PLANTS NAMED "LOTUS" IN ANTIQUITY: HISTORIOGRAPHY, BIOGEOGRAPHY, AND ETHNOBOTANY

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Abstract. In ancient times, several plants were named "lotus." They assumed very important roles in the religions and art of many cultures, but historiography and descriptions of the various plants called "lotus" have always been poor. The aim of this work is to define what plant species correspond to the ancient name "lotus." Through analysis of classical texts and other historiographical sources, three types of "lotus" have been identified: "arboreal lotus," "herbaceous lotus," and "aquatic lotus." From the sources examined, several botanical species have been identified for each "lotus" category. In the "arboreal lotus" category there are two species of *Ziziphus*: *Z. lotus* and *Z. spina-christi*. The "herbaceous lotus" include several species in Fabaceae that have been called "lotus," more specifically in the genera *Melilotus*, *Lotus*, *Trifolium*, and *Trigonella*. In the last category, "aquatic lotus," are two species of *Nymphaea* L. (*N. lotus* and *N. nouchali* var. *caerulea*) and the sacred Indian lotus (*Nelumbo nucifera*). The attributions of these species have been validated by research on their biogeography and ethnobotanical uses.

Keywords: Lotus, ethnobotany, historiography, *Ziziphus*, *Nymphaea*

In ancient times, the name "lotus" was applied to several plants, and each had a relevant economic importance: some produced wood and bark, and others produced beautiful flowers, fodder, fruits, seeds, or rhizomes. Very often people attributed a mystical-religious symbolic meaning to these plants, or used them as design elements in their legends and traditions. Historiography about plants with the name "lotus" has always been poor, and there have been many different interpretations of the original lotus plant. In the early Greek and Latin literature, the name "lotus" did not refer to one plant but to a whole group of plants, which differed in their uses, locations, and local customs. In all literatures, from Arabic to Christian and Hindu, there occur different plant species called "lotus" that assume very important roles in religion and art; emblematic cases are the Egyptian water lilies and *Ziziphus spina-cristi* (L.) Desf., exploited for ethnobotanical uses. Of great historical and botanical importance is the famous legend of the "lotus of the Lotophages," a plant mentioned in Homeric literature, in Theophrastus, and in works of subsequent authors. This plant was a food source and provided many products to the populations living on Gerba Island (modern-day Djerba) and on the nearby coasts. The plant has often been indicated as belonging to the genus *Ziziphus* but has also been referred to *Paliurus* Mill. These attributions, sometimes generic or incorrect, were influenced by rough descriptions and questionable morpho-anatomical and bio-geographical references. There is an interesting discussion of the presence of an "Italian arboreal lotus" and a "fodder lotus" in the Latin literature. There are also references to the Oriental Lotus (species of *Nelumbo* Adans., Nelumbonaceae), but these are provided with only fragmentary and sparse descriptive sources. The aim of this study is to clarify attributions made in historical descriptions and biogeographical references to reliable botanical species. Several descriptive sources will be used, and the ethnobotanical uses will be analyzed together with any cultural symbolism.

Materials and Methods

Many historiographical sources have been consulted for descriptions of plants given the name "lotus," especially the ones that, in different ways, gave clear vision of the diversity among the botanical species to which plants with this common name have been ascribed (Supplementary Table 1; Supplementary Material). Homer (Ciani, 2001: 86–169), in *The Odyssey*, distinguishes a "lotus of the Lotophages" (described as a tree), a "herbaceous lotus," and a "floral lotus." Moreover, since the time of Herodotus (fifth century BC), there was a plant known in Greece by the name "Egyptian aquatic lotus." In Theophrastus (Theophrastus, 1644: 59–116) (fourth to third century BC), both the "herbaceous lotus" and the floral one constitute two different groups of plants, each of which comprise several botanical species. Virgil (Virgilio, 1965: 71) declares clearly that many species of "arboreal lotus" were known. Pliny (Plinio, 1985, Book XIII: 17) insists on the explicit division of "lotus" plants into many varieties: arboreal, herbaceous, and aquatic; this division is implicitly accepted by Dioscorides (Mattioli, 1583: 16–594), who spends a lot of time on the "herbaceous lotus" description and less on the arboreal one. In addition to the sources deriving from Egyptological studies about *Nymphaea* spp. (the famous "Egyptian lotus") and to those from Indian culture describing the "oriental lotus" (*Nelumbo nucifera* Gaert.), special attention has been paid to those sources preceding the ninth century BC. In these sources, the great herbalists and botanical humanists of the sixteenth and seventeenth centuries who comment on the works of Theophrastus, Dioscorides, and Pliny, help clarify the ancient "lotus" terminology and propose

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the first schemes of identification. In this context, the work of Bodaeus is fundamental (1644: 323). Also considered were several authors of the nineteenth and twentieth centuries who cite historical texts from Herodotus, Strabo, Pomponius Mela, and Athenaeus, among others. In their texts, "lotus" is mentioned with varying levels of detail. Among the treatises on ethno-anthropology, Thomas Shaw's text (1738: 225–570) was analyzed, which already frames the "lotus" plant in a geographic and phenotypic context. Among the botanical treatises, Louiche Desfontaines's text (1789: 433) was fundamental. Another work consulted was the commentary on the Flore de Virgile by Fèe (1822: 81), who focuses on all antique "lotuses" benefiting from the Napoleonic expedition in Egypt. For the geobotany, texts of Pampanini (1914a: 203–248,b: 5, 1917, 1926), with descriptions of North African vegetation, and those of Bonacelli (1929), with interpretations of sources relating to plants that in antiquity were under the name "lotus," were used for reference. Essentially, all the major and most reliable texts related to the topic of this research from antiquity up to the beginning of the twentieth century have been examined. Therefore, this study's sources encompass botany, ethno-pharmacology, economic history, geography, art history, religion, and other ethno-botanical uses.

Results and Discussion

The Legend of the "Lotus of the Lotophages"

The first reference to a "Lotus of the Lotophages" appears in Homer's *Odyssey* (Ciani, 2001: 86–169). Ulysses tells Alcinoo how, during his journey back to Ithaca, adverse north winds drove him and his men off Cape Malea and made them land in an unknown place. Ulysses sent ambassadors to explore the place where the storm had driven them and discover the manners of the people living on the island. This place was inhabited by Lotophages, people who nourished themselves with "lotus," a mysterious plant that was offered to Ulysses' ambassadors. Those who accepted and ate the strange plant, sweet as honey, did not want to come back to Ulysses. So he forced them back to the ships, made them fast under the benches, and sailed quickly, freeing the crew from the "temptation of the lotus." This famous legend, also referred to in another passage of the *Odyssey* (canto XXIII, verse 311), is later mentioned in Euripides' *Troads* (Susanetti, 2014: 36), where the prophetic Cassandra announces the tribulations of Ulysses, quoting also the "temptations of the lotus." This effect of the fruit is very often evoked in ancient sources. Xenophon (Baccarini, 1991, book III: 2) tells his soldiers not to forget the way back to their houses, like the "lotus eaters" did. In sources written in Latin, the expressions which reevoked the legend come along with truly passionate and aesthetic delicacy. Propertius (Canali, 1987: book III: canto II) says that the "lotus" and the "bewitching herbs" (lotosque, herbaeque tenaces) were tribulations for Ulysses, and Ovid (Bovincini, 2005, book IV: canto I) says the same. In writers of the first century of the Roman Empire, we commonly find the epithet "too hospitable," referring to the fruit and the earth that produces it. In Virgil's *Culex* (Barelli, 2000: 71), in Silio Italico (Vinchesi, 2001, Book III, 311), as well as in Pliny (Plinio, 1985: Book XIII: 17), this "lotus" is regarded as a sweet berry ("Et dulci pasci lotos nimis hospita bacca").

