

## **Landscape of Sea-Silk**

### **Traces of traditional production around Mediterranean Sea**

Felicitas Maeder

Project Sea-silk, Natural History Museum Basel, Switzerland

#### **Abstract:**

With today's impact of mass media, new legends and myths around ancient sea-silk production are spreading worldwide. The reality may be less esoteric but fantastic and amazing nonetheless. Sea-silk, a product of the Mediterranean noble pen shell (*Pinna nobilis* L. 1758) has been known since antiquity as a rare textile material, but till the end of the Middle Ages we know very little about production places and extent. The only material proof comes from fourth-century Aquincum (not existing anymore) – the earliest textile is a knitted cap from Saint-Denis, France, dated fourteenth century. In modern time sea-silk was produced especially in Apulia and Sardinia. Many other places around Mediterranean are mentioned in travel reports, but none of them could be confirmed to the moment. Sea-silk was highly appreciated as a luxury product for the religious and secular aristocracy, often kept and presented in curiosity cabinets, which later turned into natural history museums. This is the reason why a large part of the still existing textile objects today can be found in natural history collections, and not in textile collections.

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### **First written and material proves of sea-silk**

There exist historical accounts speaking about a sea-silk production a bit everywhere, where molluscs of the genus *Pinna* live, that is in all warmer oceans. The reality is different. The noble pen shell (*Pinna nobilis* L. 1758), whose fibre beard, called byssus, is the raw material of which sea-silk is made, lives only in the Mediterranean Sea. Production would be concentrated in adjacent places (for the history and the production process of sea-silk, the analysis of the ambiguous term byssus and the terms given to sea-silk from the sixteenth to the twentieth century, I refer to my article "Sea-silk - Rediscovering a precious ancient textile material", Toronto 2015, available on the ICOM costume homepage).

Little is known about sea-silk in antiquity. Somewhere around the Mediterranean Sea somebody had the idea to use the fibres of the noble pen shell as textile material. Where exactly and in what time period is unknown. From the Greek Bronze Age many remains of noble pen shells were found in Thessaly and on Santorini (Karali 1990; Fischer 2007, 134; Burke 2012). Were they used only for food, as it was known in Southern Italy, on the Dalmatic coast and in Greece till the middle of the last century? Or was its fibre beard already been processed to sea-silk? Is there some reality behind the legend, that the Phoenicians were the first to do so? They knew another marine product, the real purple, the most valuable dye of the ancient world.

The first written evidence for sea-silk production dates around 210 CE: The church father Tertullian mentions it in his text *De Pallio* (III, 6), where he complains about the luxury of clothing: "Nor was it enough to comb and sow the materials for a tunic, it was necessary also to fish for one's dress; For fleeces are obtained from the sea, where shells of extraordinary size are furnished with tufts of mossy hair." He speaks of sea-silk, of course – in paraphrases – and opposes it to wool and linen, the customary textile materials of the time. From Late Antiquity till the Early Middle Ages, several other written evidences exist – all paraphrased, as there did not exist one specific term for sea-silk at that time. One thing is certain: it never

was called byssus, as this term was given to the fibre beard of pen shell only in the sixteenth century (Maeder 2016a, 2016b, in print a & b).

The first material find of sea-silk remains dates fourth century CE. A fragment was found in a women tomb in Aquincum (Budapest), a Roman settlement near the North-Eastern frontier of the Empire (Hollendonner 1917, Nagy 1935, McKinley 1998, Maeder 2008). In Middle Ages, there is little clearness about sea-silk production. Sea-silk is often confused with antique linen byssus, assumed sea-silk terms are discussed controversially. A thousand years older than the first material find – which unfortunately went lost during World War II together with the excavation protocol and the analyses – is a knitted sea-silk cap found in Saint-Denis near Paris. It is dated fourteenth century (Rodrigues & Wyss, 2001). What may be the reason that both of these material finds come from places far away from the coast? Is this just a coincidence, or does it allude to a real commerce of sea-silk textiles over longer distances?

