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**The Origin of Quamoclit (*Ipomoea quamoclit*, Convolvulaceae)**

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**The Origin of Quamoclit (*Ipomoea quamoclit*, Convolvulaceae).** Although it was originally American, *I. quamoclit* reached Europe by the 1550s. The vines are recorded from both Europe and India in the 1500s and were taken to both places because of medical uses. While the species is now known as a garden ornamental and weed, there is a complicated record dealing with its early Renaissance discovery, transport, and the names it brought with it or that were later applied. Several aspects of these topics are discussed.

**Key words:** Phylogeny, nativity, plant exchange, pharmacopeia, folk names, Nahuatl.

*Ipomoea quamoclit* L. is one of the commonly cultivated members of the Convolvulaceae, and arguably the most strikingly beautiful morning glory in the horticultural trade. These scarlet-flowered climbers form a delicate, lacy mass of pinnately divided leaves during the warm months in temperate regions, and all year in tropical areas. The species is planted or naturalized in all the lower latitudes around the world, yet extends as far north as China, England, and Ontario in Canada (Fang and Staples 1995:301, Brouillet et al. 2006, Dehnen-Schmutz et al. 2007:228).

Probably because *I. quamoclit* is known largely from cultivation or as a weed, little has been written about its origin. While I was a graduate student, Edgar S. Anderson (1897--1969) complained to us that botanists were blind to cultivated plants. At that time, I was guilty, and wrote about *I. quamoclit* several times without much thought of its history and origin. I began to wonder about the vines when my colleague George Staples recently asked which of two derivations of the specific name was correct.

The past four centuries have generated a number of misunderstandings about *I. quamoclit*, including where the plants originated and the source of the species name. Linnaeus (1753:159-160) thought the plants were from India, partly basing that view on seven references. Those sources, however, listed the plants in the Americas (Clusius 1611:8, 9), Italy (Colonna 1616:lxxii, lxxiii), and India (Bauhin 1671:398, van Royen 1740:430, Linnaeus 1737:60, 1747:77, 1748:39). Why Linnaeus ignored the Americas is not clear.

This discussion summarizes what is now known about the species. Four questions are addressed: 1) Where is *I. quamoclit* native?; 2) When was the species introduced into the Old World?; 3) Why was the species introduced into the Old World?; and, 4) What is the origin of the specific epithet?

MATERIALS AND METHODS

For years I have studied *I. quamoclit* and other Convolvulaceae in the Americas and Asia (e.g., Austin 1975, 1980, 1982a, 1982b, 1986, 1998a, b, Austin and Cavalcante 1982, Austin and Ghazanfar 1979, Austin and Huamán 1996, Austin et al. 1998, 2012, under review). Those studies allowed me to examine herbarium and literary records through much of the world. Subsequently, historical literature has been studied specifically to address the questions in this treatise. The older documents are now mostly available, largely from the Botanicus Digital Library (<http://www.botanicus.org/>), Biodiversity Heritage Library (<http://www.biodiversitylibrary.org/>), Biblioteca digital del Real Jardín Botánico ([http://bibdigital.rjb.csic.es/](http://bibdigital.rjb.csic.es/ing/index.php) ), Google Books (<http://books.google.com/>), and others. Those documents that are not online I obtained from the Missouri Botanical Garden and the University of Arizona libraries.

NATIVITY

Although a European history of over 150 years had discussed *I. quamoclit* when Linnaeus (1753:159-160) named the species, he simply wrote “Habitat in India.” Previously he listed the species as being in “… Maderaspatanis, ut fertur, & in Malabaria, Zeylona” (Madras region, as people say, & in Malabar, Sri Lanka) (Linnaeus 1737:66). It is true that the record as coming from India began with Joachim Camerarius the Younger (1534--1598), but Charles de l’Escluse (1526--1609), Latinized as Clusius, and John Ray (1627--1705) knew that the species was American (Camerarius 1588:135, Clusius 1611:8, 9, Ray 1693:761).

Several early authors (e.g., Camerarius 1588:135, Bauhin and Cherler 1619:177, van Rheede 1692:123, Burman 1737:197) simply said “ex India” or “Indian,” ignoring whether from *India orientale* (East Indies) or *India occidentale* (West Indies). Numerous other species of American origin were thought for decades to be native to India (e.g., Austin 2008:192). The confusion was at least partly due to the European difficulty in reconciling the strangeness of the New World plants with those from the “Indies” they had previously known (Ubrizsy Savoia 1996). Another factor was that the various parts of the world were discovered and explored by countries that did not fully share their new information. Linnaeus knew little of the Iberians in Asia, relying largely on the newer Dutch and English colonists, who mostly assumed that all plants in India were native (e.g., van Rheede 1692:123, Plukenet 1696:117, Burman 1737).

As more of the world was explored after 1492 it became increasingly clear that there were several species sharing morphological traits. The concept of a species group related to *I. quamoclit* developed and Tournefort (1700 [1703]:116) proposed *Quamoclit* as a genus. While Miller (1754) accepted *Quamoclit* at generic rank, Linnaeus (1753:159) did not. All the species in the group were originally American, and the few that were found in the Old World, like *I. quamoclit* and *I. hederifolia* L. (under *I. angulata* Lam. and *I. sanguinea* Vahl), were originally from the Americas.

A thorough study of the group remained for O’Donell (1959), although Choisy (1845:435) had revised it. Those studies pointed to the Americas as the region of diversity and origin. That conclusion was supported by Miller et al. (2004) and Streisfeld and Rausher (2009) who found that the Quamoclit group (properly *Ipomoea* section *Mina* (Cerv.) Griseb., cf. Austin and Huamán 1996:14), was monophyletic and sister to American section *Leptocallis* (G. Don) J.A. McDonald. Because all of the related species are American, it is logical that *I. quamoclit* is native there.

*Ipomoea quamoclit* was dispersed around the globe soon after Europeans discovered the New World. When, why, and how that came about are addressed next.

SPREAD TO NEW LANDS

*Ipomoea quamoclit* was brought to the attention of European botanists apparently from two directions, India and the Americas (see Ubrizsy Savoia 1996 for comments on confusion). De Candolle (1855:789) wrote that the plants were “Introduite dans les jardins européens en 1583, Caesalpinus en parla le premier … sous le nom de *Gelsiminum* *rubrum*” (Introduced into European gardens in 1583; Caesalpinus … spoke first of it as red jasmine). Indeed, Andrea Caesalpino (1524 or 1525--1603) wrote of two species he called red jasmine (Caesalpino 1583:154). Although there is a surviving Caesalpino herbarium now in the Museo di Storia Naturale di Firenze that was assembled between 1555 and 1563, *I. quamoclit* is not included (Caruel 1858, Moggi 2008:65, Nepi personal communication, 4 Aug. 2012).

Caesalpino’s first *Gelsiminum rubrum* is now *Mirabilis jalapa* L. (cf. Daléchamps 1586:1433, Bauhin 1671:168). Of the second, the one De Candolle mentioned, Caesalpino wrote “Alterum genus Gelsimini rubri nunc visum est inter peregrinas plantas multis viticulis circumnoluens se, frequentibus foliis tenuitei scissis instar Myriophylli, floribus predicto similibus” (The second species of red jasmine can now be seen among foreign plants climbing around many vines, with plenty of finely cut leaves like those of Myriophyllum and flowers like those of the previous [i.e., *Mirabilis jalapa*]). De Candolle (1855:789) said of Caesalpino’s second *Gelsiminum rubrum* “Il en ignorait l’origine” (He ignored its origin).

German physician Camerarius (1588:135) said that he had received seeds from Italian cleric Giovanni della Casa (1503--1556) from the *Florentiae Herbario* (Florence herb-garden, cf. Meyer 1863:293 for meaning of “herbario”). The seeds almost certainly came from the *Orto Botanico di Firenze* established in 1545 and backed by Cosimo I de’ Medici (1519--1574). Camerarius wrote that “Quamoclit planta nova ex India ante paucos annos allata” (Quamoclit is a new plant brought from India a few years ago). That means Quamoclit was sent to Camerarius before della Casa’s death in 1556 – three decades earlier than De Candolle thought.