Identification and Geographical Distribution of "Lotus of the Lotophages." Among the oldest historical references to the region inhabited by the Lotophages we found is by Herodotus (Sgroj, 1968: 175–183). Herodotus is sure that the coast of the ancient Tripolitania was inhabited to the east by the Maci and more to the west by the Gindans, while the coast of the area running toward the current Tripoli was occupied by the Lotophages. He adds that the shortest route to the Garamantes, a tribe inhabiting the Fezzan, started from the village of the Lotophages. Scylax (Perretti, 1979: 108), a geographer from Asia Minor who lived in the sixth and fifth centuries BC (the same period in which Herodotus wrote), confirms in the *Periplo* this distribution of these peoples. According Scylax, the Maci, a Syrtic tribe of shepherds, reached the country of Cinipide and Neapoli (and the city of Leptis Magna); he places the Lotophages to the west, up to the Lesser Syrtis (or Gulf of Gabès). Moreover, Scylax mentions Brachion Island (also known by the historical name Gerba), said to be the island of the Lotophages, where "lotus" grew spontaneously and was eaten by the people living there. Theophrastus (Theophrastus, 1644: 59–116) adds that numerous "lotus trees" were on the island of Gerba, which he called "Faride" and home of the Lotophages, who lived also on the coast across the island. Later geographical accounts agree on the location of the Lotophages on the island of Gerba, in antiquity also called "Meninge" and, by Polybius (Cardona, 1968, 1: 39), "of Lotophages." Pliny (Plinio, 1985, Book XIII: 17), in his *Naturalis Historia*, following Eratosthenes, calls the island of Gerba by the name "Lotofagitida." Strabo (Biffi, 1999; Trotta, 1996: 305) resumes the ancient concept of "lotus" in saying that the Lesser Syrtis is called "Sirte Lotofagitide."

There is no lack of quite controversial interpretations that confuse the location of those people, called Lotophages in northern Libya. One of these is Pomponius Mela (Muratori, 1855, I: 7), who locates them on the beaches of Cyrenaica, from Cape Borion (now Ras Tejonas to SW of Benghazi) to Cape Ficunte (now Ras Sem to NW of Cyrene). Moreover, Scylax (Perretti, 1979: 108) mentions the presence of the "lotus" in Cyrenaica by counting it among the plants of the famous and legendary Garden of the Hesperides. These ancient geographical designations are preserved by Ptolemy (Ruscelli and Malombra, 1574: 190), who mentions the people of the Lotophages along the River Cinipe and nicknames Meninge (Djerba) as "Lotofagitide." Meninge is the island about which, in more modern times, Torquato Tasso (Savini, 2015, XV: 18) is quoted as saying, "*Alzerbe, già dè Lotofagi albergo*." (Alzerbe, which was the home of the Lotophages). Summarizing, the most ancient data agree in indicating the position of the Lotophages on the island of Gerba and its adjacent coasts, although some sources extend the "lotus eaters" to the whole of Cyrenaica.

Descriptive Sources of the Plant. Homer, in the *Odyssey*, did not describe the "lotus" plant or its fruit. According to Herodotus (Sgroj, 1968: 175–183), the fruit was as large as a fruit of the lentisk tree (*Pistacia lentiscus* L., Anacardiaceae) and as sweet as a date (*Phoenix dactilifera* L., Arecaceae), and was also used to prepare wine. Scylax (Perretti, 1979: 108) claims that the fruit was as large as a strawberry (*Fragaria x ananassa* Duchesne, Rosaceae) and that wine was made from some species of it. Theophrastus (Theophrastus, 1644: 59–116), reporting observations of his own and other authors, claims that the plant was fruticose and dense with branches, and had a large stem. The fruits were opposite and arranged in a dense manner as in myrtle (*Myrtus communis* L., Myrtaceae). They turned color during maturation and were as big as a broad bean, sweet, pleasant, and harmless–even useful–for the womb. He reports that there was a variety that had a fruit without a kernel, which was tastier and used to make wine. But he also reports that, according other observers, the fruit was always provided with a large kernel, had little pulp, was covered by a rather rigid membrane, and was more pleasant than sweet. The wine it produced did not last more than two or three days. In any case, it was the preferred fruit of the Lotophages. The plants were numerous and produced a great quantity of fruits. A testimony of its great value comes from the "Stories" from Polybius (Cardona, 1968). In fact, he claims that "the lotus plant is not large, but rough and thorny, has green leaves, like the buckthorn, but a little darker and wider." Continuing, he claims that "the whole fruit crushed when ripe, is stored in the pots and is used to feed the servants, while, deprived of the kernel and preserved in the same way, it is food for the free people. Macerated in water and minced, it is used to make a wine-like drink." Pliny (Plinio, 1985, Book XIII: 17) reports the opinion of Cornelio Nepote, according to whom "the plant was small"; he also claims that "the fruit was abundant and dense as in myrtle; it was as big as a saffron-colored bean, changing color as it matured. Very sweet food in Africa, preserved from stomach ache." "From it we obtained a drink like wine with honey," which, Nepote states, "was not kept more than ten days." The crushed fruits were kept in large vessels for food. According to numerous authors (e.g., Bauhin, 1671: 328–447), the ancient edible lotus fruits were like jujubes. All these descriptions seem to strengthen the identification of the "lotus of the Lotophages" as *Ziziphus lotus* (L) Lam. (Rhamnaceae). It is widespread, growing wild, in arid regions of North Africa, from Egypt to Morocco: in Tripolitania, the classic Lotophages' country, it was extensively studied from the botanical point of view at the beginning of the twentieth century. In Tripolitania, as in Cyrenaica, it has mostly a bushy aspect, which evolves to a small tree in some particular soil conditions. Pampanini (1914a,b) describes it with these words: "Although we meet it in the low scrub here and there, in the garrigue, and sometimes even in the rock sites, the *Z. lotus*, also called *sedr*, never assumes great importance for its frequency, nor for its size. Instead it constitutes a particular type of vegetation. They are wide and thick bushes, sometimes very frequent, especially on loose and flat soils where the action of the wind is freer. They cover small mounds, produced from the sand carried by the wind and stopped by the intricate bushes. When conditions are favorable, and perhaps when the man intervenes by thinning the bush, the shrub becomes a sapling or a tree. However, the fruit is not very juicy, much smaller than a common jujube. On the other hand, in some of the places that were once inhabited by the Lotophages, there are no other spontaneous species that bear fruit outside the *sedretum*. Today has a greater intensity of development, and according to the same words of Theophrastus, the *-lotus of the Lotophages* was a fruit all skin and bones, tastier than sweet.-". All these descriptions tend increasingly to reinforce the belief that the "lotus of the Lotophages" is identifiable with *Z. lotus*, a shrub with gray, supple, glabrous branches when young; alternate leaves, oblong, obtuse, glandular-crenate, with short petiole; and few flowers, gathered in small axillary peaks shorter than the peduncle. Drupe 1.0–1.5 cm long, subglobose, dark yellow (Tutin et al., 2010) (Fig. 1).