### Presumed places of sea-silk production

Almost all printed sources, beginning in the sixteenth century, mention different places of a sea-silk production: Taranto, Naples, Reggio Calabria, Sardinia, Corsica, Malta, the Dalmatic coast and Istria, Tunisia, Turkey, Spain, Normandy. Especially one region, Sicily, is mentioned in almost all reports and encyclopaedias as a sea-silk production place. Johann Hieronymus Chemnitz (1730-1800), a German naturalist, reports an industrial production of sea-silk in different Italian towns and in Sicily: “... *Zu Reggio, Tarent, Neapel, Messina und in mehreren Städten Italiens und Siziliens, giebt es sehr ansehnliche Fabriken, darinnen diese Muschel Seide zu Strümpfen, Handschuhen, Westen, Beinkleidern u. dgl. verarbeitet wird.*” (Chemnitz 1785, vol. 8, 209) Such statements of naturalists studying molluscs must be taken with great caution. They were mainly interested in the diversity of shells, not in their products. The fibre beard was rarely in their interest – some illustrations even show the shell without it. Against this background the statements about sea-silk production cannot always be believed in. In a French *Encyclopédie méthodique par ordre des matières* of 1784 we find a statement diametrically opposed to the above one: “... *je n'ai pu découvrir ni à Palerme, ni dans aucun lieu de la Sicile, une seule personne qui s'en occupât*” (speaking of sea-silk) (Roland de la Platière et al. 1784).

We have three credible witnesses of the same period who travelled in Sicily *and* knew about sea-silk production in South Italy. They studied and described in detail the mulberry silk production in Sicily. We may assume that they would have mentioned sea-silk, if they had met it on the island. The German diplomat Johann Hermann von Riedesel (1740-1785) studied the employment and economic situation in various fields on his journey through Sicily and *Magna Graecia* in 1767. About von Riedesel was said: “*He is a man of learning [...] The face of the country, its agriculture, manufactures, commerce, productions, government, [...] and state of the people, with their manners, and good or bad qualities, are all objects of importance, and which he has no where omitted.*” (Johnson 1777, vol. 5, p. 248). Von Riedesel mentioned the extensive production of mulberry silk in Calabria and Sicily – yet no word of sea-silk. Later, in 1771, he was one of the first, who would talk about the sea-silk production in Taranto (von Riedesel 1773, 178).

Another witness is the German traveller Johann Heinrich Bartels (1761-1850), who writes extensively on trade and commerce in his letter(s) about Calabria and Sicily from 1789 till 1791. He focuses particularly on the production of mulberry silk; a production of sea-silk is not mentioned (Bartels 1789).

Some problems arise of the report of the Swiss traveller Ulysses von Salis-Marschlins (1728-1800), *Beiträge zur natürlichen und ökonomischen Kenntnis des Königreichs beider Sicilien* of 1790. He describes in detail the mulberry silk production, and even mentions the vegetal textile fibre aloe: “*Aus den Blättern [of aloe!] wird eine Seide zubereitet, und daraus werden Strümpfe und Handschuhe gemacht. Ich werde trachten, nähere Nachrichten von der Art, diese Seide zu gewinnen, zu bekommen.*” Gloves and stockings of fibres of aloe? Could it be that he confused it with sea-silk which he didn't mention? This would support the presence of

sea-silk in Sicily. In 1793 (1795 translated into English), he published one of the most detailed reports of sea-silk processing in Taranto, without mentioning Sicily (von Salis-Marschlins, 1795).

