

# NOTES FOR A HISTORY OF CORAL FISHING AND CORAL ARTEFACTS IN MALTA<sup>1</sup>

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## The Significance of Coral: Apotropaic, Medical, Symbolic, Precious

Coral has been prized for centuries due to its perceived protective qualities against disease, the devil and harmful supernatural forces. Fashioned into beads, horns, hands, or left in its natural state in the form of little branches, coral talismans were worn on the person, and especially by children who were particularly susceptible to these dangers.<sup>2</sup>

The perceived apotropaic qualities of coral are rooted in popular tradition.<sup>3</sup> Moreover, the appearance of coral in its natural form in the shape of a miniature leafless tree of vivid red colour had originally led to its association with the blood of the Medusa. By a process of syncretisation, this was later taken up in Christianity to symbolize the sacred blood of Christ, both of which were considered protective. The use of coral beads in rosaries, and in necklaces depicted around the Holy Infant's neck in devotional paintings, is evidence of this belief.

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1 This paper is an initial study of the sources available for a fuller consideration of coral in Malta, a topic that is currently being researched by the authors and will be published in greater detail in future.

2 Pliny the Elder records that coral branches were hung around infants' necks to protect them from danger Cf. *Naturalis Historia* 32.11.24.

3 Coral is still commonly believed, amongst the older generation in Malta, to ward off danger. 'The red coral single horn, often surmounted by a closed crown to indicate the supremacy of the phallic emblem against the evil eye, is still very popular in Malta and on the Italian mainland.' Cf. G. Zammit-Maempel, 'Fossil Sharks' Teeth: A Medieval Safeguard against Poisoning', in *Melita Historica*, vi, 4, 1975, 391-410.

Coral was also held to have medicinal uses, apparently due to its astringent qualities. It was ground and included in various preparations to address a number of ailments.<sup>4</sup>

In addition to all of its other qualities, the decorative appeal of coral has always been appreciated in different cultures around the world. With its strong colour and structure, coral can be worked into beads and carved into sculpted artefacts. As a result it has been used as a component of jewellery for personal adornment for centuries up to contemporary times.

Important centres of working of coral artefacts were located in areas where coral could be easily sourced. Sicily, and Trapani on its west coast in particular, has a long-standing tradition of harvesting and working in coral and the resultant art works, very often using tear-shaped fragments of coral mounted on a copper gilt base and surrounding coral statuettes, are unique to Trapani and immediately recognizable as such.

Although coral has, for millennia, also been present in Maltese waters, an equivalent industry and art seems simply not to have occurred in Malta. Consequently, little importance has so far been given to the study of coral from Maltese waters. Few references are found in the documents and travellers' accounts rarely, if ever, mention Maltese coral. The interest in fishing for coral seems to have been sporadic, taken up and then forgotten, until the next 'discovery', decades or even centuries later. Despite the paucity of information available, this paper attempts to chart the instances when coral was being fished in order to provide a starting point for a comprehensive study of coral and coral fishing in Malta.<sup>5</sup>

### **The Biology of Coral Species**

The basic unit of all coral species is the polyp, a sac-like body having two layers of tissue: an external one, known as the ectoderm or epidermis, and an internal one known as the gastrodermis or endodermis.<sup>6</sup> Corals can be colonial, forming large colonies or even reefs, but, contrary to common misconception, some species of coral can also be solitary.

Only a fraction of the 200 species of coral found in the Mediterranean are considered as precious in view of their commercial value for the jewellery

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4 Pliny the Elder, 32.11.

5 It is not the intention of the authors to provide an exhaustive list of all the sources which refer to coral in classical times, but only to those which have links with Maltese coral. For studies on the history of coral since classical times see C. Maltese & M.C. Di Natale (eds), *Coralli Talismani Sacri e Profani*, Novecento, Italy 1986.

6 A gelatinous layer known as the mesoglea is sandwiched between the two. The polyp secretes calcium carbonate from the ectoderm in order to construct a rigid or semi-rigid exoskeleton within which it retracts if disturbed and which persists long after the polyp dies. Whilst a disc-shaped ring of tentacles surrounds their single orifice on the upper side (which serves both as a mouth and an anus), a basal disc is located on the lower side, affording anchorage to the substratum.

industry. Such precious coral species include the emblematic *Corallium rubrum*, the precious red coral species which is endemic to the Mediterranean and to the contiguous eastern Atlantic regions. Other precious corals fished from the Mediterranean include the golden (or false black) corals (e.g. *Gerardia sauvignii*) and the black corals (*Antipathes* spp, *Leiopathes glaberrima*).<sup>7</sup>

Precious coral species are generally long-lived organisms with low growth rates and low reproductive rates. First reproduction is reached at a substantial age of more than a decade (in *C. rubrum*, sexual maturity is reached after 3-10 years). Many species can probably reach an age of more than a century,<sup>8</sup> with *L. glaberrima* presumed to survive in excess of 2000 years.<sup>9</sup>

Corals belong to one of the oldest extant animal taxa in the world, with their origins being traced back to the Pre-Cambrian. The Mediterranean was previously endowed with extensive coral reefs, characteristic of warmer waters and which form the foundations of certain rock types in the Maltese Islands. Coinciding with the early Miocene, it appears that many of these reefs suffered a serious regression and today, only a few zones (known as deep-sea, cold-water coral reefs) in this sea have been shown to bear live specimens, such as those found in the Ionian Sea and even in Maltese waters.<sup>10</sup> The deep-sea coral reef fossils formed by species such as *Lophelia pertusa*, *Madrepora oculata* and *Desmophyllum dianthus* found in the Mediterranean date back to the end of the Pliocene and the early Pleistocene (1.8 million years ago),<sup>11</sup> which makes them the oldest ones found to date.<sup>12</sup>

## The Earliest Evidence of Maltese Coral

*'Et vivum lapidem et circa  
Melitensia nectunt Coralia...'*

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- 7 Corals belong to a group of cnidarians (which includes jellyfish and hydrozoans too) known as anthozoans, of which two sub-classes exist: the Octocorallia and the Hexacorallia. Such a distinction, as can be deduced from the name, is attributed primarily to body symmetry, with the former's polyps exhibiting an 8-fold symmetry of the tentacles and the latter exhibiting a 6-fold symmetry of the same tentacles. The diverse array of coral dictates that Octocorallia is further divided into five orders – the soft corals, the organ-pipe and tree fern corals, the Indo-Pacific blue corals, the sea pens and the gorgonians (or sea fans, sea feathers). The latter order is replete with species of precious coral, including the well-known precious red coral of the Mediterranean. Hexacorallia includes the stony corals (such as the madreporans), black coral and the sea anemones.
- 8 G. Tsounis, S. Rossi, R.W. Grigg, G. Santangelo, L. Bramanti and J.M. Gili, 'The Exploitation and Conservation of Precious Corals', in *Oceanography and Marine Biology Annual Review*, Vol 48, in press.
- 9 E.B. Roark, T.P. Guilderson, R.B. Dunbar & B.L. Ingram, 'Radiocarbon-Based ages and growth rates of Hawaiian deep-sea corals', in *Marine Ecology Progress Series* 327, 2006, 1-14.
- 10 P.J. Schembri, M. Dimech, M. Camilleri, R. Page, 'Living deep-water *Lophelia* and *Madrepora* in Maltese waters', in *Cahiers de Biologie Marine*, 2007, 48: 77-83.
- 11 M. Taviani, C. Corselli, A. Freiwald, E. Malinverno, F. Mastrototaro, A. Remia, A. Savini, A. Tursi & the CORAL Shipboard Staff, 'Pleistocene to recent deep-coral growth on peri-ionic escarpments, Mediterranean basin', in *Geophysical Research Abstracts*, Vol. 5, 10916, 2003.
- 12 Expedition Scientists (2005). Modern carbonate mounds: Porcupine drilling. IODP Prel. Rept., 307. doi:10.2204/iodp.pr.307.