FIGURE 1. "Ziziphus lotus" postal stamp, representing *Z. lotus* (L.) Lam. branches, leaves, and fruits. Printed in Mauritania.

The Lotus of Cyrenaica

Theophrastus (Theophrastus, 1644: 59–116) claims that in Cyrenaica there was another plant used for the fruits called *paliuro*, whose name recurred in ancient place names; in fact, Paliuro was a locality outside the Gulf of Bomba, in view of the island of Platea, east of Cyrene. More important in this regard is a passage from Athenaeus (Dalechamp, 1612), where he speaks of plants called *connari* and *paliuri*, near Alexandria in Egypt. Agatocle from Cizico (Montanari, 1988: 26–31) describes this plant as a small tree, big like an elm (*Ulmus* spp. L., Ulmaceae) or a poplar (*Populus* spp. L., Salicaceae), with long, thorny branches and green, ovate leaves. It bore fruit twice a year, in spring and autumn, and fruits were sweet, as big as olives, also similar to olives in the pulp and kernel, and of delicate sweetness. The fruit was eaten fresh, but also slightly dried. It was ground into flour, which was kneaded with the feet and used to make coarse flat breads. Athenaeus (Jacob, 2001: 1686–1751) adds that those fruits were used on the tables of Alexandria in Egypt. The *paliurus* is known to have been present in the regions on either side of the Red Sea. Agatarchide (Burstein, 1989:

152), also cited by Photius (Bianchi and Schiano, 2016: 27–38) and Diodorus Siculus (Baldelli, 1575, XX: 6–7), claims that the Ittiofagi, people living along the African coasts of the Red Sea, had the habit of preparing a paste with fermented fish meat, in which they mixed *paliurus* seeds, to improve the texture and as a condiment. Of the Troglitidi, shepherds who inhabited the region east of the Nile near the Red Sea, Agatarchide says that the most miserable drank the juice of *paliurus* plants, and with the young branches they made bindings to tie corpses in a certain way (Bonacelli, 1929). Diodorus Siculus (Baldelli, 1575, XX: 6–7) reports that the Panchei, inhabitants of oceanic islands in front of "Arabia Felix" [now Yemen], collected the fruit of the *paliurus*, using it for food and drink, and as a remedy for stomach ailments. The descriptions herein reported all lead back to the same plant, *Ziziphus spina-christi* (L.) Desf. (Rhamnaceae). Widespread and widely cultivated, it is a plant typical of arid climates. It is mentioned in the Qur'an (Mandel, 2016) with the name *sedr*. The specific epithet *spina-christi*, assigned first by Linnaeus, derives from a Christian legend according to which its thorns formed the crown of Christ (Fig. 2). The tree, and parts of it, seems to have been used in Egyptian carpentry, diet, and medicine. Theophrastus (Theophrastus, 1644: 59–16) writes, "The (Egyptian) Spine of Christ is thicker than the lotus [presumably *Z. lotus*]," also describing the fruit. Pliny (Plinio, 1985: Book XIII: 17) mentions the plant in comparison with related species: "The region of Cyrenaica classifies the 'lotus' under the epithet Spina-christi." Pliny also states that Egyptians eat the kernels of the plant (Manniche, 1989: 157). Athenaeus (Jacob, 2001: 1686–1751) talks about it in the *Deipnosophistes*, describing the plant. This species is frequently mentioned in the Christian, Jewish, and Muslim traditions. In Hebrew, the plant is called *sheisaf*, and many Bible commentators identify it with *atad* (Scarpa, 2003; Job 40:21–22), *n'atsuts*, and *tse'elym*. In rabbinic literature, the plant is called *rimin* (Sefaria, 2019), and in the Talmud, it is called *kanari* (Jewish Virtual Library, 2019). Botanical scholars of the Bible (Scarpa, 2003) and the Gospels (Conferenza Episcopale Italiana, 2014) have long debated what constitutes the "bramble" or "thorns" (Scarpa, 2003; Judges 9:14–15; Conferenza Episcopale Italiana, 2014; Matthew 27:27–29) and the "crown of thorns" (Conferenza Episcopale Italiana, 2014, John 19:5). Today these quotations refer to *Z. spina-christi*, indicating the shrub with which Jesus was crowned before his crucifixion (Conferenza Episcopale Italiana, 2014; Matthew 27:27–29; John 19:5; Mark 15:17).

The Qur'an (Mandel, 2016) mentions the tree twice (53:13–18; 56:28–32). The "arboreal lotus" is commonly associated with *Z. spina-christi* and is consequently respected by the Muslims of the Middle East. The plant has been widely used as a source of fruit and a medicinal plant both in the past and in recent times. Many common Arabic names are still in use today: for example, *nabq*, *dum*, *sidr*, *tsal*, and *sadr*. According to various authors, the Libyan name of the plant, *sedr*, and that of its fruit, *nabeq*, are the interchangeable, and are generalized everywhere in Arabic usage; however, in modern Tunisia and Libya the word

FIGURE 2. Reproduction of the Crown of Thorns made with branches of *Ziziphus spina-christi* (L.) Desf.

sedr also indicates *Z. lotus* (Dafni et al., 2005). Muslim and Christian pilgrims and other travelers describe *Z. spina-christi* as a great tree that grows in Israel. Estori ha-Parhi (1897 cited in Dafni et al., 2005), during the Mammelucchi period (thirteenth to sixteenth centuries) in Israel, writes that the *rimin* is the *nabaq* in Egyptian, and the *dum* in the land of Canaan, and it coincides with the tree called *sidar* in Israel(Dafni et al., 2005). It is reported by Pampanini in Cyrenaica in Egypt, where it was known as *paliuro* (1917, 1926). In Tripolitania, the plant is reported by Durand and Barratte (1910: 220) and again by Pampanini (1914a,b). The Arabs used *Z. spina-christi* as a hedge to keep goats and cattle out of cultivated land; when it grew in the wild, the cattle were grazed on it (Dafni et al., 2005). The fruits, which have the flavor of dried apples, were eaten by Arabs and made a good liqueur (Dafni et al., 2005). The bark was used as a source of tannins. Its hard, heavy, and termite-resistant wood was used in African carpentry (Dafni et al., 2005). Various parts of the plant were used in Ancient Egypt, and are still used in traditional Middle Eastern medicine by various cultures that make up the ethnic mosaic of the area: Arabs, Bedouins, Bedouins particularly from Sinai and Negev, Yemenite Jews, Iraqi Jews, and Israelites (Dafni et al., 2005). The plant has been used to treat tumors; its antitumor activity has been attributed to the presence of β-sitosterol, a proven tumor inhibitor (Dukes, 1985: 717). For Muslims, the tree must be respected, as an ancient legend holds that *Z. spina-christi* has as many leaves as there are people of humanity. According to the legend, on the central day of Ramadan the leaves that fall from the shaking of the tree represent the people who will go to their death during the year. In the Hebrew tradition, the plant was associated with the saints (Dafni et al., 2005). There are also many proverbs in the various cultures investigated that mention the tree, and many traditions that are linked to not destroying, or at least to respecting, these plants because the red sap produced by the species is associated with human blood (Dafni et al., 2005).