Sicily is just one example for repeated erroneous statements about sea-silk, carried on and on and copied from one to the other. *“This byssus forms an important article of commerce among the Sicilians, for which purpose considerable number of Pinna are annually fished up in the Mediterranean [...] A considerable manufactory is established at Palermo; the fabrics made are extremely elegant, and vie in appearance with the finest silk. The best products of this material are, however, said to be made in the Orphan Hospital of St. Philomel, at Lucca.”* (Simmonds 1883, 309). This ‘Orphan Hospital of St. Philomel at Lucca’ is mentioned before and after 1883 countless times in nearly identical terms (e.g. Brühl 1938). Lucca was located by some near Palermo in Sicily, by others in the Tuscan textile town Lucca. In reality, this assumed place refers to the ‘Ospizio degli Orfani di S. Filomena’ in Lecce, Apulia, an orphanage, where mid-nineteenth century sea-silk objects were made for the market in Taranto, as presented in the *Annali civili del Regno delle Due Sicilie* of 1853. This is a good example for dissemination and repetition of a bad or wrong translation, cursory lecture or just a pervasive superficiality – current things in sea-silk studies.

There may be another reason: In the eighteenth century the term ‘*Due Sicilie*’ was common for the two reigns of Naples and Sicily. From this period date the most reliable reports about sea-silk. As in Apulia - without any doubt – sea-silk was produced, this could have led to the misleading opinion of a production also in Sicily. (fig. 1) Actually we have no sound written or material proof that sea-silk ever was produced on the island of Sicily.



Fig. 1:  
Map of the Reign of the Two Sicilies, 19th century

Let us look shortly at all the other places mentioned in literature.

A production in Naples is not proven – there may be the same problems of ‘*Due Sicilie*’ as mentioned above. “*Although every part of the Neapolitan sea produces this shell-fish in great abundance, and of an extraordinary size, the Tarentines alone reap any advantage from it, and even collect it upon the coasts of Sardinia and Corsica*” (von Salis-Marschlin 1795, 509 app. 89). Giuseppe Capecelatro (1744-1836), archbishop of Taranto, published in 1780 a study about the mussels and snails in the Mar Piccolo. He dedicated it to the Russian Empress Catherine II and sent it together with several pen shells and gloves to St. Petersburg (Sada 1983). From 1801 till his death in 1836 he lived in exile in Naples for political reasons and ordered dozens and dozens of sea-silk items in Taranto. He was a famous host and had a lively correspondence with almost all the scholars and writers of his time. His correspondence, preserved at the *Archivio di Stato di Napoli*, which is not yet studied completely, might be the most important treasure for the study of the origin of known sea-silk objects or for finding new ones.

The Dalmatic coast is rich of pen shells. Of a sea-silk production in Istria tells a traveller in the eighteenth century (Fortis 1771, 87; 1778, 289). In a nineteenth-century Austrian book of material sciences and commerce, sea-silk production in Dalmatia is mentioned: “*Ehemals wurde dieses Material nach Neapel verkauft, jetzt wird es in Dalmatien selbst verarbeitet.*” (Blumenbach 1846, 541). Researches in Croatian museums and archives have not been able to detect any material or further written results up to now.

From the isle of Malta we have witnesses from the German travel writer Heberer von Bretten (c. 1516-1623). At the beginning of the seventeenth century, he wrote about the noble pen shell and its fibre beard named *Capillo di Nacri*. The byssus fibres were put in the ear against earache (Heberer von Bretten 1610, 437), a remedy still known to fishermen in Malta in the first half of the twentieth century. It is unclear if the fibres were also collected for textile use.

Turkey, especially Smyrna/Izmir, is mentioned in a book of sea products: “*Gewebe aus Muschelseide wurden in Smyrna bis in die Zeit des 1. Weltkriegs von der dort ansässigen griechischen Bevölkerung hergestellt.*” Sea-silk was produced by the sedentary Greek population (Boettger 1962, 239). No further written or material proof has been found.

The shores of Corsica are often mentioned as a place of rich *Pinna nobilis* populations, but nothing is known of a sea-silk production to the moment (e.g. Keyssler 1741, 209).