De Soldanis reproduces the above passage (which he erroneously attributes to Horace the poet) in relation to Maltese coral.<sup>13</sup> This passage, originally written in the Augustan period, is probably the earliest documented reference to Maltese coral.<sup>14</sup> It actually appears in a poem on hunting, the *Cynegeticon libri*, penned by the Roman poet Grattius Faliscus (c. 1<sup>st</sup> cent. BC – 1<sup>st</sup> cent. AD).<sup>15</sup> De Soldanis seems to have taken it slightly out of context or thought the context irrelevant for his purpose; however, the context is extremely useful for a study on coral. Joseph Busuttill, who has analysed the preceding and following lines in detail, explains that the poet mentioned Maltese coral in the context of the fact that the Romans would hang it, together with herbs, shells and particular stones, and while reciting magic incantations, around the necks of dogs suffering from rabies.<sup>16</sup> It is probable that these corals were also considered to have amuletic properties and could prevent a healthy dog from contracting rabies. Referred to also as a *tutela*, Busuttill interprets this as a prophylactic amulet placed around the sick dog's neck.<sup>17</sup> One can conclude that, for the reputation of Maltese coral to have travelled so far, it must necessarily imply an active coral fishing industry in Maltese waters at the time.

Very few pieces of coral were found in an archaeological context in Malta. The only ones known and studied are a few pieces in their natural state found at the archaeological site connected to the cult of Hera at Tas-Silġ, in the South of Malta.<sup>18</sup> These were either white or of pale pink hue and are believed to be of the

13 G.P. Agius de Soldanis, Rev Fr Anthony Mercieca, *Gozo Ancient and Modern Religious and Profane*, Media Centre Publications, Malta 1999, 81.

14 Brunella Bruno seems unsure that it is Maltese coral which is here being referred to. She says: 'Another activity probably practiced in the nearby waters of the archipelago was coral fishing. In a poetic passage about hunting by the Augustan writer Grattius Faliscus (source no. 16), there is a reference (uncertain) to curalia melitensia.' Cf. B. Bruno, *Roman and Byzantine Malta Trade and Economy*, Midsea Books, Malta 2009, 73.

15 The full reference is as follows: '...they twine necklets around, strung of sacred shells, and the stone of living fire and red coral from Malta and herbs aided by magic incantations. And so the peace of the gods won by the protective amulet is found to vanquish baleful influences and the venom of the evil eye.' Cf. J. Wight Duff, Arnold M. Duff, *Loeb Classical Library's Minor Latin Poets*, Vol.1, 1935, 191, consulted online: [http://penelope.uchicago.edu/Thayer/E/Roman/Texts/Grattius/Cynegeticon\\*.html](http://penelope.uchicago.edu/Thayer/E/Roman/Texts/Grattius/Cynegeticon*.html).

16 J. Busuttill, 'Three articles: The coral industry', *Journal of the Faculty of Arts*, IV, 1971, 332-3. As regards dog jewellery bearing a Maltese connection: '*Tali coralli, usati per cani, vengono pure detti melitensi, per l'uso e la tradizione che se ne ha a Malta*'. Cf. C. Maltese & M.C. Di Natale, *Coralli: Talismani Sacri e Profani: Catalogo della Mostra L'arte del Corallo in Sicilia*, Trapani, Museo Regionale Pepoli, 1 marzo-1 giugno 1986, Novecento, Italy 1986, 97 & 99. Di Natale quotes G.Tescione, *Il corallo nella storia e nell'arte*, Napoli 1965, 104 as her source for this information. A seventeenth century painting in a Palermo private collection of a small (Maltese?) dog wearing bracelets of beads around the legs and some other jewellery (not clear enough to make out) around the collar area is reproduced in C. Maltese & M.C. Di Natale 1986, 99.

17 Busuttill, 332-3.

18 The information regarding the Tas-Silġ coral finds is published in detail in: A. Quercia, 'Il corallo nei santuari del Mediterraneo antico. Il caso di Tas Silġ. (Malta)', in *Uomini, Piante e Animali nella Dimensione del Sacro*, Edipuglia 2008, and A. Quercia, 'Il corallo nel santuario di Tas Silġ a Malta. Alcuni spunti di

genus *Dendrophyllia ramea* L. The value which was attached to coral as an amulet corresponded with the belief in Hera's protective powers. This could explain the association of coral with such a cultic site and could possibly point to its use as a votive offering to protect navigation, as coral was credited with this quality and Hera was invoked to protect navigators. Moreover, the site of Tas-Silġ overlooks Marsaxlokk Bay, one of the principal harbours in Malta. These coral fragments were found in areas associated with the practice of the cult ranging from the late 4<sup>th</sup> cent. B.C. to the 1<sup>st</sup> cent. A.D.

Enquiries at the National Museum of Archaeology have not turned up any further finds of coral. This could be due to the fact that coral is not easily distinguished from other materials found in an excavation as it tends to lose its red pigment and becomes powdery and white when buried for prolonged periods.<sup>19</sup> Although Pliny records that Mediterranean coral was so much in demand in India that all the coral fished was sent there and therefore few pieces remained in the places that it was sourced from, it seems stretched to argue that this is the reason why barely any coral from classical times has been found in Malta.<sup>20</sup>

### Coral in Medieval Malta

Few documentary sources and archaeological finds survive which throw any light on medieval Maltese jewellery and the materials of which it was composed. Similarly, we are left rather in the dark as to the existence and use of coral or otherwise in medieval times. Reference is made to precious stones in the Monroy episode, but coral is not specifically mentioned then.

In 1418, coral was discovered in the sea off Trapani in nearby Sicily and, from that point onwards, a thriving industry focusing on the fishing and working of coral commenced, spearheaded by Jews who had originated from North Africa.<sup>21</sup> Would this have had some impact in Malta? Were coral beads brought to Malta from Trapani and did this discovery instigate the Maltese to exploit their own coral reefs? Were there known coral reefs in Malta at the time?

No evidence to address these questions has yet emerged; however, what is certain is that, by the last decades of the fifteenth century, rosaries made of coral

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riflessione', in G. Malerba & P. Visentini (ed.), *Atti del 4° Convegno Nazionale di Archeologia*, Quaderni del Museo Archeologico del Friuli Occidentale 6, 2005, 395-401. The authors are grateful to Dott. A. Quercia and Dr N. Vella for making these papers available.

19 N. Cutajar, personal communication, 5/iii/2010.

20 'But at the present day, owing to the value set upon it as an article of exportation, it has become so extremely rare, that it is seldom to be seen even in the regions that produce it'. Cf. Pliny the Elder, 32.11 as translated in Pliny the Elder, *The Natural History*, John Bostock, MD, FRS, H.T. Riley Esq., BA, Ed. Available online at: [edu/hopper/text?doc=Perseus%3Atext%3A1999.02.0137%3Abook%3D32%3Achapter%3D11#note1](http://edu/hopper/text?doc=Perseus%3Atext%3A1999.02.0137%3Abook%3D32%3Achapter%3D11#note1) ).

