

## BOTANICAL HISTORY

## The Madeiran plants collected by Sir Hans Sloane in 1687, and his descriptions

Miguel Menezes de Sequeira,<sup>1</sup> Arnoldo Santos-Guerra,<sup>2</sup> Charles E. Jarvis,<sup>3</sup> Andreas Oberli,<sup>4</sup> Mark A. Carine,<sup>3</sup> Michael Maunder<sup>5,6,7</sup> & Javier Francisco-Ortega<sup>7,6</sup>

1 *Departamento de Biologia, Universidade da Madeira, Campus da Penteada, 9000-390 Funchal, Madeira, Portugal*

2 *Unidad de Botánica, Jardín de Aclimatación de La Orotava, Instituto Canario de Investigaciones Agrarias, Puerto de La Cruz, Calle Retama Num. 2, Tenerife, Canary Islands, Spain 38400*

3 *Department of Botany, Natural History Museum, Cromwell Road, London SW7 5BD, United Kingdom*

4 *Bermuda Mount, PO Box 274, Liguanea, Kingston 6, Jamaica*

5 *Al Ain Wildlife Park and Resort, Al Ain, Abu Dhabi, United Arab Emirates*

6 *Center for Tropical Plant Conservation, Fairchild Tropical Botanic Garden, Coral Gables, Florida 33156, U.S.A.*

7 *Department of Biological Sciences, Florida International University, University Park, Miami, Florida 33199, U.S.A.*

Author for correspondence: *Javier Francisco Ortega, ortegaj@fiu.edu*

**Abstract** The Macaronesian Islands comprise the Atlantic archipelagos of Azores, Madeira, Selvagens, Canaries and Cape Verde. These islands were a major focus for plant exploration during the 17th and 18th centuries. Sir Hans Sloane (1660–1753), one of the most important patrons and sponsors of natural sciences and botanical research, visited Madeira on his way to Jamaica in 1687. Although he stayed in Madeira for only three days, he collected plant specimens of 38 taxa (including one brown alga) and made important observations concerning the flora and fauna of Madeira from near Funchal. Sixty-six polynomial names of plants from the island are recorded in Sloane's published work along with 18 copperplate engravings, ostensibly from Madeira, although our study shows that only thirteen of them are of taxa occurring on the island. Fourteen of the sixty-six polynomials reported by Sloane relate to Macaronesian endemic taxa, six of them restricted to Madeira. Our study shows that nine of the fifteen polynomials that he putatively recorded for Madeira and/or the Antilles or for which he was unsure of their origin are from the West Indies and do not occur on this Macaronesian island. Two of the taxa that are listed for Madeira and the Caribbean Islands were likely to be present in both insular systems. Although there is evidence of earlier botanical explorations in Macaronesia, the herbarium collections made by Sloane in Madeira represent the earliest documented plant hunting expedition to Macaronesia, and Sir Hans Sloane can be considered as one of the pioneers of botanical exploration in these Atlantic Islands. Sloane's records provide an early floristic study of a diverse island flora.

**Keywords** Caribbean Islands; history of botanical collections; Macaronesia; oceanic islands; plant-hunters; plant illustrations; pre-Linnaean taxonomy

### ■ SIR HANS SLOANE AND PRE-LINNAEAN PLANT EXPLORATION OF THE MACARONESIAN ISLANDS

Plant exploration during the 17th and 18th centuries provided a basis for the development of plant systematics as a distinct scientific discipline (Stearn, 1958) and for the establishment of botanic gardens as major scientific institutions (Withers, 1999). The increasing importance of science during these two centuries was enhanced by botanical exploration associated with travels and expeditions to the European colonies (Janick, 2007).

The Macaronesian region, comprising the archipelagos of the Azores, Madeira, Selvagens, Canaries and Cape Verde, all of which are located relatively close to the European and African continents, was a focus of plant-hunting during this period (Sánchez-Pinto, 2004; Francisco-Ortega & al., 2009, in press). A number of plant collectors visited Macaronesia during these pre-Linnaean years (Vieira, 1999; Herrera Piqué, 2006). Some expeditions were en route to the Far East (e.g.,

James Cuninghame in 1697–1698 [Santos-Guerra, 1993; Francisco-Ortega & al., in press] and William Dampier in 1699 [Dampier, 1703]). Others were bound for the New World (e.g., Louis Eonches Feuillée in 1708 [Feuillée, 1714]). Travellers destined for the African continent included Jean Mocquet in 1601 (Pico & Corbella, 2000) and Michel Adanson in 1749 (Adanson, 1757), and there were also those attempting circumnavigation (e.g., William Dampier in 1683 [Dampier, 1697]).

Notable among these early plant explorers was Sir Hans Sloane (1660–1753), one of the most influential figures in the history of natural science. Between 1687 and 1689, Sloane worked as physician to the Duke of Albermarle, Governor of Jamaica (MacGregor, 1994). In September 1687, Sloane left Portsmouth on the frigate *Assistance* en route to Jamaica and, on October 21st, the ship reached Madeira where it berthed until October 23th, eventually arriving in Jamaica on December 19th (Sloane, 1707).

Upon his return to England in 1689 Sloane became a focal point for botany, maintaining an extraordinary network of

botanists, naturalists and horticulturists (MacGregor, 1994). Sloane provided the founding collections for the British Museum (Caygill, 1994) and was a strong advocate for botanical research, donating to the Worshipful Society of Apothecaries the land where the Chelsea Physic Garden, the second oldest botanic garden in Britain, is located (Minter, 2000). Sloane also served as President of the Royal Society of London between 1727 and 1741, succeeding Sir Isaac Newton.

During his brief stay in Madeira, Sloane collected plant specimens of 38 taxa and these constitute the earliest documented herbarium collection from Macaronesia (see Appendix 2). They are preserved at the Natural History Museum in London (Britten, 1958; Cannon, 1994) where they form a small part of Sloane's herbarium collection that, in total, comprises over 120,000 specimens bound in 265 volumes. Sloane's collection is recognized as one of the most important pre-Linnaean herbaria in the world and images of the specimens collected by him during his travels to and from Jamaica have been digitized and are viewable at: [www.nhm.ac.uk/jdsml/research-curation/research/projects/sloane-herbarium/](http://www.nhm.ac.uk/jdsml/research-curation/research/projects/sloane-herbarium/).

Sloane also made a number of observations concerning the natural history of Madeira and, after his return to England, he published two major works (chiefly devoted to Jamaica) based on this trip. The first (Sloane, 1696) was a concise catalogue, in Latin, of the plants that he had observed and gathered during his time abroad. Forty-six polynomial names for Madeiran plants are listed, although Sloane was uncertain whether six entries had been recorded from Madeira or from the West Indies (see Appendix 2). In addition, three polynomials were listed as occurring both in Madeira and the Antilles (see Appendix 2). Twenty-one of these polynomial names were newly coined, and the remaining 25 taxa were assigned to pre-existing polynomials published by other botanists (see Appendix 2).

The second, much larger, work was written predominantly in English and comprises two volumes (Sloane, 1707, 1725) which not only list the plants found during his trip but also provide extensive descriptions of the natural history and ethnography of the visited islands. The account for Madeira is mostly limited to the first part of the first volume, and comprises twelve pages. Here (pp. 14–20) Sloane lists those plants that he observed on the island, adding details on Madeira's history and geography, its trade with continental Europe, hospital systems, wine industry, main crops, and native fishes and birds. A total of 57 plants from Madeira are listed. Eight additional taxa from Madeira are mentioned in other sections of this first volume, and the banana (*Musa × paradisiaca*) is recorded in the second volume as cultivated on the island. Twenty of the polynomials found in these two volumes were not listed in his earlier (Sloane, 1696) book (see Appendix 2). Five of the taxa are reported as occurring both in Madeira and the West Indies, and Sloane records that he is not certain if nine of the taxa were observed in Madeira or in the Caribbean Islands. In total, Sloane (1696, 1707, 1725) includes 66 polynomial descriptions of plants thought to be from Madeira. Our research indicates that 57 of these 66 polynomials are unequivocally from the island of Madeira while the remaining nine are from the Caribbean Islands (see Appendix 2).

Sloane (1707, 1725) also included 274 copperplates, mostly depicting terrestrial and marine organisms that he recorded during his trip. The original drawings were mostly made by Everard Kickius (Dandy, 1958), with the engravings executed by Michael van der Gucht. Eighteen figures spread over seven plates (see Figs. 1–4) of the first volume allegedly depict Madeiran species (five are, in fact, of taxa occurring in the West Indies). All but one of the figures are of terrestrial plants, the exception (see Fig. 1) being the marine brown alga *Stypocaulon scoparia*.

An early study of the Madeiran species described by Sloane was published by Edward V. Harcourt, a British naturalist with a particular interest in Madeiran birds (Harcourt, 1851b, 1854, 1855). From a letter to Charles Darwin, dated 31 May 1856, we know that Harcourt visited Madeira at least four times between 1847 and 1851. Harcourt had access to a copy of volume 1 of Sloane's *A voyage to the islands Madera ... Jamaica* in the library of West Dean House near Chichester in Sussex. This had been annotated by an anonymous botanist with tentative identifications, using Linnaean binomials, of the Madeiran plants recorded in pages 14–20. Harcourt contacted the Reverend Richard Lowe (1802–1874), author of the first comprehensive Flora of Madeira (Lowe, 1857–1868, 1872), for confirmation of these identifications and they, along with Lowe's comments, were published by Harcourt (1851a: 137–151). These are noted below where they differ from our identifications. However, it appears that neither Harcourt nor Lowe studied the specimens collected by Sloane and they did not note the additional Madeiran plants recorded by Sloane (1696, 1725).

In this paper, we provide a critical evaluation of the species described by Sloane (1696, 1707, 1725) from Madeira together with his corresponding herbarium specimens, and we try to establish the identity and provenance of Sloane's putative Madeiran plants and consider their significance in terms of the vegetation of Madeira and early study of the island's flora.

## ■ POLYNOMIAL NAMES OF MADEIRAN PLANTS DESCRIBED OR LISTED BY SLOANE

The 66 putative Madeiran taxa documented by Sloane (1696, 1707, 1725) are presented below with the polynomial names used by Sloane listed in alphabetical order, and numbered consecutively. These names are shown in bold font and transcribed as they are found in the works of Sloane, without editing. Entries that are listed under polynomials newly coined are marked with an asterisk and are given in full. Where Sloane uses polynomial names of earlier authors, only the first of these is shown, with additional synonyms indicated by “[...]”.

While most of the polynomials given by Sloane (1696) are also included in his later works from 1707 and 1725, some of the later names are not identical transcriptions of the originals. In such cases, we have given only the earlier polynomials from 1696.

Forty-five of the plants putatively reported from Madeira by Sloane (1696, 1707) have matching specimens in his herbarium, most of which are accompanied by labels in his

handwriting, and they generally match the polynomials listed in his books. Some of the specimens have additional labels written by James E. Dandy (1903–1976), correlating the material with Sloane's statements as to Madeiran provenance.

