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Type material in the herbarium of the Martin Luther University Halle-Wittenberg of species based on collections from Alexander von Humboldt's American expedition between 1799 and 1804 in its historical context

Natalia TKACH, Bettina HEUCHERT, Christina KRÜGER, Heike HEKLAU, Denise MARX, Uwe BRAUN & Martin RÖSER

Abstract: Tkach, N., Heuchert, B., Krüger, Ch., Heklau, H., Marx, D., Braun, U. & Röser, M. 2016: Type material in the herbarium of the Martin Luther University Halle-Wittenberg of species based on collections from Alexander von Humboldt's American expedition between 1799 and 1804 in its historical context. Schlechtendalia **29**: 1–107.

Type material of 363 plant species described on the basis of collections from Alexander von Humboldt's American research journey at the turn from the 18th to the 19th century is deposited in the herbarium of the Martin Luther University Halle-Wittenberg (HAL). Most of these types are duplicates of specimens in Willdenow's collection housed in the herbarium of the Botanical Garden and Botanical Museum, Berlin-Dahlem (B). Some other samples came from the legacy of D. F. C. von Schlechtendal, but most of these specimens made their way to Halle through his son, D. F. L. von Schlechtendal. Numerous Humboldt collections are deposited in the herbarium of the Muséum National d'Histoire Naturelle in Paris (P). A comprehensive survey of the types deposited in HAL is given, and the herbarium samples concerned are discussed in their historical context. It has been verified whether the type specimens deposited in HAL are unique specimens or duplicates of samples preserved also in Berlin (B) and/or Paris (P). The history of Humboldt's botanical collections from his American expedition, including their shipment to Europe, all important people involved their distribution between Berlin and Paris, their scientific processing by various botanists, and the background of the transfer of duplicates to Halle, are discussed. An annotated list of the 363 type collections is provided at the end of this work.

Zusammenfassung: Tkach, N., Krüger, Ch., Heuchert, B., Heklau, H., Marx, D., Braun, U. & Röser, M. 2016: Typusmaterial von Arten basierend auf Kollektionen von Alexander von Humboldts amerikanischer Forschungsreise zwischen 1799 und 1804 im Herbarium der Martin-Luther-Universität Halle-Wittenberg im historischen Kontext. Schlechtendalia **29**: 1–107.

Typusmaterial von 363 Pflanzenarten, die auf Grundlage von Kollektionen aus Humboldts amerikanischer Forschungsreise an der Wende vom 18. zum 19. Jahrhundert beschrieben worden sind, befindet sich in Herbarium der Martin-Luther-Universität Halle-Wittenberg (HAL). Die meisten Typen sind Dubletten von Kollektionen aus der Sammlung von C. L. Willdenow im Herbarium des Botanischen Gartens und Botanischen Museums Berlin-Dahlem (B), einige andere Belege stammen aus dem Nachlass von D. F. C. von Schlechtendal, wobei aber die meisten dieser Kollektionen durch seinen Sohn, D. F. L. von Schlechtendal, nach Halle gelangten. Zahlreiche Humboldt-Kollektionen werden im Herbarium des Muséum National d'Histoire Naturelle in Paris (P) aufbewahrt. Eine umfassende Übersicht der in HAL vorhandenen Typus-Kollektionen wird vorgelegt und die einzelnen Belege werden in ihrem historischen Kontext diskutiert. Es wurde geprüft, ob die in HAL vorhandenen Typen Unikate sind oder Duplikate von Belegen, die in Berlin (B) und/oder Paris (P) vorhanden sind. Die Geschichte von Humboldts botanischen Sammlungen seiner amerikanischen Expedition, einschließlich des Transports nach Europa, aller wichtigen involvierten Personen, der Aufteilung zwischen Berlin und Paris, der wissenschaftlichen Bearbeitung durch verschiedene Botaniker und des Hintergrundes der Überführung von Dubletten nach Halle, werden diskutiert. Eine annotierte Liste der 363 Typen bildet den Abschluss dieser Arbeit.

Key words: HAL, type material, A. Bonpland, C. S. Kunth, D. F. L. von Schlechtendal, C. L. Willdenow.

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Contents

1 Introduction

Alexander von Humboldt (1769–1859) was one of the most outstanding and influential personalities of his time. His contributions to natural sciences are fundamental and of major relevance to this day. Humboldt's American research journey between 1799 and 1804 was one of the most spectacular early expeditions in little researched regions in the tropics of America, and its results lie at the core of modern scientific exploration, above all for Mexico, the West Indies and South America. Humboldt is still venerated today in wide parts of this continent. A collection comprising more than 5,000 species was part of the scientific yield of this expedition at the turn from the 18th to the 19th century (Humboldt 1851). Humboldt's plant collections reached the herbarium of the Botanical Garden and Botanical Museum, Berlin-Dahlem, especially via the collections of the botanists Carl Ludwig Willdenow and Carl Sigismund Kunth (about 3,360 species), and in the herbarium of the Muséum National d'Histoire Naturelle in Paris (about 3,560 species). In 1833, an unspecified number of additional collections, originally in the possession of Aimé Bonpland, were added to the herbarium in Paris (Hiepko 2006). Examinations of these collections by various botanists resulted in descriptions of numerous new species. According to Humboldt (1851), descriptions of 3,600 new species had been published between 1815 and 1825 in works dealing with herbarium specimens of his expedition (see Chapter 5). This amount is particularly impressive since the total number of known European species in the middle of the 19th century encompassed a mere 8,000 or so species (Hein 1959).

Type material of the new taxa of Humboldt's collections is nowadays mainly deposited in the herbaria in Berlin (B) and Paris (P). However, 363 type collections based on Humboldt material have been traced in the herbarium of the Martin Luther University Halle-Wittenberg (HAL). This herbarium is of medium size and today comprises about 500,000 specimens, including approximately 12,000 type specimens. In the last few years, a comprehensive search for type collections has been carried out in HAL, leading to the discovery of numerous types based on Humboldt material, which is, however, not sufficiently well known among taxonomists. In most previous publications dealing with Humboldt's collections, only samples deposited in Berlin (B) and Paris (P) have been taken into consideration (Rankin Rodiguez & Greuter 2001, Leuenberger 2002, Hiepko 2006, Hind & Jeffrey 2001). A reference to the fact that Humboldt collections are housed in additional herbaria is included in Lack (2003), although a first note on Humboldt's specimens was already published by Werner (1955) in his survey of the history of the herbarium HAL, including a list of collectors. Most of Humboldt's collections in HAL are duplicates of samples originally deposited in Willdenow's herbarium in Berlin (B). Many specimens came from the legacy of D. F. C. von Schlechtendal (Schlechtendal pat.), but all of these specimens made their way to Halle through his son, D. F. L. von Schlechtendal (Schlechtendal).

This work aims at giving a complete survey of type material of taxa described on the basis of material from Humboldt's American expedition deposited at HAL, including a focus on

searching for types of taxa found in Berlin (B), Paris (P) and other herbaria. In addition, a brief survey of the historical background of Humboldt's expedition with a focus on botanical collections and type material is provided, including basic bibliographic data about Humboldt, his companion Bonpland as well as Kunth and Willdenow. Numerous letters by Humboldt were used as an important source of information in this study. Last but not least, some nomenclatural and taxonomic conflicts are discussed that arose from parallel treatments of Humboldt's collections by different botanists, primarily by Bonpland and Willdenow, but also by Kunth as well as Roemer and Schultes pat. & Schultes f.

2 Methods

Type specimens of species based on collections of Humboldt's American expedition deposited at HAL are listed at the end of this work, supplemented by accession numbers, type status (lectotype, syntype, etc.), references and geographic data referring to type localities and habitats. There are numerous cases of several different names ascribed to particular collections by several botanists, due to parallel handling of Humboldt's material, mainly by Bonpland on the one hand and Willdenow and his successors on the other hand. The relevant names are also added to the appended list. The nomenclatural status of the respective types has been verified on the base of protologue data of the particular species. Historical data about the people involved and details of type specimens preserved in Berlin (B), Paris (P) and other herbaria have been taken from relevant publications, pertinent archives and internet resources (see Chapter 8 and Stafleu & Cowan 1976–1988). The archive and internet resources consulted are listed in Chapter 8. In order to trace and allocate specimens corresponding to Willdenow's unpublished names (in herb.), different sources were used, for example, Steudel (1840–1841), who listed apart from published plant names also unpublished names from herbarium Willdenow. Original handwritten nomenclatural and taxonomical notes on envelopes of sheets of duplicates in Halle stemming from Willdenow's herbarium in Berlin were often also very helpful in this respect.

3 Basic historical data

In the following chapters, basic biographical data about the important historical figures involved in collecting, distributing, and scientific examinations of Humboldt's botanical collections are briefly summarised.

3.1 Alexander von Humboldt (1769–1859)

Friedrich Wilhelm Heinrich Alexander von Humboldt was born on 14 September 1769 in Berlin as the son of Alexander Georg von Humboldt (1720–1779), officer and chamberlain at the Prussian court, and his wife Marie Elisabeth (1741–1796), descended from a bourgeois Huguenot family (Fig. 1; {URL1}). Together with his older brother Wilhelm (1767–1835), A von Humboldt grew up at Castle Tegel. His father was open to Enlightenment ideas, and put the education of both sons in the hands of open-minded private tutors, including Joachim Heinrich Campe (1746–1818), a well-known school reformer, and, from 1777 onwards, the teacher Gottlob Johann Christian Kunth (1757–1827), who was a kind of father figure for the brothers Humboldt after the early death of their father in 1779 (Jahn 2001). They grew up with a good education, but with little focus on natural sciences (Biermann 1983, Jahn 2001). Alexander loved spending his leisure in the surrounding countryside of Tegel near Berlin where he collected minerals, mollusks, plants, beetles, and butterflies for natural history studies (Geier 2010). At the request of their mother, Humboldt began studying cameralistics (economy) at the university of Frankfurt (Oder) in 1787. Using Willdenow's recently published *Florae berolinensis prodromus* ('Flora of Berlin'; Willdenow 1787), Humboldt tried to familiarize himself with the classification of plants, but only with limited success (Jahn 1966, Geier 2010). On his return from Frankfurt (Oder) after one semester, Humboldt became intently focused on educating himself further in the natural sciences. Without any letter of recommendation, he visited Carl Ludwig Willdenow (1765–1812), the author of the Berlin flora, in his pharmacy, which was the beginning of a long-lasting friendship and Humboldt's devotion to botany (Jahn

1966). Willdenow became his instructor in botany, and Humboldt admired his botanical knowledge and huge collections (Jahn 1966).

> "Der Anblick der ausländischen Pflanzen, die ich in den Herbarien sah, erfüllte meine Einbildung mit Genüssen, welche mir die Vegetation der wärmeren Länder darbieten mußte. […]. Ich konnte mir diese nicht anschauen, ohne daß sich in mir der Wunsch regte, diese Länder zu besuchen." (copy of a letter written by Humboldt, in Hein 1959: 468) [The sight of the exotic plants in the herbaria filled my imagination with delight at what the vegetation of warmer climes would surely evoke. […]. I could not look at them without nurturing the desire to visit these countries.]

Fig. 1: Alexander von Humboldt. Painting by Friedrich Georg Weitsch, 1806 {URL14}.

Humboldt intended to take part together with Willdenow in a Russian-funded world circumnavigation. This failed, however, due to Willdenow's wedding plans (Jahn 1966). In 1789, Humboldt moved to Göttingen to continue his university education. At that time Göttingen was the youngest and most progressive university in the German states (Biermann 1983). The anatomist, naturalist, and anthropologist Johann Friedrich Blumenbach (1752–1840) and the physicist Georg Christoph Lichtenberg (1742–1812), the father-in-law of the explorer and scholar Georg Forster (1754–1794), were among Humboldt's university teachers in Göttingen, and he made the personal acquaintance of the botanists Johann Heinrich Friedrich Link (1767–1851) and Christian Hendrik Persoon (1755–1857). A lasting friendship connected him with Georg Forster, who accompanied Captain James Cook (1728–1779) during his world circumnavigation between 1772 and 1775 (Jahn 2001). In March 1790, Humboldt and Forster made a joint journey to England, which they used for a visit to the Royal Botanic Gardens at Kew near London and a meeting with the naturalist Sir Joseph Banks (1743–1820), who had also participated in Cook's world circumnavigation (Plewe 1974, Biermann 1983). This was Humboldt's first longer journey which stimulated and strengthened his inclination and desire to see tropical regions (Geier 2010: 127).

> "Wie sehr erwachte diese Sehnsucht vollends bei dem Anblick des allverbreiteten, beweglichen, länderverbindenden Ozeans, den ich bei Ostende zuerst sah." (copy of a letter written by Humboldt, in Geier 2010: 127) [Great yearning arose in me when I saw near Ostend the mighty, omnipresent, connecting ocean for the first time.]

In July 1790, they used the return journey to visit Paris, where Humboldt was deeply impressed by the celebrations of the Revolution, which was in his eyes just an acceleration of necessary historical processes (Plewe 1974). Back in the German states Humboldt studied mining at the Freiberg Mining Academy in Saxony, where he even carried out botanical examinations underground that he published in *Florae fribergensis specimen* dedicated to Willdenow (Humboldt 1793). In 1792, he finished his course of studies in mining and went into the Prussian civil service as a civil servant in mining (Biermann 1983). During a visit to his brother in Jena, he met Johann Wolfgang von Goethe (1749–1832), which led to a lasting friendship. Later, Humboldt remarked regarding Goethe's influence that he had felt inspired by his insights into the natural world and had at the same time been equipped with new faculties ["durch Goethes Natureinsichten gehoben, gleichsam mit neuen Organen ausgerüstet worden sei"] (copy of a letter written by Humboldt, in Jahn 2001: 227), that is to say Goethe's view of nature inspired Humboldt.

In 1796, Humboldt's mother passed away. His share of the inheritance made him financially independent of the civil service and made plans for a journey round the world possible. At the end of this year, he obtained a dismissal, started to plan this journey, and made arrangements, although particular destinations had not yet been fixed in that phase (Jahn 2001: 227). But in various letters he continuously emphasized his plans:

> "Meine Reise ist unerschütterlich gewiß. Ich präpariere mich noch einige Jahre und sammle Instrumente, ein bis anderthalb Jahr bleibe ich in Italien, um mich mit Vulkanen genau bekannt zu machen, dann geht es über Paris nach England, wo ich leicht auch wieder ein Jahr bleiben könnte […], und dann mit englischen Schiffen nach Westindien." (copy of a letter written by Humboldt, in Geier 2010: 204) [My intention to travel is absolutely definite. I still need a few years for preparation, and will procure instruments; I will stay in Italy for one or one and a half years to examine the volcanoes, then I will travel via Paris to England to stay there about a year in order to travel finally with English ships to the West Indies].