21 C. del Mare, *Mirabilia Corallii Baroque masterpieces in coral by Jewish and Sicilian craftsmen in Trapani*, Exh. Catal. Torre del Greco 20/12/08 - 01/02/09, 13 et. seq.

are listed in inventories drawn up in Malta.<sup>22</sup> The tendency to have rosaries made specifically of coral would persist throughout the ensuing Knights' period.<sup>23</sup> This might be due to the fact that coral was probably easily available and possibly relatively cheap, but also because the use of coral had other perceived benefits. This is an interesting example, paralleled in Sicily and elsewhere, where items which are apparently purely devotional incorporate superstitious elements, combining as it were the religious with the profane and doubling the perceived efficacy of the object in question against the devil.<sup>24</sup>

### **Coral at the Time of the Order of St John**

By the sixteenth century, coral started to appear regularly in inventories of private individuals in Malta, mostly still in connection with rosaries.<sup>25</sup>

One remarkable piece of coral to survive is a coral poison credence, currently conserved at the Mdina Cathedral Museum. This coral branch from which emerges a crucifix, is mounted on a silver base. Its original use may have been to hang fossil shark teeth from it which, together with the coral, were held to have the ability to detect the presence of poison. The poison credence was, therefore, present as a precautionary measure at the scene of a banquet. Poison credences are extremely rare and few survive worldwide. By 1575, this particular artefact is recorded in the Cathedral inventories.<sup>26</sup>

A reference in a late eighteenth century inventory to *'tre alberi di corallo salvaggio con loro piedi stalli'* could be the lasting evidence of this ancient usage of coral.<sup>27</sup> The question arises whether the Cathedral Museum example is made of coral sourced from Maltese waters and, if so, were others made and exported for use to the rest of Europe?

By the middle of the seventeenth century, the working of coral in Trapani had flourished to the extent that there were several workshops and coral was

22 See S. Fiorini (editor), *Documentary Sources of Maltese History, Part 1, Notarial Documents, No. 1 Notary Giacomo Zabbara R494/1(1):1486-1488*, Malta 1996, 14, 229.

23 F. Balzan, *Jewellery in Malta Treasures from the Island of the Knights (1530-1798)*, Fondazzjoni Patrimonju Malti, Malta 2009, 7.

24 M.C. di Natale makes an interesting point in this regard: *'Nel medioevo cristiano il 'Paternoster', preghiera che tra l'altro serviva ad invocare l'allontanamento delle tentazioni del demonio, tramite proprio l'uso orientale di contar preghiere con grani, da' il suo nome al corallo, che tra tutti i grani era quello che maggiormente si legava al concetto di esorcizzazione dei mali demoniaci, Dal XII secolo inizia la consuetudine di aggiungere ai Paternostri una Ave Maria e verso la fine del XV secolo il 'Paternoster' si trasforma in Rosario. Non mancheranno infatti dipinti da questo periodo in poi riproducenti corone di corallo rosso in mano alla Vergine.'* Cf. C. Maltese & M.C. Di Natale, *Coralli: Talismani Sacri e Profani: Catalogo della Mostra L'arte del Corallo in Sicilia*, Trapani, Museo Regionale Pepoli, 1 marzo-1 giugno 1986, Novecento, Italy, 82.

25 For example: National Archives of Malta (NAM), Magna Curia Castellania (MCC), Acta Originalia (AO), Vol III, Inventarium bonorum hereditarium Oliverii Cassar, f.30: *'duj resti de paternostrij de corallo'*.

26 For information about this poison credence see Zammit-Maempel 1975, 391-410, where the use of this coral artefact was first identified and studied in detail.

27 NAM, MCC, Reg. Inventiorior Bonor., Vol 5, f. 98.

no longer used solely to make beads for *paternostri* (rosaries) but veritable sculpted works of art were being produced. An art form which remains unique to Trapani flourished. This was the combination of carved pieces of coral mounted with the *retroincastrato* technique onto gilt copper artefacts. Some examples of this exquisite art made their way to Malta. These include the superb seventeenth century monstrance belonging to the Conventual Church of St John (See Fig. 1),<sup>28</sup> the Mdina Cathedral Museum monstrance, and the capezzale in the Church dedicated to Our Lady of Pilar, Valletta.

An interest in coral fishing and some connections with Trapani emerge in the same period in Malta. In 1647, Gio. Francesco Abela wrote that fine coral could be found in Maltese waters. Proof of this, he says, is that persons involved in that trade, as well as fishermen, visited on more than one occasion to work it in a manner similar to that of the city of Trapani, receiving the privilege to do so from the Grand Master.<sup>29</sup> The fact that they were granted this permission implies that



**Fig. 1: Gilt copper monstrance studded with coral and enamel, 17th century, Trapanese, Treasury of the Co-Cathedral of St John. Image Copyright © The St John's Co-Cathedral Foundation/Midsea Books, Photo by Daniel Cilia.**

<sup>28</sup> Recently restored, this monstrance has been published in S. Guido ed., *Restauri e Riscoperte di Scultura del Barocco Romano a Malta*, Superintendence of Cultural Heritage and Midsea Books Ltd, Malta 2005, 85 et. seq.

<sup>29</sup> *'Non è scarso il nostro delizioso mare di generar anch'egli rami di fino corallo atteso, che più volte essendo à bella posta venuti alcuni del mestiero, e pescatori n'hanno trovato, e posto in opera à guisa di quello della Città di Trapani, & ottenutone perciò privilegio dalla benignità del Sig. G. Maestro Principe.'* Cf. G.F. Abela, *Della Descrizione di Malta Isola nel Mare Siciliano con le sue antichità, ed altre notizie*, Malta 1647, facsimile edition Midsea Books, Malta 1984, Bk1, 77 not.12, p.136. Interestingly, a piece of coral in its natural state was included in Abela's own collection. Cf. K. Gambin, *One Hundred Years of Heritage 1903-2003*, Heritage Books in Association with Heritage Malta, Malta 2003, 10.

there was no competition from Maltese fishermen and craftsmen. As has been pointed out above, there is no indigenous tradition of working coral in Malta, which seems to further confirm this hypothesis.

The reference to the working of Maltese coral in the Trapanese manner indicates that these persons were very familiar with that particular art and, therefore, probably came from Trapani and produced carved Maltese coral artefacts that could perhaps be passed off as Trapanese. Unfortunately, Abela stops short of telling us which market, if at all, this worked coral was intended for. Abela seems more interested in proving that Maltese coral was of good enough quality to compare with the more famous Trapanese coral. Could it be that the Order and the indigenous population had not realized the potential of Maltese coral as a resource which could be commercially exploited? Was the difficulty of fishing coral, which entailed specific equipment and techniques, a sufficient deterrent for Maltese fishermen?