We have assigned to each plant entry the following descriptors:

**HAB.:** Description provided by Sloane (1696, 1707) of the locality and/or habitat where the taxon was found.

**DET.:** Taxonomic identification of plant entries. Taxa found in the Caribbean Islands and not occurring on Madeira during Sloane's visit are abbreviated as "Carib.," those endemic in Madeira and at least an additional Macaronesian archipelago are identified as "Mac.," those endemic in Madeira have the "Mad." abbreviation, taxa native in Madeira (excluding the endemics) are indicated as "native," and finally taxa non-native to Madeira are listed as "introduced". Nomenclature for Macaronesian taxa follows Jardim & Menezes de Sequeira (2008), and Haroun Tabraue & al. (2003) for marine algae, with that of Caribbean taxa following Adams (1972), Howard (1979, 1989) and Carrington (1993). Where there are no specimens and additional descriptions are either scanty or absent, we have been guided (where the result is plausible) by the synonym(s) into which Sloane's listed polynomials have been placed by later authors, notably Linnaeus (1753).

**HERB.:** Associated herbarium specimens found in Sloane's herbarium.

**NOTES:** Additional relevant information.

A taxonomic index for the 66 polynomial descriptions listed below can be found as Appendix 1 for this paper.

1. \* **Adiantum ramosum majus, foliis seu pinnulis tenuibus longis profunde laciniatis obtusis** (Sloane, 1696: 22; 1707: 16, Tab. 2, Fig. 3).  
**HAB.:** "In Insula Madera ultra urbem *Funchall* via qua montem itur collegi" (Sloane, 1696); "It grew in the island of *Madera*, about half a Mile beyond the Town of *Funchal*, by a Road side going towards the Mountain" (Sloane, 1707). **DET.:** *Davallia canariensis*, native [*Adiantum Capellis Veneris*? Linn.] (Lowe in Harcourt, 1851a: 140). **HERB.:** Vol. 1: 141 (BM000589460), two fragments. Copperplate for this plant entry is shown in Fig. 1.
2. \* **Alypum sive Herba terribilis procerior, cortice cinereo scabro, folio acuminato longiore** (Sloane, 1696: 124; 1707: 19, Tab. 5, Fig. 3).  
**HAB.:** "Prope urbem *Funchall* in insula Madera Collegi" (Sloane, 1696). **DET.:** *Globularia salicina*, Mac. **HERB.:** Vol. 5: 23 (BM000589042), two fragments. Copperplate for this plant entry is shown in Fig. 4.
3. \* **Amaranthoides fruticosum foliis longis angustis subtus niveis** (Sloane, 1696: 48; 1707: 43–44, Tab. 7, Fig. 3).  
**HAB.:** "In Madera, vel Caribearum Insularum una hanc plantam collegi" (Sloane, 1696); "in *Madera* Island, or one of the *Caribes*" (Sloane, 1707). **DET.:** *Rolandra fruticosa*, Carib. **HERB.:** Vol. 2: 107 (BM000588965), two fragments. **NOTES:** Sloane was clearly uncertain if this species was collected in Madeira or in the Caribbean Islands. The specimen is identifiable as *R. fruticosa*, a species that occurs in the Lesser Antilles (Howard, 1989).
4. **Amarantus siculus spicatus radice perenni. Boccone. Raj hist. p. 203** (Sloane, 1696: 49; 1707: 142).  
**HAB.:** "Circa urbem *St. Jago de la Vega* in fossis reperitur" (Sloane, 1696); "in Ditches, and several places about the Town of *St. Jago de la Vega*, and in the Island *Madera*" (Sloane, 1707). **DET.:** *Achyranthes sicula*, native. **HERB.:** Vol. 2: 119 (BM000588984), two fragments. **NOTES:** Dandy's annotation for this specimen states "Jamaica and Madeira" and therefore follows the description found in Sloane (1707). *St. Jago de la Vega* (= Santiago de la Vega, currently Spanish Town) refers to the capital of Jamaica during Sloane's visit. *Achyranthes aspera* occurs in Jamaica (Adams, 1972), but we could not find any specimen of this species from this island in Sloane's herbarium. The specimen found in Vol. 2: 118 is of *A. sicula* but does not have a label indicating its provenance.
5. \* **Apocynum fruticosum folio oblongo acuminato floribus racemosis** (Sloane, 1696: 89; 1707: 18, Tab. 4, Fig. 2).  
**HAB.:** "In Jamaica vel Caribeis Insulis collegi sed locum non memini" (Sloane, 1696); "I cannot exactly remember the place where I gathered it" (Sloane, 1707). **DET.:** *Triopterys jamaicensis*, Carib. **HERB.:** Vol. 4: 16 (BM000589788), one fragment. Copperplate for this plant entry is shown in Fig. 3. **NOTES:** Although Sloane (1707) included this taxon among those recorded for Madeira, his doubts over its provenance were well-founded. *Triopterys jamaicensis* occurs in the Bahamas and Cuba (Alain, 1953; Correll & Correll, 1982) and it is currently believed to be extinct in Jamaica.
6. **Aron maximum Aegyptiacum quod vulgo Colocasia. C.B. pin. P. 195** [...] (Sloane, 1696: 61–62; 1707: 14, 166).  
**HAB.:** "Ad rivulos Insulae Jamaicae frequenter & passim oritur" (Sloane, 1696); "This is here [*Madeira*] planted by River sides in great quantities for the Roots sake, which is eaten, and very much esteemed, the leaves being good for nothing but to wrap up things in" (Sloane, 1707: 14); "The Leaves are used to carry fresh Fruit, Cheese, etc. in *Madera*" (Sloane, 1707: 166). **DET.:** *Colocasia esculenta*, introduced. **NOTES:** The description of the ecology and uses of this plant makes us confident that this plant is *C. esculenta*. This species is cultivated and used in Madeira as indicated by Sloane (1707: 14) who also (1707: 166) reports this taxon from Jamaica where the species is common (Adams, 1972).
7. **Arundo Donax sive Cypria Dod. p. 602** [...] (Sloane, 1707: 14).  
**DET.:** *Arundo donax*, introduced.
8. **Asparagus maritimus crassiore folio. C. B. pin P. 490** [...] (Sloane, 1696: 114–115; 1707: 19).  
**HAB.:** "In insula Madera sponte nascentem collegi" (Sloane, 1696). **DET.:** *Asparagus scoparius*, Mac. **HERB.:** Vol. 4: 109 (BM000589963), three fragments. **NOTES:** The

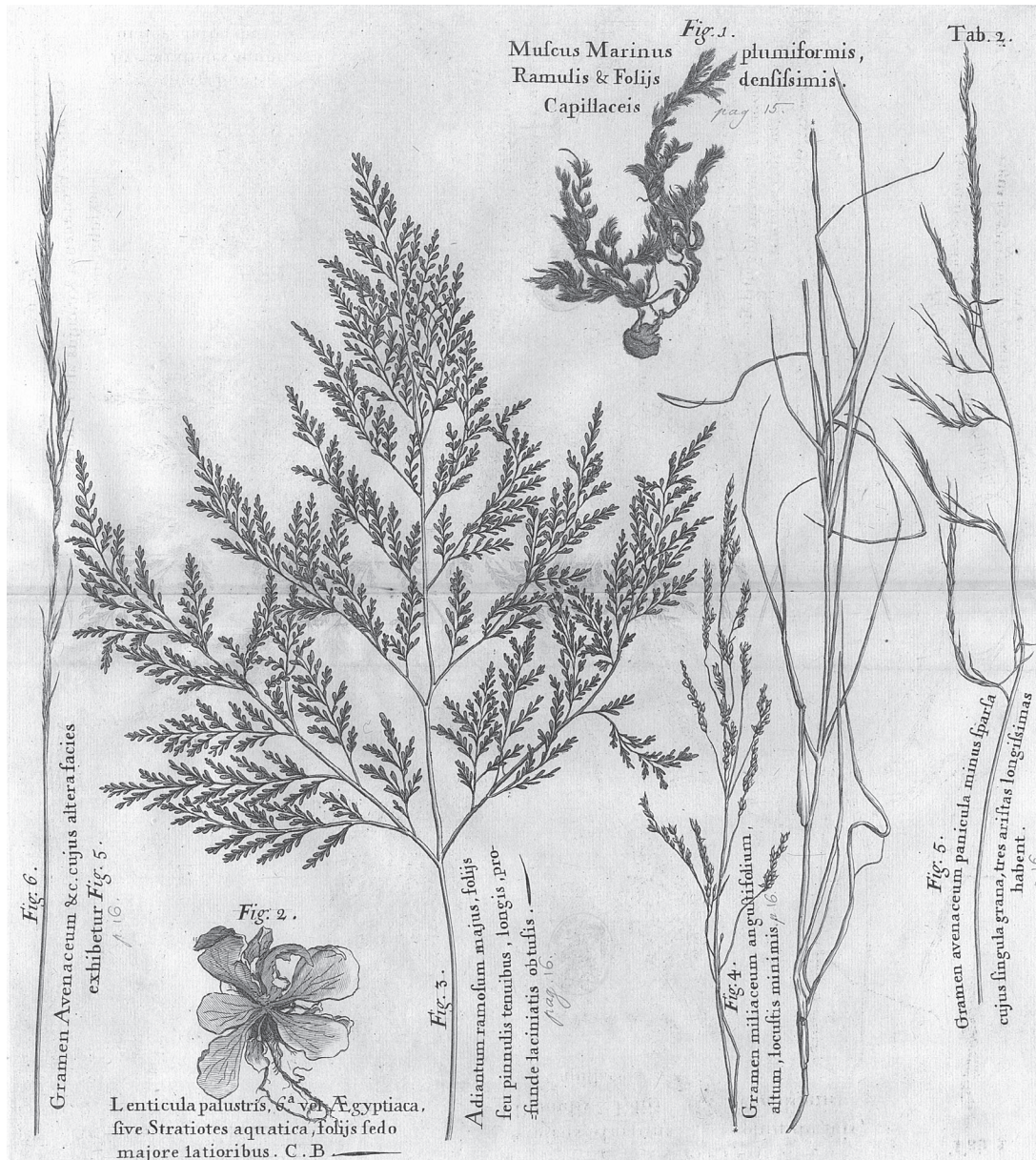
specimen is sterile and our identification is based only on the size of the cladodes.

9. **Blitum vulgare minus surrectum. Munt. pl. cult. p. 291** [...] (Sloane, 1696: 49; 1707: 17, Tab. 3, Fig. 2).

**HAB.:** “In Insula Madera prope urbem Funchall collegi” (Sloane, 1696); “in the Madera Island near the Town of Funchal” (Sloane, 1707). **DET.:** *Amaranthus blitum*, native. **HERB.:** Vol. 2: 113 (BM000588973), one fragment. Copperplate for this plant entry is shown in Fig. 2.

10. **Bupleuron primum sive folio rigido. C. B. pin. P. 278** [...] (Sloane, 1696: 92–93; 1707: 18).