That *I. quamoclit* may have come from a botanical garden in Florence should not be surprising. Botanical gardens established in the same period were the *Orto botanico di Pisa* in 1543 and the *Orto botanico di Padova* in 1545 (Chiarugi 1953, Tomasi 1983, Terwen-Dionisius 1994, Garbari 2006). The Florence and Pisa gardens were sponsored by the Grand Dukes of Tuscany, first by Cosimo I de’ Medici and then by his son, Francesco I de’ Medici (1541--1587). The Medici interest in medicinal plants made them ideal for supporting these endeavors (Lippi 2007:9, Yaya 2008:178).

Moreover, in Florence the botanical garden of San Marcos (also called *Giardino delle Stalle*) with Flemish director Jodocus de Goethuysen (ca. 1515-1595), better known as Giuseppe Casabona (Garbari 2006:91), had a marked reputation for rare plants in the late 1500s. Duke Francesco I had employed Casabona to introduce and cultivate rare plants, particularly those useful in medicine, since that was the primary European interest at the time (Ubrizsy Savoia 1996, Bedini et al 2003:196). Francesco I was also responsible for having seeds of these rare plants distributed to botanical gardens through much of northern Italy, in part through clerics who were interested in medicines for their apothecaries (Anagnostou 2007). In addition to the influence of seed exchange through gardens and clerics, there were a series of “academies” throughout Europe where scholars and wealthy men met to discuss science and the arts, and to exchange seeds and plants (cf., Egmond 2007, Ubrizsy Savoia 2007).

There is an illustration of *I. quamoclit* (Fig. 1) created between 1577 and 1587 when Francesco I de’ Medici commissioned artwork by Jacopo Ligozzi (1547--1627). This illustration is currently in the Uffizi Gallery, Florence (Galleria degli Uffizi 1990). Additionally, there is a specimen (Fig. 2) in the Erbario Aldrovandi (vol. 15, carta 136) annotated with “Quamoclit” currently preserved at Bologna University (<http://www.sma.unibo.it/erbario/erbarioaldrovandi.aspx>). A letter from Ulisse Aldrovandi (1522 --1605) to Duke Francesco I de’ Medici of Florence in the library of Bologna University (Tosi 1989:278) records “Con infinita conteztezza ho ricevuto … il quamoclith [sic] che Vostra Altezza serenissima si è piacciuta mandarmi …” (With infinite happiness I received … the quamoclit which Your Royal Highness was pleased to send me …). The seeds were received on 4 May 1583 (Tosi 1989:279) and grown in the *Orto botanico di Bologna* (Soldano 2005:52-54).

Venetian pharmacist Giovanni Pona (1565--1630) wrote about the species in 1601, first calling it “Gelseminum Indianum pennatum flore sanguine” (pinnate Indian jasmine with red flowers) (quoted in Bauhin 1671:398). Later Pona (1608:19-20) wrote “Iasminum Indicum alterum rubrum Myrriophylli folio Caesalpini: ab Indis, Quamoclit vocatum” (the other red Indian Jasmine, with the leaf like that of Myriophyllum of Caesalpino. From India. Called Quamoclit). Pona noted that he received the seeds from Holy Roman Emperor Ferdinand I (1503--1564) of Vienna, the father of Francesco I de’ Medici’s wife Joanna of Austria, thus recording other links in the period’s network of seed exchange (cf. Jenkins 1948:382, 383 regarding Cortés possibly sending tomato seeds to Europe in 1526; Borah 1962 for Ferdinand I’s interest in America).

Flemish physician Clusius (1611: 8, 9) corresponded with Pona and cited the comments from his letter. Moreover, Clusius received seeds of *I. quamoclit* (as *cunde amor*) from the Sevillian physician Juan de Castañeda (fl. 1564--1604) with a letter dated 9 April 1602 (Asso 1793:61, Ramón-Laca Menéndez de Luarca 1999:106). Castañeda practiced medicine in the *Hospital de la Nación Flamenca* in Seville and had his own medicinal botanical garden (Asso 1793:65, Colmeiro 1858:165, Barona 2007:106).

Italian lawyer and botanist Fabio Colonna (1567--1650) said of the plants “Convolvulus pennatus exoticus rarior” (The exotic pinnate Convolvulus is rarer) (Colonna 1616: lxxii, lxxiii), then added “& apud peritum Aromatarium ac Herbariae rei exertitatiss.Iosephum Guidum familiaritate nobis coniunctum observavimus Romae” (as we have said, and we observed it in Rome at the house of the expert druggist and very well-trained botanist Josephus Guidus, befriended to us). He continued, “Quamoclit nomine sibi missam retulit” (He [Guidus] mentioned that it was sent to him under the name of Quamoclit).

From about this point onward *I. quamoclit* was recorded in America (Parkinson 1629:358), Barbados (Sloane 1696:58) Switzerland (Bauhin and Cherler 1619:39), England (Gerard and Johnson 1633:1598, Parkinson 1640:169, 170, Morison 1680:18, Ray 1693:703, Miller 1735, 1752, 1754, 1768), Holland (Hermann 1690:76, 1726:47, Hermann and Boecler 1731:361, Boerhaave 1710:102, Burman 1737:197), France (Morison 1680:18, Tournefort 1700 [1703]:116, Barrelier 1714:11), Italy (Morison 1680:18), Ambon Island in the Maluku Islands, Indonesia (Rumphius 5:422, 1747), what is now the state of Kerala on the Malabar coast of India (van Rheede 1692:123), Morocco (Morison 1680:18), Sri Lanka (Linnaeus 1747:32, 33), and Sweden (Linnaeus 1737:66, 1748:39, 1753:159, 160).

John Clayton (1694--1773) had *I. quamoclit* in Virginia in the 1750s; he named it in a letter from 1755 (Clayton 1755:408). Later, Thomas Jefferson (1743--1826) cultivated *I. quamoclit*; he sent seeds to his two daughters at Monticello, VA while he was Secretary of State (Adams 2004:144). On 16 January 1791 Martha Jefferson Randolph (1772--1836) wrote to her father: “I am extremely obliged to you for the cypress vine ...” (Boyd et al. 1950, vol. 18:500).

WHY SPREAD?

When *I. quamoclit* was originally being moved around the world, it was not for beauty but for medicine. The botanical gardens established in northern Italy in the middle 1500s were all primarily *Orto dei semplici* (garden of simples), collections of medicinal species. As plants were brought from around the world to the import centers of Seville and Venice (Allen 1997:411, Cuthbertson 1997:9-23), they soon were placed in these gardens for use in teaching.

Caesalpino (1583:154) mentioned *I. quamoclit* along with another “jasmine” (*Mirabilis jalapa*) and noted medical uses, implying the same for both. Bauhin (1671:397) noted that the usual jasmine of the time was “sambac” in Latin, from Medieval Arabic *zanbaq* زنبق, which is now *Jasminum sambac* (L.) Aiton, another medicinal species (Guigues 1905:93, 542).

Camerarius (1588:135) wrote of *I. quamoclit* in his medical garden that “Sapor ipsius herbae est subdulcis & modice nitrosus, capsulae vero nonnihil piper vel brasma peperis gustatu referunt, ut & semen, quod parum abest, quin haud minore calidate fauces nonnumquam afficiat” (The taste of this herb is sweetish and moderately salty, of the capsule, it is said that it tastes to a certain extent like pepper or the pellicule [brasma] of pepper).

Imported along with the seed were also the medicinal uses from India. Hendrik Adriaan van Rheede tot Drakenstein (1636--1691) noted that “Philtri efficaciam huic plantae tribuunt incolae. Succus e foliis expressus errhynum est cephalagiam fugans” (The inhabitants attribute to this plant the efficacy of a philter. The juice expressed from the leaves is instilled into the nose and repels headache) (van Rheede 1692:123).