The commercial networks that emerged in Trapani as a result of this major industry were far more complicated than the above case implies. *Ad corallandum* companies were set up to regulate the various roles, covering the fishing of the coral, supply of boats, equipment, distribution of the coral and, later on, its working and sale overseas. Similar set-ups are not known in the Maltese context, once again showing that coral cannot have been exploited to the same extent in Malta; however, further focused research still needs to be undertaken before this possibility is entirely dismissed. It must also be noted that coral remained in demand for objects of personal adornment amongst the indigenous population because several inventories attest to its presence amongst the personal possessions of individuals.<sup>30</sup>

Moreover, a case regarding the sale of coral may be indicative of further similar activity of coral shipped through Malta. The 1682 case dealt with the sale of a small quantity of (Maltese?) coral worth around 80 *scudi* which was sold by a certain Jacobus Lavernia (Invernia) to Aurelio Varagni, a Greek youth on board a ship which was in harbour in Malta. Lavernia later attempted to stop the ship that Varagni was travelling on and experts were appointed by the court to value the coral. The appointed experts were Xaverius Rosselli, who may have been one of the members of the Rosselli family of silversmiths, and Leonardo de Paula. Their estimates varied widely with Rosselli valuing the coral at 12 *tari* per ounce while de Paula valued it at 20 *tari* per ounce.<sup>31</sup>

During the eighteenth century, some more evidence for coral fishing in Maltese waters emerges but the overall picture indicates that these were isolated incidents

30 For example: National Archives Malta (NAM), Magna Curia Castellania (MCC), Reg. Invent. Haereditar., Vol. 2, f.595 (*doi fili di corallo*), NAM, MCC, Reg. Invent. Haereditar., Vol.2, f.826 (*guleri di curallo no. 31... braccioletti di corallo no. 2 ... corona di corallo incatenata con argento no.1*), etc.

31 NAM, MCC, AO, Vol. 479, ff. 241 et. seq.



and there was as yet no discernible attempt to systematically fish for coral. All indications which have turned up so far show that coral fishing was done by Italian, predominantly Sicilian, coral fishermen, probably because they had the know-how and the tools and technique to harvest it while the proximity to their bases in Italy rendered the Maltese locations more attractive.

De Soldanis informs us that:

‘Our sea is plentiful not only in fish but also in coral trees, especially that part of the shore near Xlendi Bay. At this spot, at the time of Grand Master Zondadori<sup>32</sup>, and with his permission, some coral fishermen came from Trapani, Italy, with their fishing boats and fished up loads of coral. Also in 1743, in Malta, some Sicilian coral fishermen came with their boats to fish for coral but they were prohibited to do so, by the coast guards, because of the plague that hit Messina a day after they arrived in Malta. So they had to go back to Sicily.’<sup>33</sup>

Whether the 1743 group of fishermen are the same as the ones recorded in a 1743 petition by 25 Trapanese corallari who owned boats, requesting permission to harvest coral in Maltese waters, is not entirely clear. According to the petition, a quantity of coral was spotted towards the North East and petitioners requested the permission of the Order to fish this coral and asked that the Maltese Padron Leonardo Schembri accompany them with a speronara and seven men to help in the task.<sup>34</sup>

An eighteenth century chronicler also records that, in 1747, a large number of Sicilian boats crossed to Malta to fish for coral. They were probably not aware of the exact location, we are told, as they took a Maltese padrone with them to show them where it lay ‘*essendo questo in mezzo del mare, benché non tanto profondo, e non lungi di Malta*’. A fifth of the catch would be given to the Maltese padrone

32 Grand Master Marcantonio Zondadori reigned from 1720 to 1722.

33 Agius de Soldanis, Mercieca, 81.

34 Archives of the Order in Malta (AOM) 1188, 318-319: *di venticinque proprietari di barche trapanesi. Resc. 20.V.1743 'Antonio Callotta, Sebastiano Bardassuni, Giuseppe Casala', Geronimo Peamo, Carmino Singa, Vincenzo Garofalo, Giuseppe Garofalo, Nicolo' D'Amico, Giacomo Torrenti, Tomaso Galoppo, Antonio di Martino, Baldassare Megliuri, Gaspare la Citra, Nicola Vent'Aperto, Marco Romano, Andrea d'Angelo, Stefano Campagna, Giacomo Lazzara, Vincenzo Cruci, Leonardo Fodra', Carmino Giaganti, Vito di Fici, Leonardo Forciano, Carlo D'Angelo, Natale Forrano, Pni di venticinque barche Trapanei, da' pescare Corallo, Um:I Sev.i di V.A.S. Umil.te rappresentano, aver presentito esservi in vista di questo Suo Dominio, ed in questi suoi mari verso il Gregale qualche quantita' di Corallo, quale desiderano essi di pescare e non potendo cio' fare senza il permesso di V.A.S., come Prencipe, la supp:no instantemente affinche si compiacesse accordarli la necessaria licenza, ed insieme abilitare a' Pn Leonardo Schembri Maltese affinche si portasse con essi loro con sua speronara rmata con sette Uomini, per assistere a' i med:I in d.a pesca....'*

as payment.<sup>35</sup> This begs the question: if the Maltese knew about coral in Maltese waters why is there no evidence that they exploited it? They clearly attached value to it, as shown by the fact that the Maltese padrone was going to be paid in kind with a fifth of the catch. What then did he use this coral for? Would he have traded the coral in its natural state or, rather, had it worked into artefacts and then sold the finished product?

References to coral jewellery and beads forming components of bracelets and necklaces can be found in Maltese inventories of the eighteenth century.<sup>36</sup> Interspersed with gold and silver beads, the rich colour of coral was undoubtedly exploited for its decorative effect as well as for its other perceived properties.

Well into the eighteenth century the belief that coral had medicinal uses due to its astringent qualities persisted.<sup>37</sup> *Corallium rubrum* appears in several formats in the list of medicinals used in the Hospital of the Order in 1769 together with its price.<sup>38</sup> Ground coral features in a recipe for a tincture which was indicated for use in stomach ailments and several other maladies in a mid-eighteenth century recipe book compiled by Don Giuseppe Seychel.<sup>39</sup> Moreover, red coral was also

35 National Library of Malta Manuscript (NLM) 20, Stromatum Melit. 1755, f.111 [1747 (a 17d Luglio)]: 'Lun[e]d[i]. Partirono moltiss[im]e barche Siciliane venute dalla Sicilia trascorsi giorni per far la pesca de Coralli in un luogo in mare non distante da Malta. 'E qui è da supporre, che I marinari Siciliani non sapevano il luogo de' Coralli, e condussero con loro un Pad[ro]ne Maltese, di nome Lorenzo, volg[armen] te d[et]to P[ad]r[on] Venzu, al quale promisero la 5.a parte semai non erro, della pesca che si farà, per additargli il luogo, essendo questo in mezzo del mare, benchè non tanto profondo, e non lungi di Malta'

36 For example: NAM, MCC, Reg. Inventor. Bonor., Vol. 1, f.223v: 'un calazcinde di corallo'; *Idem*, f.240v: 'It un paro di brazzoletti d'oro trameschiati con bottoni di corallo', etc.