Herbaceous and Fodder Lotus

As mentioned above, in antiquity three types of "lotus" were mentioned: an "arboreal lotus," which we have already discussed, a "herbaceous lotus," and a "floral lotus." Homer, in the *Iliad* and the *Odyssey* (Ciani 2001, 2016: 75–155), cites a "fodder lotus," a delicious fodder for horses, which was associated with plants that grow in humid meadows or on river margins. The Homeric hymn to Mercury (Zanetto, 1996: 135) quotes this "fodder lotus" as useful to cattle. Athenaeus (Jacob, 2001: 1686–1751) gives us the color of the herbaceous lotus flower, stating that "the flower of the *helichrysum* was like the lotus, but the latter was a more intense yellow." Euripides (Medda, 2006: 287) speaks more generally about "fruitful lotus lawns." In the *Iliad*, again, we read that from the land to the summit of Mount Ida (Crete), during the embrace of Zeus and Hera, the "dewy lotus" germinated. These plants had showy flowers and, the poems from Homer suggest that they were of different species (Ciani, 2016: 75–155), when he speaks about a "floral lotus" very different from that designated for fodder. The Greeks made crowns by intertwining the showy flowers, as cited by Athenaeus (Jacob, 2001: 1686–1751), who specifically speaks of "lotine and melilotine crowns"; he also recalls, quoting Anacreonte, the "lotus crowns" composed by the Athenians. Cratino also mentions the "coronary lotus," or "melilotus," in the Effeminati (Bonacelli, 1929). The same Athenaeus speaks of the color of the flowers (Jacob, 2001: 1686–1751) and states that the flower of helichrysus is like the "lotus." With slight variations in the transcriptions, the "herbaceous lotus" of Theophrastus (Theophrastus, 1644: 59–116), of Dioscorides (Mattioli, 1583: 16–594) and of Pliny (Plinio, 1985, Book XIII: 17) is described as a sylvan flower suitable for making crowns, and many times it is said that the "lotus" plants are also odorous. Theophrastus (1644: 59–116) and Pliny (Plinio, 1985, Book XIII: 17), describing the ointments used by the Frankish King of the Parts, listed among the aromas the "herbaceous lotus." Of the "melilotus," Pliny (Plinio, 1985, Book XIII: 17) specifically states that it was odorous and used to make ointments and a fragrant oil. Dioscorides (Mattioli, 1583: 16–594) confirms its use as an ingredient for ointments, which he referred to as *telino*. Pliny (Plinio, 1985, Book XIII: 17) includes "melilotus" among the aromatic herbs and fragrant flowers to be planted as bees' flowers; furthermore, etymologically, its root (meli-) probably derives from the Latin *mellitus* or *melinus* (Greek *melinos*), pertaining to honey. Statement of Dioscorides was also present in Aristotle (Aristotele, 2018), who stated that, at the time, the bees feeded on plants that then flourish, including the "melilotus." Ovid reports the appearance of flowers (Canali, 1998: 96–97), saying that "the young companions of Proserpina picked up the melilotus with other flowers." The Greek habit of braiding crowns also occurred in Italy, especially in the Hellenic colonies of Campania. The fame of the local variety of the plant used for this purpose there soon reached Rome and is remembered by Cato (Canali and Lelli, 2000: 85), who called it *serta campanica*. This name is connected with the name "melilotus" in explicit declarations dating back to the first century of the Empire. For example, Scribonius Largo (Mantovanelli, 2012: 101–126) states that "the melilotus is what we say *sertula Campana*," and Pliny (Plinio, 1985: Book XIII: 17) says that "*Sertula Campana* is called melilotus, because in ancient times was used for crowns." In Italy, the ecotype found in Campania was very famous, while in Greece the ecotypes on the promontory south of Attica, Chalkidiki, and Crete were well known. Dioscorides (Mattioli, 1583) says that "the melilotus is celebrated in Attica, in Cizico and in Calcedone, had color close to the saffron and with a good smell," adding that "it is also born in Campania near Nola reddish and slightly odorous." For this plant, we can even make a fairly accurate hypothesis attributing it to *Melilotus neapolitanus* Ten. (Fabaceae), since the morphological descriptions and the uses found in the ancient citations correspond sufficiently to this entity. The species appears through reports to match the Steno-Mediterranean corotype (Pignatti, 2017); this fact lends evidence to the possibility that the species described by historical sources is *M. neapolitanus*.

Despite some ancient partial confusion between "herbaceous lotus" and "melilotus," the two entities were different. Nevertheless, neither the "herbaceous lotus" nor the "melilotus" was a single species; rather they constituted two groups, each of which included botanically related plants of different species. So, the "lotuses" included herbaceous forage species common in the natural pastures of central Mediterranean countries, with leaves present along the stem, generally yellow and fragrant. The "melilotus" had the yellowish flower tending to red, although sometimes the color was lighter, as in Campania, and even white; the flower was fragrant and the aroma recalled saffron (Bonacelli, 1929). In conclusion, it is essential to know what Dioscorides (Mattioli, 1583) writes about "herbaceous lotuses." The "lotus clover of the meadows" described by Dioscorides, which Pliny (Plinio, 1985: Book XIII: 17) claimed to be the best among all grasses of the meadows, is presumably referable to *Trifolium boissieri* Guss. (Fabaceae). The hypothesis that the "lotus clover of the meadows" corresponds to the previously mentioned species (i.e., *Trifolium boissieri*) is corroborated by analysis of the area of origin and distribution of the species (Euro+Med, 2006). The most typical of autochthonous plants used for fodder is *Lotus corniculatus* L. (Fabaceae), which has yellow flowers and rich nectar sought by bees. Therefore, the reference to the genus *Lotus* for herbaceous and foraging lotuses is well justified. There are also references to the use of this plant in traditional medicine; for example, the plant was used as an astringent and to treat wounds (Gras et al., 2017). Among mentions of fodder in classical literature one often sees "fenugreek," which, although not specifically referred to as "lotus," is among the edible species present in pastures and known in antiquity. "Fenugreek" is probably referable to *Trigonella foenum-graecum* L. (Fabaceae). This species is noted in texts and articles on ethnobotany for its uses in traditional medicine in the Mediterranean area: as an emollient, antalgic, and antacid, and for improving sight (Gras et al., 2017). It was also used to treat diabetes

(Asadi-Samani et al., 2017). For both *Lotus corniculatus* and *Trigonella foenum-graecum*, was made the analysis of the origin and geographical distribution (Euro+Med, 2016) to avoid errors in the attribution hypotheses. Ultimately, because of the very general descriptions of classical authors, it seems rather imprudent to attribute the presumed "herbaceous lotus" to a precise botanical species. It is likely that several species belonging to Fabaceae have been assigned the common names "herbaceous and fodder lotus" and "melilotus," more specifically species belonging to *Melilotus*, *Lotus*, *Trifolium*, and *Trigonella*.