As with many New World plants, there seem to be no early records of medical use of *I. quamoclit* in the Americas. However, the initial transport to the Old World appears to have been accompanied by medical applications that were probably learned from the New World. Laxatives were of prime interest to Europeans and *I. alba* L. was one of the few in the Convolvulaceae recorded (under the Taino name “Y,” Oveido 1526:82).

The earliest records found of American use of *I. quamoclit* were from the 1800s. Lunan (1814:399) wrote “The root is said to be a strong purge, in decoction.” Monlau (1879:304) and Gómez de la Maza (1889:64) recommended the plant as an *estornutatorio* [promote sneezing], *usándose contra el coriza* [against nasal infections] *y diversas cefalalgias* [different headaches]. Extracts of the plant were also considered *detersivas* [detergent], and the root *purgante* [purgative]. Because these records were made long after medicinal uses in India and Europe, there is no way to establish the original source.

A remnant of indigenous medical uses possibly remains in some areas. In the Governador Valadares region of Minas Gerais, Brazil, there are records of *I. quamoclit* being used as an antibiotic (Brasileiro et al 2006:198). While no specific medicinal use is recorded among the Guaraní of Argentina, they know the plant as *mbore ka’a* (tapir’s herb) and that indicates an association with magic (Keller 2011:131).

Dymock (1885:561) wrote of *I. quamoclit* that “Medicinally the Hindus consider it to have cooling properties, and apply the pounded leaves to bleeding piles, at the same time administering 1 tolá [11.6 grams] of the juice with an equal quantity of hot ghi [clarified butter] twice a day internally. The crushed leaves are also used as a lép [?] for carbuncles (kálupli).”

More recent records of medicinal use are still concentrated in the Indian region. Duke et al. (2008:379, 380) found the vines being considered analgesic, astringent, cyanogenic, detergent, febrifuge, hemostat, purgative, sternutatory.

NAMES

*Quamoclit* was recorded by Camerarius (1588:135), although it was in use earlier since it was written in a 1583 letter and specimen in the Aldrovandi herbarium. Linnaeus (1737:66) simply said “est nomen barbarum” (it is a foreign name), and declined further comment (Linnaeus 1747:32, 1753:159,160). That silence invited disagreement.

Two views of the etymology have been presented, apparently starting with French scholar and baron Alexandre de Théis (1765--1842). De Théis (1810:242) wrote that *I. quamoclit* was “Altéré de κύαμος, haricot, et κλιτὸς, bas, nain. Qui ressemble au haricot par sa tige ascendante; mais moins élevée” (Altered from *kuamos*, beans, and *klitos*, low, dwarf. Resembles the bean by its ascending stem, but lower). Later de Candolle (1855:788, 789) commented “Je ne sais où de Theis … a été imaginer que Quamoclit vient de κύαμος, haricot, et κλιτὸς, bas, nain” (I do not know how de Theis … dreamed up that Quamoclit comes from *kuamos*, beans, and *klitos*, low, dwarf). De Théis’s derivation was repeated by numerous subsequent authors (e.g., Wood 1846:443, Webster and Porter 1913:1173, Bailey 1949:822), and still appears (Dictionary.com 2012), although Craigie (1888:19) had declared that *quamoclit* is “the basis of imaginary etymologies from Greek and Sanskrit.” Craigie (1888:19) must have been alluding to a connection between *quamoclit* and Sanskrit *kalamata* although nothing further has been found.

The other interpretation is that *quamoclit* was derived from Nahuatl (Table 1). *Quamochitl* is in Siméon’s (1885:401) Nahuatl dictionary; taken from Francisco Hernández de Toledo (1514--1587). Hernández et al. (1615:94, 1651:94) wrote in book 1, part 2, chap. 69 “De Quamochitl, seu arbore fructus crepitantis … Maizio similis” (On the Quamochitl, that is, the tree whose fruit crackles. [It is] similar to maize). Hernández said that “Spinifera arbos est Quamochitl, folia mali Punicae ferens, paulo tamen obtusioris cuspidis, & capitula in postremis viticulis Epithymo similia, maiora tamen” (The Quamochitl is a thorny tree that bears leaves like those of the pomegranate, but (with) less pointed tips and some heads similar to [those of] the epithymon at the extremities of the twigs; translation from Varey 2000:125).

Hernández (1651:121, Hernandez, ed. Ochoterena 1942-1946:1005) also used Quamochitl in another entry. There he talked about “Curaquam vocant Michuacanenses, & Mexicani Quamochitl, & Uitzquahuitl & Hispani Brasilium solent nuncupare, frutex est spinosus surculosis candidisque insistens radicibus” (People in Michoacán call it *Curaqua*, and Mexicans *Quamochitl* and *Uitzquahuitl* [spiny tree] and the Spaniards usually call it *Brazil*; it is a thorny shrub with white stalks and roots).

Lindley (1838:271), among others, pointed out that the Quamochitl mentioned by Hernández is a tree, a legume, and not a climber in the Convolvulaceae. Standley 1922:394) identified the tree as *Pithecellobium dulce* (Roxb.) Benth., as do Felger et al. (2001:203), although other interpretations exist (e.g., Puchtler and Meloan 1987:9). As Standley (1922:394) noted, the same tree was called *coacamachalli* (snake’s jaws) by Hernández (1651:90), where he compares it with a liana called *coanenepilli* (snake’s tongue or *Passiflora jorullensis* Kunth*,* Ortiz de Montellano 1986:121), both having similar leaves.

Hernández’s is not the only possible derivation of Quamochitl. Another is that the name came from the Nahuatl words *cuauh-mochitl*, where *cuauh* is *cuahuitl,* tree, and *mochitl* means a species of mesquite or acacia (Secretaría de Gobernación 1988). The word *cuahuitl* /kwɑwitɬ/ is attested as tree (Karttunen 1992:58, 69), but a similar root is also present in eagle (*cuāuh-tli*, /kwɑ:wtɬi/), and in compound forms the two are not always distinguishable in the colonial transcriptions. Orthographic “qua” also appears in the early documents, where it represents roots for “head” and “good” (e.g., Karttunen 1992:56, 59).

However, *mochitl* or *muchitl* is even more problematical (e.g., Robelo 1904:143, 576, Karttunen 1992:69). Except for the historical records of *Mochitl* as the “beautiful daughter” of the Toltec leader Tepancaltzin (Brocklehurst 1883:173, Leclercq 1884:523), the word does not appear to exist independently. Bernardino de Sahagún (1499--1590) wrote between 1545 and 1590 that the Nahuatl word for tin was *amochitl*, composed of *atl*, water, and *mochitl*, foam (Sahagún, ed. Anderson and Dibble 1963). According to a letter from Dibble to Easby, written in December of 1961, the word came from *atl* (water) and *mochitl* (smoke or scoria), but Karttunen (1992:200) instead gives *pōc-tli* /po:ktɬi/ as smoke. Could *mochitl* in the names be an error for *xōchitl* /ʃo:tʃitɬ/ flower?

Of the possible interpretations, the Greek derivation has been rejected by recent sources (e.g., Austin in Staples and Herbst 2005:813, Haugen 2009:67 et seq., OED online 2012), with a Nahuatl origin accepted. Indeed, Linnaeus’s (1737:66) reference to *Quamoclit* as a foreign name should have been enough to reject a Greek source. Greek names were considered “civilized.” While Hernández brought his manuscripts back from Mexico in 1577 with *Quamoclit*, the word was also used in the same period by Camerarius (1588:135) and Aldrovandi (Tosi 1989:279). Camerarius (1588:135) did not say where he got the name *Quamoclit* but he received the seed from Italian Giovanni della Casa who died before Hernández returned from Mexico. I suspect Camerarius got the name along with the seeds as did later recipients.