37 By the seventeenth century 'Corallinea pulv composed of a mixture of opium, myrrh, cascarilla, cinnamon and powdered red coral was prescribed as an astringent in dysentery and to allay epigastric pains.' Cf. C. Savona-Ventura, *History of Medical Practice and Pharmacy*, online article available at <http://reocities.com/HotSprings/2615/medhist/medicine.html>. See also: C. Savona-Ventura, *Outlines of Maltese Medical History*, Midsea Books Ltd, Malta 1997, 41-58. and P. Cassar, 'Two centuries of medical prescribing in Malta 1683-1882', *St Luke's Hospital Gazette*, 4(2), 1969, 107-112. We are grateful to Prof. Savona-Ventura for the afore-mentioned references and for the following information: 'In this article, Dr. Cassar publishes a list of medicaments noted in registers dating to the late 17th through the 19th century. Corallinae pulv was mentioned in one register dated to 1723. A mid-19th century manual of pharmaceuticals published in Bologna mentions the *Corallina di Corsica*, o *Corallina Bianca*, *Corallina officinalis*. The substance 'per se stessa è affatto inerte, e sembra che la sua riputazione, come antelmintico, sia affatto dipendente dai fuchi coi quali sempre mescolata, ed all matricie saline di cui è impregnata, e che contengono dello iodio.' (personal communication 30.iii.2010).

38 L. Farigiani, *Taxa recens pretii omnium pharmacorum...*, Malta 1769. Our thanks to Prof. Roger Ellul-Micallef for drawing our attention to this publication.

39 NLM 1173, Giardino di Bellissimi Segreti e Ricette: *Effetti della Tintura del Corallo: La Tintura del Corallo per l'analogia, che ha' con li spiriti vitali, ed il caldo innato, cacciando dall'interno tutte le superfluita' ed augmentando, e roborando (?) esso caldo innato, restituisce il Corpo in una temperie (?) tanto adeguata che rende l'uomo in modo che facilmente supera i morbi, sana il mal caduco e si loda particolarmente a' flussi bianchi e rossi delle donne, a' cui giova in modo tale, che non la fa' piu' incorrere in questo ne in altro simil'male. Ferma il sangue da' qualunque parte del corpo. Sana il mal'francesc ancorche invecchiata(inocchiata mocchiata??) con piu' efficacia, e senza pericolo, che l'istessa polvere del Corallo non si faccia quano piu' vaglia nei febril pestilenti co dichiara la storia a' mano scritta d'Angel:mo Boezio (f.1v)* The recipe for 'Tintura del Corallo' is to be found in f. 2 of this manuscript. Other recipes in this

to be found in eighteenth century apothecaries' stock in Malta.<sup>40</sup> On the nature of Maltese coral, de Soldanis comments:

‘Maltese corals come in two different colours, red and white. Some say it is a stone because it looks like stone but it is in fact a tree like any other tree that grows and spreads in the bottom of the sea.’<sup>41</sup>

Apart from indicating that it was to be found in the waters off Xlendi, Gozo, de Soldanis also states that ‘*Krolla*’ (the Maltese term for coral, and which he wrongly identifies as ‘*lapis pyriten*’) is to be found:

‘*Il nostro mare di Malta e Gozo, propriamente sopra Ricasoli, e ne’Frei del Gozo sotto Sannat produce un bel Corallo.....Osservai varie specie di Coralli tratti dal nostro mare, Corallo bianco, biancastro, giallo, pavonaccio, verde e nero. Circa le qualità del Corallo leggi Plinio Lib. 9. c. 30. lib. 36. c. 19. et Lib. 37. ...*’<sup>42</sup>

It could very well be that de Soldanis’s claim that Maltese coral is present in different colours (other than black and red) is, in fact, taxonomically incorrect and other species which superficially resemble coral (e.g. encrusting bryozoans) are what are here being referred to. Another possible explanation is that de Soldanis is referring to non-precious coral species fished from our waters. The reference to black coral, on the other hand, is the first documented instance known to the present authors of the presence of black coral in Maltese waters.

### **Fishing for ‘The Red Coral of Commerce’ in the Nineteenth Century**

The mid-nineteenth century discovery of ‘coral rocks’ off the coast of Gozo was very well-documented and led to the first systematic attempt at mapping the distribution of *C. rubrum* in Maltese waters. The commercially exploitable potential of this find quickly set in motion a chain of events.

On 10 July 1862, the Superintendent of Police advised Captain W. Brett, the Acting Chief Secretary to Government, that

‘... in the Gozo waters a quantity of coral has lately been found and that many Gozo, Maltese and Sicilian boats are now engaged in

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manuscript which mention coral include ‘*Ricetta di uno buon medicamento universale, ed effettuofo per lo stomaco, che si dice alias effettuario (?) o’ vero Loch Sanum (?)*’ which lists ‘*coralli rossi pp. una drama e mezzo*’ as well as ‘*cristallo di rocca, occhi di granci, madreperla*’ and many more ingredients (f.13<sup>v</sup>). A recipe for apoplexy includes ‘*Coralli rub: polveriz:ti*’ and ‘*Lingua d: Pauli polve:ti*’ (f.14).

40 Balzan, 87.

41 Agius de Soldanis, Mercieca, 81. The belief that coral belonged to the plant kingdom was an incorrect but often repeated misconception.

42 NLM, Ms. 143/i, *Damma tal kliem Kartaginis mscerred fel fom tal Maltin u Ghaucin...*f.317<sup>r</sup>.

such coral fishing which, if successful, will prove a great resource to these Islands'.<sup>43</sup>

Another statement follows that a report had been made by a certain M. Criscuolo<sup>44</sup> (later identified as the person who discovered these rocks)

'...that there are now about 60 Boats fishing on the coral bed, and ... (raising??) the branches of Coral by throwing down heavy weights with the object of breaking them off and recovering the pieces so broken. I have seen the Superintendent of Police who has undertaken to immediately send to the spot a proper trustworthy officer to personally investigate the matter and take such steps as may be necessary for the proper protection of the rights of the Crown, and the interest of Government'.<sup>45</sup>

A day later, the Chamber of Commerce was quick to address a request to Captain Brett to suspend any permits for fishing coral until the fishing thereof could be properly regulated to ensure benefit to the 'native population' and this in the interest of industry and commerce in the country.<sup>46</sup> The reply, dated 12 July 1862, reassured the Chamber that the Government had immediately put an end to these activities as soon as it heard of same (on 10 July).<sup>47</sup>

A week later, on 17 July 1862, the Superintendent of Ports proposed that :

'I think it would be most desirable to have their [coral rocks] positions accurately ascertained and noted on the Charts: with this view as Captain Spratt<sup>48</sup> of H.M.S. 'Medina' is at present in Port, I would suggest that a request to that effect might be made to the Admiral – The 'Medina' I believe leaves this [?] in a day or two – Mr Criscuolo the discoverer of these rocks being here is ready to render his assistance in pointing out the positions, and would accompany the Steamer for that purpose'.<sup>49</sup>

43 NAM, Chief Secretary of Government (CSG) 01, 8824/1862.

44 Also spelt 'Crescuolo'.

45 NAM, CSG 01, 8824/1862.

46 NAM, CSG 01, 8837/1862.

47 NAM, CSG 04, 8367/1862.

48 For a detailed biography on T.A.B. Spratt see G. Zammit Maempel, *Pioneers of Maltese Geology*, The Author, Malta 1989. This biography had previously been published in 1986. Cf. G. Zammit Maempel, 'T.A.B. Spratt (1811-88) and his Contribution to Maltese Geology', *Melita Historica*, ix, 3, 1986, 271-308. It is to be noted that the aforementioned publication, on page 40, also mentions the discovery of the coral beds and Spratt's contribution in carefully charting them.

49 NAM, CSG 01, 8869/1862 (dated 17 July 1862). The request was put to Rear Admiral Codrington (NAM, CSG 04, 8395/1862).

In engaging Captain T.A.B. Spratt, who had already achieved considerable fame, the Government was calling on the best possible technical help.