Tunisia and Egypt are candidates for a sea-silk production on southern coasts of the Mediterranean Sea during Islamic rule – probable terms have to be clarified (Lombard 1978, 113). An order of a merchant of the eleventh century, probably from Tunisia to Spain, enumerates several textiles in different colours and shapes, amongst them “*two cloaks of sea wool*” (Goitein 1983, 182).

The Spanish coasts, and especially the Balearic Islands, are rich of noble pen shells. Research of fishermen and old weavers didn’t bring any knowledge of sea-silk production. A study of a Spanish speaking person would bring probably more indications.

And finally Normandy, where sea-silk is mentioned in many catalogues of goods of the nineteenth century. One of the last finds is a pair of sea-silk gloves, together with two noble pen shells and byssus, in a showcase of the Natural History Museum of Rouen, the capital of the French province of Normandy. Or is this a reference to the two French localities Louviers and Elbeuf, both belonging to Normandy, where at the end of the eighteenth century textile companies experimented with sea-silk (Becchia 2000, 555)? The same happened in the German textile town Monschau, where in a pattern book a sample of sea-silk, mixed with merino wool, was found (Schmitz 1983, 80; Maeder 2013). Such fabrics were presented at different fairs and international exhibitions – a good source for further finds of sea-silk items.



Probably there was at no time a real sea-silk industry – it was produced in homework, in girls' schools, orphanages or in convents. Nevertheless, we find traces of sea-silk in many lists of customs duties, beginning in the fifteenth century (da Uzzano 1442, Pagnini della Ventura and Pignotti 1766, Pignotti 1813, 24), especially focussed in the nineteenth century (e.g. Hübner 1866, Troje 1880). (Fig. 2) A short internet research shows that even today, in an information site of German transport insurances, in the chapter silk we can find the mentioning of marine silk "*Marineseide: auch Muschelseide oder Bisior genannt, die aus den Fasern von Muscheln gewonnen wird*" – annotated precious fibre, but seldom in commerce (the term *Bisior* is another, rare candidate for sea-silk which has to be studied).

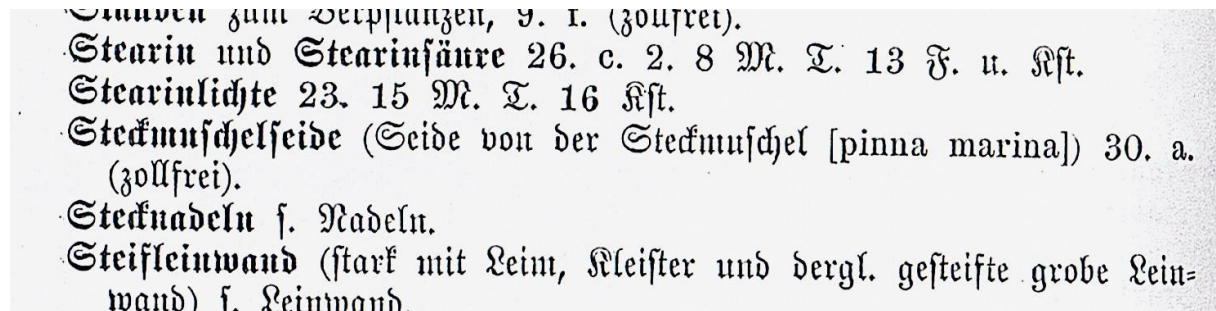


Fig. 2:  
Sea-silk (Steckmuschelseide) in a German list of customs (Troje 1880, 240)

### Modern time sea-silk production places: Apulia and Sardinia

In modern times, sea-silk production was concentrated in Southern Italy, especially Apulia and Sardinia. From these places come most of the 60 inventoried items (see the inventory on the projects homepage "[www.muschelseide.ch](http://www.muschelseide.ch)", in English, Italian, and German).