**HAB.:** “Inter herbas siccas in Madera, Jamaica vel una è Caribéis Insulis collectas, reperio, quânam autem inveni non memini” (Sloane, 1696); “in some of the Islands going to Jamaica, but where I do not remember” (Sloane, 1707). **DET.:** Apiaceae sp., Carib. **HERB.:** Vol. 4: 33 (BM000589815), one fragment. **NOTES:** Two species of *Bupleurum* occur in Madeira, *B. lancifolium* and *B. salicifolium*. We are not certain if the genus *Bupleurum* sensu Linnaeus refers to this taxon; however, based on Sloane’s description and the specimen, this plant entry does not belong to either of the above two species and it appears that this is a Caribbean plant. *Bupleurum* does not occur in Jamaica or the Lesser Antilles and we have been unable to provide a specific or generic determination for this material.



**Fig. 1.** Copperplate of plants collected in Madeira by Sir Hans Sloane. Tab. 2 of Sloane (1707): “Fig. 1” = *Stypocaulon scoparium* (L.) Kützing (Phaeophyceae: Stypocaulaceae); “Fig. 3” = *Davallia canariensis* (L.) Sm. (Davalliaceae); “Fig. 4” = *Oryzopsis miliacea* (L.) Asch. Schweinf. (Poaceae); “Fig. 5” and “Fig. 6” = *Aristida adscensionis* L. (Poaceae); “Fig. 2” is for *Pistia stratiotes* L. (Araceae), a species not found in Madeira.

11. ***Bupleurum tertium minimum***. Col. min. cogn. stirp. p. 85, & 247 [...] (Sloane, 1696: 93; 1707: 19).

**HAB.:** “Cum praecedente collegi [referring to plant entry number 10] & inter herbas siccas reposui” (Sloane, 1696); “likewise in some of the Islands, but which I remember not” (Sloane, 1707). **DET.:** Apiaceae sp., Carib. **HERB.:** Vol. 4: 34 (BM000589816), one specimen. **NOTES:** The specimen does not belong to any species known in Madeira (see previous record).

12. \* ***Capsicum minus fructu rotundo, erecto, parvo, acerrimo Axi rotundum acre quod Caribe ab Indis nuncupatur*** [...] (Sloane, 1696: 111–112; 1707: 240).

**HAB.:** “In Madera Jamaica & Caribeis Insulis, sylvis, frutetis, & sepidus ubique sponte oritur” (Sloane, 1696); “It grows not only in the Island of Jamaica, but in the Madera, and all the Caribes” (Sloane, 1707). **DET.:** *Capsicum baccatum*, introduced (cultivated in Madeira). **HERB.:** Vol. 4: 105 (BM000589956), one fragment. **NOTES:** This species occurs wild in Jamaica (Adams, 1972) and it is cultivated both in Madeira and the Lesser Antilles; however, it is not certain if this specimen was collected

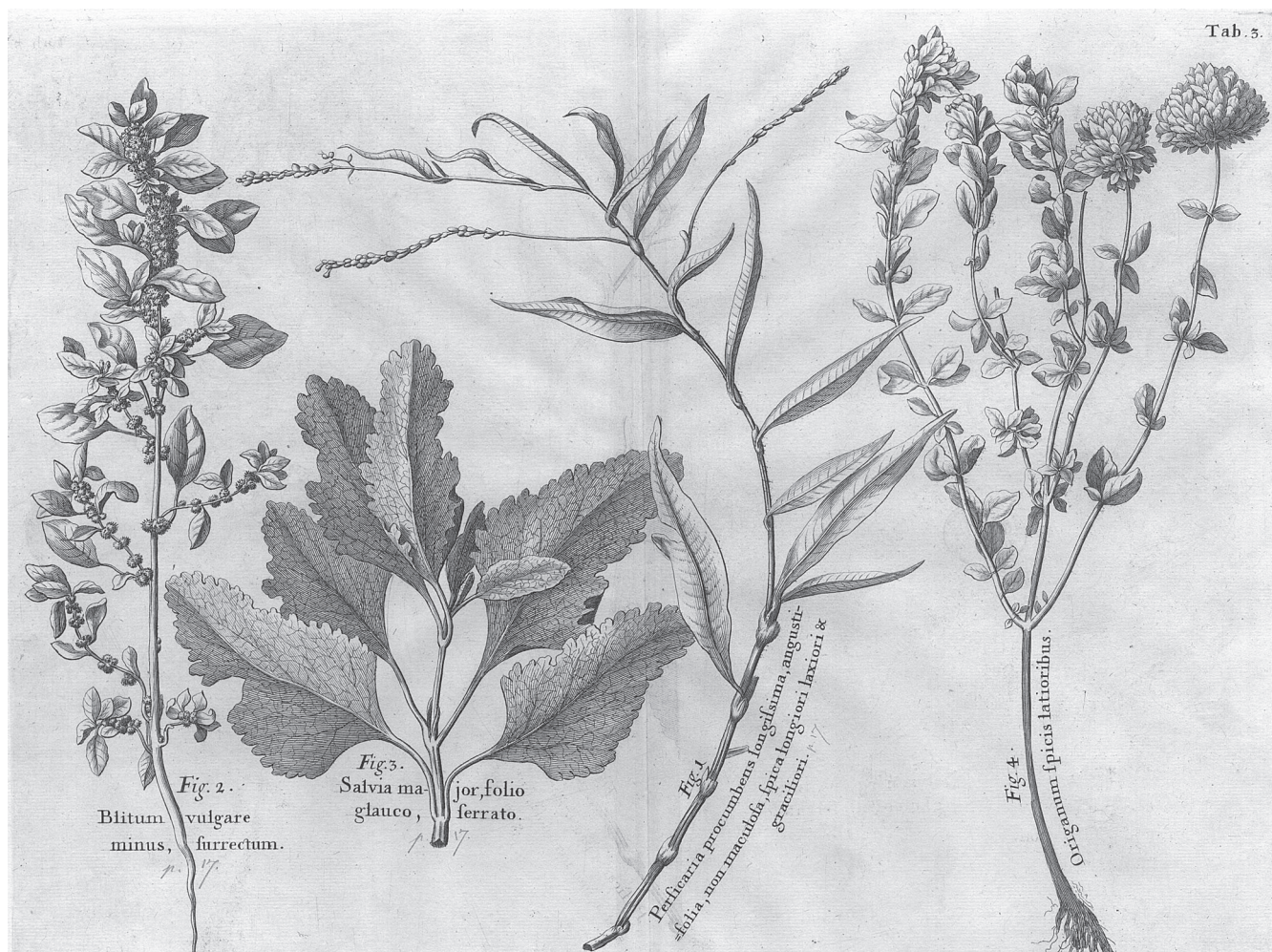
in Madeira or in the West Indies. Lowe (1872: 72) refers to this species as cultivated in Madeira by the second half of the 19th century but it is not listed by him in Harcourt (1851a).

13. ***Caryophyllus barbatus sylvestris annuus latifolius multis capsulis simul junctis donatus***. Morison. hist. pl. part. 2. P. 563 [...] (Sloane, 1696: 86; 1707: 18).

**HAB.:** “Prope urbem Funchal in Insula Madera sponte provenientem collegi” (Sloane, 1696). **DET.:** *Petrorhagia nanteuillii*, native. **HERB.:** Vol. 4: 1 (BM000589750), four fragments.

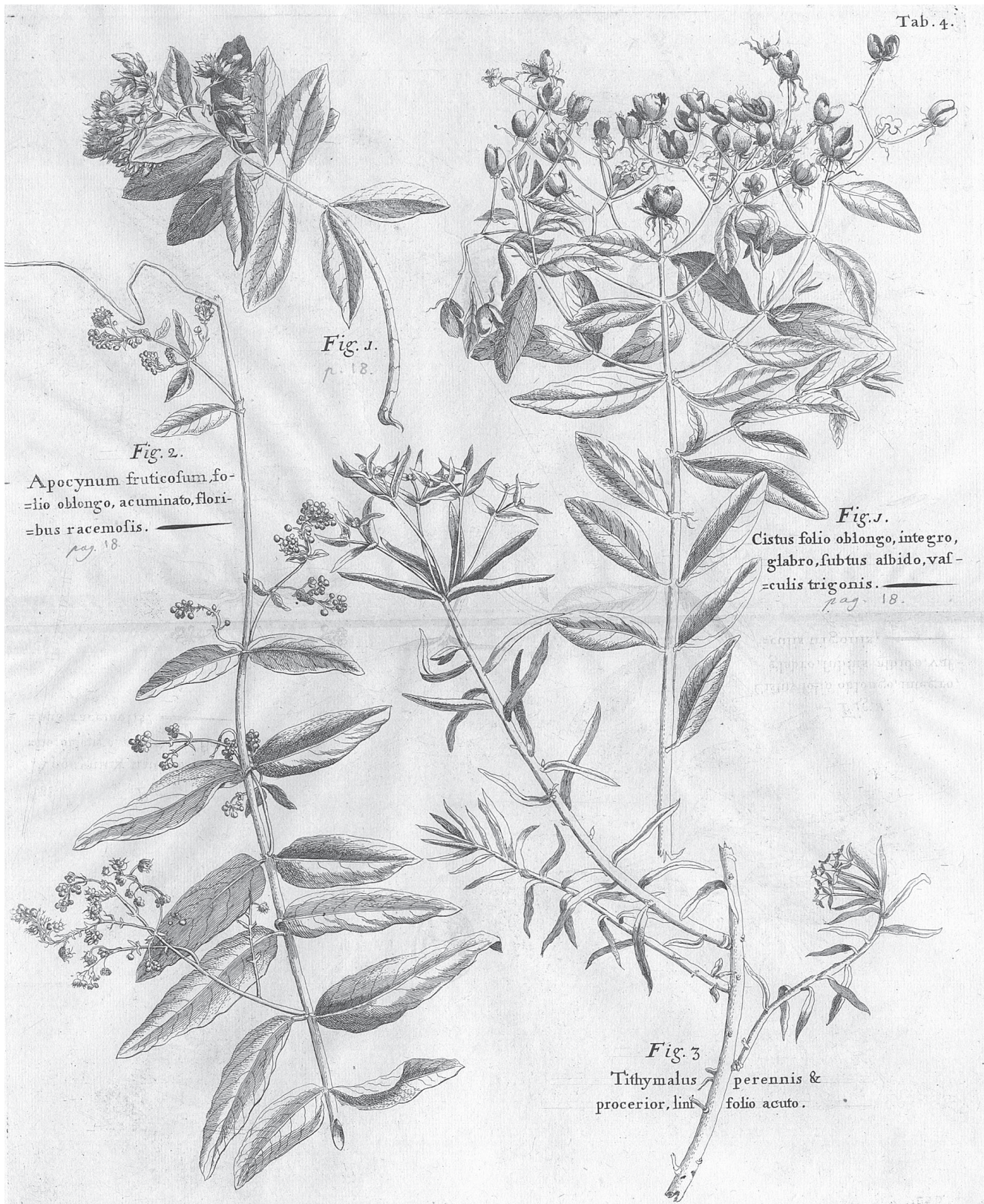
14. ***Chrysanthemum aquaticum Cannabinum folio tripartito diviso***. Herm cat. pl. P. 146 [...] (Sloane, 1696: 126–127; 1707: 19).