This was Humboldt's first indication of a specific destination, although he not only referred to the Caribbean Islands, but also included the whole tropical and subtropical regions of Central and South America, which he aimed to reach in the end after several circuitous tours (Geier 2010: 204). For his examinations of the volcanoes, he acquired several measuring instruments, which he tested under the guidance of the geologist Leopold von Buch (1774–1853). In the Salzburg Alps, he carried out barometric and meteorological measurements. However, his initial plans to travel to Italy were scuppered by Napoléon's Italian military campaign. As a result, in April 1798 Humboldt followed his brother on a voyage to Paris (Jahn 2001), where he contacted

several important scientists of the 'Institut de France', improved his botanical, chemical, anatomical and astronomic knowledge and completed his assembly of scientific instruments (Geier 2010: 208). All his hopes for a private participation in Captain Thomas-Nicolas Baudin's (1754–1803) world circumnavigation, planned by the French Government, were ruined by the chaos of war in Europe and could not be realized, which led to Humboldt's decision to finance his long-awaited research travel through private funding, and to start on a trip to North Africa. He was able to convince the physician and botanist Aimé Bonpland (1773–1858) whom he had met in Paris (Moheit 1993, Geier 2010), to accompany him on these travels. On 20 October 1798, they left Paris and intended to travel via Marseille to Egypt and then to East India, but they waited in vain for the ship, so they decided to walk to Madrid (Geier 2010). On the route across the Pyrenees, Humboldt measured the Spanish mountains using a sextant, chronometer, thermometer and barometer (Jahn 2001: 227), and thus created quite incidentally a first landscape relief of a larger area. Immediately upon arrival in Madrid, Humboldt used previous relations with the Spanish politician Mariano Louis de Urquijo (1768–1831), whom he had met in England in March 1799, to get access to the Spanish royal court. In March 1799, together with his travel companion he was one of the first researchers to obtain permission for an expedition through the Spanish colonies in Central America (Jahn 2001: 228). Equipped with Spanish passports, promising all kinds of support and protection during their travels, they embarked in La Coruña on 5 June 1799. Full of anticipation at the great long-awaited adventures he would undertake in exotic natural surroundings, he wrote in a letter to a friend shortly after departure:

> "Welch ein Glück ist mir eröffnet! Mir schwindelt der Kopf vor Freude. Ich gehe ab mit der spanischen Fregatte Pizarro; wir landen vorher in den Canarien und an der Küste Caracas in Süd-Amerika. […] Welchen Schatz von Beobachtungen werde ich nun nicht zu meinem Werke über die Construktion des Erdkörpers sammeln können! Von dort aus mehr, mein guter Herzensfreund. Der Mensch muß das Gute und Große wollen. Das Uebrige hängt vom Schicksal ab." (copy of a letter written by Humboldt, in Geier 2010: 211) [What luck has come my way! My head is spinning with happiness. I will travel on the frigate Pizarro; we will disembark at the Canary Islands and on the coast of Caracas in South America. […] What a treasure of observations can now be collected for my work about the construction of the body of earth! But more on that later from there, my dear friend. Humankind has to want the good and the great. The rest depends on fate.]

In Tenerife, Humboldt was able to climb the mountain Pico de Teide which enabled him to investigate his first volcano (Jahn 2001). His observations were the basis for his ground-breaking ideas about the geography of plants, namely that different plant species are to be found at different heights up the mountain, comparable to their horizontal distribution on earth. The drop in temperature, atmospheric density and disposable water therefore creates different zones of vegetation that are arranged like storeys (Geier 2010: 213).

The roughly planned travel route had been altered several times in the course of the expedition (Plewe 1974, Moheit 1993), but Humboldt's defined objectives remained unchanged (Fig. 2):

> "Ich werde Pflanzen und Fossilien sammeln, […] nützliche astronomische Beobachtungen machen können; ich werde die Luft chemisch zerlegen. – Dies alles ist aber nicht Hauptzweck meiner Reise. Auf das Zusammenwirken der Kräfte, den Einfluss der unbelebten Schöpfung auf die belebte Thiere- und Pflanzenwelt, auf diese Harmonie sollen stäts meine Augen gerichtet seyn." (copy of a letter written by Humboldt, in Moheit 1993: 33). [I will collect plants and fossils, […] carry out useful astronomic observations; I will disassemble the air chemically. – But all these things are not the main purpose of my travel. The interaction of the forces, the influence of the inanimate nature on the animate fauna and flora, this harmony shall always be in my focus.]

On 16 July 1799, the two explorers reached Cumaná in Nueva Barcelona (present-day Venezuela; Geier 2010). In Nueva Barcelona Humboldt and Bonpland already felt they were in 'the Promised Land' ["göttlichsten und vollsten Lande"] (letter written by Humboldt, copy in Moheit 1993: 41), and in the following months they made several expeditions along the coast

Fig. 2: Map with destinations of Humboldt's and Bonpland's American expedition {URL15}, modified.

and into the hinterland.Between 30 March and 10 June 1800, they journeyed along the river basin of the Río Orinoco for a period of 75 days, using small canoes belonging to the indigenous inhabitants, and covered a distance of 2,250 km. During these travels, Humboldt could confirm the formerly supposed connection between the Río Casiquiare, a tributary river of the Orinoco, and the Río Amazonas (Plewe 1974, Jahn 2001). Humboldt and Bonpland were impressed by the overwhelming abundance of the tropical rain forest, with its flora and fauna that were completely new to the scientific world (Jahn 2001: 231). In November 1800, they sailed from Cumaná to Cuba and spent three months there. In March 1801, they continued their journey towards Cartagena in present-day Colombia, a journey covering 55 days (between 21 April and 15 June 1801), on the Río Magdalena to Hona, where they climbed to the plateau of Bogotá. In Bogotá, they were guests of the botanist José Celestino Mutis (1732–1808) for several weeks and could use his large herbarium for comparison with their own specimens. In September 1801, they continued the difficult crossing of the Cordilleras by foot, up to a height of 3,000 m (Jahn 2001: 232), reached the volcanic plateau of Quito on 6 January 1802, where they stayed for eight months. The travellers, accompanied since Quito by the son of their host, Carlos Montúfar (1780–1816), used this stay to visit all the local volcanoes. Successively they investigated the tops of the volcanoes Pichincha, Cotopaxi, Antisana, and Illiniza (Geier 2010: 226) since Humboldt assumed underground connections between them. On 23 June 1802, they climbed the volcano Chimborazo (Fig. 3), at that time considered the world's highest mountain, but without any special equipment and despite the fact that Humboldt was slowed down by sore feet. At an insurmountable chasm just below the peak they had to turn around, nevertheless they reached the height of 3,031 toises (= 5,906 m), which had been calculated by Humboldt {URL1}. During their further travels towards Peru, they entered the Amazonian jungle in the region around the upper Río Marañón (Plewe 1974), visited mines and old Inka settlements before they arrived in Lima on 23 October 1802. This was the southernmost point of their expedition, where they stayed until the end of December 1802. Starting at Calloa, they sailed on

board the Spanish frigate La Castora along the coast to Guayaquil in present-day Ecuador. During this sea voyage, Humboldt observed and described the cold sea currents that influence climate and vegetation of the countries along the coast. In honour of Humboldt, they were later referred to as the Humboldt Current (Geier 2010, Jahn 2001). On 22 March 1803, they arrived in Acapulco at the Mexican coast and continued their voyage to Mexico City where they stayed until January 1804. For several months they worked and travelled in and around Mexico City and undertook several excursions deep into the interior of the country, where they visited the mines and settlements of the Aztecs (Jahn 2001: 233). In addition, Humboldt was engaged in studies of geographical and geological conditions, numbers of inhabitants, and ethnological affairs, agriculture, economics and the traffic system (Jahn 2001: 233). With the aim of completing this kind of regional study for Cuba as well, they travelled to Havana for a second time, where they arrived on 19 March 1804. On 29 April 1804, they continued their journey and reached Philadelphia and Washington in the United States, where Humboldt above all tried to compare the Spanish colonies in South and Central America with the independent democratic political systems (Jahn 2001: 233). However, the discrepancy between the spirit of the national constitution and the […] enslavement of the blacks was condemned wholeheartedly by Humboldt, a fact which he also made clear during a meeting with President Thomas Jefferson (1743–1826). After a few weeks, Humboldt and Bonpland left the United States, and on 3 August 1804 they reached Bordeaux on the French coast.

Initially Humboldt travelled to Paris to give lectures about the results of his expedition. After a detour via Italy, he returned to his home city of Berlin in November 1805, where he gave additional lectures and started to put down on paper first accounts in his *Ansichten der Natur* (Humboldt 1808, Jahn 2001). However, in Berlin there were few opportunities to perform detailed analyses and produce publications of the complete works about the yield of Humboldt's American expedition, that encompassed numerous boxes full of mineral, botanical and zoological treasures (Geier 2010: 231). Therefore, Humboldt accepted the Prussian King's offer to visit the French capital to enter into diplomatic negotiations, in order to finally settle in Paris (Jahn 2001). He spent 20 years in this city and devoted his efforts to the publication of his

Fig. 3: Humboldt and Bonpland at the foot of the Chimborazo volcano. Painting by Friedrich Georg Weitsch, 1810 {URL14}.

epoch-making travel work *Kosmos* (Humboldt 1845–1862) that covered several themes, including atlases, regional geography, plant geography, zoology and botany (Biermann 1983, Plewe 1974). Humboldt's private assets were almost completely used up by the whole publishing process of in total 34 volumes with 1,425 copper plates (Jahn 2001).

In May 1827, Humboldt, financially dependent on the annual donation by the King, had little choice but to return to Berlin (Geier 2010). He gave scientific lectures at the 'Königlich-Preußische Akademie der Wissenschaften' as well as public lectures, which were so popular that 'all of Berlin wanted to hear Humboldt's statements about the world' (Geier 2010: 287), but neither widespread public appreciation nor the recollection of the palm forests, volcanic mountains and mighty rivers that had enthralled him on his journeys helped him to forget the miserable sandy vegetation around Berlin: his longing for travel was difficult to quell (Geier 2010: 289). Several planned expeditions to Canada, Tibet and Russia never became reality (Plewe 1974). It was therefore with gratitude that he accepted the offer made by the Russian Tsar in 1829 to participate in a Russian research expedition through Russia and Siberia for several months, but with one major difference between this and his own American expedition – the route was prescribed and already prepared, and undertaking activities on his own would have been impossible. Humboldt, meanwhile 60 years old, focussed on geological, geomagnetic and climatic studies (Jahn 2001: 237). During this time in Russia, he wrote that the scientific purpose of his travel had been satisfied beyond his expectations (Jahn 2001: 237).

Back in Berlin, Humboldt started to analyse outcomes of his second major expedition and initiated the publication of his comprehensive works on 'all the natural forces that shape the world' (Jahn 2001: 239). This opus, first entitled *Physics of the world*, then *Cosmos: Sketch of a physical description of the universe*, later became his life's work which was issued between 1845 and 1859 in five volumes (Plewe 1974, Jahn 2001). Humboldt's aims are best reflected in his own words:

> "Ich habe den tollen Einfall, die ganze materielle Welt, alles was wir heute von den Erscheinungen der Himmelsräume und des Erdenlebens, von den Nebelsternen bis zur Geographie der Moose auf den Granitfelsen, wissen, alles in einem Werke darzustellen und in einem Werke, das zugleich in lebendiger Sprache anregt und das Gemüth ergötzt. Jene große und wichtige Idee, die irgendwo aufglimmt, muß neben den Thatsachen hier verzeichnet sein. Es muß eine Epoche der geistigen Entwicklung der Menschheit (in ihrem Wissen von der Natur) darstellen. […] Das Ganze ist nicht was man gemeinhin als physikalische Erdbeschreibung nennt, es begreift Himmel und Erde, alles Geschaffene." (copy of a letter written by Humboldt on 24 October 1834, see Assing 1860a: 20–22) [I have the extravagant idea of describing in one and the same work the whole material world – all that we know today of the celestial bodies and of life upon the earth – from the nebular stars to the mosses on the granite rocks – and to make this work instructive to the mind, and at the same time attractive, by its vivid language. Every great and sparkling idea must be noticed, side by side with its attendant facts. The work shall represent an epoch of the intellectual development of mankind in their knowledge of nature. […] It comprises heaven and earth – everything existing.] (Assing 1860b: 35–38).

To facilitate the preparation of *Kosmos*, Humboldt drew on an ever wider network of academics worldwide, corresponded with different specialists, and reduced his sleeping time to four hours a night (Plewe 1974, Jahn 2001). Nevertheless he failed to complete his major project. On 6 May 1859, Humboldt passed away in Berlin at the age of almost 90 years. The versatility of this polymath, whose research 'contributed to the liberation of man' (Plewe 1974), can only be guessed. Humboldt's comprehensive thirst for knowledge is reflected in his countless publications. He was a supporter of young scientists and artists, until his death he was always interested in scientific innovations, and he left a lasting impression on contemporaries who had made his acquaintance. In 1827, Goethe wrote about Humboldt:

> "Was für ein Mann! Ich kenne ihn so lange, und doch bin ich von neuem über ihn in Erstaunen. Man kann sagen, er hat an Kenntnissen und lebendigem Wissen nicht seinesgleichen. […] Wohin man rührt, er ist überall zu Hause und überschüttet uns mit geistigen Schätzen." (copy of a letter written by Goethe, in Geier 2010: 285) [What a man!

> I have known him such a long time, nevertheless I am still amazed. His knowledge and vivid awareness are unique […] He is well-versed in all fields and subjects, and overwhelms us with intellectual treasures.]

3.2 Aimé Bonpland (1773–1858)

Aimé Bonpland (Fig. 4) was Humboldt's travelling companion during the American expedition. He was born as Aimé Jacques Alexandre Goujaud-Bonpland in La Rochelle in France (Sarton 1968). His exact date of birth is not quite clear. Demersay (1854) gave his birthday as 22 August 1773. His father, the physician Simon-Jaques Goujaud-Bonpland, seems to have been the first in his family who carried the byname Bonpland ('good seedling'), which was said to be based on an exclamation made by his grandfather on the occasion of his birth (Bell 2010).

Aimé was the youngest of three siblings, but little is known about his childhood. In 1791, he followed his brother Michel-Simon Goujaud-Bonpland (1770–1850) to Paris in order to study medicine at the Charité. In 1794, he served in the armed forces as a medical officer in Rochefort, but soon returned to Paris to continue studying medicine. He spent almost every free minute in the botanical garden and botanized, often together with his brother (Bouvier & Maynial 1949, Bell 2010). In 1798, he met Alexander von Humboldt, possibly at the Charité on the occasion of lectures held by the physician Jean Nicolas Corvisart (1755–1821; Demersay 1854). Humboldt described the first meeting as follows:

> "Auf die einfachste Art der Welt. Sie wissen, dass, wenn man beim Ausgehen seinen Schlüssel abgibt, man mit der Frau des Portiers stets einige freundliche Worte wechselt. Dabei begegnete ich oft einem jungen Manne mit einer Botanisiertrommel, das war Bonpland; so wurden wir bekannt." (letter written by Humboldt, copy in Biermann 1983: 41) [The easiest thing in the world. You know that, when one leaves and hands over the key, one is used to exchanging a few kind words with the wife of the porter. I often met a young man with a botanist's container, who was Bonpland: that was how we got to know each other.]

Bonpland was already set to accompany Captain Baudin's planned circumnavigation as the botanical specialist on board, but since this journey did not go ahead, he decided to accompany Humboldt on his travel to the American tropics (Moheit 1993, Geier 2010).