Of the numerous other common names for these vines (Table 1), Cupid’s flower and *cundeamor* deserve comment. At first glance, these two appear to be related, however examination of their derivation shows that they are distinct.

The older of the two names is “Cupid’s flower,” being a bowdlerization of the Sanskrit kamlta *kāmalatā* (Table 1).A more literal translation is “Love’s creeper” (Jones 1795:260). That *kāmalatā* is older than the arrival of this American plant in India is indicated by the fact that it was previously applied to a “... mythological plant, by which all desires are granted to such as inhabit the heaven of Indra ...” (Jones 1795:261). That view was expanded by Reader (1890:29) who wrote “The *Padma* and *Kamalata* or *Granter-of-Desires*, or *‘Consummator-of-our-Wishes*,’ are all terms applied to the lotus. It is also called ‘*love’s creeper*,’ the throne and ark of the gods ...” More recently, Forlong (2008:363) recorded “Kāma-latā. The ‘bindweed of love’ -- the phallus ... one of the many shrubs and flowers sacred to Kāma.” McDonald (personal communication, 1 June 2012) confirmed that the lotus (*Nelumbo nucifera* Gaertn.) is indeed *kāmalatā* in Sanskrit although Monier-Williams (1899:272) listed only *I. quamoclit*.

*Cundiamor* or *cundeamor* also makes reference to “love,” but with a different meaning. In this name the reference is to the creeper “loving” to grow wildly and spread. Stevens (1726) recorded *cúnde amór*, saying “a sweet herb in Spain, which spreads much.” This he followed with *cundir*, “to spread, to increase, to thrive.” References in the next few decades make it clear that the plant indicated is *Momordica* (Cucurbitaceae), although I know of no plant part deserving the descriptor “sweet.” Its taste and odor are vile. That vine matches *cundeamor* and “loves to spread” because of birds eating and scattering the red aril-enveloped black seeds. The dictionary of the Real Academia Española (2012) has this entry for *cundiamor*: “Ant. y Ven. Planta trepadora, de la familia de las Cucurbitáceas, de flores en forma de jazmines y frutos amarillos, que contienen semillas muy rojas” (Ant[illes] and Ven[ezuela]. Climbing plant, of the family Cucurbitaceae, with flowers in the shape of jasmine and red fruits, which contain very red seeds). Leonhard Fuchs (1501--1566) used the name *balsamine* for *Momordica* (Fuchs 1542:188), and Meyer et al. (1999:355) note *balsamina* in Italian by 1551 and in Spanish by 1557. Between the middle 1500s and early 1600s *cundeamor* was used for both *I. quamoclit* and *Momordica* (Table 1), but by the early 1700s, it was in use largely for the latter in Europe.

DISCUSSION

Although native to the Americas, *I. quamoclit* arrived in Europe by at least the 1550s. The species might have arrived earlier along with other new plants, but no documentation was found that it did. Certainly, many other American plants arrived in Europe earlier (Hawkes 1998:153, Janick and Caneva 2005, Janick and Paris 2006).

The first records of *I. quamoclit* in Europe are said to be from India, although we cannot be certain where they came from (Ubrizsy Savoia 1996:165-167). The species was likely from India, but Asia and the Caribbean were both translations of “India” from the time of Columbus until at least the 1600s. While *las Indias occidentales* was in use by 1516, non-Spanish speakers rarely distinguished between there and the East Indies. When these American plants were moved to India is apparently not recorded, but they may have been taken along with several other New World plants, including other members of the Convolvulaceae (cf. Austin 2008:192). For example, *I. batatas* (L.) Lam. arrived in Europe by 1493 (Hawkes 1998:153), reaching Africa in the 1500s (Austin 1988:46), and China by the 1560s (Ho 1956:2). Sweet potato was taken to Africa by the Portuguese (Harlan et al. 1976:296, 301) and unquestionably also to India since it is බතල *batala* in Sinhalese. *Ipomoea batatas* and *I. quamoclit* may have arrived in India with the Portuguese between 1498 and 1505, but they surely arrived early. Likely, Portuguese mariners brought with them other New World members of the family in the 1500s. Historical documents not yet found may establish the dates.

Regardless of when *I. quamoclit* arrived in India, it was moved to Europe before 1556, because della Casa sent seeds to Camerarius from Florence before that year. The next few records are from the 1570s and 1580s – the illustration by Jacopo Ligozzi of Florence made between 1577 and 1587; Caesalpino had it at Pisa by 1580; and the Aldrovandi specimen in Bologna from seeds received in 1583. There are no records that Hernández brought *I. quamoclit* back from Mexico to Spain in 1577.

*Ipomoea quamoclit* was in Europe, perhaps in Seville (Colmeiro 1858: 32, 131, 152, 165), but certainly in Florence at the *Orto Botanico* before 1556, also in Germany before 1556, then in Pisa by 1580 and Bologna by 1583. Thus, *I. quamoclit* was in Europe at the most 64 years after the Americas were discovered. A more specific dating of when *I. quamoclit* arrived in either Europe or India is not currently possible. Nor is it feasible to determine which country actually first imported it, although the preponderance of records came from Italy. There were literally hundreds of ships traveling between Europe, the Americas, and Asia during the late 1400s and early 1500s (cf. Morison 1974:184-209, Gerbi 1985, Subrahmanyam 2012:65). American voyages were controlled from Seville (Allen 1997:411); Asian trips from Seville and Lisbon. Among the mariners were Italians, Spanish, and Portuguese. Numerous individuals could have returned the seeds of *I. quamoclit* to Europe from either direction, and the species was perhaps introduced several times as happened later. Miller (1735), for example, said seeds were generally imported each spring from the Caribbean.

The plants from both America and India were moved because of their medical uses; the first people to write about the vines were all physicians or pharmacists -- Caesalpino, Camerarius, Clusius, and Pona. As scholars and clerics traded seeds and information between the middle 1500s and early 1600s, the species was more widely distributed in Europe. The over-riding interest in the vines was as a medicine until well into the 1600s and 1700s.

How *Quamoclit* came to be applied to both a tree and a vine is uncertain. *Quamoclit* was apparently being applied to the vine in Europe before Hernández’s records of it for a tree arrived there in 1577. Possibly there was a mix-up in Hernández’s manuscripts from 1577 creating that situation, but more likely is that the Aztecs applied the same word to both *Ipomoea* and *Pithecellobium*. Such mixing of completely distinct organisms under the same folk name is widespread among indigenous groups even though it may appear odd to people steeped in Western European scientific traditions. Even those with European views practice such classification, as shown by the diversity of plants with the name “apple.”

It cannot be established whether *Quamoclit* was first brought into Europe from the Americas or from India. *Ipomoea quamoclit* was certainly in both Florence and Germany before 1556. It is likely that the name and plants arrived in India in the 1500s with the Portuguese.

Although an attempt was made to link *Quamoclit* with Greek, there is nothing supporting that view. *Quamoclit* is of Nahuatl origin and records seem to date its use to before 1556 when Camerarius presumably had that name with the seeds he received before della Casa’s death; later Hernández recorded *Quamoclit* between 1570 and 1577. Given the multiple ways that the Nahuatl words were transcribed by the Europeans, there is no way to tell for sure what the original words may have been. *Quamoclit* is probably a corruption of the original Nahuatl sounds; it may be that *Quamoclit* and *Guamuchil* are orthographic variants of *Coacamachalli.*

The Sanskrit *kāmalatā* is a transfer of that name from the native Indian *Nelumbo nucifera* to the introduced *I. quamoclit*. As in all parts of the world, names of native species are sometimes expanded and used for introduced species. A newer example of reassignment is the Spanish name *cundeamor.* Most documents state that *cundeamor* first meant *Momordica* in Europe and later was used there and in the Americas for *I. quamoclit*. However, the first record found was its use for the *Ipomoea* in Europe (Ramón-Laca Menéndez de Luarca 1999:101-102, 106), preceding any connection with *Momordica*. Both *kāmalatā* and *cundeamor*, now applied to *I. quamoclit*, refer to love. “Love,” however, is sex in the Indian name and “loving to spread” in the Spanish.