German, Swiss and English travellers in eighteenth-century Italy are the best witnesses for the actual sea-silk production in Taranto: "*The Pinna is torn off the rocks with hooks, and broken for the sake of its bunch of silk called Lanapenna, which is fold, in its rude state, for about fifteen carlini a pound, to women that wash it well with soap and fresh water. When it is perfectly cleansed of all its impurities, they dry it in the shade, straiten it with a large comb, cut off the useless root, and card the remainder; by which means they reduce a pound of coarse filaments to about three ounces of fine thread. This they knit into stockings, gloves, caps, and waistcoats; but they commonly mix a little silk as a strengthener. This web is of a beautiful yellow-brown, resembling the burnished gold on the back of some flies and beetles.*" (Swinburne 1790, 77) The raw wool was sold for 12 or 16 Carlini, a pair of gloves for 30, and a pair of stockings for 100 or 120 Carlini (von Riedesel 1773, 178).

From Taras (Taranto), the main town of *Magna Grecia*, several ancient authors mention the *Tarantinidion*, a light, delicate, transparent fabric, for a long time supposed to be made of sea-silk – another topos repeated till today: "*Déjà à l'époque romaine, la ville était un centre substantiel de production de byssus. Son importance peut être déduite du nom ταραντινον [tarantinon] qui, dans l'Antiquité, décrivait le tissu même.*" (Ditchfield 2007, 425) Doubts about this assertion are not new. Lucia D'Ippolito analysed this argument in the catalogue of the first sea-silk exhibition in Basel in 2004 (Maeder et al. 2004). No sea-silk item is transparent, so probably this fine, translucent textile has been made from the finest Apulian sheep wool: "*Wool from the latter was so fine that it could be spun into diaphanous material.*" (Sebesta 1994, 67) At the beginning of the twentieth century, there were two important persons in Taranto who wanted to revitalise the production, known in the eighteenth and nineteenth centuries. Beniamino Mastrocinque, a teacher of natural history, published in 1928 a nicely illustrated report "*Bisso e porpora – per la rinascità delle due grandi industrie*" (the production of purple in ancient Taras is proved – he also supported the idea of a sea-silk production already in antiquity). The second one was Rita del Bene (1909-1998), who experimented with the processing of sea-silk on a mechanical loom and founded a private school for this handicraft (Campi 2004). All these projects ended with the Second World War.

Sardinia never was a destination of the Grand Tour, the obligatory voyage of young noble men from the seventeenth to the nineteenth century, nor was the new class of civic travellers interested in the island. This may be one reason why we have much less testimonials than for Taranto. There is only one medieval source of a textile named *pinnikon* (or *pinnino*) who could mean sea-silk (Stolberg 1794, 193; Zanetti 1964; Cherchi Paba 1974, vol. I, 204; Pala 2013, 935). Often sea-silk is confounded with the antique byssus – so the term is still discussed (Bellieni 1973, 692). In literature, a nineteenth century sea-silk production is mentioned on the islands of La Maddalena, Asinara, San Pietro, and in Alghero and Cagliari. *"The Sardes call the fish nachera, and the lanapinna known to naturalists as the byssus, is termed the barba; this, when cleaned and prepared, sells for 8s. the lb.; and it takes four ounces to make a pair of gloves, which are sold at eleven reals (4s. 2 3/4d.) the pair."* (Tyndale 1849, 78). The British naval commander Horatio Nelson speaks in a letter of March 18<sup>th</sup>, 1804 to his lover Emma about *"a pair of curious gloves, they are made only in Sardinia of the beards of mussels [...] they tell me they are very scarce"*. He ordered also a muff of sea-silk when staying at sea between Sardinia and Corsica (Hamilton *et al.* 1893/94, 262).