Aquatic Lotus

Since the first dynasties in ancient Egypt, some Nymphaeaceae were considered sacred so they acquired symbolic meaning, and their forms were reproduced as stylistic motifs in architecture and in the art of the Empire. Studies of the flowers' stylization, reproduced on capitals of columns, on sculptures, and on paintings, always lead back to *Nymphaea* L. Depictions of leaves, which have the insertion of the petiole in the cordiform inlet, support the referral to this genus. Kandeler and Wolfram (2009) report iconographic sources, related to hieroglyphic culture, representing flowers related to the *Nymphaea* that highlight the morphological, descriptive, and biogeographic similarities. More precisely, these depictions represent *Nymphaea nouchali* var. *coerulea* (Savigny) B. Verdcourt and *Nymphaea lotus* L., both present in Egypt and reported (Muschler, 1912: 1294) for the Delta, Fayun, and other neighboring areas. Recent sources (Euro+Med, 2006) confirm the area of origin of *N. nouchali* var. *coerulea* and *N. lotus*, species hypothesized as corresponding to the "Egyptian aquatic lotus." Hieroglyphic documents include references to the aforementioned Nymphaeaceae. The hieroglyphic personification of the god Nefrtem (called ZŠŌŠĚN), corresponding with the desired transformation of dead's soul, has been identified with *N. nouchali* var. *coerulea*; the depiction of the leaf (called ḤA') with the typical cordiform insertion, is undoubted testimony of the genus, and the species can be identified in the schematic figure of the flower with long, acute petals in the oldest texts (Bonacelli, 1929). The historical sources, generic and descriptive, of "Egyptian lotus" are Herodotus (Sgroj, 1968: 175–183), Theophrastus (Theophrastus, 1644: 59–117), Diodorus Siculus (Baldelli, 1575, XX: 6–7), Pliny (Plinio, 1985, Book XIII: 17), Dioscorides (Mattioli, 1583), and Galenum (Gaudano, 1543: 20–322). The Greeks first used the name "lotus" to refer to a white-colored water lily (*N. lotus*), and later Athenaeus (Jacob, 2001: 1686–1751) designated with the same name the blue water lily (*N. nouchali* var. *coerulea*) and some ecotypes with reddish flowers (presumably local variations derived from variations in soil and climate). The relation between Hellenic references to "lotus" and the sacred Egyptian plants is strengthened by the sun myth of the god Horo, born on the water lily flower: "the flower rose from the primordial waters of Nù on the day of creation." In artistic depictions, the flower seems to be *N. lotus* as often as *N. nouchali* var. *coerulea* (Spanton, 1917: 1–20). This "Egyptian lotus" lived on the flooded lands of the Nile and the Euphrates. Descriptions (Baldelli, 1575, XX: 6–7; Mattioli, 1583; Plinio, 1985: Book XIII: 17; Sgroj, 1968: 175–183; Theophrastus, 1644: 59–116) indicate that the "lotus" flower was white; the fruit was like a large poppy capsule, equally divided into lodges, but with more-dense seeds like millet, which, extracted by maceration of the shell, served to make bread. Indeed, Diodorus Siculus (Baldelli, 1575, XX: 6–7) says that in Egypt bread was made from the seeds of lotus plants. Pliny (Plinio, 1985, Book XIII: 17) specifies that the "*lotometra* was produced from the lotus"; and that "from the seed like the millet, macerated in water or milk, the Egyptian shepherds made excellent breads to be cooked, but when cooled they became indigestible." *Nymphaea* spp. are still found in Egypt, offering, at least until the beginning of our century, seeds and edible roots to the peoples of the upper Nile. From there to Senegal, the genus *Nymphaea* is distributed widely during marsh floods and has spread south throughout all of tropical Africa, often offering a substantial contribution of seeds and tubers to the diets of native peoples. Today the blue water lily has almost disappeared from the Nile, but during the dynastic periods it was found from the Delta to the Nubia (Koemoth, 1997). The range of meanings and symbols, linked to the sacred and ritual sphere, that were attributed to these plants over the centuries was of great importance. The blue water lily, which emerges from the water during the day and plunges into it at sunset, has become the symbol of the rising sun and eternal life (Kandeler and Wolfram, 2009). The Egyptian *ankh*, symbol of eternal life, a mystic knot in ancient depictions (Lurker, 1987, cited in Kandeler and Wolfram, 2009), was composed of three stamens or petioles bound together, most likely coming from the water lily. The water lilies were used in funerary rites, as evidenced by limestone reliefs (Kandeler and Wolfram, 2009). Wreaths of dried flowers, including the blue water lily, were found in the tomb of Tut-ankh-Amun (Newberry, 1973, cited in Kandeler and Wolfram, 2009). The sacredness of water lilies in Pharaonic Egypt was also linked to their use by priests and druids as a drug for trances and to connect with the other world (Kandeler and Wolfram, 2009). The hypothesis that the Egyptian blue water lily has narcotic properties is found in the decorative motifs of Egyptian funerary art. Often, in the depictions, it is united with the narcotic fruit of the mandrake (*Mandragora officinarum* L., Solanaceae); the rhizome of the *Nymphaea* is never represented, always and only the flower, often with one or more fruits of *M. officinarum* in the center. Further evidence in ancient iconography of the psychoactive properties of *N. nouchali* var. *caerulea* can be found in the combination of blue water lilies and opium poppies, as shown in the gold sanctuary of Tut-ankh-amun (Emboden, 1978). Goris and Crete (1910, cited in Emboden, 1978) isolated an alkaloid, which they called nupharina, from the species *Nymphaea lutea* L. In 1941 some explorers indicated water lilies as substitutes for opium, and in the same year, Delphaunt and Balansard (1941, cited in Emboden, 1978) described their experiments using *Nymphaea alba* L. rhizomes on some animals and verified their soporific

effects after initial spasms. Raymond-Hamet (1941, cited in Emboden, 1978) reports that the water lily flowers are narcotic and lead to a hypnotic state if swallowed. It can be assumed that the other species of *Nymphaea* (*lotus* and *nouchali* var. *caerulea*) can have similar effects and for that reason have been used in shamanic rites in Egypt. A relevant clue to these shamanic practices involving *N. nouchali* var *caerulea* is seen in representations of ritual vessels used in the rites. The vessels were made of calcite and shaped like water lily flowers, often inlaid with blue pigments and lapis lazuli (Fig. 3).

In the tomb of Tut-ankh-amun, a specimen of a white flower-shaped chalice was found. The Egyptologist I. E. S. Edwards, observing the differences between the chalices, asserted that the white chalices (*Nymphaea lotus*) were vessels for drinking and the blue chalices (*N. nouchali* var. *caerulea*) were for rituals (Emboden, 1978). *Nymphaea nouchali* var. *caerulea* could also have been used for medical purposes in ancient Egypt. A proof of this can be seen in some hieroglyphics concerning Tut-ankh-amun. The sovereign, of notoriously delicate health, is often portrayed with his queen offering him fruits of mandrake and blue water lily buds and blue water lily shaped chalices containing liquid. These findings suggest a use of the flower in ritual healing practices (Emboden, 1978). Dioscorides associates the "Egyptian lotus" with *Nelumbo nucifera* Gaertn. (Bonacelli, 1929), a species referred to Nelumbonaceae, but this attribution is doubtful. Already in 1834, Cattaneo tried to reorganize historical sources to address the confusion created between *N. nucifera* and Egyptian water lilies (Cattaneo, 1834). Analysis of the biogeography of the species shows that it is not native to Egypt (Euro+Med, 2006). Testimonies from Herodotus (Sgroj, 1968: 175–183) to Strabo (Jones, 1924, VIII: 383) document that in antiquity a plant of the genus *Nelumbo* Adans., almost certainly the same *N. nucifera*, also lived in Egypt, but it is a species introduced for ornamental purposes during Persian hegemony and cultivated in Egypt for a definite period. In the mosaic of the House of the Faun, the aquatic species in the Nilotic scene (Fig. 4) was analyzed.