During the whole journey of about five years, Bonpland devoted most of his time to botany, he collected a huge number of plants and took care of the field book (*Journal de botanique*; Lack 2004; see Chapter 5.1). In a letter from 1801, addressed to Willdenow, Humboldt wrote:

> "Mit meinem Reisegefährten Alexandre Bonpland bin ich überaus zufrieden. Er ist ein würdiger Schüler Jussieu's, Desfontaine's und besonders des alten wunderlichen Richard's (der wohl der beste Botanist in Paris ist). Er ist überaus thätig, arbeitsam, sich leicht in Sitten und Menschen findend, spricht sehr gut spanisch, ist sehr muthvoll und unerschrocken. Er hat vortreffliche Eigenschaften eines reisenden Naturalisten. Die Pflanzen mit Doubletten über 12.000 hat er allein getrocknet, die Beschreibungen sind etwa zu Hälfte sein Werk. Oft haben wir besonders jeder dieselbe Pflanze beschrieben, um gewisser zu sein." (copy of Humboldt's letter in Moheit 1993: 128) [I am very satisfied with my travel companion, Alexandre Bonpland. He is a worthy pupil of Jussieu, Desfontaine, and above all of the whimsical Richard, who is probably the best botanist in Paris. He is very active, industrious, intuitive with regard to customs and people, fluent in Spanish, brave and fearless. He has excellent characteristics required of a travelling naturalist. He alone accomplished the exsiccation of more than 12,000 plant specimens and duplicates, and prepared around half the descriptions. We have often simultaneously prepared descriptions of the same plant in order to feel certain.]

Humboldt appreciated Bonpland as a good botanist as well as a friend. Physical exertions during their travels along the Río Oronoco, drenched by torrential downpours, plagued by mosquitos and tormented by hunger, resulted in a close fellowship. In the course of a terrible shipwreck, Bonpland did not hesitate to rescue Humboldt, who could not swim (Knobloch 2006), whereas Humboldt sacrificially cared for Bonpland who was regularly ill and afflicted for days by fever (Moheit 1993). Bonpland mentioned in a letter: 'We are living together like two friends, like brothers.' (copy of Bonpland's letter, in Schneppen 2002: 8).

Back in Paris in 1804, Humboldt ensured that Bonpland, who was completely destitute, was awarded an annual pension of 3,000 francs by the French government. In return, they transferred most of their herbarium material to the botanical garden in Paris. Humboldt emphasized:

> "Wenn meine Expedition Erfolg gehabt hat, ist das zum großen Teil Bonpland zu verdanken, der als Schüler Eurer Anstalt den Spuren seiner Meister gefolgt ist. Wir haben die Pflanzen gesammelt, die wir geschickt haben; ich habe eine große Zahl derselben bestimmt; aber Bonpland allein hat vier Fünftel derselben beschrieben und allein das Herbarium zusammengestellt, das wir darbieten." (copy of Humboldt's letter, in Schneppen 2002: 10) [The success of my expedition is largely due to Bonpland. He was a graduate of your academic institution who followed in the footsteps of his masters. We have together collected the plants sent, I have identified a large number of them, but Bonpland described four fifths of them and prepared the offered herbarium alone.]

The analyses of the yield of the expedition proceeded over a period of 30 years. In the initial phase, Bonpland was still heavily involved, but in subsequent years he was increasingly occupied by other duties. In 1804, Corvisart, who in the meantime had become personal physician to the French emperor Napoléon, introduced Bonpland to Empress Joséphine (1763–1814), who shared Bonpland's passion for botany (Demersay 1854). At the beginning of 1809, she officially employed him as botanist. He took care of her gardens in Malmaison and Navarre and was engaged in acquiring rare plant species (Bouvier & Maynial 1949: 178).

In 1807, Bonpland spent some months in Berlin together with Humboldt (Biermann 1983, {URL1}). Back in Paris, Humboldt urged Bonpland to continue with swift and careful examinations of the collections (Biermann 1983), but he seemed to prefer spending his time in glasshouses full of exotic plants. Due to these unexpected delays in the examination of the botanical collections, in spring 1814, after years of unheeded warnings, Humboldt relieved Bonpland of his duties (Schneppen 2002).

Fig. 4: Aimé Bonpland. Daguerreotype from the 1850s, archive of the Gray Herbarium, Harvard University, Cambridge, MA. Taken in Paraguay 1850 or in São Borja (Brazil) 1856. From Bell (2010), reproduced by permission.

In spring 1814, Emperor Napoléon was deposed, shortly after Empress Joséphine had passed away. This change in circumstances prompted Bonpland to think about his situation and to make plans to leave the country. Between 1814 and 1816, he made several journeys to London, visited the herbaria of the Royal Botanic Gardens at Kew, and established close contacts to Joseph Banks (Bouvier & Maynial 1949). On these occasions, he met the Argentinians Manuel José Belgrano (1770–1820) and Bernardino Rivadavia (1780–1845). Both were later involved in the South American independence movement, in the same way as Simón Bolívar (1783–1830). The conversations with them led to his later travel plans (Sarton 1968, Lack 2009). He was heavily influenced by the spirit of the French Revolution, had a forthright attitude to political independence, and an irrepressible spirit of adventure, always prepared to take risks, and open for new ideas (Bouvier & Maynial 1949: 24). In November 1816, Bonpland embarked in Le Havre to travel to Argentina, a country about to become independent from Spain. At the beginning of 1817, still thinking about returning to Europe (Hamy 1906), Bonpland arrived in Buenos Aires (Bouvier & Maynial 1949). Besides fruit trees, medical plants, grapevines and vegetables, he took with him his complete personal herbarium, which was intended to be the basis for his botanical activities in South America (Sarton 1968, Lack 2009).

In Buenos Aires, Bonpland soon took an interest in Yerba mate (*Ilex paraguariensis* A.St.-Hil., Paraguay tea). He not only considered this plant a stimulant, but also comprehended its economic potential for Argentina. In 1820, he travelled through an area between Río Uruguay and Río Paraná in order to study the distribution, cultivation and utilisation of Yerba mate, which was more important for the South Americans than chocolate for the Spanish, coffee for the Germans, and black tea for the British (Gülich 1855: 290). Bonpland's notes in his diary were concerned with the production of Indigo and Yerba mate (Bouvier & Maynial 1949). In Santa Ana (Corrientes), he founded a 'flowering' Indian settlement (Bouvier & Maynial 1949: 231), in order to deepen his studies of these and other native as well as European plants. Unfortunately, the dictator of Paraguay, Rodríguez de Francia (1766–1840), felt that his Yerba mate monopoly was under threat by these plantations near the border. In December 1821, his soldiers attacked Santa Ana and destroyed Bonpland's plantations. Bonpland was injured, kidnapped and, taken in chains to Paraguayan territory (Rengger 1827, Schneppen 2002). Bonpland received Rodríguez de Francia's permission to settle in an area around Santa Maria. The Indians appreciated his medical support.

Despite this deprivation of liberty, Bonpland lived happily as a rich planter (Schneppen 2002). During their American expedition, Humboldt and Bonpland had not traveled to Paraguay, so they only had rough ideas about the abundance of plants in this country. Despite his difficult personal situation, Bonpland felt that his childhood dream had now come true, since he was now able to study the impressive Paraguayan flora in person, as he later noted in a letter to Humboldt (Bouvier & Maynial 1949: 244). Out of concern for his friend, Humboldt left no stone unturned and used all available diplomatic means to liberate Bonpland from captivity, but it was not until 1831 that Bonpland could cross the border river Río Paraná (Schneppen 2002).

Bonpland, meanwhile 58 years old and once again destitute, settled in the Brazilian São Borja on the Río Uruguay, where he, for the third time, successfully established an agricultural farm. He was admired by the local population for his charity, humanity, support as a physician, and his botanical activities (Bouvier & Maynial 1949: 254). In the following years, he always found good reasons to postpone his return to Europe (Schneppen 2002). In 1842, he started a family, with which he alternately lived in São Borja in Brazil and on his beloved plantations at Santa Ana in Argentina (Gülich 1855: 291), where he truly felt at home.

> "Ich bin daran gewöhnt, im Schatten tausendjähriger Bäume zu leben, dem Gesang der Vögel zu horchen […]. Was würde mich im lärmenden Paris für die Abwesenheit dieser Güter entschädigen? […] Ich würde das verlieren, was mir das Liebste ist, die Gesellschaft meiner theuren Pflanzen, mit denen ich mein Leben hingebracht habe." (Bonpland 1855a: 282) [I am used to living in the shade of trees a thousand years old, listening to birdsong […]. What could be the compensation in noisy Paris for the absence of all these things? I would lose my favourite passion, viz. being in the company of my beloved plants with which I have spent my whole life.]

In several letters, Humboldt urged Bonpland to send back to Europe all the collections made during the joint American expedition (Schneppen 2002). Finally, he sent 25 boxes, including the major part of his botanical, zoological and mineralogical collections, which reached the Muséum National d'Histoire Naturelle in Paris at the end of 1831, but he retained a certain proportion of the collections in Argentina (Hamy 1906, Sarton 1968, Leuenberger 2002). In a letter sent to Humboldt in 1854, Bonpland expressed the wish to transfer the remainder of the material to Europe personally in order to facilitate a reunion with his old friend and travel companion and to publish his *Flora of Argentina* (Bouvier & Maynial 1949, Schneppen 2002), but this did not happen. Bonpland died on 11 May 1858 in the Argentinian Restauración, so his own foreshadowing of his death when he embarked in Le Havre in 1816 to leave Europe came true:

> "Sollte dies mir nicht gelingen, wird man mich drüben auf einem Hügel oder in einem schönen Tal begraben." (copy of a letter written by Bonpland, in Schneppen 2002: 11) [Should I fail, I will be buried over there on a hill or in a lovely valley.]

The friendship between Humboldt and Bonpland that began in 1798 in Paris lasted a whole lifetime, although they were very different in character, since Humboldt tried to comprehend and describe the entire world in its complexity, whereas Bonpland tried to discover the essential secrets of nature in order to understand how to make the fruits of the earth useful to humans (Bouvier & Maynial 1949). In honour of Bonpland, Santa Ana was renamed Bonpland in 1858 (Bell 2010).

3.3 Carl Ludwig Willdenow (1765–1812)

Carl Ludwig Willdenow was born in Berlin on 22 August 1765 (Fig. 5). After leaving school, he received training in his father's pharmacy. He was taught by the botanist Johan Gottlieb Gleditsch (1714–1786), director of the Botanical Garden in Berlin, who took care of the herbarium from time to time (Heß 1879, Urban 1881, Eckardt 1965). In 1785, he moved to the university in Halle to study medicine. At the 'Wiegleb'sche Anstalt' in Langensalza, an educational institution for pharmacists, he completed additional professional training before he graduated in 1789. After that, Willdenow worked in his father's pharmacy. In 1798, he was appointed professor of natural history at the 'Collegium medico-chirurgicum' in Berlin and later director of the Botanical Garden. Directly after the foundation of the Friedrich Wilhelm University of Berlin in 1810, Willdenow became the first full professor of botany (Hiepko 1990, Hesse 2010).

Already since his youth, botany had been one of Willdenow's passions. Encouraged by Gleditsch to prepare his first herbarium (Hesse 2010), each walk used to turn into a botanical excursion (König 1898). The preparation of a herbarium comprising all plant species of Central and North Germany was one of his main objectives, which he already achieved as a student, and consequently in 1787 he issued his *Florae berolinensis prodromus* ('Flora of Berlin') comprising 1,243 descriptions of species (Böhme & Müller-Wille 2013). This was the first publication of a comprehensive flora of Berlin and gained wide acclaim among experts (König 1898, Hesse 2010). Willdenow offered private lectures and excursions in the surroundings of Berlin for interested young people (König 1898, Jahn 1966). In 1788, he made the acquaintance of Alexander von Humboldt, who later wrote about this first meeting:

> "Von welchen Folgen war dieser Besuch für mein übriges Leben! […] Ich fand in Willdenow einen jungen Menschen, der unendlich mit meinem Wesen harmonisierte … Er bestimmte mir Pflanzen und ich bestürmte ihn mit Besuchen. […] In drei Wochen war ich ein enthusiastischer Botanist." (copy of a letter written by Humboldt, in Biermann 1983: 16) [What consequences this meeting would have for the rest of my life! I found in Willdenow a young man who perfectly harmonised with my own character. He identified my plants, and I besieged him with visits. Within three weeks I had become an enthusiastic botanist.]

Humboldt's words reflect Willdenow's impressive character. For the continuously expanding audience that attended his lectures of natural history and botany, Willdenow made every effort to improve his teaching and make it as clear as possible, rich in substance, and fascinating (Schlechtendal 1814, König 1898). His textbook of botany *Grundriss der Kräuterkunde*, issued

in 1792 and intended to be the basis for his lectures, was sold out very quickly. Between its first appearance in 1792 and Willdenow's death in 1812, the book was issued in five revised editions (Schlechtendal 1814).

Fig. 5: Carl Ludwig Willdenow. Unknown artist, 1812. Copperplate print in the third edition of *Anleitung zum Selbststudium der Botanik* (Willdenow 1822).

The relationship between Willdenow and Humboldt went beyond that of a mere teacher-student-acquaintance, since it became a true friendship (Jahn 1966). They spent a lot of time together, and made numerous joint field trips. In that time, they strongly influenced each other. They exchanged opinions and knowledge about the distribution of plant species, which is obviously reflected in Willdenow's first issue of *Grundriss der Kräuterkunde* (Willdenow 1792). In a chapter dealing with 'the history of plants', Willdenow described plant geographical aspects in similar words as in a letter personally written by Humboldt in autumn 1791 (Jahn 1966). Furthermore, in his *Florae fribergensis specimen* (Humboldt 1793) and *Ideen zu einer Geographie der Pflanzen* (Humboldt 1807), Humboldt referred to Willdenow's publications several times. Last but not least, Willdenow's publications deserve special admiration since he only travelled twice in his lifetime, undertaking one major journey in 1804 to Italy and a second in 1810 to Paris. His knowledge was mainly based on examinations of herbarium specimens, and careful observations of German as well as exotic plants, which he usually obtained from friends, colleagues and nature enthusiasts in numerous countries (Hein 1959: 470), including Humboldt, who sent the following letter to Willdenow in 1799 on the way to Madrid:

> „Wenn ich, mein brüderlichst geliebter Freund, seit Marseille auch keine Zeile an Dich geschrieben habe, so bin ich doch nicht minder tätig für Dich und Deine Freunde gewesen.

> Ich schlage eben eine Kiste mit 400 Pflanzen für Dich zu, und wenn Du sie durchgehst, so wirst Du Dich überzeugen, daß kaum ein Tag vergangen ist, an dem nicht Wälder, Wiesen und am Meeresufer Dein Andenken mir lebendig gewesen ist. Überall habe ich für Dich gesammelt, und zwar nur für Dich, da ich selbst erst jenseits des Ozeans mein eigenes Herbarium anfangen will." (copy of a letter written by Humboldt, in Hein 1959: 469) [Although, my most warmly loved friend, I have not yet written you a single line since Marseille, I have nevertheless been very active on behalf of you and all your friends. I am just sealing up a box with 400 plants for you. When you go through them, you will be convinced that not one day passed in forests, in meadows and on the coast without my thinking of you. I collected plants from everywhere for you, and exclusively for you, since I intend to start my own herbarium only when I am on the other side of the ocean.]