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References Cited

Adams, D. W. 2004. Restoring American Gardens: An Encyclopedia of Heirloom Ornamental Plants, 1640-1940. Portland, Oregon: Timber Press, Inc.

Aldén, B., S. Ryman & M. Hjertson. 2009. Våra kulturväxters namn - ursprung och användning. Formas, Stockholm (Handbook on Swedish cultivated and utility plants, their names and origin). Formas Research Council for Environment, Agricultural Sciences and Spatial Planning, Stockholm.

Allen, J. L. 1997. North American Exploration, Volume 1: A New World Disclosed. Lincoln: University of Nebraska Press.

Anagnostou, S. 2007. International transfer of medicinal drugs by the Society of Jesus (sixteenth to eighteenth centuries) and connections with the work of Carolus Clusius. Pp. 293-312 In F. Egmond, P. Hoftijzer, and R. P. W. Visser. Carolus Clusius. Towards a Cultural History of a Renaissance Natuarlist. Amsterdam: Koninklijke Nederlandse Akademie van Wetenschappen. <http://www.knaw.nl/Content/Internet_KNAW/publicaties/pdf/20061066_Clusius_13.pdf>.

Asso, I. J. de. 1793. Clarorum Hispaniensium atque exterorum epistolae. Zaragoza: Imprenta Real.

Austin, D. F. 1975. Convolvulaceae In: Flora of Panama. Annals of the Missouri Botanical Garden 62:147-224.

Austin, D. F. 1980. Convolvulaceae 1:288-363 In Dassenayake, M. D. & F. R. Fosberg, eds. A Revised Handbook of the Flora of Ceylon. New Delhi: Amerind Publishing Co. Pvt. Ltd.

Austin, D. F. 1982a. Convolvulaceae, Fam. 165. In: G. Harling & B. Sparre, eds. Flora of Ecuador No. 15:1-99.

Austin, D. F. 1982b. Convolvulaceae In: Z. Luces de Febres & J.A. Steyermark, eds. Flora de Venezuela. Vol. 8, pt. 3:15-226.

Austin, D. F. 1986. Convolvulaceae pp. 652-661 and Cuscutaceae pp. 661-666. In: T. Barkley, ed. Flora of the Great Plains. Lawrence: University Press of Kansas.

Austin, D. F. 1988. Taxonomy, evolution, and genetic diversity of sweet potatoes and related wild species. Pp. 27-60 In: Exploration, Maintenance and Utilization of Sweet Potato Genetic Resources, Proceedings of the Planning Conference, Centro Internacional de la Papa, Lima, Peru.

Austin, D. F. 1998a. Convolvulaceae Pp. 377‑424 and Cuscutaceae Pp. 369-370. 1998. ln:Steyermark, J. A., P. E. Berry, and B. K. Holst, eds. Flora of the Venezuelan Guyana Volume 4. Caesalpinaceae‑Ericaceae. St. Louis: Missouri Botanical Garden Press.

Austin, D. F. 1998b. Convolvulaceae Pp. 18-32 In: Cremers, G. and M. Hoff. 1998. Inventaire Taxonomique des Plantes de la Guyane Francaise VII – Les Dicotyledones. 3ème Partie: Connaraceae a Fabaceae. Muséum National d’Histoire Naturelle, Institut d’Ecologie et de Gestion d la Biodiversité, Ministère de l’Environnement, Paris.

Austin, D. F. 2005. Convolvulacae Pp. 245-252, 813 In: Staples, G. W. and D. R. Herbst. A Tropical Garden Flora. Plants Cultivated in the Hawaiian Islands and other Tropical Places. Honolulu, HA: Bishop Museum Press.

Austin, D. F. 2008. *Evolvulus alsinoides* (Convolvulaceae): An American herb in the Old World. Journal of Ethnopharmacology 117:185-198.

Austin, D. F. and P. B. Cavalcante. 1982. Convolvuláceas de Amazônia. Belém, Museu Emilio Goeldi, Publicaçoes Avulsas No. 36:1-134.

Austin, D. F. and S. Ghazanfar. 1979. Convolvulaceae In: E. Nasir & A.I. Ali, eds. Flora of West Pakistan 126:1-64.

Austin, D. F. and Z. Huamán. 1996. A synopsis of *Ipomoea* (Convolvulaceae) in the Americas. Taxon 45:3-38.

Austin, D. F., J. Piper and T. Beliz. 1998. Convolvulaceae Pp. 293-300 In: Martin, P. S., D. Yetman, M. Fishbein, P. Jenkins, T. R. van Devender and R. K. Wilson. 1998. Gentry’s Río Mayo Plants. The Tropical Deciduous Forest & Environs of Northwest Mexico. Tucson: University of Arizona Press.

Austin, D. F., J. A. McDonald, and G. Murguía-Sánchez. 2012. Convolvulaceae Pp. 318-352. In: Sousa, M., Davidse, G. and Knapp, S., eds. Flora Mesoamericana Vol. 4(2). Rubiaceae a Lamiaceae. Universidad Nacional Autónoma de México, México, D.F.; Missouri Botanical Garden, St. Louis; The Natural History Museum, London.

Austin, D. F., M. Costea, R. Brummitt, A. Krings, and C. Allen. Under review. Convolvulaceae, in Flora of North America Editorial Committee, eds. The Flora of North America. Vol. 14.

Bailey, L. H. 1949. Manual of Cultivated Plants. New York: Macmillan Co.

Barona, J. L. 2007. Clusius’ exchange of botanical information with Spanish scholars. Pp. 99-116 In F. Egmond, P. Hoftijzer, and R. P. W. Visser. Carolus Clusius. Towards a Cultural History of a Renaissance Natuarlist. Amsterdam: Koninklijke Nederlandse Akademie van Wetenschappen. <http://www.knaw.nl/Content/Internet_KNAW/publicaties/pdf/20061066_Clusius_05.pdf>.

Barrelier, J. 1714. Plantae per Gallium , Hispaniam et Italiam observatae: iconibus aeneis exhibitae ... Parisiis: Apud Stephanum Ganeau.

Bauhin, C. 1671. Pinax Theatri botanici ... Basileæ: Impensis Joannis Regis.

Bauhin, J. and J. H. Cherler. 1619. Historiae plantarum generalis novae et absolutiss. Ebroduni: Ex Typographia Societatis Caldorianae. <http://books.google.com/books?id=wcxAAAAAcAAJ&printsec=frontcover&dq=Historiae+plantarum&hl=en&sa=X&ei=TEe4T_2gHvDPiAKMkMmWBw&ved=0CEMQ6AEwAg#v=onepage&q&f=false>.

Bedini, G., F. Garbari, and A. Tosi. 2003. Museums and collections of Pisa University: An archive of arts and sciences. Atti della Società toscana di scienze naturali, Memorie, Serie B 110:195-199.

Boerhaave, H. 1710. Index plantarum, quae in Horto Academico Lugduno Batavo reperiuntur [microform], conscriptus ab Hermanno Boerhaave. [Leiden]: Apud Cornelium Boutestein.

Borah, W. 1962. The Cortés Codex of Vienna and Emperor Ferdinand I**.** The Americas  
19(1):79-92.

Boyd, J. P., C. T. Cullen, J. Catanzariti, B. B. Oberg, et al., eds. 1950--. The Papers of Thomas Jefferson, 33 vols. Princeton: Princeton University Press.

Brasileiro, B. G., V. R. Pizziolo, D. R. Raslan, C. M. Jamal, D. Silveira. 2006. Antimicrobial and cytotoxic activities screening of some Brazilian medicinal plants used in Governador Valadares district. Revista Brasileira de Ciências Farmacêuticas 42(2): 195-202.