The reply, dated 19 July 1862, was in the affirmative and Captain Spratt of HMS *Medina* was directed ‘to proceed to Gozo for the purpose of ascertaining the accurate position and extent of the rocks’ on the Governor’s express wish. Evidently, time was not to be spared as ‘I [the Rear Admiral] have directed Captain Spratt to proceed on this service as early as convenient and he will probably leave on Monday or Tuesday next’.<sup>50</sup>

It only took Captain Spratt 10 days to draw up the survey report to which was attached a chart clearly marking all the locations where coral was to be found. A letter, written presumably in Spratt’s own handwriting, is enclosed.<sup>51</sup>

The report, in the form of a letter dated 29 July 1862 is signed by Spratt.<sup>52</sup> In it he says that he was requested

‘...before leaving the Island on the completion of its Survey examine and report upon certain Coral rocks recently discovered off Malta and Gozo, as well as the probable extent of these Coral rocks, with the view to obtain a knowledge of its commercial importance’.

Performing the survey in unfavourable weather, he was assisted all along by Criscuolo who accompanied HMS *Medina* in another boat equipped with the apparatus required for coral fishing. It seems that Criscuolo had a knack for detecting the most likely spots for coral to be found and advised Spratt on the proper coral fishing techniques and apparatus, bringing up samples of coral during the survey. Spratt takes care to assert that Criscuolo ‘is an experienced Coral Fisher’.<sup>53</sup> It is clear that the coral species Spratt was engaged to chart was the ‘Red Coral of Commerce’, which had a commercial value. Black coral is not mentioned at any stage and, probably, was not being sought.

In his findings, Spratt reported that, to grow, coral required a certain depth (from 30 to 70 fathoms), a fixed bare rock-face or ledge on which to attach and grow, and conditions of clean sea-water. Therefore, it was more likely to grow on the West of the Maltese Islands, from the South East of Malta all the way to the North point of Gozo (approximately from Wied iż-Żurrieq, Malta to the

50 NAM, CSG 01, 8881/1862.

51 The original report and chart are to be found in NAM, CSG 01, 8926/1862. A copy is lodged in the United Kingdom Hydrographic Office Archive (OD 244/OD MP1/3). Thanks to Mr Joe Bianco for indicating this source.

52 The acknowledgement of receipt of the report, together with an expression of His Excellency’s gratitude, is dated 31 July 1862. Cf. NAM, CSG 04, 8490/1862.

53 It seems that Criscuolo was not duly paid for his expenses and services and a court case ensued. The First Hall of the Civil Court awarded him £28.12s ‘for expenses incurred by him and for his assistance on the occasion of a survey ordered by Gov.n for the discovery of coral beds’. Cf. NAM, CSG 04, 10284/1863, dated 3.viii.1863.

Ġurdan lighthouse, Gozo). Actual discoveries of coral along this stretch were indicated in the accompanying chart. Spratt went on to describe how coral ought to be fished, and included a sketch of the recommended fishing apparatus. This was a device in the shape of a St Andrew's cross with nets suspended from it and weighted at the centre (as opposed presumably to the method used earlier in the month by the 60 boats which were trying to fish coral by throwing heavy weights at it and bringing up the broken bits - an impractical method which led to damage and unnecessary wastage and had first raised the alarm). Spratt indicated that a coral ledge had been found recently 'off Ras - el Newhela, or Ras el Hobs' etc. Apart from the known locations of coral to fishermen (Ras el Rahab, Fomm el Reh, Ras el Hawieh in Malta and Ras el Hobs, S.W Gozo, Dweira/Fungus rock, Chambray in Gozo), Spratt also found some other coral in the Filfla and Mtahleb area in Malta and Cape Demetri in Gozo. He concluded that, given the positive results of his survey, 'there is a promise of a very remunerative coral fishery, and source of industry, of considerable commercial importance to the community and Government'. He warned of the destruction and loss that could occur if not fished correctly (probably in allusion to the occurrences earlier in the month) but the fact that the coral was so close to the coast was a positive factor in both supervising its correct fishing and in facilitating the actual fishing.

Enclosed in the same batch of documents is a letter, presumably in Spratt's own handwriting, dated 31 July 1862 and addressed to Brett. In this letter, Spratt seems to have been worrying about the contents of the report submitted earlier, wanting to emphasise certain points, clarify others and adding on some further information. The letter starts by saying that he was too unwell to go directly to the palace (he was probably suffering from malaria at the time<sup>54</sup>) and being about to depart for the East, he asked whether any clarifications were needed as regards the report and repeats where coral might possibly be found. He also - for the first time - referred to 'pale colored coral' and said it

'is also to be had as well as the dark red. For we got a fine piece of the pale red coral from the abrupt face of the cliff under Suitakle (?) where one of my Crosses as(?) thrown and which Mr C.scuol(?) was worth £4. I let him keep it, as he fished it up'.

He also said that, although he indicated 30 fathoms as the shallowest water where coral could be found, it was possible that it would be present in shallower water. He commented that

'With such ... craftsmen in gold working as the Maltese are, the coral ornament(?) trade ought to be a source of ... industry and local advantage. It is I believe, a good deal of Coral can be found in the deeps of the Island at little comparative labour and expense, when properly done, by proper apparatus and a

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54 G. Zammit Maempel 1989, 40-41.

little experience: Which many of the Maltese and Gozitan fishermen have already had.'

Thereafter, the Superintendent of Ports together with the Superintendent of Police seem to have been requested to provide a joint report about the Coral beds found in the south.<sup>55</sup> Dated 22 Aug 1862, the resulting report gives a detailed account of previous discoveries of coral from circa 1782 onwards, based on verbal testimonies of named persons. The account kicks off with a rather dramatic incident that had become entrenched in popular lore by the time the report was written:

'...it is traditionally known and believed at Gozo, that about 80 years back nine boats from Trapani (in Sicily) fished Coral from the Gozo Coast successfully, and that on their way back to Sicily with such Coral they were captured by the Turks and conveyed to Algiers, where they met with some Gozitans who were slaves and who having been ransomed, returned to Gozo and related the circumstance.'

It seems, therefore, that the documented presence of Sicilian fishermen discussed above continued into the late eighteenth century and was still recalled in popular memory. The involvement of Sicilian coral fishermen continued, as the report recounts. Padrone Antonio Borg<sup>56</sup> recalled that, 50 years earlier, his father had accidentally fished up some coral with an implement called a Palamite near 'ta Rahep', directly opposite 'Ghar il-Mithna', and informed some Sicilian coral fishermen who were heading to the African Coast about it. They struck a deal with him to pay 40 dollars if he were to indicate where this coral might be found. Much coral was subsequently found in the areas indicated by him.

Later on, circa 1844, another Gozitan fisherman<sup>57</sup> brought up some coral with his Nafsi fishing equipment in the same spot and sold it in Malta, whereupon a Valletta trader by the name of Giuseppe, who sold coral from a shop in Strada Levante close to Marina Gate, struck a similar deal with him. In 1860, another fishermen said he also found coral in the same area but no activity seems to have ensued.