Willdenow's herbarium increased to several thousand species. He used it for his scientific studies, lectures and comparison purposes (Schlechtendal 1842) and, as customary in that time, he exchanged and donated some of his samples. The herbarium of his old friend Diederich Friedrich Carl von Schlechtendal (Schlechtendal pat.; 1767–1842) contained, for instance, numerous duplicates from Willdenow's herbarium (Schlechtendal 1814, Schlechtendal 1832, Werner 1988). Schlechtendal pat. was a lawyer by education, but since his youth he had a strong passion for natural history (Schlechtendal 1842: 515). Since his time as judge in Xanten, he had kept a rich personal herbarium that he was continuously trying to increase. Due to chaos in wartime with France and French troops approaching Xanten, Schlechtendal pat. decided in 1798 to escape with his family and settle in Berlin, where he met Willdenow, which was the beginning of a deep and long-lasting friendship. Willdenow introduced him to scientific circles in Berlin.

In 1810, Humboldt asked Willdenow for support of Bonpland's work on his American travel book (Humboldt 1810 {HS1}, Hesse 2010). In May 1810, Humboldt addressed the following letter to Willdenow:

> "Mein Werk ist seiner Vollendung nahe. […] Die Botanik bleibt ganz zurück. […] Die Ursachen brauch ich Dir nicht zu enthüllen. […] Ich habe von B.[onpland] verlangt, daß er mir die Manuscripte […] herausgibt, daß er mir die Herausgabe der Spec.[ies] überlässt. Wärst Du barmherzig genug dieses Werk zu übernehmen. Hier meine Vorschläge, ganz frei und zutraulich: Du kämst mit Frau und Kind hierher. […] In wenigen Monaten gehst Du das Herbarium u. die MSS [*Journal de botanique*] durch. […] Zu allem was in unserem MSS u. im Herbarium steht, wird Bonpl.[and] u. Humb.[oldt] gesagt, zu allem was Du selbst beschreibst, Willd.[enow]. So geschieht jedem Recht." (Humboldt 1810 {HS1}) [My work is almost done, but the botany is delayed, I think I do not need to explain the reasons. I asked B.[onpland] to hand over all manuscripts as a matter of urgency and to leave it to me to issue the species. Would you be so kind as to take over these activities? Frankly and in confidence, I would like to make the following proposal: you could come here with wife and child. Within a few months you could go through the herbarium and manuscripts [*Journal de botanique*]. […] All [taxa] already included in the manuscripts and the herbarium would be published under Bonpl.[and] and Humb.[oldt] and all [taxa] described by you as Willd.[enow], which would be fair on all sides.]

Therefore, Willdenow travelled in winter 1810/11 to Paris where he spent several months in the local herbaria, but in 1811 he had to interrupt his stay and returned to Berlin suffering from an illness, where he died on 10 July 1812 (Schlechtendal 1814). After his death, Schlechtendal pat. took care of Willdenow's herbarium (Schlechtendal 1842; see Chapter 5.3).

Willdenow was the first outstanding representative of botany in Berlin and one of the most careful botanists of his time (Eckardt 1965a: 2). He left a long list of publications and described several thousand new species of vascular plants (König 1898, Lack 2012). Willdenow's fame was closely linked with the issue of *Species plantarum* which was said to be the most comprehensive treatment of the whole plant kingdom at the time (Hesse 2010). His designation as 'Prussian Linnaeus' is fully justified (Lack 2012: 12). However, he failed to finish his ambitious project to summarise and describe the entire diversity of higher plants up to species level in a single opus.

3.4 Carl Sigismund Kunth (1788–1850)

Carl Sigismund Kunth (in the text briefly referred to as Kunth; Fig. 6) was born on 18 June 1788 in Leipzig. He attended the school of the City Council, where he was well trained in anatomical drawing by Johann Christian Rosenmüller (Stearn 1968b). Due to the poverty-stricken circumstances of his family, he was not able to continue his university education after his father's death (Humboldt 1851). Therefore his uncle, Gottlob Christian Kunth (1757–1829), privy councillor and between 1777 and 1789 educator of the brothers Humboldt, brought him to Berlin in 1806 and introduced him to science (Goldschmidt & Goldschmidt 1881, Treß 2012). In Berlin, Kunth found employment at the Royal Maritime Trade Institute. Uncle and nephew shared the same passion for contemplating nature and above all plants (Goldschmidt & Goldschmidt 1881: 50).

Kunth, a young man full of ambition and talent, soon dedicated most of his time to study botany. Inspired by Humboldt, whom he had met at his uncle's house, he continued to extend his knowledge through all kinds of further education and attended lectures at the recently opened university in Berlin (Goldschmidt & Goldschmidt 1881: 51). He got to know Willdenow, who gave lectures in botany at the 'Collegium medico-chirurgicum' in Berlin (Stearn 1968b) and became one of his best students (Humboldt 1851: 428). The success of his diligence was soon reflected in the publication of his highly regarded *Flora berolinensis* (Kunth 1813), in which he arranged all plant species according to Linnaeus's sexual system, based on Willdenow's example. This book was the second most comprehensive flora of Berlin published after Willdenow's *Flora berolinensis prodromus* from 1787 (Schlechtendal 1839, Wunschmann 1883, Treß 2012). In the preface of the book, Kunth explained in detail his reasons for the publication of this work: Owing to missing species, Willdenow, his very distinguished mentor, was fully aware of the necessity to revise and supplement his *Flora berolinensis prodromus* which was not comparable to other Willdenow's publications. Willdenow gave his consent to this project and fully supported it with words and deeds, which delighted Kunth (Kunth 1813: VI), and he also mentioned Schlechtendal as supporter, undoubtedly referring to Schlechtendal pat. At first he was somewhat reluctant, but after Willdenow's untimely death he decided to present this carefully prepared book to all 'friends of botany' in order to make it available for their excursions (Kunth 1813: VI). Since autumn 1812, Kunth had been accompanied on his own excursions around Berlin by Adelbert von Chamisso (1781–1838), who had just turned his attention to botany, and they became friends (Hitzig 1839). In a letter, Kunth commented on this friendship:

> "Für die Botanik habe ich hier die beste Gelegenheit; ich bin mit einem arglosen, stachellosen, sehr verdienstvollen jungen Botaniker sehr gut Freund, ich sehe Herbarien durch und habe schon 3000 Pflanzen in Berlin gesammelt." (copy of a letter written by Kunth, in Hitzig 1839: 336) [There are here the best possible opportunities to botanize; [Adelbert von Chamisso], an innocent, pleasant, most deserving young botanist, is a very good friend of mine; I work with herbaria and have already collected 3,000 plants in Berlin.]

Back from Paris in 1811, Willdenow, Kunth's mentor in botany, introduced him to Humboldt (Humboldt 1851: 428) and recommended Kunth as his successor for the further work on the enormous treasure trove of plants collected during Humboldt's American expedition. In January 1813, Chamisso wrote in a letter to a friend:

> "Kunth, mein hiesiger botanischer Freund, ein lieber Mann, ist zu Humboldt nach Paris berufen, um mit ihm den botanischen Theil seines Werkes herauszugeben […]. Er ist mir sehr gut, ist über Maßen gefällig und ein guter Botaniker. Binnen sechs Wochen wird er wohl in Paris sein." (copy of a letter written by Chamisso, in Hitzig 1839: 339) [Kunth, my local botanical friend, a good man, has been invited to move to Humboldt in Paris to issue together with him the botanical portion of his work. He is very friendly, always ready to help, and a good botanist. Within the next six weeks he will probably be in Paris.]

The employment of 25-year-old Kunth and his stay in Paris from 1813 to 1829 later turned out to be a stroke of luck for Humboldt (Humboldt 1851) since it was the genuine beginning of the scientific processing of the collections from the America expedition, nine years after

Humboldt's and Bonpland's return to Europe (Lack 2009: 65). Together with Humboldt, Kunth was associated with famous French botanists such as Jussieu, Richard and Desfontaines. They influenced Kunth, and he was highly appreciated (Humboldt 1851: 430). In contrast to the 'strictly specific' Willdenow, Kunth started to arrange Humboldt's plants consistently according to a natural system (Humboldt 1851: 429). He belonged to a new generation of young botanists in Paris, open to developing new ideas and concepts about recording botanical diversity (Lack 2009: 65), although Kunth's new approach seems to be surprising since he had never seen the tropical vegetation with his own eyes (Lack 2009: 65). He published his results in *Nova genera et species plantarum* (Kunth 1815–1825) and in additional works. When Kunth left Paris in 1829, his botanical work was almost done, for the main part published, and Humboldt's and Bonpland's collections deposited at the Muséum National d'Histoire Naturelle were well organised.

Fig. 6: Carl Sigismund Kunth. Unknown artist, undated portrait (Orden Pour le Mérite für Wissenschaften und Künste 1975).

Lack (2009: 63) emphasized that relaunching, promoting and finishing this project after the initial delay was very much Kunth's achievement, which turned him into the hero of the whole venture.

Based on his publications, Kunth had already acquired an excellent reputation in Europe (Goldschmidt & Goldschmidt 1881: 167) when he was appointed professor of botany in 1829 and vice-director of the Botanical Garden in Berlin, in addition to Link (Humboldt 1851). Over the following 20 years, Kunth was fully occupied with teaching and studies in systematic morphology (Orden Pour le Mérite für Wissenschaften und Künste 1975), the publication of numerous books, including a revised second edition of *Flora berolinensis* (1838), in which, in contrast to the first edition from 1813, the families were arranged according to a natural system and not on the base of Linnaeus's sexual system (Schlechtendal 1839), and the issue of the *Lehrbuch der Botanik* (Kunth 1847) in which he treated the 'organography and physiology according to brand-new observations' (Humboldt 1851: 431). In the final phase of Kunth's life, he suffered from painful rheumatism for more than ten years (Humboldt 1851). Nevertheless he enthusiastically continued his scientific activities (Humboldt 1851: 432) and published the

monumental 5-volume opus *Enumeratio plantarum* (Kunth 1833–1850), which is undoubtedly the most important publication of the late phase of his life.

He remained a close friend of Chamisso, who had been employed at the Botanical Garden in Berlin since 1819, a friendship that was renewed and continued after Kunth's return from Paris. Kunth regularly sent letters with invitations for personal talks and scientific disputations to Chamisso (Kunth 1828 {HS2}), and maintained close contacts to numerous other scientists of his time. In 1837, he visited his French friends in Paris, chief among them Adrien Henri Laurent de Jussieu (1797–1853), for the last time (Humboldt 1851).

As a basis for Kunth's scientific research, a well-organized herbarium was built up (Wunschmann 1883). It encompassed several thousand specimens and species and was among the largest and most comprehensive private botanical collections ever (Humboldt 1851: 427). The herbarium included collections from Humboldt's American expedition, specimens from the 'Jardin des Plantes' in Paris, the Botanical Garden in Berlin, and valuable duplicates of the alpine flora of the Himalayas, which he obtained as gift for his support during the identification of these specimens, a special collection of woody plants and other herbarium samples (Humboldt 1851: 431). Following Kunth's last wishes, this herbarium was incorporated after his death into the general herbarium of the Botanical Garden in Berlin (Humboldt 1851, Wunschmann 1883, {URL3}).

On 22 March 1850, Kunth committed suicide after a long period of suffering (Wunschmann 1883, Lack 2009). His sudden, unexpected death shocked his friends and family, and professional circles lost one of the most perceptive researchers of the time (Humboldt 1851: 427). Humboldt's obituary dedicated to Kunth, with whom he had shared a flat for 14 years (Lack 2009, {URL1}), reads as follows:

> "Das Andenken meines Freundes wird lange gefeiert werden: nicht bloß da, wo sein glänzendes wissenschaftliches Verdienst und sein Einfluß auf den analytisch und systematisch beschreibenden Theil der allgemeinen Pflanzenkunde erkannt werden kann, sondern auch bei denen, welche nach freier, rein menschlicher Ansicht zu schätzen wissen Einfachheit eines gediegenen Charakters, Zartheit der Gefühle und die das Leben verschönernde Anmuth der Sitten." (Humboldt 1851: 432) [The memory of my friend will be long-lasting, not only with regard to his excellent scientific achievements and his influence on analytic and systematic aspects of general botany, but also by those who appreciate a straightforward, dignified character, tenderness and delightful grace of behavior.]

4 History of Humboldt's and Bonpland's herbarium material

Collecting and describing unknown plant species and their transport in the course of the travels and later back to Europe were essential aspects of Humboldt's and Bonpland's expedition. In the following chapters, basic aspects of the history of the collections concerned, including transportation, allocation between the herbaria involved and the present-day continuance, are discussed.

4.1 Transportation of the herbarium material and return of Humboldt and Bonpland to Europe

On 16 July 1799, Humboldt and Bonpland arrived in Cumaná in present-day Venezuela. They were immediately overwhelmed by the richness of the tropical nature, and on that same day Humboldt wrote a letter to his brother:

> "Wie die Narren laufen wir bis itz umher; in den ersten drei Tagen können wir nichts bestimmen, da man immer einen Gegenstand wegwirft, um einen anderen zu greifen. Bonpland versichert, daß er von Sinnen kommen werde, wenn die Wunder nicht bald aufhören. Aber schöner noch als diese Wunder im Einzelnen, ist der Eindruck, den das Ganze dieser kraftvollen, üppigen und doch dabei so leichten, erheiternden, milden Pflanzennatur macht. Ich fühle es, daß ich hier sehr glücklich sein werde […]." (copy of a letter written by Humboldt, in Moheit 1993: 42) [We are running around like fools. In the first three days we were unable to do any identification since we permanently discarded objects in order to take up other ones. Bonpland confessed to be afraid of going crazy,

> should there not soon be an end to these wonders. However, the whole impression of the vigorous, luxurious but nevertheless light, delightful and mild nature of plants is even more beautiful than all these particular wonders. I feel that I will be very happy here.]

During the course of the five-year expedition, Humboldt, and above all Bonpland, collected, described, depicted and dried several thousand plants. They were transported in wooden boxes and deposited at different destinations to which they later returned. They tested various methods of preservation such as camphor, turpentine, tar, tarred planks, hanging boxes (Moheit 1993: 126), but they nevertheless had to accept several severe setbacks (Sarton 1968), about which Humboldt complained in the following sentences written in Havana to Willdenow:

> "Kaum 1/10 von dem, was wir gesehen, habe ich gesammelt. […] Aber ach! Mit Thränen eröffnen wir fast unsere Pflanzenkisten. […] Die unermeßliche Nässe des amerikan [ischen] Klimas, die Geilheit der Vegetation, in der es so schwer ist, alte, ausgewachsene Blätter zu finden, haben über 1/3 unserer Sammlung verdorben. Wir finden täglich neue Insekten, welche Papier und Pflanzen zerstöhren. […] Ist man 3–4 Monathe abwesend, so kennt man sein Herbar kaum wieder, von 8 Exemplaren muß man 5 wegwerfen […]." (Humboldt's letter, copy in Moheit 1993: 125–126) [I could collect scarcely one-tenth of what we have seen. […] But oh! With tears in our eyes we opened the boxes of plants. […] The immense humidity of the American climate, the opulence of the vegetation, which makes it difficult to find adult leaves, has destroyed more than one third of our collection. Each day we come across new insects that damage paper and plants. After three or four months of absence, the herbarium is hardly recognizable. Five out of eight specimens have to be discarded.]