Britton, N.L., and A. Brown. 1898. An illustrated flora of the northern United States: Canada and the British possessions ... New York: C. Scribner’s Sons.

Brocklehurst, T. U. 1883. Mexico to-day: a country with a great future, and a glance at the prehistoric remains and antiquities of the Montezumas. London: John Murray.

Brouillet, L., F. Coursol, and M. Favreau. 2006. VASCAN. The database of Canadian vascular plants. <http://data.canadensys.net/vascan/search/> [Accessed 29 May 2012].

Browne, P. 1756. The civil and natural history of Jamaica. London: Printed for the author, and sold by T. Osborne and J. Shipton.

Burman, J. 1737. Thesaurus zeylanicus ... Amstelaedami: Apud Janssonio-Waesbergios & Salomonem Schouten.

Camerarius, J. 1588. Hortus medicus et philosophicus ... Francofurti ad Moenum [Frankfurt am Main]: [Apud Iohannem Feyerabend, impensis Sigismundi Feyerabendii, Henrici Dackii, & Petri Fischeri].

Caruel, T. 1858. Illustratio in hortum siccum Andreae Caesalpini. Florentiae : [Typis Le Monnier].

Caesalpino, A. 1583. De plantis libri XVI. Florentiae [Florence]: Apud Georgium Marescottum.

Chiarugi, A. 1953. Le date di fondazione dei primi Orti Botanici del Mondo. Giornale botanico italiano 60(4): 785-839.

Choisy, J. D. 1845. Convolvulaceae In: De Candolle, A. P. 1845. Prodromus systematis naturalis regni vegetabilis 9: 323-465. Parisii: Sumptibus Sociorum Treuttel et Würtz.

Clayton, J. 1755. Some remarks made on Dr Alston's dissertation on the sexes of plants (see vol. xxiv, p. 465) by two celebrated botanists of North America, both dated June 10, 1755. Gentleman's Magazine 25:407-408.

Clusius, C. 1611. Caroli Clvsii Atrebatis Cvrae posteriores ... [Antwerp]: In officina Plantiniana Raphelengii.

Colmeiro, M. 1858. La botánica y los botánicos de la península Hispano-Lusitana: Estudios bibliográficos y biográficos. Madrid: Imprenta de M. Rivadeneyra.

Colmeiro, M. 1859. Manual completo de jardinería ... Madrid: Imprenta de D. Cipriano Lopez. 2:103, 3:169.

Colonna, F. 1616. Fabii Columnae Lyncei Minus cognitarum rariorumque nostro coelo orientium stirpium ekphrasis. Romae: Jacobum Mascardum.

Craigie, W. A. 1888. Volume 8, pt. 1 Q, R. In: Murray, J. A. H. A new English dictionary on historical principles founded mainly on the materials collected by the Philological Society. Oxford: Clarendon Press.

Cuthbertson, B. 1997. John Cabot and the Voyage of the Matthew. Halifax, Nova Scotia: Formac Publishing Company.

Daléchamps, J. 1586-87. Historia generalis plantarum …Lugduni [Lyon] : Apud Gulielmum Rouillium.

De Candolle, A. 1855. Geographie botanique raisonnée ou exposition des faits principaux et des lois concernant la distribution géographique des plantes de l’epoque actuelle, Volume 2. Paris, V. Masson.

Dehnen-Schmutz, K. J. Touza, C. Perrings, M. Williamson. 2007. The horticultural trade and ornamental plant invasions in Britain. Conservation Biology 21(1): 224–231.

De Théis, A. 1810. Glossaire de botanique ou Dictionnaire étymologique de tous les noms et termes relatifs à cette science. Paris: G. Dufour.

Dictionary.com. 2012. Dictionary.com, LLC <http://dictionary.reference.com/browse/quamoclit?s=t>; [Accessed 31 May 2012].

Duke, J. A. M. J. Bogenschutz-Godwin, A. R. Ottesen. 2008. Duke’s Handbook of Medicinal Plants of Latin America. Boca Raton: CRC Press.

Dymock, W., C. J. H. Warden, and D. Hooper. 1890-1893. Pharmacographia indica: A history of the principal drugs of vegetable origin, met with in British India. Volume 2. London: K. Paul, Trench, Trübner & Co.

Dymock, W. 1885. The vegetable materia medica of western India, Edition 2. Bombay: Education Society’s Press.

Dutt, U. C. and G. King. 1877. The materia medica of the Hindus, Calcutta: Thacker, Spink & Co.

Egmond, F. 2007. Clusius and friends: Cultures of exchange in the circles of European naturalists. Pp. 9-48. In F. Egmond, P. Hoftijzer, and R. P. W. Visser. Carolus Clusius. Towards a Cultural History of a Renaissance Natuarlist. Amsterdam: Koninklijke Nederlandse Akademie van Wetenschappen.

Fang Rhui-cheng and Huang Shu-hua. 1979. Flora reipublicae popularis Sinicae delectis florae reipublicae popularis Sinicae agendae academiae Sinicae edita : Tom 64(1). Angiospermae. Dicotyledoneae. Convolvulaceae, Polemoniaceae, Hydrophyllaceae. Peking : Science Press.

Fang, R.-C. and G. W. Staples. 1995. Convolvulaceae Pp. 271-321 in Wu, Z.-Y. and Raven, P., eds. Flora of China. Science Press and Missouri Botanical Garden Press, Beijing and St. Louis, MO.

Felger, R. S., M. S. Johnson and M. F. Wilson. 2001. The Trees of Sonora, Mexico. Oxford University Press, New York.

Forlong, J. G. R. 2008. Encyclopedia of Religions: E-m. New York: Cosmo Classics.

Fuchs, L. 1542. De historia stirpium commentarii insignes. Basileae: In officina Isingriniana.

Galleria degli Uffizi. 1990. Discover the flowers of the Uffizi Gallery. Botanical notes and editing by Christian Holtz. Florence. 45 pp. •Flowers depicted in about 20 paintings dating from 1300 to 1700. Published to accompany the XXIIIrd International Horticultural Congress, Florence. [not seen, cited on Hunt Botanical Library pages 2012. Hunt Botanical Art record: 20021 (of the original in the Galleria degli Uffizi). <http://128.2.21.109/fmi/xsl/roa-institution/recordlist.xsl;jsessionid=2F8511755536B0697787FE40FD75710A.cwpe1?-lay=Institution+2&-max=25&-findall=&-lay.response=Institution+2&-sortfield.1=Publications&-sortorder.1=ascend&-db=BotanicalArt&-encoding=UTF-8&-grammar=fmresultset&-skip=515>].

Garbari, F. 2006. From the garden of simples to the botanical garden of Pisa University: History, roles and perspectives. Atti della Società toscana di scienze naturali, Memorie, Serie B 113:91-93.

Gerard, J and T. Johnson. 1633. The Herbal or General History of Plants. London: Printed by Adam Islip[,] Joice Norton and Richard Whitakers, 1633. Reprinted by New York: Dover Publications, 1975.

Gerbi, A. 1985. Nature in the New World: From Christopher Columbus to Gonzalo Fernandez de Oviedo. Translated by Jeremy Moyle. Pittsburgh: University of Pittsburgh Press. [First published in Italian in 1975 as La natura delle Indie Nove: Da Cristoforo Colombo a Gonzalo Fernández de Oveido. Milan: Riccardo Ricciardi Editore]

Gómez de la Maza, M. 1889. Ensayo de farmacofitologia cubana. Habana: La Propaganda Literaria.

Guigues, P. 1905. Les noms Arabes dans Sérapion "Liber de simplici medicina." Essai de restitution et d'identification de noms Arabes de Médicaments usités au moyen âge. Journal asiatique (Paris), 10e série, 4 :473-546; 6:49-112.

Harlan, J. R., Jan M. J. de Wet, Ann B. L. Stemler. 1976. Origins of African Plant Domestication. The Hague: Mouton.