In circa 1858, in the area of 'Ras Enneuela' under the Ta' Ċenċ cliffs of Gozo, 'fine' coral was brought up in a net and, since that time, fishermen were bringing up relatively large quantities of it, spearheaded by Antonio Borg.<sup>58</sup> Michele Criscuolo, referred to as 'shopkeeper in this Island', enters the scene on the 30

55 NAM, CSG 01, 9039/1862. Unfortunately the report is incomplete and has missing paper/s at the end.

56 Nicknamed 'Ta Formica'. In Gozo, nicknames are important identifiers, almost more so than the actual surname of a person.

57 By the name of Luigi Cachia, known as 'Ececcia'.

58 Nicknamed Palamita. Curiously the report first refers to 'Palamita' as an implement used in fishing.

June 1862 when, together with Captain Agnello Pontillo, a Sicilian who was well-experienced in coral fishing, and using Antonio Borg as a guide, they fished 'very fine coral' from this spot. They returned a few days later, better equipped and fished 'upwards of a cantar of coral' until, on 11 July 1862, they moved to a new spot on the same coast which had not been exploited before. Several other fishermen were by then fishing coral. In the meantime, on 10 July 1862, two Maltese boats, which included Sicilian crew, successfully fished coral along the Ta' Rahep coast, Gozo.

With all this activity going on, the report by Criscuolo seemed opportunely timed to eliminate the competition by pointing to the fact that these other fishermen were destroying the coral through their incompetent coral fishing techniques.<sup>59</sup>

The joint report went on to advise the Government how to go about licensing coral fishery, firstly by making comparisons with the system adopted in Calle, Algiers and in Sardinia whereby permission was granted to boats to fish for coral against the payment of a tax. They made reference to a certain Signor Luigi Aquilina, who was part of a French commission, to establish rules for coral fishing and who was also apparently a merchant in Algiers.<sup>60</sup> His opinion must have been sought by the compilers of the report as they recounted that he told them about how he paid 10 per cent of the 'gross proceeds' to the Ionian government when he took on coral fishing in Corfu. In 1858, the 11 Cantars of 'indifferent' coral he managed to fish amounted to the value of 11,000 dollars. The report then suggested either charging each boat an annual amount to permit coral-fishing or else, and preferably, to divide the Maltese islands into three zones and to concede a licence for a year (by means of a public competition) for each zone, thus guaranteeing exclusive rights to exploit the coral in the zone allocated.

A second joint report, dated 18 September 1862, made recommendations on the issuance of the licence to fish for coral.<sup>61</sup> A yearly fee of £50 was mooted, being sufficiently high to deter inexperienced fishermen from applying for a licence. Other conditions considered were that the boat so licensed had to be equipped with the proper fishing apparatus and that, while fishing, licensed boats were to keep a distance of twenty yards between them. The pros and cons of the two suggested systems of licensing seem to have been weighed and considered as can be seen in the various notes and opinions in the document.

<sup>59</sup> NAM, CSG 01, 8824/1862.

<sup>60</sup> It must be noted that at the time Calle in Algiers was reputedly the most important location of coral fishing on the African coast, controlled by the French, and to which several Italian coral fishermen were attracted, raising the French flag on their boats. Cf. B. Liverino, *Il Corallo esperienze e ricordi di un corallaro*, Analisi-Trend Bologna 1984, 79. This raises the question whether any Maltese were engaged in coral fishing in Algiers. Luigi Aquilina is likely to have been Maltese and to have reached a position of some distinction, as evidenced by the fact that he was appointed member of an advisory commission to the French government for the establishment of rules regarding coral fishing.

<sup>61</sup> NAM, CSG 01, 9159/1862.



Ultimately, the system of dividing the coast of the Islands into three sections, each of which would be let on lease for a year to a successful bidder, was opted for. An advertisement for tenders was issued on 16 January 1863 (Fig.2).<sup>62</sup> The tenderers were Giosue Cafiero in association with Settimio Caramia, who offered £120 for all three sections of the coast, in effect tendering for a monopoly on the potential coral grounds of Malta and Gozo. Ignazio Marceca also tendered for all three grounds, offering £75 for all of them or significantly

less for each one. A. Bonnici Mompalao also made individual offers for the three sections separately. Section no. 3 (the western coast of Gozo) must have been considered the most valuable as both Bonnici Mompalao and Marceca offered practically double what they had offered for the other sections. The covering letter, dated 24 March 1863, to these documents addressed to Sir V. Houlton, Chief Secretary to Government, by the Superintendent of Ports makes clear that Cafiero and Caramia's offer was 'the most advantageous'. This was referred to the Crown Advocate who did not disagree. It is, therefore, to be assumed that Cafiero and Caramia were awarded the first tender for coral fishing on an exclusive basis for the entire west coast of Malta (from Benghisa point to 'Circheua' point) and the western coast of Gozo, for the duration of a year from 1 April 1863 until 31 March 1864.<sup>63</sup>

The years following this 'discovery' still need to be studied in greater detail. However, the promise of a coral industry which would be so beneficial to commerce and industry, as optimistically hoped for by the Chamber of Commerce on the initial discovery of the coral, seems never to have been realized. Whether this was



Fig. 2: Notice regarding tenders, NAM, CSG 01, 10271/1863. Image courtesy of the National Archives of Malta

<sup>62</sup> NAM, CSG 01, 10271/1863.

<sup>63</sup> All documents referred to regarding this tender are to be found in NAM, CSG 01, 10271/1863. According to the Oil Exploration Division Progress Report which relates to a Coral Project which was undertaken in 1983, 'A coral reef discovered in 1862 between Malta and Gozo in 60 fathoms of water about one-fourth of a mile off Gozo led to its being exploited under a Government exclusive Licence to Michele Crescuolo, a Neapolitan whose descendants are currently employed in fashioning decorative pieces. Another discovery in the following year in Gnejna Bay was treated similarly. There is documentary evidence that at least up to the first years of this century coral was still extracted, if not worked, in Malta.' Cf. Ministry for Resources and Rural Affairs Archives (MRRRA), Oil Exploration Progress Report, dd. 1/6/83, Appendix 2, compiled by Roger Scotto.

due to the fact that the coral proved too difficult to fish or that it was of insufficient quality or quantity to support a thriving industry is yet to be determined. One fact is certain and that is the great blow dealt to the coral industry in the Mediterranean by the discovery of the extensive Sciacca (Sicily) coral bank in 1875, followed by discoveries of a second and third bank in 1878 and 1880.<sup>64</sup> This flooded the market with coral, with the consequent collapse in the price of coral, effectively rendering any further fishing in Maltese waters uneconomic.<sup>65</sup>

Later on, the ebb and flow of requests to fish coral must naturally have been dependent on the demand generated primarily by the jewellery industry.<sup>66</sup> Its decorative appeal was not, however, restricted only to its use in personal adornment but it was also used as a wall decoration. Pieces of coral are used in profusion as an element of the mosaic decorating the interior of the Nymphaeum at the Argotti Gardens, Floriana. A church at Tas-Silġ is also reportedly decorated with coral in a similar manner.<sup>67</sup>

The sporadic requests for permission to fish coral in Maltese territorial waters continued well into the twentieth century, mostly emanating from Italian individuals or companies based in Sicily and Naples (where coral working industries flourished) and Greece. These requests were generally turned down by the Maltese authorities.<sup>68</sup>

In 1983, a licence was granted by Maltese authorities to the Italian company Coralma S.r.l. to extensively survey Maltese waters for the presence of *C. rubrum*.<sup>69</sup> Twenty different locations, extending throughout the twelve-nautical-mile territorial waters of the Maltese Islands were sampled, by dividing the same marine area in ten different zones. The long-term intention was to set up a coral working company in Malta, training and employing a number of artisans in the art

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64 Liverino, 79 et. seq.