The dried plant samples were usually given handwritten labels and registered in the field book (*Journal de botanique*; Fig. 7c, see Chapter 5.1). However, how many samples they had collected in all these years can only be estimated (Lack 2009). Humboldt was permanently concerned about the preservation of manuscripts and herbarium material. The transportation across the ocean was endangered by robber bands, who respected neither politically neutral passports nor ships (Moheit 1993: 122). English privateers sailed off the South American shore. The political situation was complicated. Therefore, Humboldt and Bonpland copied any descriptions and divided the collected plants in order to used different routes for the transport to Europe. They shipped, for instance, a set of 1,600 species via the plant collector John Fraser (1750–1811) in London to Willdenow in Berlin (Moheit 1993, Lack 2003). Ten or twelve times they sent big shipments of fresh seeds and fruits to Paris, Madrid and London (Moheit 1993: 229), but it remains unclear if they safely arrived in the botanical gardens and which of them germinated and could be cultivated (Lack 2003). But it was reported that at least two shipments to Paris and London got lost, so Humboldt's worries were justified {URL1}, and so it is not surprising that at the end of the expedition he preferred to take care of the transportation of his 'treasure' himself (Moheit 1993: 229). In August 1804, Humboldt and Bonpland once again set foot on European soil, accompanied by 27 wooden boxes with plant exsiccatae, which they soon spread among various herbaria.

4.2 The collections kept in the herbarium in Paris

The Muséum National d'Histoire Naturelle was founded in Paris on 10 June 1793. The Botanical Garden ('Jardin des Plantes'), originated from the 'Jardin Royal des Plantes Médicinales' established in 1635 and later renamed as 'Jardin du Roi', with 9,000 plant samples from the herbarium of Sébastien Vaillant (1669–1722) as basic stock (Williams 2001).

Several institutes affiliated to the museum developed in the following years into famous scientific centres that employed high-level scientists (Ziswiler 1993), including the botanists Jean Baptiste de Lamarck (1744–1829), René Louiche Desfontaines (1750–1833) and Antoine Laurent de Jussieu (1748–1836), the zoologist Georges Cuvier (1769–1832), and the physician and chemist Antoine François Compte de Fourcroy (1755–1809) as contemporaries of Humboldt, to name but a few (Beck 2009). A special research focus was laid on the registration of the botanical and zoological diversity in space and time (Lack 2009: 51). The scientists conducted several expeditions in various countries and made the yields available for scientific

purposes. The French Revolution (1789–1799), based on the new ideas of the Enlightenment (with a new approach to nature), led to complete freedom of teaching and research at institutions subsidized by the state. The excellent research conditions for French scientists, above all in Paris, were unique at that time (Ziswiler 1993, Lack 2009). Therefore, it is not surprising that after his return to Europe in 1804 Humboldt preferred to use the excellent possibilities offered by the institutes in Paris, and decided to carry out the scientific analyses of the collected material of his expedition over there (Stearn 1968a).

Part of the collected plants, comprising approximately 6,000 specimens, which included according to Humboldt's recollection about 1,500–2,000 undescribed species, had been handed over to the Museum in Paris in 1804. Two additional parts of the plant collections remained in the possession of Humboldt and Bonpland and consisted, as with the material for the Museum in Paris, of unique specimens as well as duplicates, so they also did not represent complete sets. The most complete part of the collections seemed to be in Bonpland's possession (Löwenberg et al. 1873; Lack 2003, 2009), who immediately after the return from the expedition started to deal with the plant specimens, although he was not able to meet Humboldt's high expectations with regard to the publication of the results. Willdenow's activities during his visit in Paris between 1810 and 1811 fell short of Humboldt's expectations as well. Since spring 1813, Kunth had taken over all duties with respect to the processing of the botanical collections from Humboldt's American expedition (Humboldt 1851). He worked with the collection in Paris until 1829 and arranged the plant collection according to the system in which they are stored to this day (Lack 2003; see Chapter 5.2).

When Bonpland left Europe and travelled to Argentina in 1816, he took with him the whole private herbarium including collections from the American expedition, although the exact original size of his collection is unknown, because Bonpland later enlarged his herbarium in South America considerably (Lack 2003). In October 1832, Bonpland returned a certain part of his herbarium to Paris, which had been inserted in the general herbarium of Paris in 1833 (Hamy 1906, Lack 2003). After Bonpland's death, Humboldt successfully tried to get back the remainder of Bonpland's herbarium in Argentina that still included material from their American expedition, which was later also inserted in the general herbarium in Paris (Schneppen 2002).

All collections acquired by the herbarium in Paris in 1804, are separately stored as a historic collection and marked by labels reading '*HERB. MUS. PARIS. Herbier Humboldt & Bonpland. AMÉRIQUE ÉQUATORIAL*'. Since most of the botanical work had been carried out by Bonpland, '*Humboldt & Bonpland*' is currently being changed to '*Herbier Bonpland*', abbreviated as '*P-Bonpl.*' (Lack 2003, 2009; {URL2}). Collections inserted in 1833 are supplemented with labels reading '*HERB. MUS. PARIS. Herbier donné par Mr. BONPLAND en 1833*' and '*HERB. MUS. PARIS. AMÉR. MÉRID. M. BONPLAND. 1833*' ({URL2}). The complete collections of the Muséum National d'Histoire Naturelle in Paris have been preserved in their entirety and were not affected by damage during World War II. Currently the herbarium in Paris houses more than eight million herbarium sheets and is one of the largest herbaria worldwide.

4.3 The collections kept in the herbarium in Berlin

In Schöneberg near Berlin the first botanical garden in this region was founded in 1679 (Lack 1990). This garden developed from the former kitchen garden at the palace of the Prussian Prince Friedrich I. in Schöneberg. In 1718 this garden came under the supervision of the Academy of Sciences in Berlin. Willdenow successfully acted as director of this garden from 1801 to his death in 1812. His private herbarium was used intensively for scientific purposes (see Chapter 3.3). In 1815, Heinrich Friedrich Link (1767–1851) succeeded him as director of the Botanical Garden in Schöneberg and also took the decision to found a public herbarium (Eckardt 1965, Hiepko 1990). The oldest part of this herbarium comprises a part of the private herbarium belonging to Max Spenner (1678–1714) from 1719 (Urban 1881, 1909; Kühn 2011). Older herbarium samples, collected before 1801, were little used and poorly looked after. On the order of the Prussian King Friedrich Wilhelm III., Willdenow's plant collection, which

contained 20,260 species of higher plants with 38,000 specimens, was bought for the public herbarium in the year 1818 (Hiepko 1990, 2006). Hence, 1815 can be considered the year of the official foundation of the herbarium in Berlin (Eckardt 1965). The Willdenow material now forms the important basis of the herbarium.

The Willdenow herbarium contains many type collections of species described by himself as well as numerous duplicates of types of taxa described by contemporary botanists (Eckardt 1965). With 3,360 specimens, the number of collections from Humboldt's and Bonpland's American expedition is rather large (Hiepko 1972). Up until his death, Willdenow obtained numerous herbarium specimens from various botanists worldwide, but they largely remained unsorted and uncatalogued, which also applied to his Humboldt collections that were transferred to Berlin after Willdenow's stay in Paris between 1810 and 1811 (Schlechtendal 1832, Schubert 1964). On his herbarium sheets, Willdenow often left brief provisional descriptions and denominations. However, since Willdenow's identifications were often wrong, Ignaz Friedrich Tausch (1793–1848) expressed the wish that all botanists dealing with plants in Willdenow's herbarium should be allowed to annotate the plants concerned with new identifications, even when they are deviating from Willdenow's original naming (Tausch 1832: 18), which led to several identifications and annotations on some of the specimens {URL4}.

After Willdenow's death, his old friend Schlechtendal pat. administered his private herbarium (see Chapter 5.3).

In 1819, Diederich Franz Leonhard von Schlechtendal, the son (1794–1866), was employed as 'Aufseher der öffentlichen Kräutersammlung' [supervisor of the public herb collection]. He worked together with Adelbert von Chamisso, a friend since his student days in 1813, as 'Mitaufseher des Botanischen Gartens' [co-supervisor of the Botanical Garden] (Hiepko 1990: 299, Schubert 1964). After 1819, they were engaged in organizing and mounting all the sheets from Willdenow's herbarium, which had been previously unmounted and just deposited in envelopes on sheets of paper together with labels (McVaugh 1955, Schubert 1964). Envelopes contained names of the species concerned, names of collectors, and indications that the samples were part of Willdenow's herbarium ('B-W'). Schlechtendal added consecutive numbers and the names based on Willdenow's identifications on the outside of envelopes. Furthermore, he supplemented already existing labels by the names of the writers in brackets and prepared a systematic catalogue (Schlechtendal 1832).

In 1822, Joseph August Schultes (1773–1831) visited the Botanical Garden and the affiliated herbarium and expressed his admiration of Schlechtendal's restless activities: "Die Willdenowsche Sammlung war jetzt so geordnet, daß jeden Augenblick jede Pflanze, aus den vielen Tausenden […] hervorgezogen, geprüft und verglichen werden konnte." (Schultes 1822: 150) [Willdenow's collections are now in an order so that each plant can immediately be found among thousands of specimens, examined, and compared.] The deep impression of this visit on Schultes is reflected in the following sentence: "Es scheint, daß fortan […] jeder Botaniker nach Berlin wird pilgern müssen, wenn er selig sterben will." [It seems that from now on any botanist has to make a pilgrimage to Berlin if he wants to die happily.] (Schultes 1822: 152). Schlechtendal applied Linnaeus's sexual system for the rearrangement of Willdenow's herbarium, an arrangement maintained to this day (Hiepko 1972).

Schlechtendal emphasized that the collections in Willdenow's herbarium, except for ferns, were only to some extent usable as reference collections for his *Species plantarum* since Willdenow used to exchange true types from time to time for 'better samples' of the same or putatively same species (Schlechtendal 1832), which was confirmed by Hiepko (1972). This means that collections deposited in Berlin cannot always be regarded as genuine holotypes of species described by Willdenow. Hiepko (1972) stated, for instance, that several original collections of Willdenow's species are deposited in the National Museum in Prague, but they are missing in his herbarium in Berlin. However, these circumstances do not detract from the historical importance of Willdenow's herbarium, which was one of the largest botanical collections of its time and very rich in type material (Eckardt 1965).

In 1833, Schlechtendal was appointed professor of botany at the university in Halle. Chamisso became his successor at the Botanical Garden in Berlin for the next five years, followed by Johann Friedrich Klotzsch (1805–1860) who took care of the herbarium from 1838 to 1860. Under Klotzsch's guidance the herbarium increased considerably due to the purchase of several important private herbaria, for example, the large collections of Kunth (marked as 'HB Kunth'). Through Humboldt's mediation, the Prussian government bought the latter private herbarium from Kunth's widow in 1850 (Lack 2003). It encompassed 70,000 specimens of 54,500 species {URL3}, including some 3,000 herbarium sheets of material collected during Humboldt's and Bonpland's American expedition, which Kunth brought along in 1829 when he returned from Paris to Berlin (Hiepko 1990, 2006; Lack 2003). At the end of 19th century the move of the Berlin herbarium and the Botanical Garden from Schöneberg to Dahlem began and it was finished in 1910 (Hiepko 1990).

During World War II, the herbarium at the Museum in Berlin was bombed and destroyed in the night from 1 to 2 March 1943. Large parts of the herbarium, including most of Kunth's valuable collections, were irretrievably lost. Willdenow's herbarium had been evacuated and deposited in a safe room of a bank, where it survived the war without larger losses (only about 80 specimens are considered to be missing and destroyed, respectively). To date, Willdenow's herbarium is kept separately ('B-W') and it has not been incorporated into the general herbarium (Hiepko 1972, 1990; Lack 2004). The herbarium in Berlin comprised about four million specimens before the losses during World War II and was at that time one of the largest herbaria worldwide besides Kew, Leningrad, Paris and Vienna (Hiepko 1990). Currently it encompasses 3.6 million plant specimens, and represents the largest herbarium in Germany {URL4}.

4.4 The collections kept in the herbarium in Halle

The herbarium in Halle (Saale) evolved in parallel with the Botanical Garden, which was founded in 1698 as the medical herb garden belonging to the university. It was the first garden of this kind in Prussia (Kümmel 2012). Due to the permanent lack of sufficient financial support, it was necessary for a long period to grow fruits and vegetables that could be sold, which strongly hampered the development of the garden as a scientific institution (Schubert 1964: 31, {URL5}). In 1817, the universities of Halle and Wittenberg were merged, which led to a transfer of the herbarium of Christian Schkuhr from Wittenberg to Halle. Schkuhr's herbarium, comprising some garden and wild plants collected around Wittenberg and, above all, his famous collection of sedges, can be considered the nucleus of the herbarium of the university in Halle (Braun & Werner 2007). A catalogue of the herbarium compiled in 1825 listed about 4,300 species. Kurt Polycarp Joachim Sprengel (1766–1833) was professor of botany in Halle between 1797 and 1833. He largely neglected the herbarium of the university, but his private herbarium encompassed more than 21,800 species (Werner 1988).

In 1833, after Sprengel's death, Schlechtendal moved from Berlin to Halle and became his successor. In Berlin, Schlechtendal had access to a rich, well-organised herbarium, which he could use for his scientific work (see Chapter 4.3). Immediately after his appointment as a professor in Halle, he complained in a letter addressed to the university administration about the poor condition of the herbarium that was not up to the standards of that time (Werner 1955: 775). He made several proposals to improve the situation and to enlarge the herbarium in Halle. Besides the preparation of plants from the botanical garden, he strongly recommended the purchase of Sprengel's private herbarium for the university, which, however, failed due to missing financial resources of the university. Fortunately his proposal to ask for duplicates of the herbarium in Berlin was successful. In the following years he obtained about 1,600 duplicates, including numerous collections from Willdenow's herbarium (Werner 1955, 1988). In addition, the herbarium in Halle was enriched by collections belonging to Ernst Ludwig Heim (1847–1834), personal physician of Humboldt's and Schlechtendal's families (Geier 2010), collections owned by the botanist August Garcke (1819–1904), and those from other herbaria. Schlechtendal continuously tried to enlarge the herbarium in Halle, although he was permanently faced with insufficient financial support and inappropriate premises, but simultaneously his private herbarium, including original specimens collected by Ferdinand

Deppe (1794–1861) and parts of A. von Chamisso's herbarium, increased rapidly (Schubert 1964, Weber 1984). Moreover, after the death of his father Schlechtendal inherited his rich herbarium which comprised numerous collections from Humboldt's American expedition (Werner 1988).

Schlechtendal was a 'born systematist' (Schubert 1964: 104), who described about 1,200 new species {URL11}, and was the publisher of several botanical journals. Type material of his new species as well as types of numerous species published by contemporaries was preserved in his private herbarium. Up until his death in 1866, his herbarium had expanded to include more than 70,000 specimens (Braun 1994, Heklau 1998). Schlechtendal's collections were extremely important in complementing the holdings of the university herbarium. Hence, the university tried to do everything possible to purchase his herbarium and finally was successful. Nowadays, Schlechtendal's herbarium, which was incorporated in the university herbarium under the guidance of Gregor Kraus (1841–1915), director of the Botanical Institute between 1872 and 1898, constitutes the historical stock of the current herbarium of the university in Halle (Schubert 1964; Werner 1988; Braun 1994, 1998; Heklau 1998).