Leaving aside any anatomical differences, presumably due to stylistic issues, the presence of capsules of *N. nucifera* is clear. There are also flowers, in blossom and not, and leaves that could be attributable to *Nelumbo*. Given the similarities of this genus with water lilies, the importation of

FIGURE 3. Blue lily (*Nimphaea nouchali* Burm. var. *caerulea* (Sav.) Verdc.) shaped chalice used in Egyptian rites.

Nelumbo in Egypt has generated over time a terminological confusion that can now be cleared up. On the basis of this analysis, and considering the historical and biogeographical data mentioned above, it can be said that the various species generically called "Egyptian lotus" collectively in ancient times are very distinct and actually represent *Nymphaea lotus* (white water lily), *Nymphaea nouchali* var. *caerulea* (blue water lily), and *Nelumbo nucifera* (Indian lotus).

The Oriental Sacred Lotus or Indian Lotus. *Nelumbo nucifera* has a wide range of common names (e.g., Indian lotus, Indian bean, Chinese water lily, and sacred lotus). Historically, three countries have venerated this plant: India, China, and Egypt. Illustrations depicting this species are present in all the cultures of these countries, being a symbol of perfection, purity, and beauty. On the aspect of diet, different parts of the plant were used to prepare various

FIGURE 4. The Nilotic scene depicted in the mosaic of the House of the Faun. Museo Archeologico Nazionale di Napoli.

dishes in the respective cultures (Paudel and Panth, 2015: 1–33). The white or pink flower of *N. nucifera* emerges from the water together with the peltate leaves. The flower axis has the shape of an inverted cone, on whose flat upper part the carpels are reduced to holes during the maturation process (Kandeler and Wolfram, 2009). The "Indian lotus" is widespread in the stagnant waters of the Indian subcontinent and in Southeast Asia. It was introduced into Egypt during the period of Persian hegemony (Germer, 1985, cited in Kandeler and Wolfram, 2009), although today it no longer grows there. Some scholars have mistakenly called it "Egyptian lotus;" however, no evidence was found before 700 BC, when the Assyrians imported it. Moreover, at the beginning of 1900 it was no longer found in Egypt (Emboden, 1978). An important source of disambiguation is represented by the Ani Papyrus, also known as the Book of the Dead, dated between 1500 and 1350 BC; in this text, there is a chapter entitled "Transformation in a water lily." Some translators have linked the term "water lily" to the term "lotus," creating confusion between the genus *Nymphaea* and the genus *Nelumbo*. Given the gap between the historical period of the reference text and the period of importation of the *N. nucifera* species in Egypt, it is impossible for the "sacred Egyptian lotus" to be attributable to it (Emboden, 1978). However, when it was introduced into Egypt, it supplanted the native water lilies species (*Nymphaea* spp.) in the Isis cult. Isis became the goddess of fertility and the queen of the kingdom of the dead (Helck, 1979, cited in Kandeler and Wolfram, 2009). In Buddhism, the plant is a central symbol because it is said that Buddha, at birth, took seven steps and lotus flowers sprang up in his footsteps; moreover, the holy figures of Buddhism are often represented sitting on lotus flowers or on the flat part of the flower gynoecium (Majupuria and Joshi, 1988, cited in Kandeler and Wolfram, 2009). Sacred for Hindus since ancient times, it represents the firstborn of creation and the magic womb from which the gods and the world were born (Kandeler and Wolfram, 2009). It is a symbol, in India, of fertility, long life, health, and knowledge. In the early stages of Christianity, in the Council of Ephesus, the name "Theotokos" (God-bringer) was attributed to St. Mary, and the figure of the lotus is associated with her (Kandeler and Wolfram, 2009). In traditional medicine, the whole plant, the rhizomes, the stems, the leaves, the flowers, and the seeds have been used as the main components of recipes to cure several diseases (Paudel and Panth, 2015: 1–33).

When we consider descriptions found in the ancient literature, it is difficult to make correct and precise botanical attributions of plants referred to as "lotus." Many ancient descriptions appear to have little botanical reliability and are often the result of imagination. We present here only verifiable data from a large number of carefully examined sources, eliminating descriptions of questionable logic and reporting and interpreting only those that show a certain reliability. In this context, the name "lotus" is not attributable to a single plant but to a group of plants of different habitus and biogeography. The distinction between the "lotus of the Lotophages" (*Z. lotus*) and the "lotus of Cyrenaica" (*Z. spina-christi*) appears to be definite and reliable. In historical sources, there is a slight overlap of distribution areas of the two species, specifically in North Africa; this overlap, although there is a risk of interpretative confusion in the analysis of texts, can be accepted, as validated by the literature (Tutin et al., 2010). Different results have been obtained for the "herbaceous lotuses," since the sources in our possession make possible a precise reconstruction of the entities identified with this name. In the cases of *M. neapolitanus*, *T. foenum-graecum*, and *L. corniculatus*, the specific attribution is clear and certain. In *Trifolium*, we have indicated *T. boissieri*, but a wider range of species of this genus among the "lotuses" cannot be excluded. It is no wonder that various species of fodder were attributed to the epithet "lotus": it is typical of classical literature to refer to an entity by what it most "resembles," on the basis of impressions of the author and ancient vernacular names from the most disparate ethnobotanical uses. From this tendency of classical authors, confusion arises in relation to the "aquatic lotuses." This name has been given to plants similar to each other in shape, habit, and habitat. Historical events, over the centuries, have led to a temporary overlap of the habitats of these species in Egypt, confusing reports related to them. The native water lilies of Egypt, used for widely varying purposes since pre-dynastic periods, are the species *N. lotus* (white water lily) and *N. nouchali* var. *caerulea* (blue water lily). Joining them in the iconography from the time of Persian domination in Egypt (sixth to fifth centuries BC) is *N. nucifera* (Indian lotus). Similar to the indigenous water lilies, it supplanted or at least appeared side by side with these in uses and descriptions. The confusion generated in the past is clarified by a careful analysis of the sources and areas of origin and distribution of the species. This is confirmed by the fact that *N. nucifera* has disappeared from Egypt, regressing in that environment to which it was not fully adapted, while the native water lilies are still present, even if less widespread than in the past.

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absolutissimis cum notis, tum commentariis: item rariorum plantarum iconibus illustravit Ioannes Bodaevs à Stapel, medicus amstelodamensis. Accesserunt Ivlii Caesaris Scaligeri, in eosdem libros animadversiones: et Roberti Constantini annotationes, cum indice locupletissimo. Amsterdam.

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Supplementary Table 1. Sources for "*lotus*." Analyzed sources, with authors, dates, titles, and citations. Sorted by date.