Haugen, J. D. 2009. Borrowed borrowings: Nahuatl loan words in English. Lexis: E-Journal in English Lexicology 3: 63–106. lexis.univ-lyon3.fr [Accessed 26 Feb. 2012].

Hawkes, J. G. 1998. The introduction of New World crops into Europe after 1492. Pp. 161-183 In Prendergast, H., N. L. Etkin, D. R. Harris and P. J. Houghton. Plants for Food and Medicine. Kew, UK: The Royal Botanic Garden.

Hermann, P. 1690. Florae Lugduno-Batavae flores ... [Leiden]: Apud Fredericum Haaring.

Hermann, P. 1726. Musaeum Zeylanicum ... ed. 2. Lugduni Batavorum [Leiden]: Danielem vander Vecht.

Hermann, P. and J. Boecler 1731. Cynosura materiae medicae ..., Volume 3 (<http://books.google.com/books?id=inFAAAAAcAAJ&pg=PA361&lpg=PA361&dq=%22Convolvulus+pennatus+exoticus%22&source=bl&ots=GZ8IOUaZGa&sig=XkSV2A5sSonCYv6V_BuwtuQMZfU&hl=en&sa=X&ei=RfpkT7zJF8nJiQL0mbToBg&ved=0CCMQ6AEwATgK#v=onepage&q=%22Convolvulus%20pennatus%20exoticus%22&f=false>).

Hernández, F. 1651. Rerum medicarum Nouae Hispaniae thesaurus, seu, Plantarum animalium mineralium mexicanorum historia ... Romae: Ex typographeio Vitalis Mascardi.

Hernández, F. 1942-1946. Ochoterena, I., ed. Historia de las plantas de Nueva España. 3 Vol. Instituto de Biología de la Universidad Nacional Autónoma de México, Impresta Universitaria México. Online version 2004-2010, <http://www.ibiologia.unam.mx/plantasnuevaespana/index.html>.

Hernández, F., F. Jiminez, and N. León. 1615. Cuatro libros de la naturaleza y virtudes medicinales de las plantas y animales de la Nueva España. Reimpresso Morelia [Mexico]: Imp. y lit en la Escuela de Artes, á cargo de José Rosario Bravo,1888.

Ho, Ping-Ti. 1956. American food plants in China. Plant Science Bulletin 2(1):1-3.

Janick, J. and G. Caneva. 2005. The first images of maize in Europe. Maydica 50:71-80.

Janick, J. and H. S. Paris. 2006. The Cucurbit images (1515--1518) of the Villa Farnesina, Rome. Annals of Botany 97:165-176.

Jenkins, J. A. 1948. The origin of the cultivated tomato. Economic Botany 2:379-392.

Jones, W. 1795. Botanical observations on select Indian plants. Asiatick Researches 4:237-312.

Karttunen, F. 1992. An Analytical Dictionary of Nahuatl. Norman: University of Oklahoma Press.

Keller, H. A. 2011. Problemas de la etnotaxonomía Guaraní: “Las plantas de los animales.” Bonplandia 20(2):111-136.

Leclercq, J. 1884. Antiquite’s Mexicaines I. Tula. Bulletin de la Société royale belge de géographie 8:517-558.

León, Hmo. and Hmo. Alain. 1957-1963. Flora de Cuba, Vol. 2. Reprinted 1974by Otto Koeltz Science Publishers, Koenigstein.

Lindley, J. 1838. Flora medica; a botanical account of all the more important plants used in medicine: in different parts of the world. London: Longman, Orme, Brown, Green, and Longmans.

Linnaeus, C. 1737. Hortus Cliffortianus ... Amstelaedami [Amsterdam]:[s.n.].

Linnaeus, C. 1747. Caroli Linnaei ... flora zeylanica ... Prostat Amstelaedami: Apud J. Wetstenium.

Linnaeus, C. 1748. Hortus upsaliensis ... Stockholmiae: Sumtu & literis Laurentii Salvii.

Linnaeus, C. 1753. Species plantarum. Holmiae [Stockholm]: Impensis Laurentii Salvii.

Liogier, A. H. 1974. Diccionario Botanico de Nombres Vulgares de la Espaniola. Santo Domingo: Impresora Univ. Nacional Pedro Henriquez Ureña.

Lippi, D. 2007. The diseases of the Medici family and the use of phytotherapy. Evidence-Based Complementary Alternative Medicine 4(Suppl 1): 9–11.

Lunan, J. 1814. Hortus jamaicensis: or A botanical description, (according to the Linnean system) and an account of the virtues, &c., of its indigenous plants hitherto known, as also of the most useful exotics. Jamaica: Printed at the office of the St. Jago de la Vega gazette.

Meyer, E. H. T. 1863. On the origin of herbaria. Journal of Botany 1:297-302.

Meyer, F. G., E. E. Trueblood, and J. L. Miller. 1999. The Great Herbal of Leonhart Fuchs. De historia stirpium commentarii insignes, 1542. Stanford, CA: Stanford University Press.

Miller, P. 1735. The gardeners dictionary ... London,Printed for the Author, Abridg’d from the folio ed.

Miller, P. 1752. The Gardeners dictionary ... The sixth edition; carefully revised; and adapted to the present practice. London: Printed for the author; And Sold by John and James Rivington, at the Bible and Crown in St. Paul’s Church-Yard.

Miller, P. 1754. The Gardeners Dictionary ... Abridged ... fourth edition. Printed for the author : and sold by John and James Rivington, London.

Miller, P. 1768. The gardeners dictionary ... London : Printed for the author and sold by John and Francis Rivington ... [and 23 others].

Miller, R. E., J. A. McDonald, and P. S. Manos. 2004. Systematics of *Ipomoea* subgenus *Quamoclit* (Convolvulaceae) based on ITS sequence data and a Bayesian phylogenetic analysis. American Journal of Botany 91(3):1208-1218.

Moggi, G. 2008. L’erbario di Andrea Cesalpino Pp. 3-20, 114-186 in Nepi, C. and E. Gusmeroli. Gli erbari aretini da Andrea Cesalpino ai giorni nostri. Firenze: Firenze University Press.

Monlau, J. 1879. Compendo de historia natural ... 2ª. Edición. Barcelona: Liberia de Juan y Antonio Bastinos, Imp. De J. Jepús.

Monier-Williams, M. 1899. A Sanskrit-English dictionary etymologically and philologically arranged with special reference to cognate Indo-European languages ... New ed., greatly enlarged and improved, with the collaboration of E. Leumann, C. Cappeller ... and other scholars. Oxford, The Clarendon Press. <http://www.sanskrit-lexicon.uni-koeln.de/mwquery/>.

Morison, R. 1680. Plantarum historiae universalis oxoniensis, pars secunda [-tertia] ... Oxonii [Oxford]: E Theatro Sheldoniano.

Morison, S. E. 1974. The European discovery of America: the southern voyages 1492-1616. New York: Oxford University Press.

Nayar, T. S., A. Prasiya Beegam, N. Monhanan, G. Rajkumar and M. Sibi. 2006. Flowering Plants of Kerala--A Handbook. Tropical Botanic Garden and Research Institute, Palode, Thiruvananthapaurm Kerala, India.

Nicolson, D. H., C. R. Suresh and K. S. Manilal. 1988. An Interpretation of Van Rheede’s Hortus Malabaricus. Koeltz Scientific Books, Koenigstein, Germany. Convolvulaceae pp. 86-94.

O’Donell, C. A. 1959. Las especies americanas de *Ipomoea* L. sect. *Quamoclit* (Moench) Griseb. Lilloa 29: 19–86.

OED online. 2012. Oxford English Dictionary, Third edition, December 2007; online version March 2012. <http://www.oed.com.ezproxy2.library.arizona.edu/view/Entry/155898>; [Accessed 31 May 2012]. An entry for this word was first included in *New English Dictionary*, 1902.