65 By 1886, it seems that the extraction of coral had been completely shelved: 'A few years back the discovery of a coral bank in the vicinity of Gozo was reported; so far, however, nothing further has been heard of its existence, as possibly the profit that could be derived from it would not compensate for the heavy outlay required for its extraction.' Cf. N. Zammit, *Malta and its Industries*, London 1886, 30. We are grateful to Dr Albert Ganado for this reference.

66 It must be recalled, however, that coral was collected in itself as a curiosity and would, in the past, have also been included in its natural form in cabinets of curiosities and collections of minerals and specimens collected from nature. See footnote on G.F. Abela's cabinet of curiosities *supra*. *The Museum Annual Report for 1924-25* lists the following donation: 'A fine collection of exotic and a few local species of corals, also a few local sponges, formerly belonging to the late Chev. G. Gollcher very kindly presented also by Madam Gollcher'. The Gollcher family operated a successful ship-owning business in Malta, so it could be that the interest in marine species emerged from their interest in the marine environment.

67 For information about the coral used in the decoration of the Nymphaeum and reference to the church at Tas-Silġ, see I. Ross, *The Mosaic decoration at the Nymphaeum, Argotti Gardens: condition assessment and conservation strategy*, unpublished B.Cons. (Hons) thesis, University of Malta 2006.

68 MRRAA, Coral Correspondence.

69 The information contained in this and the following page forms part of a paper by A. Deidun et al. entitled 'Record of the presence of black coral in the Maltese Islands, and description of precious coral fishing activities', in press.

of working coral for use in jewellery.<sup>70</sup> The enterprise was largely unsuccessful, since just three kilos of 'low-quality' *Corallium rubrum* was officially recorded.

In 1984, a Maltese parastatal company, the Mediterranean Coral Fishing Company, was instituted with the sole objective of identifying and harvesting precious coral populations in the Mediterranean, but which yielded the only quantitative information about shallow-water precious coral populations in Maltese waters.<sup>71</sup> The company was initially set up with an investment of the equivalent of 250,000 euro and had at its disposal two Italian boats. Maltese fishermen were commissioned at an attractive rate of 165 euro per week.<sup>72</sup>

An analysis of this data indicates that the *C. rubrum* catch landed from Maltese near-shore waters during 1984-85 and 1986-87 amounted to almost 1.5% of the total biomass of the 44.3 tons and 40.4 tons recorded for the whole Mediterranean for these two periods respectively.<sup>73</sup> White and orange coral were also reportedly fished in this period. The 'orange' coral recorded may either be a variant of *C. rubrum* or the dead coral. Mediterranean white coral is not considered precious.

During the operating period of the coral-harvesting company (1984-1987), Maltese near-shore waters were surveyed primarily by means of SCUBA divers using helium-based breathing gas mix, ROV (remote operating vehicles operated from a modified French navy vessel) and manned submersible (<10m in length, manned by three individuals, and fitted with robotic arms for collection of coral specimens), which was occasionally hired for 150,000 euro per week from offshore oil companies.<sup>74</sup>

This fishery also landed 100 kg of black coral (*Antipataria*), which was recorded at that time as *Antipathes* spp., revealing a limited effort being invested in the taxonomic identification of the species. To date, very few black coral specimens and fragments retrieved from the company's operations can be located, and it is not clear if the fishery exploited one or several species. One such erect, branching specimen, identified as *Leopathes Glaberrima*<sup>75</sup>, and having a height of 40 cm, is in the reserve collection of the Natural History Museum, Mdina.

Most of the recorded fishing locations for the precious coral species coincide with the locations indicated by Captain Spratt's survey in 1862. One other record refers to *C. rubrum* documented by a SCUBA diver at a depth of circa 20 metres in a partially submerged cavern, located a few hundred metres to the north of Ras in-Newwiela in Gozo<sup>76</sup> and this might constitute one of the shallowest records

70 Malta Development Corporation letter granting approval to Luigi D'Amato of Fratelli D'Amato Srl of Naples, for Coralma to research for coral in Maltese waters etc. dd. 24/3/1983.

71 See the front page report 'Expensive coral 'find' in Maltese waters', *The Times* (of Malta), 27.xii.1984.

72 MRRAA; Frank Abela, personal communication Dec 2009.

73 <http://www.fao.org/fishery/statistics/software/fishstat/en>

74 Roger Scotto, personal communication, November 2009.

75 A. Deidun et. al., in press.

76 Official from AquaBiotech Malta, personal communication, January 2010.

of *C. rubrum* in Maltese near-shore waters. While red coral was mainly bought by the industry in Torre del Greco,<sup>77</sup> according to official Mediterranean Coral Fishing Company documents, black coral jewellery derived from Maltese stocks was mainly sold to the German market, whilst the largest demand for local red coral artefacts came from Britain. The former fetched lower prices and was more time-consuming to sculpt. In addition, whilst 75% of the biomass of precious red coral was wasted during the sculpting phase, this statistic was even higher for the black coral species due to its softer skeleton that makes it less congenial for machine-mediated processing and sculpting. The company purchased a single coral-fashioning machine from Germany, worth 10,000 euro, and even developed a protocol for the polishing of precious red coral through the adaptation of equipment normally used in the manufacture of spectacles and through the use of tumblers and mud.<sup>78</sup>

Certainly the most remarkable aspect of this analysis is the discovery of the only known past black coral fishery in the Mediterranean. This is even more surprising given the fact that the presence of this genus has not been described in Maltese waters, apart from the solitary reference in de Soldanis. Unfortunately, the specimens available have lost their soft tissue by natural abrasion, which are required for reliable identification.<sup>79</sup> However, the branching pattern<sup>80</sup> of the larger specimen at the Mdina Natural History Museum suggests that it might be a specimen of *Leiopathes glaberrima*, whose taxonomic identity was further confirmed through an analysis of microscopic spines from smaller fragments of the species.

If future surveys confirm the presence of *L. glaberrima* in Maltese waters, it would be of considerable implications for conservation, as this species is supposed to reach a lifespan of several decades or centuries,<sup>81</sup> maybe even more than 2000 years.<sup>82</sup>

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77 G. Tescione, *Il corallo nella storia e nell'arte*, Montanino Editore, Napoli 1965.

78 Noel Zarb Adami (personal communication, Nov 2009).

79 D. Opresko, *Revision of the Antipatharia Part. I. Establishment of a new family Myriopathidae*. *Zool. Med. Leiden* 75, 2001, 343-370.

80 D. Opresko and G. Försterra, Chapter 'Antipatharia' in the reference work *Das Mittelmeer*, Ed.: Dr. Robert Hofrichter, Spektrum Verlag 2003.

81 B. Williams, M.J. Risk, S.W. Ross, & K.J. Sulak, 'Deep-water antipatharians: Proxies of environmental change', in *Geology* 34, 2009, 773-776.

82 E.B. Roark, T.P. Guilderson, R.B. Dunbar & B.L. Ingram, 'Radiocarbon-Based ages and growth rates of Hawaiian deep-sea corals', in *Marine Ecology Progress Series* 327, 2006, 1-14.