Author	Date	Title	Investigated terms and interpretations
Egyptian traditions	IV millennium BC –Ptolemaic period (III century BC)	Myth of the birth of the god Horo	"the flower rose from the primordial waters of Nù in the day of creation" (*Nymphaea lotus* L.; *Nymphaea nouchali* var. *coerulea* (Savigny) B. Verdcourt)
Islamic and Hebrew culture		Common names	"nabq," "dum," "sidr," "tsal," "sadr" (*Ziziphus spina-christi* Mill.)
Various authors			"fenugreek" (*Trigonella foenum-graecum* L.)
Homer	IX–VIII century BC	Odissey; Iliad	"lotus of the Lotophages" (*Ziziphus lotus* L.); "fodder lotus," "dewy lotus" (*Trifolium boissieri* Guss.; *Trifolium* spp.); "floral lotus" (*Melilotus neapolitanus* Ten.; *Trigonella foenum-graecum* L.)
Bible	VI century BC	Judges 9:14-15; Jobs 40:21-22	"bramble," "thorns," "sheisaf," "atad," "n'atsuts," "tse'elym" (*Ziziphus spina-christi* Mill.)
Scylax	VI–V century BC	The *Periplo*	"lotus of the Lotophages," "Brachion, Lotophages's island," "Lotus of the Hesperides," "the fruit was as large as a strawberry tree fruit and from a species was made wine" (*Ziziphus lotus* L.)
Cratino	520–423 BC	The *Effemminati*	"coronary lotus or melilotus" (*Melilotus neapolitanus* Ten.)
Euripides	485–407 BC	The *Troadi*; The *Fenicie*	"lotus of the Lotophages" (*Ziziphus lotus* L.); "fruitful lotus lawns" (*Trifolium boissieri* Guss.; *Trifolium* spp.)
Herodotus	484–430 BC	The *Histories*	"lotus of the Lotophages," "the fruit was as large as a lentisk, it was as sweet as the date, from it was also made of wine" (*Ziziphus lotus* L.); "Egyptian white-colored water lily," "the flower was white; the fruit like a large poppy capsule, equally divided into lodges, but with more dense seeds like millet, which, extracted by maceration of the shell, served to make bread" (*Nymphaea lotus* L.); "Egyptian blue water lily" (*Nymphaea nouchali* var. *coerulea* (Savigny) B.Verdcourt)
Xenophon	430–355 BC	*Anabasi*	"Lotus eaters" (*Ziziphus lotus* L.)
Aristotle	384–322 BC	*Historia animalium*	"at the time the bees wax, they feed on plants that then flourish, including the melilotus" (*Melilotus neapolitanus* Ten.)
Theophrastus	371–287 BC	*De Historia Plantarum*	"*Faride*, home of the Lotophages," "the plant was fruticose, dense with branches and had a large stem. The fruits were arranged in opposite and dense manner as in myrtle; they turned color during maturation, were as big as a broad bean, sweet and pleasant, were harmless, even useful for the womb," "there was a variety that had the fruit without kernel, which was tastier and needed to make wine," "the fruit was always provided with a large kernel, had little pulp, covered by a rather rigid membrane, more pleasant than sweet, and the wine it produced did not last more than two or three days" (*Ziziphus lotus* L.); "paliurus" "The (Egyptian) Spine of Christ is thicker than the lotos" (*Ziziphus spina-christi* Mill.); "sylvan flower suitable for making crowns" (*Melilotus nepolitanus* Ten.); "Egyptian white-colored water lily," "the flower was white; the fruit like a large poppy capsule, equally divided into lodges, but with more dense seeds like millet, which, extracted by maceration of the shell, served to make bread" (*Nymphaea lotus* L.); "Egyptian blue water lily" (*Nymphaea nouchali* var. *coerulea* (Savigny) B. Verdcourt)

Supplementary Table 1 cont. Sources for "*lotus*." Analyzed sources, with authors, dates, titles, and citations. Sorted by date.

Author	Date	Title	Investigated terms and interpretations
Agatocle from Cizico	III century BC	*History of Cizico*	"a small tree, big like an elm or a poplar, with long and thorny branches, green and ovate foliage. It bears fruit twice a year: in spring and autumn, fruits were sweet, as big as an olive, similar to this in the pulp and kernel and of delicate sweetness; the fruit was eaten fresh, but also a little dried, it was ground to obtain a flour, which was kneaded with the feet, to prepare coarse flat breads" (*Ziziphus spina-christi* Mill.)
Cato	234-149 BC	*De Re Rustica*	"*serta campanica*" (*Melilotus neapolitanus* Ten.)
Agatarchide	220-145 BC	*About the Red Sea*	"the Ittiofagi, people living along the African coasts of the Red Sea, had the habit of preparing a paste with fermented fish meat, to which they mixed paliurus seeds, to make it more consistent, and as a condiment," "the most miserable drank the juice of the paliurus plants, and with the young branches they made bindings to tie the corpses in a certain way" (*Ziziphus spina-christi* Mill.)
Polybius	206-124 BC	*Histories*	"Meninge, Lotophages' island," "the lotus plant is not large, but rough and thorny, has green leaves, like the buckthorn, but a little darker and wider, the whole fruit crushed when ripe, is stored in the pots and is used to feed the servants, while, deprived of the kernel and preserved in the same way, it is food for the free people. Macerated in water and minced, it is used to make a wine-like drink" (*Ziziphus lotus* L.)
Diodorus Siculus	90-27 BC	*Bibliotheca Historia*	"Agatocle cit.," "Panchei, that those peoples collected the fruit of the paliurus, using it for food and drink, obtaining benefit against the flow of the stomach" (*Ziziphus spina-christi* Mill.); "Egyptian white-colored water lily," "the flower was white; the fruit like a large poppy capsule, equally divided into lodges, but with more dense seeds like millet, which, extracted by maceration of the shell, served to make bread," "in Egypt bread was made" (*Nymphaea lotus* L.); "Egyptian blu water lily" (*Nymphaea nouchali* var. *coerulea* (Savigny) B. Verdcourt)
Virgil	70-19 BC	*Culex*; The *Georgiche*	"lotus too hospitable" (*Ziziphus lotus* L.);
Strabo	60 BC-24	*Geography*	"Sirte Lotofagide" (*Ziziphus lotus* L.)
Propertius	47-15 BC	The *Elegie*	"lotosque, herbaeque tenaces" (*Ziziphus lotus* L.)
Ovid	43 BC-17	The *Tristia*; The *Fasti*	"lotosque, herbaeque tenaces" (*Ziziphus lotus* L.); "the young companions of Proserpina picked up the melilotus with other flowers" (*Melilotus neapoletanus* Ten.)
Pomponius Mela	I century-43	*De Chorografia*	"Lotophages in Cyrenaic" (*Ziziphus lotus* L.)
Bible, Gospels	I century	Mattew 27:27-29; Jon 19:5	"bramble," "thorns," "crown of thorns" (*Ziziphus spina-christi* Mill.)
Scribonius Largo	I century	The *Compositiones*	"the melilotus is what we say sertula Campana" (*Melilotus neapolitanus* Ten.)

continued

SUPPLEMENTARY TABLE 1 CONT. Sources for "*lotus*." Analyzed sources, with authors, dates, titles, and citations. Sorted by date.