**HAB.:** “In Insula Madera, circa urbem Funchall, locis palustribus Collegi. Inter siccas plantas ex Insula Bermuda ad diligentissimum botanicum Dom. Jacobum Pettiver Missas, hanc observavi” (Sloane, 1696). **DET.:** *Bidens pilosa*, introduced (*B. leucantha* Willd., Lowe in Harcourt, 1851a: 149). **HERB.:** Vol. 5: 43 (BM000589075), two fragments.



**Fig. 2.** Copperplate of plants collected in Madeira by Sir Hans Sloane. Tab. 3 of Sloane (1707): “Fig. 1” = *Polygonum hydropiper* L. (Polygonaceae); “Fig. 2” = *Amaranthus blitum* L. (Amaranthaceae); “Fig. 3” = *Teucrium betonicum* L’Hér. (Lamiaceae); “Fig. 4” = *Origanum vulgare* L. subsp. *virens* (Hoffmanns. & Link) Bonnier & Layens (Lamiaceae).

15. **Cicer sativum**, C. B. Raii Hist. p. 917 (Sloane, 1707: 17).  
**DET.:** *Cicer arietinum*, introduced (cultivated).
16. \* **Cistus folio oblongo, integro, glabro, subtus albido, vasculis trigonis** (Sloane, 1696: 86; 1707: 18, Tab. 4, Fig. 1, two drawings, left and right).  
**HAB.:** “In Insula Madera ad utrumque latus viae quae ab urbe *Funchal* in montem ducit copiosum inveni” (Sloane, 1696); “beyond the Town of Funchal towards the Mountain, on each side of the Road, in the Madera Island” (Sloane, 1707).  
**DET.:** *Hypericum canariense*, Mac., and *H. glandulosum*, Mac.  
**HERB.:** *H. canariense* [Vol 4: 2\* (BM000589753), one fragment; Vol 4: 3 (BM000589756), two fragments]; *H. glandulosum* [Vol 4: 2\* (BM000589754), one fragment]. Copperplates for this plant entry are shown in Fig. 3. **NOTES:** The two pages carrying these specimens have labels written by Sloane assigning this single polynomial to what have subsequently been recognized as two different species. The figure to the right was clearly drawn from the fruiting specimen of *H. canariense* in Vol. 4: 3 (Fig. 3) while the figure to the left is of a flowering shoot of *H. glandulosum* prepared from the specimen in vol. 4: 2\* (right fragment). The name reported by Harcourt (1851a: 146) (“*Hypericum erectum*. M. Scr.”) is probably linked with *H. grandifolium* Choisy (= *H. erectum*) (see Lowe, 1857: 75–76). We suspect that “M. Scr.” means “manuscript”, therefore referring to an unpublished manuscript name.
17. **Convolvulus altheae foliis** Clus. rar. pl. hist. lib 4. p. 49 [...] (Sloane, 1696: 56–57; 1707: 17).  
**HAB.:** “In Insula Madera prope urbem Funchall abunde provenit” (Sloane, 1696); “plentifully in *Madera* Island near the Town of *Funchal*” (Sloane, 1707). **DET.:** *Convolvulus althaeoides*, native. **HERB.:** Vol. 3: 15 (BM000589533), two fragments.
18. **Erica folio coridis 6<sup>a</sup>, seu major scoparia foliis deciduis**. C. B. pin. P. 485 [...] (Sloane, 1696: 139; 1707: 19).  
**HAB.:** “In Insula Madera prope urbem *Funchall* collegi” (Sloane, 1696). **DET.:** *Erica platycodon* subsp. *maderincola*, Mad, and *E. arborea*, native [“*Erica Scoparia* ? Linn.” (Lowe in Harcourt, 1851a: 149)]. **HERB.:** Vol. 5: 113 (BM000589203), 3 fragments. **NOTES:** The fragment on the left of this sheet belongs to *E. arborea*; the others are *E. platycodon* subsp. *maderincola*. Both taxa are native in Madeira.
19. **Filix Hemionitis dicta Maderensis, hederæ arboreæ aliquatenus aemula sed foliorum basi auriculis binis utrinque donato**. Pluken. Alm. p. 155 [...] (Sloane, 1707: 72).  
**HAB.:** “This was brought me with the former [referring to plant entry number 36], and was gathered by *James Harlow* in *Madera*, if I rightly remember” (Sloane, 1707). **DET.:** *Asplenium hemionitis*, native. **NOTES:** This fern was not collected by Sloane (see also plant entry numbers 35 and 36) and it is not listed by Harcourt (1851a). The polynomial description provided by Sloane (1707) seems to refer to this species (Francisco-Ortega & al., 1994).
20. **Foeniculum vulgare**. Ger. emac. P. 1032 [...] (Sloane, 1696: 92; 1707: 18).  
**HAB.:** “Copiosè & ubique crescit in Insula *Madera*” (Sloane, 1696); “in the *Madera* Island very plentifully” (Sloane, 1707). **DET.:** *Foeniculum vulgare*, native. **HERB.:** Vol. 4: 32 (BM000589814), one fragment. **NOTES:** It is identified by Lowe as “*Foeniculum Peperitum*. Dc.” (Harcourt, 1851a: 147); however, we could not trace this name and believe that it refers to *Anethum foeniculum* var. *piperitum* (= *F. piperitum*; = *F. vulgare* subsp. *piperitum*) a name previously published by De Candolle (1813).
21. **Fumaria quinta seu lutea**. C. B. pin. P. 143 [...] (Sloane, 1696: 75; 1707: 17).  
**HAB.:** “In Insula Madera provenit prope urbem Funchall ubi collegi” (Sloane, 1696). **DET.:** Papaveraceae sp. **HERB.:** Vol. 3: 95 (BM000589681), one fragment. **NOTES:** We are not certain if the genus *Fumaria* sensu Linnaeus refers to this taxon; however, none of the species of *Fumaria* from Madeira has yellow flowers. The specimen is sterile and our placement of it within the Papaveraceae is tentative.
22. **Genista non spinosa 1<sup>a</sup>, seu angulosa & scoparia**. C. B. pin. p. 395 [...] (Sloane, 1696: 140; 1707: 19).  
**HAB.:** “In Insula Madera sponte provenientem observavi & collegi” (Sloane, 1696). **DET.:** *Cytisus scoparius*, introduced. **HERB.:** Vol. 6: 2 (BM000593754), one fragment.
23. **Genistella tinctoria** Ger. p. 1316 (Sloane, 1707: 17).  
**DET.:** *Genista tenera*, Mad. **NOTES:** Harcourt (1851a: 144) reports the identity of this taxon as *Genista tinctoria*, and this seems to be the obvious name for this plant entry; however, as noted by Lowe (in Harcourt, 1851a: 144), this species does not occur in Madeira. In addition to *G. tenera* (a common Madeiran endemic mostly found on the south coast of the island) there are three other species of *Genista* occurring in Madeira. Two of them are native (*G. maderensis* and *G. paivae*) and the third is a recent introduction (*G. monspessulana*). The two native species are rarely found in southern Madeira (Cannon & Turland, 1994) and, for this reason, we believe that *G. tenera* was probably the species observed by Sloane in the Funchal area.
24. **Geranium Altheae folio**, C. B. Raii Hist. p. 1055 (Sloane, 1707: 18).  
**DET.:** *Erodium malacoides*, native. **NOTES:** Linnaeus (1753: 680) refers to “*Geranium folio althaeae* Bauh. pin. 318” as a synonym of *Geranium malacoides*, and our tentative determination is based on this association.
25. **Gnaphalium at Staechadem citrinam accedens**. J. B. tom. 3. lib. 26. P. 160 [...] (Sloane, 1696: 125; 1707: 19).  
**HAB.:** “Cum priore ubi proceritate” [referring to plant entry number 33] (Sloane, 1696). **DET.:** *Pseudognaphalium luteo-album*, native. **HERB.:** Vol. 5: 28 (BM000589051), two fragments; 29 (BM000589052), three fragments; 30 (BM000589053), one fragment. **NOTES:** Specimen BM000589053 may be identifiable as the non-native *Gamochaeta pensylvanica*.



**Fig. 3.** Copperplate of plants collected in Madeira by Sir Hans Sloane. Tab. 4 of Sloane (1707): “Fig. 1” = *Hypericum canariense* L. (drawing of fruiting specimen located to upper right section) and *Hypericum glandulosum* Ait. (drawing of fruiting specimen located to upper left section) (Guttiferae); “Fig. 3” = *Euphorbia terracina* L. (Euphorbiaceae); “Fig. 2” is for *Triopterys jamaicensis* L. (Malpighiaceae), a species not found in Madeira.

26. \* *Gramen avenaceum, panicula minus sparsa, cujus singula grana, tres aristas longissimas habent* (Sloane, 1696: 35; 1707: 16, Tab. 2, Figs. 5–6).  
**HAB.:** “Prope urbem Funchall in Insula Madera inveni” (Sloane, 1696). **DET.:** *Aristida adscensionis*, native [*“Aristida Coeruleascens. Desf.”* (Lowe in Harcourt, 1851a: 141)]. **HERB.:** Vol. 2: 43 (BM000588844), four fragments.
27. \* *Gramen avenaceum, panicula minus sparsa, glumis alba sericea lanugine obductis* (Sloane, 1696: 35; 1707: 43, Tab. 14, Fig. 2).

- HAB.:** “Si bene memini in Insula Nieves dicta collegi” (Sloane, 1696); “in *Madera*, or one of the *Caribes*, and if I remember right it was in the Island *Nieves*” (Sloane, 1707). **DET.:** *Digitaria insularis*, Carib. **HERB.:** Vol. 2: 42 (BM000588841), four fragments. **NOTES:** This species does not occur in Madeira.
28. *Gramen dactylon siculum multiplici panicula spicis ab eodem exortu geminis. Raij hist. P. 1271 [...]* (Sloane, 1696: 34; 1707: 16).  
**HAB.:** “In Insula Madera non procul ab urbe *Funchall*



**Fig. 4.** Copperplate of plants collected in Madeira by Sir Hans Sloane. Tab. 5 of Sloane (1707): “Fig. 1” and “Fig. 2” = *Tolpis succulenta* (Ait.) Lowe (Asteraceae), “Fig. 3” = *Globularia salicina* Lam. (Globulariaceae). “Fig. 4” = Undetermined taxon.



dicta inveni” (Sloane, 1696). **DET.:** *Hyparrhenia sinaica*, native. **HERB.:** Vol. 2: 28 (BM000588801), three fragments.

29. \* **Gramen miliaceum angustifolium altum locustis minimis** [...] (Sloane, 1696: 35; 1707: 16, Tab. 2, Fig. 4).