In the following decades, the focus of scientific research activities of the directors of the Botanical Institute in Halle shifted considerably towards experimental botany, which led to a decreasing interest in the university herbarium, its neglect, and damages caused by insect infestation. The situation changed with the morphologist Wilhelm Troll (1897–1978), director of the Institute in Halle between 1932 and 1945, who used the herbarium for his scientific research and took care of the collections (Werner 1988). The founding of the Institute of Systematic Botany and Plant Geography in 1947 with Hermann Meusel (1909–1997) as first professor and director after World War II resulted in diverse research activities such as plant morphology and taxonomy, and initiated a new phase in the development of the herbarium in Halle, including curatorial supervision of the herbarium for the first time in its history (Werner 1988: 17). A first estimation of the size of the herbarium in 1954 resulted in about 170,000 specimens (Werner 1955). In the subsequent period, hitherto untreated collections were put on new sheets, labelled and inserted in the herbarium (Werner 1988). Type material, above all of taxa described by Schlechtendal, was sorted out, registered and separately stored (Braun & Wittig 2003). To date approximately 12,000 type specimens have been identified in the herbarium in Halle (HAL). The number of specimens has increased to a total of about 500,000 through donations, purchase, exchange and collecting activities by collaborators of the Institute, for example, the comprehensive gathering of Mongolian plants in the course of Mongolian-German biological expeditions since 1966 (Ungethüm et al. 2013).

5 Processing of Humboldt's and Bonpland's collections of the American expedition

> "… und es wird einst ein großes Werk erscheinen" (copy of a letter written by Humboldt, in Moheit 1993: 66) [and some day a great work will be published.]

Together with Bonpland, Humboldt planned to publish his botanical work, not only *Nova genera et species plantarum* (Kunth 1815–1825), but also a complete treatment of all species with descriptions in compliance with Linnaeus's system. They had seen more species than other botanists and anticipated being able to process about 5,000 to 6,000 species. Humboldt did not intend to keep the collected material: in several letters he emphasized that these specimens should finally be transferred to Willdenow. First sets of samples had already been sent to Willdenow from Havana, with Humboldt's permission to publish new species in the excellent *Species plantarum* (Willdenow 1797–1825) and his wish to be mentioned in this work, although he asked that readers be reminded that the detailed diagnoses in the *Journal de botanique* were essential for natural descriptions. In case of Willdenow's death, Humboldt predetermined the publication of Willdenow's botanical results under Humboldt's and Bonpland's authorship (copy of a letter written by Humboldt, in Moheit 1993: 124–125).

After Humboldt's and Bonpland's return to Europe in 1804, they deposited the botanical collections in Paris and Berlin, but treatments of the collections of the expedition and publications of results were carried out by several botanists. Details of the processing and

publication of the collections during the expedition and in the following years are discussed in the following chapters, with special emphasis on particular collections preserved in Halle.

5.1 Processing of the collections during the expedition and the *Journal de botanique*

Most of the collected plants were accompanied by handwritten labels with collection numbers and brief notes with locality data as well as preliminary identifications. These labels, prepared by Humboldt as well as Bonpland, are to be found on specimens in Paris and Berlin (Lack 2004). However, the sheets in Willdenow's herbarium in Berlin often just contain collection numbers and localities, but rarely additional information (Fig. 7A). In Havana, Humboldt commented in a letter on the occasion of a first set of plant specimens being shipped to Willdenow:

> "die Eil, mit der ich sie einpacke, hindern mich die Beschreibungen zu copiren. Bewahre die n° [Sammelnummern], wenn Du die Pflanzen in Dein Herbarium legst. Sie werden einst sehr nützlich sein." (copy of a letter written by Humboldt, in Moheit 1993: 131) [due to the haste in which I wrapped the material I could not copy the descriptions. Thus, please keep the collection numbers of the specimens deposited in your herbarium. Some day in future they will be very useful.].

Fig. 7: Labels of specimens collected by Humboldt and Bonpland and their field book. **A**. Labels of a specimen of *Atriplex cristata* Humb. & Bonpl. ex Willd. in B (B-W18914010). On the left: "*Salsola*, 123, Punta Araya (Cumana)" written by Humboldt and "(Humboldt)" written by Schlechtendal. On the right: "123, Punta Araya, *Salsola*?" written by Humboldt and "(Humboldt)" written by Schlechtendal {URL4}. **B**. Label of specimen of *Conocarpus acutifolius* Humb. & Bonpl. ex Schult. at P (P00538386). "thermid. aug. Cumana. n°. 1243 … *Conocarpus erecta*…" written by Bonpland {URL2}. **C**. Field book called *Journal de botanique* of Humboldt and Bonpland kept at Muséum National d'Histoire Naturelle. Photograph: I. Haas {URL14}.

Humboldt and Bonpland kept precise records in the field book (*Journal de botanique*), which included descriptions of numerous plants and animals observed and collected, together with preliminary identifications (Lack 2004, 2009). All entries are chronologically numbered (1–4,528 for plants, 1–33 for animals) and always begin with a number that corresponds to the number on the handwritten label (Lack 2004). This system was new for that period, but it is unknown whether it was introduced by Humboldt or by Bonpland, although it can more likely be attributed to Humboldt (Lack 2004: 496). Bonpland mainly took care of the field book, and used this system in later field books as well. On the other hand, there are also numerous specimens in Paris as well as Berlin without any collection number. Rankin Rodíguez & Greuter (2001) stated that only such specimens were numbered that simultaneously were listed and described in the *Journal de botanique*, namely probably 'rare and new' species (see Moheit 1993: 122). In the first two years of the expedition, from July 1799 to March 1801, the calendar of the French Revolution with corresponding months and years was applied (Fig. 7B; Rankin Rodíguez & Greuter 2001). The seven volumes of the *Journal de botanique* are today preserved in the Bibliothèque Centrale du Muséum National d'Histoire Naturelle in Paris, and a copy is kept in the Botanical Museum in Berlin-Dahlem (Fig. 7C; Leuenberger 2002, Lack 2004).

5.2 Processing and publication of the collection deposited in Paris

Immediately after their return to Europe, Bonpland started to examine the botanical collections of the expedition and planned the publication of results. From an announcement by the publishers Levraut and Schoell, it is clear that the publication was not intended to reflect the systematic order of the plants but focused on descriptions and illustrations of new genera and species (Lack 2009). During the examination of the collections in Paris, Bonpland had the *Journal de botanique* at hand (Fig. 7C). He also had the specimens deposited at the Muséum National d'Histoire Naturelle, his own and Humboldt's herbarium, as well as drawings and 'nature printing' (typographia naturalis, Naturselbstdrucke, i.e. printing of plants not requiring a woodcut or an engraving) at his disposal. Between 1805 and 1817, descriptions and plates of more than 140 plants were published in 17 instalments of the *Plantae aequinoctiales* (*Plantes équinoxiales*) (Humboldt & Bonpland 1805–1817). Bonpland later added the names published in this work to the *Journal de botanique*. Humboldt's preface to this publication suggests that the texts up to instalment 14 were exclusively written by Bonpland:

> "Si mon entreprise est regardée un jour comme intéressante pour le progrès de la botanique, ce succès devra être presque entièrement attribué au zèle actif de M. Bonpland" (Humboldt 1805: VI–VII) [Should my venture eventually be considered interesting for the progress in botany, its success is mainly attributable to Bonpland's enthusiasm.]

Types of some species described in the *Plantae aequinoctiales* are also deposited in the herbarium in Halle (see Chapter 6), for example, *Bambusa guadua* Bonpl. (HAL0107032), *Bejaria glauca* Bonpl. (HAL0117271), *Bougainvillea peruviana* Bonpl. (HAL0135058), *Cinchona condaminea* Bonpl. (HAL0048887), *Eugenia albida* Bonpl. (HAL0089640), *Freziera nervosa* Bonpl. (HAL0060621), *Jussiaea sedoides* Bonpl. (HAL0097644), *Myrtus microphylla* Bonpl. (HAL0089791), *Pallasia dentata* Bonpl. (HAL0111225), *Quercus crassipes* Bonpl. (HAL0060338), *Q. crassipes* var. *angustifolia* Bonpl. (HAL0060339), *Q. depressa* Bonpl. (HAL0060340), *Q. lanceolata* Bonpl. (HAL0060336), *Q. laurina* Bonpl. (HAL0060342) and *Tagetes zypaquirensis* Bonpl. (HAL0110969).

After publication of the first volume of the *Plantae aequinoctiales*, Bonpland's contributions to this project came to a halt (Schneppen 2002). All planned publications of the results of Humboldt's and Bonpland's examinations proceeded only slowly, mainly due to Bonpland's work in the imperial gardens and several changes of publisher (Lack 2009). Consequently, Humboldt decided in 1810 to ask Willdenow to shoulder responsibility for the examination of the botanical collection. Willdenow accepted, travelled to Paris, and worked with the plant collections in the herbarium for some months until spring 1811 (Chapter 3.3; Hein 1959). He added his preliminary diagnoses to Bonpland's labels and in the *Journal de botanique* (Fig. 8A–B; Lack 2004), but considerable contributions to the publications cannot be attributed to Willdenow since he had to stop his work in Paris after just a short time due to illness (see Chapter 3.3).

Fig. 8: Labels on three type specimens at P collected by Humboldt and Bonpland {URL2}. **A–B**. Type of *Cyperus filifolius* Willd. ex Kunth (P00542009) with (A) "*Cyperus filiformis* Swartz, ad Orinocum" written by Willdenow and (B) detailed label with reference and synonyms in different handwritings. **C–D**. Type of *Vilfa fasciculata* Kunth (P00740549) with (C) "*Agrostis*?" written by Bonpland, "*Agrostis fasciculata*"written by Willdenow and "*Vilfa fasciculata* mihi" written by Kunth and (D) detailed label with reference and synonyms in different handwritings. **E–F**. Type of *Vilfa fasciculata* Kunth (P00740548) with (E) "*Vilfa fasciculata*!" written by Bonpland and (F) detailed label with synonyms in different handwritings.

From 1813 onwards, Kunth took care of the collections from Humboldt's and Bonpland's American expedition, and used Bonpland's partly very precise notes in the *Journal de botanique* for his examinations of the particular species (Lack 2009). Furthermore, he had the comprehensive collections at the 'Jardin des Plantes' as well as herbaria of various famous botanists at his disposal, including that of Robert Brown (1773–1858) in England (Humboldt 1851: 430). Results of his research were published in several larger works, especially in *Nova genera et species plantarum* (Kunth 1815–1825), which was published in two different formats, viz. a coloured luxury edition comprising 20 big folio and 10 quarto volumes and a smaller uncoloured octavo edition of four volumes (Humboldt 1851, Biermann 1983). Details and analyses of flowers for the 700 copper plates were prepared by Kunth himself (Fig. 9; Humboldt 1851). In addition to the *Nova genera et species plantarum*, several publications were issued that partly supplemented this work. Herbarium material of certain groups was sent to specialists, for example, mosses, fungi and lichens. These were, at least partly, processed by William Jackson Hooker (1785–1865). Some duplicates of mosses are to date kept in the Royal Botanic

Garden Edinburgh (Lack 2003, 2006). The few algae collected were examined by Carl Adolph Agardh (1785–1859) at the University of Lund, although details of the collaboration with Humboldt and with Kunth are unknown.

Fig. 9: Illustration of *Telipogon angustifolius* Kunth prepared by Turpin and Kunth in the folio edition of *Nova genera et species plantarum* 1 (4): 336, t. 75 (1816) {URL16}.

With regard to the choice of name for new species, Kunth often followed proposals made by Bonpland and Humboldt in the *Journal de botanique* (Leuenberger 2002), which is at least partly evident on labels that survive from Bonpland's private herbarium (Fig. 8E–F).

Furthermore, Kunth's descriptions resemble those of Bonpland, which becomes evident by comparisons with Bonpland's notes (Leuenberger 2002). Lack (2004) emphasized that Humboldt was aware of that fact and this was reflected in the originally intended title *Nova genera et species plantarum* which included the usually unrecognized notation "ex schedis autographis Amati Bonplandi in ordinem digessit" [put in order from Aimé Bonpland's

handwritten texts], but this does not diminish the great achievements of Kunth, who published detailed descriptions of more than 4,500 species, including 3,600 new taxa (Humboldt 1851). Besides data of localities and habitats, they added the altitudes of the particular collections, which was completely new at that time (Löwenberg et al. 1873). Kunth arranged the collections in Paris according to the sequence of his publications, added new labels with the newly coined scientific names, mostly also collection numbers, localities and habitats, and in some cases also references to particular publications (Leuenberger 2002, Lack 2003, {URL2}). However, Humboldt's and Bonpland's original labels, including notes added by Willdenow, were discarded by him for unknown reasons. During his final stay in Paris in 1837, he probably examined the collections of Bonpland's private herbarium sent from Argentina. These collections contain Bonpland's original labels with Kunth's handwritten notes (Fig. 8C–D; Lack 2003).

5.3 Processing and publication of the collection deposited in Berlin

Following Humboldt's suggestions, Willdenow had already begun to deal with particular collections from the American expedition two years before Humboldt returned to Europe in 1804. Willdenow lectured in 1802 on the results under the title *Von der Angostura-Rinde* (Willdenow 1804) at the Royal Prussian Academy in Berlin, and published descriptions of various species in the fourth edition of his *Species plantarum*. However, only few descriptions could be added to the manuscript of this book, since it was almost finished when Willdenow obtained Humboldt's collections (Lack 2009). For some species described in *Species plantarum* duplicates of the original collections, which are maintained in Berlin, have been found in Halle, for example, for *Johannia insignis* Willd. (HAL0112990, B-W14990) and *Scleria capitata* Willd. (HAL0082160, B-W17335).

It is unknown when Willdenow received additional collections from Humboldt, but it can be assumed that they were personally handed over by Humboldt, as is mentioned in a letter from April 1803 (Humboldt's letter, copy in Moheit 1993; see Chapter 3.1). After returning from his expedition, Humboldt travelled to Berlin in November 1805. It is possible that he used this occasion to transfer collections from Paris to Willdenow in Berlin. Moreover, from Paris he sent specimens to Willdenow but there is no further information on them (Lack 2003, 2009). The collections concerned consisted of unique specimens and duplicates, but only a few descriptions of species based on this material found their way into the *Species plantarum* (Hiepko 2006, Lack 2009). Some duplicates of such accessions are preserved in Halle, for example, *Atriplex cristata* Humb. & Bonpl. ex Willd. (HAL0107067, B-W18914) and *Inga lanceolata* Humb. & Bonpl. ex Willd. (HAL0120847).

In most cases, Willdenow only had herbarium material at his disposal to describe new species. The essential characteristics like the colour of flowers and leaves were missing and, due to the difficult circumstances during the transportation under tropical conditions, the specimens were often damaged (see Chapter 3.1). Hence, Willdenow's few published descriptions are usually scarce and not illustrated, and the locality and habitat records are mostly confined to 'Habitat in America meridionali' (Lack 2009, {URL4}). The *Journal de botanique* containing descriptions based on living material and detailed annotations was in Humboldt's and Bonpland's hands and was not available to Willdenow (see Humboldt in Moheit 1993: 131). Furthermore, without the *Journal de botanique* the meaning of the numbers (n°) on Humboldt's labels remained hidden to Willdenow (see Chapter 5.1).