In the twentieth century Sardinia, two men were important for the surviving of sea-silk. Giuseppe Basso-Arnoux (1840-1919), a physician, promoted the production with a report *"Sulla pesca ed utilizzazione della 'Pinna Nobilis' e del relativo bisso"* (1916). In 1908 he had founded the *Byssus Ichnusa Society* for the promotion of sea-silk, domiciliated in London (Addari 1988, Carta Mantiglia 1997) – but there are no traces left. In 1910, he sold several sea-silk items to the new *Musée Océanographique* in Monaco for 100 French francs (see inventory on the Projects homepage). The second one was Italo Diana (1890-1969), founder of a weaving atelier in Sant'Antioco, in the 1930s (fig. 3) Efisia Murrioni (1913-2013) who died 3 years ago at the age of hundred was the last apprentice of Italo Diana. Two of her students, the weavers Assuntina and Giuseppina Pes, still work with sea-silk – on a very small scale, and only for demonstration purposes. There are others. In marked contrast to what you may read in mass and social media or in dubious internet sites, there still live several women in Sant'Antioco who know the tradition of producing sea-silk (see the analyse of this fact in Maeder 2016b, Maeder in print b).



Fig. 3:  
Four women of the Atelier Italo Diana, Sant'Antioco, Sardinia, in the 1930s. The weavers are (from left to right) Assuntina Cabras, Emanuele Vacca, Raffaella Schirru, Raffaella Lusci (Museo etnografico, Sant'Antioco)



The fan shell *Pinna nobilis*, together with its fibre beard, has been protected in the European Union since 1992 – so all this will never again be more than an opportunity to collect the knowledge about this handicraft, research the history of this cultural heritage and make it available for everybody.

### Sea-silk in today's natural history collections



Fig. 4:  
Showcase with noble pen shell, byssus and gauntlets of sea-silk (Musée Zoologique de Strasbourg)

In the *Musée Zoologique de Strasbourg*, France, we see in the molluscan department a noble pen shell together with its byssus and a pair of finely knitted gauntlets (fig. 4). What is the reason that almost all sea-silk items belong today to natural history museums, and not to textile collections? *Wunderkammern* and cabinets of curiosities of the seventeenth to the nineteenth century form the basis of almost all of today's natural history museums in Europe (e.g. Fontes da Costa 2002). Not only the different mollusc species were presented, but also products made of them, like nacre or pearls. The noble pen shell was another one, shown often together with its fibre beard – and a textile object made of it. The oldest evidence for this is the Englishman John Evelyn (1620-1706), whose diary describes a visit of the Museum of the pharmacist and naturalist Ferrante Imperato (1550-1625) in Naples. The 'theatre of nature', as he calls it, is a big attraction for educated travellers. Evelyn writes: "Among the natural herbals most remarkable was the Byssus marina and Pinna marina." (Bray 1901, 150)



The Italian nobleman Ferdinando Cospi (1606-1686) was the owner of a curiosity cabinet in Bologna. On a copper engraving we see several noble pen shells on the base of an exhibition furniture (fig. 5). In chapter XIX of the catalogue of this cabinet sea-silk is mentioned as wool of the noble pen shell, which imitates the finest silk (Legati 1677).



Fig. 5:  
Detail of the Museo Cospiani in Bologna (Legati 1677)

Textiles of sea-silk were also highly appreciated as a luxury product for the religious and secular aristocracy, and a favoured gift on the occasion of state visits. These objects, too, were later presented in curiosity cabinets which then turned into natural history museums.

In the United States the situation was different. Many profit oriented entrepreneurs collected various natural history objects while travelling through Europe, presenting them in exhibitions and offering them for sale. The best-known company – which still exists today – was the Ward's Natural Science Establishment in Rochester, New York, founded in 1862 (Kohlstedt 1980, Barrow 2000). In Ward's Mollusca sales catalogue (after 1890) a "Pinna nobilis, Linn. Mediterranean" is offered at a price of \$ 0.75-2.00. An illustration shows it, with the byssus beard, and the remark: "*The byssus of this species has sometimes been mixed with silk, spun, and knitted into gloves, etc.; and we have some of the articles made thus at Taranto, Italy.*" Today we find gloves and other sea-silk objects in collections of the Field Museum of Natural History in Chicago and in the Smithsonian National Museum of Natural History in Washington – all purchased from the Ward's Establishment.



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