**HAB.:** “In Insulae Madaerae sepibus non procul ab urbe Funchall inveni” (Sloane, 1696). **DET.:** *Oryzopsis miliacea*, native (*Panicum repens*; Lowe in Harcourt, 1851a: 141). **NOTES:** Sloane (1707) provides a long English description and a copperplate for this plant entry. Based on this information we provide a tentative identification. Copperplate for this plant entry is shown in Fig. 1.

30. **Gramen paniceum spica simplici laevi. Raij. hist. p. 1261** (Sloane, 1696: 30; 1707: 16).

**HAB.:** “In pratis inter Black River Bridge, & urbem *St. Jago de la Vega* copiosè provenit” (Sloane, 1696). **DET.:** *Setaria parviflora*, Carib. (*S. glauca*; Lowe in Harcourt, 1851a: 140). **HERB.:** Vol. 2: 8 (BM000588765), one fragment. **NOTES:** Sloane (1707: 16, 107) lists this species both for Madeira and Jamaica, though only for Jamaica in his earlier work (Sloane, 1696). *Setaria parviflora* occurs both in Madeira (Jardim & Menezes de Sequeira, 2008) and Jamaica (Adams, 1972, as *S. geniculata*). However, this species is not native to Madeira and as it is considered to be a recent introduction there (Hansen, 1968), we believe this to be a collection from Jamaica rather than Madeira.

31. **Gramen tremulum maximum. C. B. Raii Hist. p. 1274** (Sloane, 1707: 16).

**DET.:** *Briza maxima*, native. **NOTES:** The polynomial provided by Sloane (1707) is cited as a synonym of *B. maxima* by Linnaeus (1753: 70).

32. **Hedera terrestris. Caesalp. p. 453** [...] (Sloane, 1696: 65; 1707: 17).

**HAB.:** “In Insula Madera prope urbem Funchall collegi” (Sloane, 1696); “in the Island *Madera* near the Town of *Funchal*” (Sloane, 1707). **DET.:** *Sibthorpia peregrina*, Mad. **HERB.:** Vol. 3: 60 (BM000589621), one fragment. **NOTES:** *Glechoma hederacea* is reported by Harcourt (1851a: 144), along with Lowe’s comment (Harcourt, 1851a: 144): “Does not exist in Madeira now, possibly *Sibthorpia Peregrina*. Linn.”

33. **Helichrysum 2um seu Helichryso Sylvestri flore oblongo similis. C. B. pin. P. 265. prod. P. 123** (Sloane, 1696: 125; 1707: 19).

**HAB.:** “Prope urbem Funchall in insula Madera Collegi” (Sloane, 1696). **DET.:** *Phagnalon saxatile*, native. **HERB.:** Vol. 5: 27 (BM000589050), one fragment.

34. **Heliotropium majus. Gesn. hort. Germ. f. 261** [...] (Sloane, 1696: 94; 1707: 19).

**HAB.:** “In Insulae Madaerae agris hanc plantam spontaneam observavi” (Sloane, 1696); “In *Madera* Island” (Sloane, 1707). **DET.:** *Heliotropium europaeum*, native. **HERB.:** Vol. 4: 38 (BM000589821), one fragment.

35. \* **Hemionitis asari folio** (Sloane, 1696: 14; 1707: 15).

**HAB.:** “Hanc elegantissimam hemionitidis speciem ex insula Madera, ab Hortulano Arthuri Rawdon Bar. delatam mihi Botanicus eximius Dominus Guilielmus Sherard” (Sloane, 1696); “It was brought from *Madera* to Dr. *William Sherard*, by one sent to that Island in search of Plants for Sir Author Rawdon, and by him given me” (Sloane, 1707). **DET.:** *Adiantum reniforme*, native. **HERB.:** Vol. 1: 44 (BM000589277), three fragments. **NOTES:** This fern was collected by James Harlow, grown in Rawdon’s garden, and subsequently sent to Sloane (see above and plant entries 19 and 36).

36. **Hemionitis peregrina Clus. rar. plant. hist. lib. 6. p. 214** [...] (Sloane, 1696: 14; 1707: 72).

**HAB.:** “E Jamaica insula delatam & sibi dono datam mihi communicavit Ingeniosissimus Botanicus D. Gulielmus Sherard” (Sloane, 1696); “I had this given me by Dr. *William Sherard*, who had it of one, who gathered it in *Jamaica* or *Madera*” (Sloane, 1707). **DET.:** *Asplenium hemionitis*, native. **HERB.:** Vol. 1: 43 (BM000589276), one fragment. **NOTES:** This fern was not collected by Sloane (see above and plant entries 19 and 35) and this taxon does not occur in Jamaica (Proctor, 1985).

37. \* **Hieracium fruticosum angustissimis gramineis foliis capitulis parvis** (Sloane, 1696: 123; 1707: 255, Tab. 149, Fig. 3).

**HAB.:** “In Madera, Jamaica, vel una è Caribeis Insulis collegi, quàm autem earum non memini” (Sloane, 1696); “I am not certain where I found this” (Sloane, 1707). **DET.:** *Pectis linifolia*, Carib. **HERB.:** Vol. 5: 6 (BM000589005), one fragment. **NOTES:** This species does not occur in Madeira, but it is found both in Jamaica and the Lesser Antilles (Adams, 1972; Howard, 1989).

38. \* **Hieracium fruticosum foliis tenuissime coronopi modo divisivis** [...] (Sloane, 1696: 123; 1707: 19, Tab. 5, Figs. 1, 2).

**HAB.:** “In montibus saxosis prope urbem *Funchall* in Insula Madera collegi” (Sloane, 1696); “It grew on the stony Hills to the Eastward of the Town of *Funchal* in the Island of *Madera*” (Sloane, 1707). **DET.:** *Tolpis succulenta*, Mac. **HERB.:** Vol. 5: 4 (BM000589002), two fragments. **NOTES:** We could not find the name assigned to this entry by Lowe (“*Tolpis Pectinata*. Lowe”; Harcourt, 1851a); however, we believe that he refers to *Crepis pectinata* (accepted name = *T. succulenta*; = *T. pectinata*).

39. **Hieracium stellatum J. B. tom. 2. lib. 24. P. 1014** (Sloane, 1696: 123; 1707: 19).

**HAB.:** “In Insula Madera hanc plantam collegi” (Sloane, 1696). **DET.:** *Rhagadiolus stellatus*, introduced or *Lapsana communis*, native. **NOTES:** Linnaeus (1753: 811) refers to this polynomial as a synonym of *L. stellata* (= *R. stellatus*); however, records for the occurrence of this species on Madeira are unclear (Press, 1994) and this plant entry might well refer to *L. communis*, now a common species in the areas visited by Sloane.

40. **Horminum luteum glutinosum, C. B. Raii Hist. p. 547** [...] (Sloane, 1707: 17).  
**DET.:** Lamiaceae sp. **NOTES:** *Salvia glutinosa* is the identification reported by Harcourt (1851a: 144) who also quotes Lowe's comment that this species does not occur in Madeira (see also Jardim & Menezes de Sequeira, 2008). The only member of the Lamiaceae from Madeira resembling Sloane's account is the endemic *Sideritis candicans* with pale yellow flowers and a partially sticky indumentum, and the description might well refer to this taxon.
41. **Hypericon minus. Dod. p. 75** [...] (Sloane, 1707: 15).  
**DET.:** *Hypericum humifusum*, native. **NOTES:** The polynomial description "*Hypericum minus supinum, vel supinum glabrum* C. B. Pin. p. 279" is also used by Sloane (1707: 15) for this plant entry. Linnaeus (1753: 786) refers to this polynomial description as a synonym for *H. humifusum*. This is one of the eight native species of *Hypericum* occurring in Madeira (Jardim & Menezes de Sequeira, 2008).
42. **Jasminum tertium seu humilius magno flore, C. B. p. 398** [...] (Sloane, 1707: 14).  
**DET.:** Undetermined. **NOTES:** We are not certain if the genus *Jasminum* sensu Linnaeus refers to this taxon. As there are no associated specimens, we are unable to determine this polynomial. However, the name could refer to the ornamental *J. grandiflorum* (Turland, 1994) or to *J. azoricum*, a rare, white-flowered Madeiran endemic but one for which at least one population is known near Funchal.
43. **Lapathum pulchrum Bononiense sinuatum, J. B. Fidle Dock** (Sloane, 1707: 14).  
**DET.:** *Rumex pulcher* subsp. *woodsii*, native. **NOTES:** The polynomial provided by Sloane (1707) is cited as a synonym by Linnaeus (1753: 336) in his protologue of *R. pulcher*.
44. **Lenticula palustris sexta vel Ægyptiaca sive stratiotes aquatica foliis sedo majore latioribus, C. B. Pin. p. 362** [...] (Sloane, 1696: 11; 1707: 15, Tab. 2, Fig. 2).  
**HAB.:** "Aquis stagnantibus insularum Barbados vel Maderae innatantem inveni" (Sloane, 1696); "either in the Island of *Madera* or *Barbados* floating on the Water" (Sloane, 1707). **DET.:** *Pistia stratiotes*, Carib. **HERB.:** Vol. 1: 30 (BM000589256), one fragment. Copperplate for this plant entry is shown in Fig. 1. **NOTES:** As Lowe (in Harcourt, 1851a: 139) indicates, this species is not known in Madeira but it does, however, occur in Barbados (Carrington, 1993).
45. **Lonchitis aspera Maranthae, J. B. [...]** (Sloane, 1707: 15).  
**DET.:** *Notholaena marantae* subsp. *subcordata*, Mac. **NOTES:** The polynomial provided by Sloane (1707) is cited as a synonym of *Acrostichum marantae* by Linnaeus (1753: 1071).
46. **Lychnis hirsuta quarta, seu sylvestris lanuginosa minor. C. B. pin. P. 306** [...] (Sloane, 1696: 86; 1707: 18).  
**DET.:** *Silene gallica*, native. **HERB.:** Vol. 4: 2 (BM000589751), one fragment.
47. **\*Lycium folio oblongo serrato acuminato spinis minoribus armatum** (Sloane, 1696: 171; 1707: 20, Tab. 5, Fig. 4).  
**HAB.:** "In insula Madera prope urbem *Funchall* in sepibus provenire observavi" (Sloane, 1696). **DET.:** Undetermined. **HERB.:** Vol. 7: 27 (BM000594023), one fragment. Copperplate for this plant entry is shown in Fig. 4. **NOTES:** The specimen upon which the drawing was based is sterile. In addition we are not certain if the genus *Lycium* sensu Linnaeus refers to this taxon. There are two species of *Lycium* in Madeira; *L. europaeum* and *L. intricatum*. However, the specimen does not appear to belong to either. Without reproductive structures, we have been unable to assign this material to any species from Madeira or the West Indies.
48. **\*Musa, caudice maculato, fructu recto, rotundo, brevior, odorato [...]** (Sloane, 1696: 192–193; 1725: 147).  
**HAB.:** "Cum priore [referring to "Musa, caudice viride, fructu longiore, falcato, anfuloso ..."], nec non in Insulae Maderae hortis crescere observavi" (Sloane, 1696); "they are planted in Jamaica ... (Sloane, 1725). **DET.:** *Musa* × *paradisica*, introduced (cultivated), Carib. **NOTES:** Linnaeus (1763: 1477) cited Sloane's polynomial as a synonym of *M. sapientum* (= *M.* × *sapientum* ; = *M.* × *paradisica*).
49. **\*Muscus marinus plumiformis ramulis & foliis densissimis capillaceis** (Sloane, 1696: 6; 1707: 15, Tab. 2, Fig. 1).  
**HAB.:** "In insulae Maderae littus, ejectam hanc plantam prope locum *Funchall* dictum inveni." (Sloane, 1696); "thrown up by the Waves on the Shore of the Island of *Madera*, near the Town of *Funchal*" (Sloane, 1707). **DET.:** *Stypocaulon scoparia*, native. **HERB.:** Vol. 1: 21 (BM000589236), one fragment. Copperplate for this plant entry is shown in Fig. 1.
50. **Myrtus 7<sup>a</sup>. seu sylvestris foliis acutissimis. C. B. pin. P. 469** [...] (Sloane, 1696: 161; 1707: 20).  
**HAB.:** "Ad viarum margines & in sepibus Insulae Maderae copiose provenientem collegi" (Sloane, 1696); "very plentifully growing wild in the Hedges by the waysides in the Island of *Madera*" (Sloane, 1707). **DET.:** *Myrtus communis*, native. **HERB.:** Vol. 6: 68 (BM000593877), two fragments.
51. **Oleastri Species ut quidam putant, au alii Ziziphus alba. Gesn. hort. Germ. fol. 269** [...] (Sloane, 1707: 14).  
**HAB.:** "One of the plants I gathered, or saw in the fields [in Madeira]" (Sloane, 1707). **DET.:** *Olea maderensis*, Mad. **NOTES:** Harcourt (1851a: 137) records this as *Elaeagnus angustifolia*, a species found naturalized only in some areas of the island of Porto Santo (Vieira, 2002; Jardim & Menezes de Sequeira, 2008). In Madeira, however, *E. angustifolia* is not naturalized and it is rarely cultivated, nor was it recorded for the archipelago by Lowe (1857–1868, 1872). It seems more likely that Sloane was referring to *O. maderensis*, a taxon that has narrower and more whitish leaves than the European species of *Olea*.
52. **\*Opuntia maxima, foliis majoribus crassioribus & atrovirentibus spinis minoribus & paucioribus obsitis.** [...] (Sloane, 1696: 195; 1707: 20).