In 1807, Bonpland spent some months in Berlin and probably dealt with collections of the expedition (Bonpland 1855a, Biermann 1983, {URL1}). Willdenow's herbarium was housed at that time in his own home (Schubert 1964). Thus, it may be assumed that he was probably in attendance when Bonpland dealt with Humboldt's collections. However, it has unknown whether or not Bonpland brought with him the *Journal de botanique* from Paris to Berlin, and, if so, whether Willdenow could make use of it for his own work. Bonpland's handwritten note with species name and reference on a herbarium sheet of *Bambusa guadua* Humb. & Bonpl. (HAL0107032, B-W07008; Fig. 10A), published in the *Plantae aequinoctiales* (Humboldt & Bonpland 1808), can be taken as proof of his stay in Berlin.

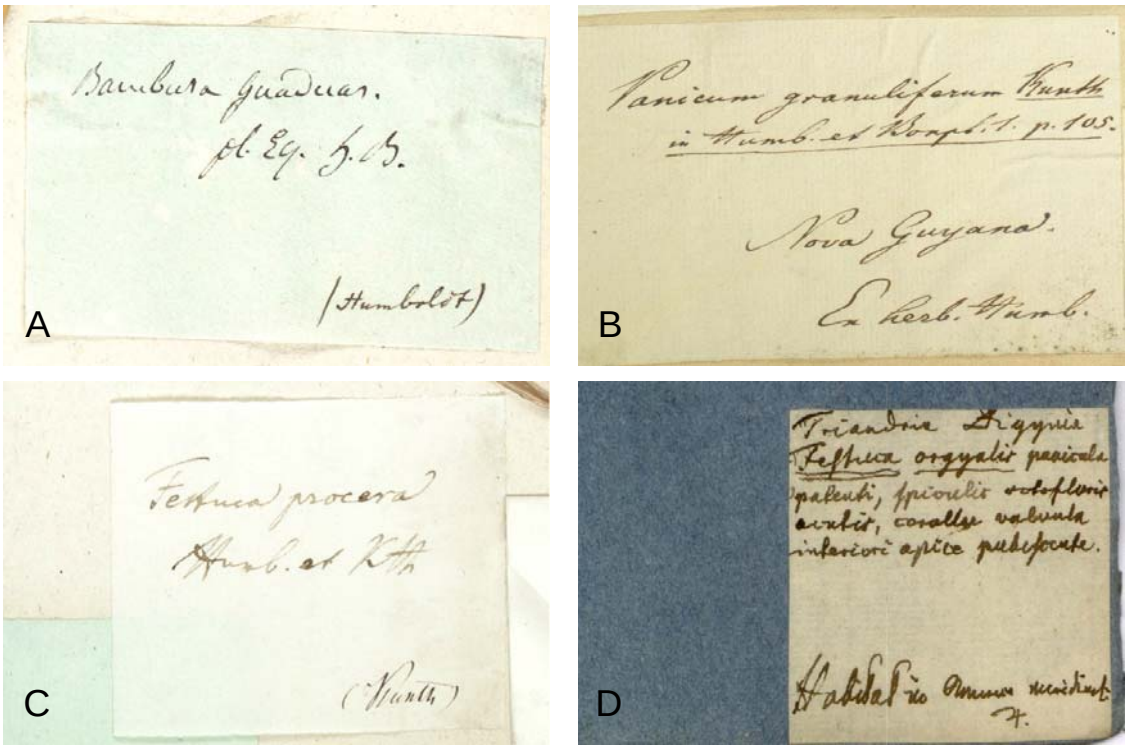

Fig. 10A–D: Labels of type specimens at B {URL4}. **A**. *Bambusa guadua* Bonpl. (B-W07008010) with "*Bambusa guadua* pl. Eq. H. B." written by Bonpland and "(Humboldt)" written by Schlechtendal, denoting the origin of this specimen from Humboldt's collection. **B**. *Panicum granuliferum* Kunth (B100249051) with "Ex herb. Humb.", denoting that this specimen in Kunth's collection originated from the private herbarium of Humboldt. **C–D**. Folder and specimen of *Festuca procera* Kunth (B-W02088) with (C) label on the folder "… *Festuca orgyalis* ..." written by Willdenow and (D) label on the specimen "*Festuca procera* Humb. et Kth." written by Kunth during his studies at herbarium B.

During the visit to Paris, Willdenow dealt with Humboldt's collections and used to add notes to his *Species plantarum* manuscript. Willdenow returned with his manuscript to Berlin (Schlechtendal 1842) but this manuscript was unfortunately destroyed during World War II (Lack 2003, 2009). Willdenow obtained in Paris a large number of plant collections, which he later incorporated into his own herbarium but without closer inspection and only partly with annotations and renaming (Schlechtendal 1832).

In the course of his American expedition, Humboldt sent seeds to Willdenow that were used for growing plants in the Botanical Garden in Berlin. Herbarium specimens of such cultivated plants were later deposited in Willdenow's herbarium (Lack 2009, {URL4}), which enabled him to prepare some descriptions of species on the base of living material, for example, in his *Enumeratio plantarum horti regii botanici berolinensis* (Willdenow 1809). Some duplicates of such collections probably from plants grown in Berlin have been traced in Halle such as *Atriplex linifolia* Humb. & Bonpl. ex Willd. (HAL0107068, B-W18913) but it often remains unclear if duplicates deposited in Halle refer to plants grown in Berlin or original samples collected during the American expedition.

After Willdenow's death (1814), his friend Schlechtendal pat. took care of his herbarium and tried to organize the collection in order to make it usable for scientific purposes. With the intention to demonstrate the richness of Willdenow's herbarium, Schlechtendal pat. published a few small papers (Schlechtendal 1816a, b, Braun & Heuchert 2013a, b). Furthermore, he issued a supplement in 1813 with Willdenow's unpublished descriptions and diagnoses of new garden plants together with a register of all the names of species newly cultivated in the garden in Berlin since Willdenow's *Enumeratio*... from 1809. Schlechtendal pat. published at least one further paper dealing with Willdenow's collections after he had left Berlin in 1814 (Chapter 5.3; Schlechtendal 1842: 518).

In his position as first administrator at the herbarium, Schlechtendal pat. allowed several botanists to deal with the plants in Willdenow's herbarium, which had already happened before 1818 when the Prussian government purchased the herbarium from Willdenow's widow and before this herbarium became publicly available (see Chapter 3.3; McVaugh 1955, Hiepko 2006). Johann Georg Lehmann (1792–1860), director of the botanical garden in Hamburg, published, for instance, in his *Plantae e familia Asperifoliarum nuciferae* (Lehmann 1818a) several of Willdenow's brief descriptions. He mentioned that the plants concerned were deposited in Willdenow's herbarium, which he also emphasized in a letter addressed to Kunth (Lehmann 1818b). Type specimens of two of the species described by Lehmann on the base of collections from Humboldt's and Bonpland's American expedition have been found in Halle (HAL). They are duplicates of material deposited in Berlin: *Anchusa linifolia* Willd. ex Lehm. (HAL0115298, B-W03315, B-W03316) and *Lithospermum ramosum* Willd. ex Lehm. (HAL0115296, B-W03292). Moreover, Schlechtendal pat. prepared transcripts of Willdenow's descriptions on herbarium specimens, which he placed at the disposal of the Swiss botanist Johann Jakob Roemer (1763–1819) and the Austrian botanist Josef August Schultes (1773–1831; McVaugh 1955, Hiepko 2006). Roemer and Schultes published some of Willdenow's descriptions since 1822 in their *Systema vegetabilium* (Roemer & Schultes 1817–1830) which Schultes edited after Roemer's death together with his son Julius Hermann Schultes (1804–1840) in a series of editions (Hiepko 2006, Lack 2009). Roemer and Schultes (later Schultes and Schultes f.) published Willdenow's rather brief and provisional descriptions just based on the transcripts of Schlechtendal pat. and without having seen the original plants. They usually used Willdenow's names with reference to his herbarium (McVaugh 1955, Hiepko 2006). Several examples of such species with original collections in Berlin and duplicates in Halle have been found, for example, *Psychotria aristata* Humb. & Bonpl. ex Schult. (HAL0113738, B-W04104), *Aralia reticulata* Willd. ex Schult. (HAL0117400, B-W06144) and *Higginsia racemosa* Willd. ex Schult. & Schult.f. (HAL0114294, B-W02849).

The correspondence received by the son (Schlechtendal), is housed in the herbarium of the university in Halle, including a letter sent by Schultes (Schultes 1821), in which he expressed his appreciation at being sent annotations about new genera and species in Willdenow's herbarium and for the permission of Schlechtendal pat. to publish the descriptions concerned. Furthermore, he asked for additional notes since Willdenow's diagnoses were often too scarce (Schultes 1821, {HS3}). Some authors, for example, Rankin Rodríguez & Greuter (2001), supposed that Schlechtendal was responsible for the distribution of transcripts of Willdenow's diagnoses and their uncritical publications, but this assumption proved to be incorrect. However, Schlechtendal, curator of the herbarium in Berlin since 1819, made Willdenow's collections accessible to various botanists; for instance, he invited Schultes f. to visit the herbarium in Berlin (Hiepko 2006). Schlechtendal published *Lasiocephalus, eine neue Pflanzengattung* (Schlechtendal 1818), dealing with a new genus based on material from Humboldt's American expedition and a name coined by Willdenow (Schubert 1964).

The handling of Willdenow's herbarium by Schlechtendal pat. and the publication of taxa based on material from Humboldt's and Bonpland's American expedition in Berlin led inevitably to conflicts with Kunth, who was responsible for the scientific examination of the botanical collections of Humboldt's expedition deposited in Paris and published his results in various larger works (see Chapter 5.2). Roemer and Schultes described almost concurrently with Kunth about 250 taxa from Willdenow's herbarium in Berlin (McVaugh 1955), which caused several published disputes between Kunth, Lehmann as well as Roemer and Schultes (Kunth 1818, Lehmann 1818b). These discussions mainly revolved around Willdenow's short diagnoses and descriptions, his claims to be entitled to publish results, and his assertion of priority regarding questions relating to published species (Hiepko 2006, Lack 2009).

Willdenow added during his stay in Paris in winter 1810/11 tentative species denominations in the *Journal de botanique* which were at least partly used by Kunth for his own descriptions in the *Nova genera et species plantarum*, unfortunately without any reference to Willdenow who had coined the names concerned (Hiepko 2006). The missing references to Willdenow had soon been noticed by contemporary botanists and received critical comment. Lehmann mentioned in

a letter to Kunth written in 1818a: "Auffallend mußte es mir allerdings seyn, daß wir gerade da dieselben Namen haben, wo Sie diese Namen die Ihrigen nennen belieben, und ich sie aus Willdenows Sammlung entlehnt habe […]" (Lehmann 1818b: 606) [It is striking that we had just utilized the same names when you had designated them as your own names, whereas I had taken them from Willdenow's herbarium.]. Schultes f. (1822) stressed in a letter to Schlechtendal that 'Kunth was so ungrateful towards Willdenow' which probably referred to his criticism as well. Among the samples deposited at Halle, there is an example of identical names used by Kunth in Paris and Willdenow in Berlin, viz. *Hedyotis microphylla* Willd. ex Roem. & Schult. (HAL0114266, P00671134 as *H. microphylla* Kunth).

Numerous names used by Willdenow and Kunth for the same taxon are strikingly similar as already discussed by McVaugh (1955) and Hiepko (2006), for example:

Croton incanus Kunth – *Croton canescens* Willd.: hoary – greyish (HAL0118989).
Paspalum pallidum Kunth – *Paspalum pellitum* Willd.: pale – with fur (HAL0063596).
Pectis pygmaea Kunth – *Pectis minuta* Willd.: dwarf – minute (HAL0058581).
Rhynchotheca diversifolia Kunth **–** *Alectorium heterophyllum* Willd.: with leaves of diverse shapes – having leaves of different shapes (HAL0118917).
Vernonia cordata Kunth – *Vernonia cordifolia* Willd.: heart-shaped – with heart-shaped leaves (HAL0110521).

Kunth strongly animadverted that Roemer and Schultes had uncritically published Willdenow's brief, often misleading or even wrong tentative diagnoses. He was concerned that the reputation of Willdenow, his admired mentor, could be damaged, although he admitted in the letter concerned that Willdenow was, indeed, wrong in some identifications, in a few cases he even assigned the same species to three different genera (Kunth 1818: 602). The confrontation between different botanists dealing with Willdenow's herbarium material on the one hand and Kunth on the other hand intensified over the years. In the preface of his *Synopsis plantarum*, Kunth (1822) blamed Link in Berlin for being responsible for the numerous confusing synonyms. Link had published several of Willdenow's names, but without any attempts to compare this material with collections in Paris (Link 1820). Furthermore, Kunth emphasized that he did not get permission to work with the collections in Berlin (Kunth 1822, Hiepko 2006).

As he had been refused access to the material in Berlin, which was possibly the result of the aforementioned confrontation, Kunth was not able to make any comparisons between duplicates in Berlin and Paris (McVaugh 1955, Hiepko 2006). The French occupation of Germany together with severe repressive measures at that time resulted in strong anti-French attitudes across large segments of the population. It is possible that Schlechtendal pat., due to his conflict-induced personal situation, was one of those involved in the refused collaboration with Humboldt and his researcher Kunth in Paris, i.e. 'in the capital of the enemy' (see Chapter 2.3; Hiepko 2006, McVaugh 1955), but this is just speculation, since there is no detailed data that has been published to back this up. The role of Schlechtendal, the son, in this conflict is also unclear.

In 1829, Kunth returned to Berlin from Paris together with collections from Humboldt's herbarium that had been incorporated into his own collection. The specimens concerned were Humboldt's gift (Fig. 10B; Humboldt 1851). This was the first occasion for Kunth to see unique specimens in Willdenow's herbarium (Lack 2003). During our own studies, we could trace in Willdenow's herbarium several collections with Kunth's annotations, including epithets deviating from Willdenow's denominations (Fig. 10C–D, Chapter 6; Rankin Rodríguez & Greuter 2001).

Humboldt knew about these conflicts, but did not interfere. He expressed his attitude to this dispute in a letter to his brother Wilhelm: "Beschwerde … gegen Schlechtendal, der ohne meine Erlaubnis meine Pflanzen mit schlechten Beschreibungen an die Herrn Roemer und Schultes gibt, die meine Species publizieren … Rede nicht über diese letztere Klage, die einige Schnitzer Willdenows enthüllt … Da W.[illdenow] der einzige Botaniker in Berlin war, hatte man eine übertriebene Idee von seiner Unfehlbarkeit." (copy of a letter written by Humboldt, in Lack 2009: 43) [Complaints about Schlechtendal, who made my plants available to Roemer and Schultes with poor descriptions, without my permission, who published them … I do not talk

about those complaints that reveal some mistakes made by Willdenow. Since he was the only botanist in Berlin, one had exaggerated expectations of his infallibility.] As mentioned in Chapter 5, Humboldt initially intended to publish results together with Bonpland, later with Willdenow, but finally it was Kunth who accomplished this work over the years and successfully finished it in 1834. Kunth (1818: 601) wrote: "Das geringste, was Hr. von Humboldt verlangen kann, ist wohl, daß man ihn für die vielen gebrachten Opfer seine Pflanzen selbst publizieren läßt" [The very least that Mr von Humboldt, who has made great sacrifices, may expect is to publish his own plants.]