AUTHOR	DATE	TITLE	INVESTIGATED TERMS AND INTERPRETATIONS
Pliny	23-79	*Naturalis Historia*	"Lotus too hospitable," "Gerba Lotofagida," "the plant was small; the fruit was abundant and dense as in myrtle; it was as big as a saffron-colored bean, changing color as it matured. Very sweet food in Africa, preserved from stomach ache. From it we obtained a drink like wine with honey which was not kept more than ten days. The crushed fruits were kept in large vessels for food" (*Ziziphus lotus* L.); "Spina-christi" (*Ziziphus spina-christi* Mill.); "a sylvan flower suitable for making crowns," "it was odorous and was used to make ointments and with it was prepared a fragrant oil," "the ointments used by the King of the Parts," "*Sertula Campana* is called melilotus, because in ancient times was used for crowns," "aromatic herbs and the fragrant flowers to be planted as bees' pasturage" (*Melilotus neapolitanus* Ten.); "be the best among all the grasses of the meadows" (*Trifolium boissieri Guss*.; *Trifolium* spp.); "*lotometra* was produced from the lotus," "Egyptian white-colored water lily," "the flower was white; the fruit like a large poppy capsule, equally divided into lodges, but with more dense seeds like millet, which, extracted by maceration of the shell, served to make bread," "from the seed like the millet, macerated in water or milk, the Egyptian shepherds made excellent breads to be cooked, but when cooled they became indigestible" (*Nymphaea lotus* L.); "Egyptian blue water lily" (*Nymphaea nouchali* var. *coerulea* (Savigny) B. Verdcourt)
Silio Italico	25-101	*Punica*	"Lotus too hospitable" (*Ziziphus lotus* L.)
Dioscorides	40-90	*De Materia Medica*	"a sylvan flower suitable for making crowns," "ingredient for ointments, which he defined as *telino*," "the melilotus is celebrated in Attica, in Cizico and in Calcedone, had color close to the saffron and with a good smell," "it is also born in Campania near Nola reddish and slightly odorous" (*Melilotus neapolitanus* Ten.); "lotus clover of the meadows" (*Trifolium boissieri* Guss.; *Trifolium* spp.); "Egyptian white-colored water lily" (*Nymphaea lotus* L.); "Egyptian blue water lily" (*Nymphaea nouchali* var. *coerulea* (Savigny) B. Verdcourt)
Ptolemy	100-175	*Geography*	"*Gerba Lotofagida*," "*Meninge Lotofagida*" (*Ziziphus lotus* L.)
Galeno	129-201	*De simplicium medicamentorum facultatibus*	"Egyptian white-colored water lily" (*Nymphaea lotus* L.); "Egyptian blue water lily" (*Nymphaea nouchali* var. *coerulea* (Savigny) B. Verdcourt)
Talmud	II-III century	Bava Bathra, 48b	"*kanari*" (*Ziziphus spina-christi* Mill.)
Mishnah	217	Demai, 1:1; Kil'ayim, 1:4	"*rimin*" (*Ziziphus spina-christi* Mill.)
Ateneo	II sec.	The *Deipnosofisti, Propontis*	"*connari* and *paliuri*," "those fruits were used on the tables of Alexandria in Egypt," "*spina-christi* (description)" (*Ziziphus spina-christi* Mill.); "the flower of the *helichrysum* was like the lotus, but the latter was a more intense yellow" (*Trifolium boissieri* Guss.; *Trifolium* spp.); "*lotine* and *melilotine* crowns" (*Melilotus neapolitanus* Ten.)
Qur'an	650	LIII: 13-18; LVI: 28-32	"*sedr*" (*Ziziphus spina-christi* Mill.)
Photius	820-893	Biblioteca	"Agatocle cit." (*Ziziphus spina-christi* Mill.)
Estori ha-Parhi	1280-1355	Sepher Kaftor va-Ferah	"*rimin*," "*nabaq*," "*dum*," "*sidar*" (*Ziziphus spina-christi* Mill.)
Mattioli P. A.	1501-1577	Commentarii	"the flower was white; the fruit like a large poppy capsule, equally divided into lodges, but with more dense seeds like millet, which extracted by maceration of the shell, served to make bread" (*Nymphaea lotus* L.)
Torquato Tasso	1544-1595	Gerusalemme Liberata	"Alzerbe, già dè lotofagi albergo" (*Ziziphus lotus* L.)
Pampanini Renato	1875-1949	Various	"*Sedr*" (*Ziziphus lotus* L.)

SUPPLEMENTARY MATERIAL. Summary of "lotus" ancient names and definitions related to hypothesized species.

I. Arboreal lotus

***Ziziphus lotus* Lam.**

1) Lotus of the Lotophages (Homer, Herodotus, Theophrastus, Scylax, Polybius, Pomponius Mela, Pliny, Strabo, Ptolemy, Torquato Tasso).
Tempting lotus (Euripides).
Lotus too hospitable (Virgil, Silio Italico, Pliny).
Lotus and bewitching herbs (Propertius).
Lotus makes forget the way home (Xenophon, Ovid).
Lotus of the Hesperides (Scylax).

***Ziziphus spina-Christi* Willd.**

2) Paliurus of Cyrenaic (Theophrastus, Agatocle from Cizico).
Paliurus and connaro (Athenaeus).
Paliurus of the African coasts (Agatarchide cited by Photius and Diodorus Siculus).
Paliurus of the *Arabia felix* (Diodorus Siculus).
Sedr (Qur'an).
Tree of *nabeq* fruit (Qur'an, Estori ha-Parhi).
The Egyptian Spine of Christ (Theophrastus).
Spina Christi Lotus (Pliny).
Atad (Bible).
N'atsuts (Bible).
Tse'elym (Bible).
Rimin (Talmud, Estori ha-Parhi).
Kanari (Talmud).
Bramble and thorns (Bible, Gospels).
Sidar (Estori ha-Parhi).
Dum (Estori ha-Parhi).

II. Herbaceous and fodder lotus

***Lotus*, *Melilotus*, *Trigonella and Trifolium* spp.**

1) Fodder lotus (Homer).
Herbaceous lotus (Athenaeus, Theophrastus, Pliny, Dioscorides).
Floral lotus (Homer)
Lotus flower like helichrysus (Athenaeus)
Coronary lotus or melilotus (Athenaeus, Anacreonte, Cratino).
Lotus as ingredient for ointments (Theophrastus, Pliny).
Odorous melilotus, ingredient for ointments (Pliny, Dioscorides).
Melilotus as bees' pasturage (Pliny, Aristotle).
Floral melilotus (Ovid).
Melilotus called *serta campanica* (Cato).
Melilotus called *sertula campana* (Pliny, Scribonius Largo)
Lotus clover of meadows (Dioscorides, Pliny).
Dewy lotus from mount Ida (Homer).
Lotus in fruitful lawns (Euripides).
Clover lotus (Dioscoride, Galeno).

III. Aquatic lotus

***Nymphaea lotus* L.**

1) Egyptian lotus (Herodotus, Theophrastus, Diodorus Siculus, Pliny, Dioscorides, Galenum).
Lotus from which bread is made (Diodorus Siculus, Pliny)
Lotus from which the *lotometra* is obtained (Pliny)

***Nymphaea nouchali* var. *coerulea* (Savigny) B. Verdecourt**

2) *ZŠŌŠĔN* (Hieroglyphic documents).
3) Egyptian lotus (Athenaeus).

***Nelumbo nucifera* Willd.**

4) Egyptian lotus (Dioscorides).