**HAB.:** “In Insula Madera circa urbem *Funchall*, spontanea (uti videtur) & frequens est” (Sloane, 1696); “in a Gully near the Town of *Funchal* in *Madera*, and in the *Canaries*” (Sloane, 1707). **DET.:** *Opuntia tuna*, introduced (cultivated), Carib. **NOTES:** This is one of the two species of Cactaceae naturalized in Madeira, the other being *O. ficus-barbarica* (Vieira, 2002; Jardim & Menezes de Sequeira, 2008). According to Vieira (2002) the widely naturalized *O. tuna* was introduced into Madeira in the early 18th century. Sloane’s account suggests that this species was already present in Madeira much earlier.

53. \***Origanum spicis latioribus** (Sloane, 1696: 65; 1707: 17, Tab. 3, Fig. 4).

**HAB.:** “In Insula Madera sponte proveniebat prope urbem *Funchall*” (Sloane, 1696); “wild in *Madera* Island” (Sloane, 1707). **DET.:** *Origanum vulgare* subsp. *virens*, native. **HERB.:** Vol. 3: 53 (BM000589610), three fragments. Copperplate for this plant entry is shown in Fig. 2.

54. **Palma prunifera foliis yuccae, fructu in racemis congestis cerasi formi, duro, cinereo, pisi magnitudine, cujus lachryma sanguis draconis est dicta. Comm. cat. Amst. p. 260** [...] (Sloane, 1696: 179; 1707: 20).

**HAB.:** “In Insulae Madaerae sepibus prope urbem *Funchall* collegi” (Sloane, 1696); “in the Island of *Madera* in the Hedges very plentifully though not very large” (Sloane, 1707). **DET.:** *Dracaena draco* subsp. *draco*, Mac. **HERB.:** Vol. 7: 55 (BM000594072), three fragments. **NOTES:** Currently this species is highly threatened in Madeira and survives in a single wild population outside the Funchal area. We cannot rule out that by the time of Sloane’s visit, this species was already rare and this record might well refer to specimens cultivated in some of the gardens of Funchal.

55. \***Persicaria procumbens longissima, angustifolia, non maculosa spica longiori, laxiori & graciliori** (Sloane, 1696: 48; 1707: 17, Tab. 3, Fig. 1).

**HAB.:** “Ad ripas fluminis prope urbem *Funchall* in Insula *Madera*, & ad ripas humidiores fluvii *Cobre* dicti in Insula *Jamaica* inveni” (Sloane, 1696); “It grows in the Island of *Madera*, in a Rivers Bank, half a Mile beyond the Town of *Funchal* towards the Mountain, and in *Jamaica* on the moist muddy low Banks of the Rio *Cobre*, & c.” (Sloane, 1707). **DET.:** *Polygonum hydropiper*, native. **HERB.:** Vol. 2: 105 (BM000588959), two fragments. Copperplate for this plant entry is shown in Fig. 2. **NOTES:** Lowe (in Harcourt, 1851a: 143) stated: “*Polygonum Hydropiper*, Linn., is not uncommon in Madeira, but *Polygonum Minus*, to which this description seems to point, does not occur there now”. Based on the specimen, however, we determine the plant as *P. hydropiper*, which, as Lowe noted, does occur in Madeira. Contrary to Sloane’s contention, this species is absent from Jamaica (Adams, 1972).

56. **Plantago quinquenervia cum globulis albis pilosis J. B. tom. 3. lib. 31. p. 504** [...] (Sloane, 1696: 83; 1707: 18).

**HAB.:** “In Insula Madera crescentem collegi” (Sloane, 1696). **DET.:** *Plantago* sp. **HERB.:** Vol. 3: 120 (BM000589730),

one fragment. **NOTES:** Although identified by Lowe (in Harcourt, 1851a: 145) as *P. lanceolata*, the specimen does not permit identification below generic rank.

57. **Psillium majus erectum, C. B. J. B. Raii Hist. p. 881** (Sloane, 1707: 17).

**DET.:** *Plantago* sp. **NOTES:** Linnaeus (1753: 115) assigns this polynomial to *P. psyllium* (current name = *P. arenaria*); however, this species does not occur in the wild in Madeira. It is likely that this entry refers to the later described *Plantago arborescens*. Lowe (in Harcourt, 1851a: 143) appears to have made a mistake in referring this to *Eclipta erecta* (= *E. prostrata*).

58. **Ruta quarta seu ruta sylvestris minor, C. B. Pin. p. 336** [...] (Sloane, 1707: 15).

**DET.:** *Ruta chalepensis*, native (*R. angustifolia*; Lowe in Harcourt, 1851a: 138). **NOTES:** The polynomial provided by Sloane (1707) is cited as a synonym of *R. graveolens* by Linnaeus (1753: 754). Only one species of *Ruta* occurs in Madeira (Jardim & Menezes de Sequeira, 2008); therefore, it seems probable that Sloane was referring to *R. chalepensis*.

59. \***Salvia major folio glauco serrato** (Sloane, 1696: 64; 1707: 17, Tab. 3, Fig. 3).

**HAB.:** “In Insula Madera prope urbem *Funchall* collegi” (Sloane, 1696); “It grew near *Funchal* in the island *Madera*” (Sloane, 1707). **DET.:** *Teucrium betonicum*, Mad. **HERB.:** Vol. 3: 45 (BM000589591), two fragments (see Notes). Copperplate for this plant entry is shown in Fig. 2. **NOTES:** This page has one small fragment (bottom right) of the Madeiran endemic *Bystropogon maderensis* and two larger fragments (left; upper right) of *T. betonicum*. Sloane’s illustration was clearly prepared from the left specimen and this is identifiable as *T. betonicum*. The specimens are sterile leading Sloane (1707) to write “I gather’d it without Flowers or Seed, so that I am not able to determine its Family; perhaps it may be a *Marrubium nigrum*, or of some other kind”.

60. **Scorpioides bupleuri folio, C. B. Raii p. 931** (Sloane, 1707: 17).

**DET.:** *Scorpiurus sulcatus*, native. **NOTES:** The polynomial provided by Sloane (1707) is treated as a synonym of *S. sulcatus* by Linnaeus (1753: 754).

61. **Solanum nonum seu fruticosum bacciferum. C. B. pin. P. 166** [...] (Sloane, 1696: 108; 1707: 19).

**HAB.:** “In Madera Insula ubique sponte provenit” (Sloane, 1696). **DET.:** *Solanum pseudocapsicum*, introduced. **NOTES:** The polynomial provided by Sloane (1707) is cited as a synonym of *S. pseudocapsicum* by Linnaeus (1753: 184), who also mentions the presence of this species in Madeira.

62. **Sonchus Laevis Cord. hist. pl. f. 157** [...] (Sloane, 1696: 122; 1707: 255).

**HAB.:** “In Madera, Jamaica & Caribeis Insulis, in agris cultis ubique luxuriat” (Sloane, 1696); “It is common every where through the whole Island [Jamaica]” (Sloane, 1707).

**DET.:** *Erechtites hieracifolia*, Carib. **HERB.:** Vol. 5: 1 (BM000588997), one fragment. **NOTES:** This species does not occur in Madeira but it is found both in Jamaica (Adams, 1972) and the Lesser Antilles (Howard, 1989).

63. \***Tithymalus perennis & procerior lini folio acuto** [...] (Sloane, 1696: 82; 1707: 18, Tab. 4, Fig. 3).

**HAB.:** “In Insula Madera prope urbem *Funchal* collegi” (Sloane, 1696). **DET.:** *Euphorbia terracina*, native [*E. segetalis*; Lowe in Harcourt, 1851a: 145]. **HERB.:** Vol. 3: 115 (BM000589721), one fragment. Copperplate for this plant entry is shown in Fig. 3.

64. **Trifolium acetosum corniculatum luteum minus repens & etiam procumbens**. **Moris. hist. pl. P. 183** [...] (Sloane, 1696: 90; 1707: 18).

**HAB.:** “In Insula Madera sponte natam collegi” (Sloane, 1696). **DET.:** *Oxalis corniculata*, introduced. **HERB.:** Vol. 4: 25 (BM000589803), one fragment.

65. **Trifolium bituminosum seu trifolium caeruleum aut violaceum bitumen redolens**. **Moris. hist. pl. part. 2. P. 136** [...] (Sloane, 1696: 74; 1707: 17).