Ortiz de Montellano, B. R. 1986. Aztec medicinal herbs: Evaluation of therapeutic effectiveness. Pp. 113-127 In Etkin, N. L. Plants in Indigenous Medicine & Diet: Biobehavioral Approaches. New York: Redgrave Publishing Co.

Oviedo, G. 1526. De la Natural Hystoria de las Indias. Facsimile edition, No. 85, 1969. Chapel Hill: University North Carolina Press.

Parkinson, J. 1629. Paradisi in sole paradisus terrestris .... London: Printed by Humfrey Lownes and Robert Young.

Parkinson, J. 1640. Theatrum botanicum = The theater of plants ... London: Printed by Tho. Cotes.

Parrotta, J. A. 2001. Healing Plants of Peninsular India. New York, NY: CABI Publishing.

Peng, C.-I. 2000. Revised Draft of Index to Codes of Vascular Plants of Taiwan. Academia Sinitica Taipei, Taiwan.

Phaf-Rheinberger, I. and T. De Oliveira Pinto. 2008. AfricAmericas: Itineraries, Dialogues, and Sounds. Madrid: Iberoamericana Editorial.

PIER 2012. Pacific Island Ecosystems at Risk. Plant threats to Pacific ecosystems. Institute of Pacific Islands Forestry*.* <http://www.hear.org/pier/commonnames/details/ipomoea_quamoclit.htm> [Accessed 29 May 2012].

Plukenet, L. 1696. Almagestum botanicum, sive phytographiae pluc’netianae Onomasticon. Londini: Sumptibus Authoris.

Pona, G. 1608. Plantae, seu simplicia, ut vocant, quae in baldo monte et in via ab Verona ad baldum reperiuntur … secunda editio. Basilae: Sumptibus Lazari Zetzneri.

Powell, D. A. and G. W. Staples. 1979. The Convolvulaceae of the Lesser Antilles. Journal of the Arnold Arboretum 60(2):219-271.

Puchtler, H. and S.H. Meloan. 1987. On the history of brazilin and hematoxylin. Georgia Journal of Science 45:7-14.

Rafinesque, C. S. 1830. Medical Flora or Manual of the medical botany of the United States of North America. Philadelphia: Atkinson & Alexander.

Ramón-Laca Menéndez de Luarca, L. 1999. Las plantas americans en la obra de Charles de l’Écluse: primeras citas en las cartas de Juan de Castañeda. Anales Jardin Botanico de Madrid 57(1):97-107.

Ray, J. 1693. Historia plantarum generalis ... Londini: Typis Mariae Clark: Prostant apud Henricum Faithorne ...Tome 1.

Reader, A. 1890. Fishes, flowers, & fire as elements and deities in the Phallic faiths & worship of the ancient religions of Greece, Babylon, Rome, F, &c: with illustrative myths and legends. London: A. Reader.

Real Academia Española. 2012. Diccionario De La Lengua Española - Vigésima segunda edición. <http://buscon.rae.es/draeI/>. [Accessed 29 May 2012].

Robelo, C. A. 1904. Diccionario de aztequismos. Cuernavaca: Imprenta del autor.

Rumphius (Rumpf, G. E.). 1747. Herbarium amboinense ... Amstelaedami [Amsterdam]: Apud Fransicum Changuion, Joannem Catuffe, Hermannum Uytwerf.

Safford, W. E. 1905. The Useful Plants of the Island of Guam. Washington, DC: Government Printing Office.

Secretaría de Gobernación. 1988. Los Municipios de Sinaloa. Mexico. <http://books.google.com>.

Sahagún, B. de, ed. A. J. O. Anderson, and C. E. Dibble. 1963. General history of the things of New Spain. Book 11, Earthly things.[Santa Fe, N.M.] : School of American Research; [Salt Lake City]: University of Utah.

Siméon, R. 1885. Diccionario de la Lengua Náhuatl or Mexicana. Reprinted in 1981 by Siglo Veintiuno Editores, S.A., Mexico City.

Sloane, H. 1696. Catalogus plantarum quae in insula Jamaica ... Londini: Impensis D. Brown.

Soldano, A. 2005. L’Erbario di Ulisse Aldrovandi. Vol. XV. Atti dall’Istituto Veneto di Scienze Lettere ed Arti Tomo 163(1):52-55, no. 136, fig. 12.

Standley, P. C. 1922. Trees and Shrubs of Mexico. Contributions from the United States National Herbarium 23(2):171-515 + xxxvi. Both parts reprinted 1971 by Smithsonian Press, Washington, DC.

Stevens, J. 1726. A new Dictionary, Spanish and English, and English and Spanish. London: Printed for J. Darby, etc. <http://books.google.com/> [Accessed 1 June 2012].

Streisfeld, W. J. and M. D. Rausher. 2009. Genetic changes contributing to the parallel evolution of red floral pigmentation among Ipomoea species. New Phytologist 183:751-763.

Subrahmanyam, S. 2012. The Portuguese Empire in Asia, 1500-1700: A Political and Economic History. Hoboken: John Wiley & Sons.

Terwen-Dionisius, E. M. 1994. Date and design of the botanical garden in Padua. Journal of Garden History 14(4): 213-235.

Tomasi, L. C. 1983. Projects for botanical and other gardens: A 16th century manual. Journal of Garden History 3(1): 1-34.

Tosi, A., ed. 1989. Ulisse Aldrovandi e la Toscana. Carteggio e testimonianze documentarie. Firenze: L. S. Olschki.

Tournefort, J. P. 1700-[1703]. Institutiones rei herbariæ. Parisiis: E Typographia Regia], vol. 2:116, tab. 39.

Ubrizsy Savoia, A. 1996. The influence of New World species on the botany of the 16th century. Asclepio 47I(2):163-172.

Ubrizsy Savoia, A. 2007. Some aspects of Clusius’ Hungarian and Italian relations. Pp. 267-292 In F. Egmond, P. Hoftijzer, and R. P. W. Visser. Carolus Clusius. Towards a Cultural History of a Renaissance Naturalist. Amsterdam: Koninklijke Nederlandse Akademie van Wetenschappen. <http://www.knaw.nl/Content/Internet_KNAW/publicaties/pdf/20061066_Clusius_12.pdf>.

van ‘t Klooster, C. I. E. A. J. C. Lindeman and M. J. Jansen-Jacobs. 2003. Index of vernacular plant names of Suriname. Blumea, Supplement 15:1-322.

Van Rheede, H. 1692. Hortus Indicus Malabaricus ... Volume 11. Amstelaedami [Amsterdam]:sumptibus Johannis van Someren, et Joannis van Dyck.

Van Royen, A. 1740. Florae leydensis prodromus: exhibens plantas quae in Horto academico Lugduno-Batavo aluntur. Lugduni Batavorum [Leiden]: Apud Samuelen Luchtmans academiae typographum.

Varey, S., ed. 2000. The Mexican treasury: the writings of Dr. Francisco Hernández. Translated by R. Chabrán, C. L. Chamberlin and S. Varey. Stanford: Stanford University Press.

Webster, N. and N. Porter. 1913. Webster’s revised unabridged dictionary of the English language ... Springfield, MA: G. & C. Merriam Co.

Wood, A. 1846. A Class-book of Botany … New York: A.S. Barnes & Burr.

Woodhead, E. 1998. Early Canadian Gardening: An 1827 Nursery Catalogue. Montreal: McGill-Queens University Press.

Wuhan Botanical Garden. 2012. 中国科学院武汉植物园　中国·武汉 武昌磨山 / Wuhan Botanical Garden, Chinese Academy of Sciences, Wuhan, China. <http://www.wbg.cas.cn/kxcb/mrhx/khzw/200910/t20091022_2587853.html> [Accessed 29 May 2012].

Yaya, I. 2008. Wonders of America. The curiosity cabinet as a site of representation and knowledge. Journal of the History of Collections 20(2):173-188.