**HAB.:** “In insula Madera sponte provenientem collegi” (Sloane, 1696); “in the Island *Madera*” (Sloane, 1707). **DET.:** *Bituminaria bituminosa*, native. **HERB.:** Vol. 3: 91 (BM000589675), one fragment.

66. \***Urtica, caule lignoso, foliis tenuioribus atrovirentibus**. [...] (Sloane, 1696: 38; 1707: 16).

**HAB.:** “In Insula *Madera* prope urbem *Funchall* collegi” (Sloane, 1696); “found on the *Madera* Island, near the Town of *Funchal*” (Sloane, 1707). **DET.:** *Urtica morifolia*, Mac. (*U. elevata* [= *U. morifolia*]; Lowe in Harcourt, 1851a: 142). **HERB.:** Vol. 2: 74 (BM000588905), one fragment; 75 (BM000588906), one fragment. **NOTES:** *Urtica morifolia* currently occurs at higher elevations, so the record for this species near *Funchal* is unusual.

## ■ SIR HANS SLOANE’S VISIT TO MADEIRA

The Madeiran plants collected and described by Sloane (1696, 1707, 1725) came from the *Funchal* area including the small village of Monte (580 m of elevation), some nine kilometers from the city. Eight of the taxa are endemic to Macaronesia while six are Madeiran endemics. The terrestrial wild plants are predominantly herbs (32), with fewer shrubs/sub-shrubs (16), and trees (2). In addition, Sloane reported four native taxa (five polynomials) of ferns. It appears that Sloane collected rather few specimens (representing only 38 taxa) but this is perhaps unsurprising given that the ship spent only one whole day (arriving in port on 21 October and leaving again on 23 October) in Madeira. Despite this short stay, the species that Sloane collected show that he evidently visited a number of different vegetation zones (see below). Clearly, the material that he collected on the island had to survive the rest of that voyage, a

period in Jamaica, and the return voyage to England. This may explain Sloane’s occasional lapses in recalling provenance, or the loss of collection labels. It also may explain why, as far as is known, Sloane did not introduce any Madeiran species into cultivation.

Sloane’s observations provide some historical insights into the ecology of the island. He recorded species that had been introduced for agriculture (e.g., *Capsicum baccatum* and *Musa × paradisiaca*), including some that have subsequently become naturalized on the island (e.g., *Opuntia tuna* and *Solanum pseudocapsicum*) and some native species that have declined over time and are currently threatened with extinction. The Dragon Tree (*Dracaena draco*) is now extirpated in the vicinity of *Funchal* and, indeed, survives in only one wild population in Madeira. However, it is widely cultivated as a garden tree and it is possible that Sloane collected this species in cultivation. Similarly, *Olea maderensis* is uncommon around *Funchal* (surviving only on high cliffs and in ravines) and threatened throughout Madeira.

It is likely that *Erica platycodon* subsp. *maderincola*, *Hypericum canariense*, *H. glandulosum*, *Myrtus communis*, and *Teucrium betonicum* were found close to Monte, although some can also be found at lower elevations. At least three species, *Asparagus scoparius*, *Tolpis succulenta* and *Globularia salicina*, are likely to have been collected in eastern *Funchal*, and both *Dracaena draco* and *Olea maderensis* are found at lower elevations. These records may correspond with the “stony Hills to the Eastward of the Town of *Funchal*” referred to by Sloane (see plant entry number 38). While limited in the area he was able to visit, Sloane’s collections did at least come from several vegetation types.

By the end of the 17th century, most of the *Funchal* area was already seriously affected by human activities (Menezes de Sequeira & al., 2007) and it is likely that little of the original vegetation of this area was present at the time of Sloane’s visit, which would account for his not recording any of the tree species representative of the laurel forest. While some endemics feature in his collections, most of them are associated with secondary vegetation.

The taxon originally described by Sloane (1696) with the polynomial *Apocynum fruticosum folio oblongo acuminato floribus racemosis* we have identified as *Triopteris jamaicensis*, a Caribbean endemic that is now extinct in Jamaica but occurs in the Bahamas (Correll & Correll, 1982) and Cuba (Alain, 1953).

Sloane’s account of Madeiran plants also included species that were cultivated by his circle of correspondents. Specifically, three of the fern species (see plant entries number 19, 35 and 36) were not collected by Sloane but were provided by William Sherard (1659–1728). These specimens came from the gardens of Sir Arthur Rawdon (1662–1695) in Moira in the northeast of Ireland where there was an extensive living collection of exotic plants (mostly from Jamaica). William Sherard was a lawyer who studied botany with Joseph Pitton Tournefort (1656–1708) in Paris, and with Paul Hermann (1646–1695) in Leiden. Sherard was employed by Rawdon as a tutor to his children (Nelson, 1983). Although there is no known list of material cultivated in this garden, we believe that some of the

Madeiran ferns now in Sloane's herbarium were collected by Arthur Rawdon's gardener, James Harlow (1660s–1690s), during the latter's journey to Jamaica in 1692, five years after Sloane's visit (Nelson, 2009).

Several Macaronesian taxa were in cultivation in various European gardens long before Sloane's Madeiran visit. Examples include *Dracaena draco* in Lisbon in the 15th century (Casper, 2000; Mason, 2006) and at least two other woody species (*Genista canariensis* L. in 1656 and *Persea indica* (L.) Spreng., Lauraceae, in 1665) in gardens in London (Aiton, 1789). However, Sloane was the first plant collector to provide an extensive record and account of the island's flora (Francisco-Ortega & al., in press). Sloane's accounts are not only the earliest documented herbarium collections from Macaronesia but also provide an important pre-Linnaean floristic study from the Macaronesian Islands.

## ■ ACKNOWLEDGEMENTS

We dedicate this paper to the memory of Richard Lester (1937–2006), friend, mentor, colleague, and outstanding teacher who introduced JFO to the world of modern plant systematics. This is contribution number 173 from the Tropical Biology Program of Florida International University. We are grateful to the Natural History Museum, London for providing images of the illustrations found in Sloane's works. George Proctor (IJ), Norman Robson (BM), and Ian Tittley (BM) kindly provided help with identifications of specimens and taxonomic interpretation of the polynomial descriptions. Lastly, we are grateful to Charles Nelson for his many helpful suggestions in reviewing this manuscript.

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**Appendix 1.** Taxonomic index. Accepted names for polynomial names found in Sloane's works are indicated in bold. Additional information is provided in square brackets: Mac., endemic in Macaronesia; Mad., endemic in Madeira; Carib., native in Caribbean Islands; native, native in Madeira (excluding the endemics), introduced, taxa non-native to Madeira; plate, illustrated in Sloane (1707); herb., specimen in Sloane's herbarium; total number of sheets is indicated in parentheses.

Taxon – Plant entry number	Taxon – Plant entry number
<i>Achyranthes aspera</i> L. (Amaranthaceae) – 4	<b><i>Erica platycodon</i> (Webb &amp; Berthel.) Rivas Mart. &amp; al. subsp. madericola</b> (D.C. McClint.) Rivas Mart. & al. [Mad., herb. (1)] – 18
<b><i>Achyranthes sicula</i> (L.) All.</b> [native, herb. (1)] – 4	<i>Erica scoparia</i> L. – 18
<i>Acrostichum marantae</i> L. (Sinopteridaceae) – 45	<b><i>Rhodium malacoides</i> (L.) L'Hér.</b> (Geraniaceae) [native] – 24
<i>Adiantum capillus-veneris</i> L. (Adiantaceae) – 1	<i>Euphorbia segetalis</i> L. (Euphorbiaceae) – 63
<b><i>Adiantum reniforme</i> L.</b> [native, herb. (1)] – 35	<b><i>Euphorbia terracina</i> L.</b> [native, plate, herb. (1)] – 63
<b><i>Amaranthus blitum</i> L.</b> (Amaranthaceae) [native, plate, herb. (1)] – 9	<b><i>Foeniculum vulgare</i> Mill.</b> (Apiaceae) [native, herb. (1)] – 20
<i>Anethum foeniculum</i> L. var. <i>piperitum</i> (Ucria) DC. – 20	<i>Foeniculum vulgare</i> subsp. <i>piperitum</i> (Ucria) Cout. – 20
<b>Apiaceae sp.</b> [Carib., herb. (2)] – 10, 11	<i>Foeniculum peperitum</i> DC., nom. dub. – 20
<b><i>Aristida adscensionis</i> L.</b> (Poaceae) [native, plate, herb. (1)] – 26	<i>Foeniculum piperitum</i> (Ucria) Sweet – 20
<i>Aristida coerulescens</i> . Desf. – 26	<i>Fumaria</i> L. sp. (Papaveraceae) – 21
<i>Arundo</i> L. (Poaceae) – 7	<i>Gamochoeta pensylvanica</i> (Willd.) Cabrera (Asteraceae) – 25
<b><i>Arundo donax</i> L.</b> [introduced] – 7	<i>Genista maderensis</i> (Webb & Berthel.) Lowe (Fabaceae) – 23
<b><i>Asparagus scoparius</i> Lowe</b> (Liliaceae) [Mac., herb. (1)] – 8	<i>Genista monspessulana</i> (L.) L. Johnson – 23
<b><i>Asplenium hemioniitis</i> L.</b> (Aspleniaceae) [native, herb. (1)] – 19, 36	<i>Genista paivae</i> Lowe – 23
<i>Bidens leucantha</i> Willd. (Asteraceae) – 14	<b><i>Genista tenera</i> (Jacq. ex Murray) Kuntze</b> [Mad.] – 23
<b><i>Bidens pilosa</i> L.</b> [introduced, herb. (1)] – 14	<i>Genista tinctoria</i> L. – 23
<b><i>Bituminaria bituminosa</i> (L.) C.H. Stirt.</b> (Fabaceae) [native, herb. (1)] – 65	<i>Geranium malacoides</i> L. (Geraniaceae) – 24
<b><i>Briza maxima</i> L.</b> (Poaceae) [native] – 31	<i>Glechoma hederacea</i> L. (Lamiaceae) – 32
<i>Bupleurum</i> L. (Apiaceae) – 10, 11	<b><i>Globularia salicina</i> Lam.</b> (Globulariaceae) [Mac., plate, herb. (1)] – 2
<i>Bupleurum lancifolium</i> Hornem. – 10, 11	<b><i>Heliotropium europaeum</i> L.</b> (Boraginaceae) [native, herb. (1)] – 34
<i>Bupleurum salicifolium</i> B. Br. ex Buch – 10, 11	<b><i>Hyparrhenia sinaica</i> (Delile) Llaurod ex G. López</b> (Poaceae) [native, herb. (1)] – 28
<b><i>Bystropogon maderensis</i> Webb &amp; Berthel.</b> (Lamiaceae) [Mad., herb. (1)] – 59	<i>Hypericum</i> L. (Hypericaceae) – 41
<b><i>Capsicum baccatum</i> L.</b> (Solanaceae) [introduced, herb. (1)] – 12	<b><i>Hypericum canariense</i> L.</b> [Mac., plate, herb. (2)] – 16
<b><i>Cicer arietinum</i> L.</b> (Fabaceae) [introduced] – 15	<i>Hypericum erectum</i> Link in Buch, nom. nud. – 16
<b><i>Colocasia esculenta</i> (L.) Schott</b> (Araceae) [introduced] – 6	<b><i>Hypericum glandulosum</i> Aiton</b> [Mac., plate, herb. (1)] – 16
<b><i>Convolvulus althaeoides</i> L.</b> (Convolvulaceae) [native, herb. (1)] – 17	<i>Hypericum grandifolium</i> Choisy – 16
<i>Crepis pectinata</i> Lowe (Asteraceae) – 38	<b><i>Hypericum humifusum</i> L.</b> [native] – 41
<b><i>Cytisus scoparius</i> (L.) Link</b> (Fabaceae) [introduced, herb. (1)] – 22	<i>Jasminum azoricum</i> L. (Oleaceae) – 42
<b><i>Davallia canariensis</i> (L.) Sm.</b> (Davalliaceae) [native, plate, herb. (1)] – 1	<i>Jasminum grandiflorum</i> L. – 42
<b><i>Digitaria insularis</i> (L.) Mez ex Ekman</b> (Poaceae) [Carib., plate, herb. (1)] – 27	<b>Lamiaceae sp.</b> – 40
<b><i>Dracaena draco</i> (L.) L. subsp. draco</b> (Dracaenaceae) [Mac., herb. (1)] – 54	<b><i>Lapsana communis</i> L.</b> (Asteraceae) [native] – 39
<i>Eclipta erecta</i> L. (Asteraceae) – 57	<i>Lapsana stellata</i> L. – 39
<i>Eclipta prostrata</i> (L.) L. – 57	<i>Lycium</i> L. (Solanaceae) – 47
<i>Elaeagnus angustifolia</i> L. (Elaeagnaceae) – 51	<i>Lycium europaeum</i> L. – 47
<b><i>Erechtites hieracifolia</i> (L.) DC.</b> (Asteraceae) [Carib., herb. (1)] – 62	<i>Lycium intricatum</i> Boiss. – 47
<b><i>Erica arborea</i> L.</b> (Ericaceae) [native, herb. (1)] – 18	<i>Lapsana stellata</i> L. – 39
	<b><i>Musa × paradisiaca</i> L.</b> (Musaceae) [introduced] – 48
	<i>Musa × sapientum</i> L. – 48

## Appendix 1. Continued.

Taxon – Plant entry number	Taxon – Plant entry number
<i>Myrtus communis</i> L. (Myrtaceae) [native, herb. (1)] – 50	<i>Rhagadiolus stellatus</i> (L.) Gaertn. (Asteraceae) [native] – 39
<i>Notholaena marantae</i> (L.) R. Br. subsp. <i>subcordata</i> (Cav.) G. Kunkel (Sinopteridaceae) [Mac.] – 45	<i>Rolandra fruticosa</i> (L.) Kuntze (Asteraceae) [Carib., plate, herb. (1)] – 3
<i>Olea</i> L. (Oleaceae) – 51	<i>Rumex pulcher</i> L. subsp. <i>woodsii</i> (De Not.) Arcang. (Polygonaceae) [native] – 43
<i>Olea maderensis</i> (Lowe) Rivas Mart. & del Arco [Mad.] – 51	<i>Ruta</i> L. (Rutaceae) – 58
<i>Opuntia ficus-barbarica</i> A. Berger (Cactaceae) – 52	<i>Ruta angustifolia</i> Pers. – 58
<i>Opuntia tuna</i> (L.) Mill. [introduced] – 52	<i>Ruta chalepensis</i> L. [native] – 58
<i>Origanum vulgare</i> L. subsp. <i>virens</i> (Hoffmanns. & Link) Bonnier & Layens (Lamiaceae) [native, plate, herb. (1)] – 53	<i>Salvia glutinosa</i> L. (Lamiaceae) – 40
<i>Oryzopsis miliacea</i> (L.) Asch. & Schweinf. (Poaceae) [native, plate] – 29	<i>Scorpiurus sulcatus</i> L. (Fabaceae) [native] – 60
<i>Oxalis corniculata</i> L. (Oxalidaceae) [introduced, herb. (1)] – 64	<i>Setaria geniculata</i> (Lam.) P. Beauv. (Poaceae) – 30
<i>Panicum repens</i> L. (Poaceae) – 29	<i>Setaria glauca</i> (L.) P. Beauv. – 30
<i>Papaveraceae</i> sp. [herb. (1)] – 21	<i>Setaria parviflora</i> (Poir.) Kerguelen [Carib., herb. (1)] – 30
<i>Pectis linifolia</i> L. (Asteraceae) [Carib., plate, herb. (1)] – 37	<i>Sibthorpia peregrina</i> L. (Scrophulariaceae) [Mad., herb. (1)] – 32
<i>Petrorhagia nanteuilii</i> (Burnat) P. W. Ball & Heywood (Caryophyllaceae) [native, herb. (1)] – 13	<i>Sideritis candicans</i> Aiton (Lamiaceae) – 40
<i>Phagnalon saxatile</i> (L.) Cass. (Asteraceae) [native, herb. (1)] – 33	<i>Silene gallica</i> L. (Caryophyllaceae) [native, herb. (1)] – 46
<i>Pistia stratiotes</i> L. (Araceae) [Carib., plate, herb. (1)] – 44	<i>Solanum pseudocapsicum</i> L. (Solanaceae) [introduced] – 61
<i>Plantago</i> sp. (Plantaginaceae) [herb. (1)] – 56	<i>Stypocaulon scoparia</i> (L.) Kütz. (Sphacelariales: Stypocaulaceae) [native, plate, herb. (1)] – 49
<i>Plantago</i> sp. – 57	<i>Teucrium betonicum</i> L'Hér. (Lamiaceae) [Mad., plate, herb. (1)] – 59
<i>Plantago arborescens</i> Poir. – 57	<i>Tolpis pectinata</i> Lowe, nom. dub. (Asteraceae) – 38
<i>Plantago arenaria</i> Waldst. & Kit. – 57	<i>Tolpis pectinata</i> (Lowe) DC. – 38
<i>Plantago lanceolata</i> L. – 56	<i>Tolpis succulenta</i> (Aiton) Lowe [Mac., plate, herb. (1)] – 38
<i>Plantago psyllium</i> L. – 57	<i>Triopteris jamaicensis</i> L. (Malpighiaceae) [Carib., plate, herb. (1)] – 5
<i>Polygonum hydropiper</i> L. (Polygonaceae) [native, plate, herb. (1)] – 55	<b>Undetermined taxon</b> [plate, herb. (1)] – 47
<i>Polygonum minus</i> Huds. – 55	<b>Undetermined taxon</b> – 42
<i>Pseudognaphalium luteo-album</i> (L.) Hilliard & B. L. Burt (Asteraceae) [native, herb. (3)] – 25	<i>Urtica elevata</i> Lowe (Urticaceae) – 66
	<i>Urtica morifolia</i> Poir. [Mac., herb. (2)] – 66

## Appendix 2. Polynomial descriptions found in Sloane (1696, 1707, 1725).

Item	Plant entry number
Polynomials reported only for Madeira and not for the Caribbean Islands by Sloane (1696)	1, 2, 8, 9, 13, 14 <sup>a</sup> , 16, 17, 18, 20, 21, 22, 25, 26, 28, 29, 32, 33, 34, 35 <sup>b</sup> , 38, 39, 46, 47, 48, 49, 50, 52, 53, 54, 56, 59, 61, 63, 64, 65, 66
Polynomials reported only for Madeira and not for the Caribbean Islands by Sloane (1707)	1, 2, 7, 8, 9, 13, 14, 15, 16, 17, 18, 19 <sup>b</sup> , 20, 21, 22, 23, 24, 25, 26, 28, 29, 31, 32, 33, 34, 35 <sup>b</sup> , 38, 39, 40, 41, 42, 43, 45, 46, 47, 49, 50, 51, 52, 53, 54, 56, 57, 58, 59, 60, 61, 63, 64, 65, 66
Polynomials reported only for Madeira and not for the Caribbean Islands by Sloane (1725)	48
Polynomials reported only for Madeira and not for the Caribbean Islands by Sloane (1696, 1707, 1725)	1, 2, 7, 8, 9, 13, 14, 15, 16, 17, 18, 20, 21, 22, 23, 24, 25, 26, 28, 29, 31, 32, 33, 34, 35, 38, 39, 40, 41, 42, 43, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 56, 58, 59, 60, 61, 63, 64, 65, 66
Polynomials reported by Sloane (1696) but not reported by Sloane (1707, 1725)	48, 62
Polynomials reported by Sloane (1707) but not reported by Sloane (1696)	4, 6, 7, 15, 19 <sup>b</sup> , 23, 24, 27, 30 <sup>c</sup> , 31, 36 <sup>b</sup> , 40, 41, 42, 43, 45, 51, 57, 58, 60
Polynomials reported both for Madeira and the Caribbean Islands by Sloane (1696)	12, 55, 62
Polynomials reported both for Madeira and the Caribbean Islands by Sloane (1707)	4, 6, 12, 30 <sup>c</sup> , 55
Polynomials for which Sloane (1696) was not certain if they were collected in Madeira	3, 5, 10, 11, 37, 44
Polynomials for which Sloane (1707) was not certain if they were collected in Madeira	3, 5, 10, 11, 19 <sup>b</sup> , 27, 36 <sup>b</sup> , 37, 44
New polynomials described by Sloane (1696)	1, 2, 3, 5, 12, 16, 26, 27, 29, 35 <sup>b</sup> , 37, 38, 47, 48, 49, 52, 53, 55, 59, 63, 66
Polynomials that refer to species not occurring in Madeira but in the Caribbean during Sloane's visit	3, 5, 10, 11, 27, 30 <sup>c</sup> , 37, 44, 62
Polynomials with matching herbarium specimens in Sloane's herbarium	1, 2, 3, 4, 5, 8, 9, 10, 11, 12, 13, 14, 16, 17, 18, 20, 21, 22, 25, 26, 27, 28, 30 <sup>c</sup> , 32, 33, 34, 35 <sup>b</sup> , 36 <sup>b</sup> , 37, 38, 44, 46, 47, 49, 50, 53, 54, 55, 56, 59, 62, 63, 64, 65, 66
Polynomials with illustrations in Sloane (1707)	1, 2, 3, 5, 9, 16, 26, 27, 29, 37, 38, 44, 47, 49, 53, 55, 59, 63

<sup>a</sup>Sloane (1696) indicates that material of *Bidens pilosa* from Bermuda was sent to him by James Petiver (1663–1718).<sup>b</sup>These fern specimens reached Sloane from William Sherard (1659–1728).<sup>c</sup>*Setaria parviflora* occurs in Madeira, but it is believed to be a recent introduction to the island (Hansen, 1968).