In summary, it is clearly the case that different synonyms of particular species often caused confusion among botanists, as already predicted by Kunth (1822). McVaugh (1955) dealt in detail with the chronology of descriptions published by Kunth as well as Roemer and Schultes in the same period, and pointed out that in most cases descriptions in the *Nova genera and species plantarum* (Kunth 1815–1825) have priority over corresponding names in the *Systema vegetabilium* (Roemer & Schultes 1817–1830). But he also emphasized that various species introduced by Roemer and Schultes were unknown to Kunth and referred to unique specimens in Willdenow's herbarium.

5.4 Processing and publication of the collection in the herbarium of the university in Halle

After his inauguration in Halle in 1833, Schlechtendal tried to enlarge the university's herbarium. In December 1833, Schlechtendal commented in a letter to Chamisso that he had obtained from the ministry the privilege of acquiring free duplicates of plants for the herbarium in Halle. He was advised to contact Link in Berlin in this matter (Schlechtendal 1833, {HS2}). Schlechtendal's envisaged journey to Berlin to sort out duplicates in the herbarium himself was refused, nevertheless he obtained numerous collections put together and delivered by unknown staff at the herbarium (see Chapter 3.4; Schubert 1964).

The herbarium sheets in Halle were given labels, fixed at the bottom on the left-hand side, with hand-written inscriptions mostly attributable to Schlechtendal and Schlechtendal pat. (Fig. 11), although there is also some writing by unknown hands. The details on the labels usually refer to species names based on Willdenow's identifications supplemented by 'Willd. dett.' In contrast to the collections deposited in Berlin, collection numbers and dates are missing on the labels in Halle. Other data, for instance, 'ex Am[erica] merid[ionali]', agree in most cases with Willdenow's corresponding collections in Berlin, although they are in some cases more detailed and contain additions like 'e Peru' or 'ad Orinocum'. 'Humboldt' or 'Humb.' is usually added as collector. The data on the labels are rather brief, suggesting that the preparation of duplicates in Berlin had been carried out under pressure of time, probably by unknown clerks. Details about the whole process of sorting and preparation of the duplicates in Berlin, including responsibilities, are unknown.

Handwritten notes on the labels of the duplicates in Halle suggest that both Schlechtendal and Schlechtendal pat. had dealt with the collections concerned. The older notes by Schlechtendal pat. might originate from the period after Willdenow's death in which he rearranged the herbarium of his friend (Schlechtendal 1842). Since his own herbarium sheets were not explicitly marked as such, some of the collections might be from Willdenow's herbarium, obtained as a gift and later passed to the ownership of his son. Schlechtendal, as curator of the herbarium in Berlin between 1819 and 1833, was among his other duties also responsible for Willdenow's collections, but he did not say anything about his father's support in the process of sorting and lettering of this material (Schlechtendal 1832). In 1820, Schlechtendal proposed using blue envelopes which have been preserved to this day (Schubert 1964, {URL4}). The herbarium sheets in Halle contain, at least in part, blue labels written by Schlechtendal pat. with synonyms and references, which have recently been cut out and added to the new sheets during the course of re-preparations. Since Schlechtendal pat. continued to deal with Willdenow's herbarium after he left Berlin in 1814 (Schlechtendal 1842; see Chapter 5.3), it can be assumed that the blue envelopes originate from the herbarium in Berlin (Fig. 12).

Fig. 11: Type specimen of *Aralia reticulata* Willd. ex Schult. (HAL0117400). On the left above Willdenow's original label? with "*Aralia reticulata*" written by Willdenow and "Willdenow scripsit et dedit" written by Schlechtendal pat. On the left below Schlechtendal's pat. original label with "*Aralia reticulata* ex America merid. Humboldt W. dett" written by Schlechtendal pat. On the right new printed label {URL11}.

Nowadays new printed labels ('Herbarium Universitatis Halensis') are added containing species names with corresponding references supplemented by collection data, often taken from the original publications, collectors ('Humboldt' or 'Humboldt & Bonpland'), and date specification (1799–1804). Original labels from the expedition are missing from the collections in Halle, which are originally duplicates of the collections in Berlin, but based on the history of the collections in Halle it can be assumed that data on the labels in Berlin and Paris, which often contain the same collection numbers, also refer to corresponding samples in Halle.

Fig. 12: Type specimen of *Poa thalassica* Kunth (HAL0106907). On the left above labeling of the blue original envelope with "*Poa thalassica*" written by Schlechtendal and several synonyms and references written by Schlechtendal pat. On the left below original label of the specimen written by Schlechtendal pat. On the right new printed label.

In total, 363 type collections by Humboldt and Bonpland have been traced in the herbarium in Halle. 43 specimens are marked as 'authentic specimen' (AS) since the names concerned had not been effectively or validly published ('in herb.' or 'nom. nud.'). The other 320 specimens are type collections of validly published species. As mentioned above, most of these collections are duplicates from Willdenow's herbarium in Berlin, but except for four cases there is no indication of whether the samples concerned originated from the herbarium in Berlin directly ('ex herb. Reg. Berol.') or from the private herbarium of Schlechtendal pat. ('ex herb. D. F. C.

von Schlechtendal'). A single sheet, with the inscription 'ex herb. Kunth' and a collection number that cannot be identified with certainty as an original number given by Humboldt and Bonpland, seems to be from Kunth's herbarium directly (*Trixis neriifolia* Bonpl., HAL0113153).

5.5 Unique specimens and duplicates in Halle, Berlin and Paris

Based on the database JSTOR-Global Plants {URL9} and the databases of the herbaria in Berlin {URL4} and Paris {URL2}, the presence of duplicates of Humboldt's type collections deposited at HAL has been proven. Duplicates of type collections found in additional herbaria are discussed below in Chapter 6.

The herbarium HAL contains type material collected by Humboldt and Bonpland during their American expedition for 363 taxa. *Conyza ceratophylla* Willd. (HAL0112792), *C. filaginoides* Willd. (HAL0135505), *Psilurus loliaceus* Willd. (HAL0107116) and *Viola teucriifolia* Humb. & Bonpl. ex Schult. (HAL0117770) seems to be the only examples of unique type collections preserved at HAL. Similar instances might be *Baccharis opaca* Willd. (HAL0112968) and *Gnaphalium rufidulum* Willd. (HAL0112148, HAL0112149) but synonymy is unclear (see Chapter 6). Type material of *Valeriana aretioides* Kunth (HAL0005384) is present also in P but not in B, whereas type specimens of 61 taxa are preserved only in HAL and B. Type material of five taxa is present in HAL, B and other herbaria, but not in P. Type material for the remaining 290 taxa is present in HAL, B, P and occasionally also in further herbaria like A, AAU, BAA, BM, C, COL, F, G, GH, H, K, L, LE, LL, LP, MA, MICH, MO, MP, MPU, MSC, NY, PH, PP, S, SI, UCSB, UC, US.

5.6 Publications based on Humboldt's and Bonpland's collections by other authors

There are some additional authors who published description of new species based on collections from Humboldt's and Bonpland's American expedition, but only two of them are discussed in more detail in this chapter. Some of the species concerned were introduced by Sprengel in Halle, among other in his issues of the *Systema vegetabilium* (Sprengel 1824–1828) and the *Plantarum minus cognitarum pugillus* (Sprengel 1818–1815) such as *Arundo quitensis* Spreng. (HAL0106835) and *Panicum densiflorum* Willd. ex Spreng. (HAL0082561).

Some other collections came into the possession of Augustin Pyramus de Candolle (1778–1841), which are now deposited at G (Conservatoire et Jardin botaniques de la Ville de Genève, Geneva; Lack 2009). Candolle published various descriptions in his *Regni vegetabilis systema naturale* (1818–1821) as well as his *Prodromus systematis naturalis regni vegetabilis* (1821–1839). Some examples of such species described by de Candolle have been found in Halle: *Azorella aretioides* DC. (HAL0026847), *Calea leontophthalmum* DC. (HAL0055682), *Oxalis albicans* Kunth var. *sericea* DC. (HAL0118840, HAL0119664), *Senebiera pectinata* DC. (HAL0118336) and *Mutisia microphylla* Willd. ex DC. (HAL0112995). However, it was not possible to ascertain any information about how the collections concerned came into Candolle's hands. According to Candolle's remarks in his publications, these samples originated from the herbaria in Berlin and Paris. According to Schubert (1964: 51), Link intended to send 19 species from Willdenow's herbarium to Candolle, but it remains unclear which species were involved and if they were sent on loan or as gift.

5.7 Humboldt's and Bonpland's collections of the American expedition in other herbaria

Duplicates of the type specimens, which are present in HAL and based on Humboldt's material, have been found in the course of this study also in additional herbaria besides B and P (see Chapter 5.5).

The collections concerned reached these herbaria in different ways, which is exemplified for a few selected cases. On 15 November 1800, Humboldt wrote in a letter to Banks that he intended to send for his herbarium seeds and plants from Havana. In this communication, he mentioned two additional letters including seeds that he had sent to Kew (Moheit 1993), but we failed to acquire any further information about the content of these letters, and if any material is still preserved at Kew. Two duplicates of a type collection preserved at Halle have been found in the

herbarium Kew, viz. *Tillaea rubescens* Kunth (HAL0117654, K000486217) and *Gentiana sedifolia* Kunth (HAL0083641, K000438885; see Chapter 6). On the sheet of the type of *Tillaea rubescens* Kunth preserved at Kew, there is a note and a label which read as follows: "Humboldt & Bonpland s.n. 1802" and "Ecuador, Alausi, Quitensium. Herbier de l'Amérique équatoriale donné par M. A. Bonpland" {URL10}. The date given on the label coincides with the travel information from Ecuador {URL1}, nevertheless it is not possible be sure whether the material concerned had been sent during the American expedition or if it is one of the specimens brought by Bonpland to London, as suggested by the notes given on the label (see Chapter 2.2). The species of *Gentiana sedifolia* Kunth at Kew has three labels stating "Ex herbario Humboldtiano dedit Kunth 28 Majo 1818", "*Gentiana sedifolia* Kunth in Humboldt & Bonpland Nov. gen et spec. plant I. p." and "Herb. J. Gay. Presented by Dr. Hooker, February 1868". This specimen was probably donated to Hooker during Kunth's visit in London.

On the occasion of the planning of a national herbarium in Corrientes in 1854, Bonpland offered a part of his own herbarium, comprising more than 3,000 plants at that time, to serve as a basis for an Argentine plant collection (Bonpland 1855b). It seems that some collections from Humboldt's American expedition were among the specimens concerned {URL2, URL9}, and it is possible that a certain portion of Bonpland's herbarium remained in Argentina after his death. Nowadays, collections from Humboldt's and Bonpland's American expedition are housed in three herbaria in Buenos Aires (including La Plata), viz. Herbario Gaspar Xuárez, Universidad de Buenos Aires, Facultad de Agronomía (BAA), Herbario, Museo de La Plata (LP), and Instituto de Botánica Darwinion (IBODA).

During his studies for the *Flora of Peru* (1936), James Francis Macbride (1892–1976) prepared photographs of about 15,800 type collections of South American plant species deposited at Berlin, including types based on Humboldt's material in Willdenow's herbarium and Kunth's collections, which has been lost almost completely (see Chapter 4.3). These photographs, currently deposited in the herbarium of the Field Museum of Natural History in Chicago (F) (Hiepko 1990), are an important supplement to the herbarium sheets preserved. Photographs of 30 type collections from Berlin with duplicates in Halle have been traced in Chicago.

Moreover, in the course of our search for type collections of species based on Humboldt's material, we came across the following interesting detail:

On 18 November 1800, Bonpland sent from Cumaná the following information to his brother: „…Préparez vos herbiers, que votre muséum prenne les formes, le développement et l`attitude américaines… L'arrivée prochaine de trois caisses expédiées de Cumaná et auxquelles vous avez part, exige quelques préparatifs…" (Bonpland's letter, copy in Hamy 1906: 6) [Prepare the herbaria of your museum to receive America's forms, development and keeping… the imminent arrival of the three boxes sent from Cumana requires some preparations to be undertaken …]. However, these transactions as well as the fact that a copy of the *Journal de botanique* had been sent to Bonpland's brother in La Rochelle was not mentioned by Humboldt (Moheit 1993). The material concerned is now housed in the Muséum d'Histoire Naturelle in La Rochelle, which encompasses the herbarium of Michel-Simon Goujaud-Bonpland as one of the most important parts, including a large number of South American samples collected by Bonpland, but details about the content of this herbarium are not available since the inventory of the collections has not yet been finished {URL6}.

6 Annotated list of type collections

The following alphabetical list includes types of taxa based on specimens from Humboldt's and Bonpland's American expedition that are deposited in the herbarium of the Martin Luther University Halle-Wittenberg (HAL). The types with images are available in an online database {URL11, URL12}.

The LABELS on the specimens in HAL are usually very brief and contain for the most part only the information 'ex Amer. merid.' or occasionally supplementary details like 'Quito' or 'Mexico', etc. More detailed data about the type localities can be found in the PROTOLOGUES of the new taxa concerned, which are provided in this list in square brackets. The national

boundaries in the areas perambulated by Humboldt and Bonpland changed during the last 200 years considerably. Thus, clear assignment of locations from the protologues to countries in their current boundaries is often difficult or even impossible. Collection numbers (COLL. NO.) were taken from the herbarium sheets at Berlin (B) and/or Paris (P). The specimens at HAL are consistently without collection numbers. Further information was received from databases of different herbaria (B {URL4}, P {URL6}, US {URL17}) and from Tropicos {URL8}, IPNI {URL13}, The Plant List {URL7} or JSTOR Plants {URL9}.

TYPE SPECIMENS lists only specimens collected by Humboldt and Bonpland during the South American voyage. Syntypes of other collectors eventually used and listed in the protologues of new taxa are not cited here. The particular categories of types (iso-, syn-, lectotype, etc.) are specified in brackets for all specimens present in HAL.

REFERENCES AND COMMENTS provides additional information such as reference to synonyms, citation of specimens from Willdenow's herbarium in the literature and previously published typifications. Categories of types are cited in brackets behind the corresponding specimens. Although actually lectotype designations were required, syntypes were often erroneously named 'holotypes' or 'isotypes' in publications and on annotation labels attached to the specimens. Such specimens, however, are cited here accordingly as 'HT' or 'IT'. Specimens without any designation represent syntypes.

The specimens collected by Humboldt and Bonpland during the American expedition between 1799 and 1804 are consistently undated. There are several publications with details to the itinerary, for example, for Mexico and Colombia (Sprague 1924, 1926), Venezuela, Ecuador and Peru (Sandwith 1925, 1926). However, attempts to determine precise collecting dates for the specimens deposited at HAL have not been made. Herbarium acronyms follow the standard abbreviations of Index herbariorum {URL18}.

Abbreviations:

alt. – altitude
AS – authentic specimen
coll. no. – collection number
fragm. – fragment
hex., hexap. – hexapodium (fathom, 6 feet = 1,8 m)
HT – holotype
in herb. – the name was used only on the herbarium sheet or label
ING – Index Nominum Genericorum {URL19}
IT – isotype
ILT – isolectotype
LT – lectotype
nom. nov. – nomen novum
nom. nud. – nomen nudum
nom. illeg. – nomen illegitimum
nom. illeg. hom. – nomen illegitimum homonymum
nom. illeg. superfl. – nomen illegitimum superfluum
pro syn. – the name 'in herb.' was listed as synonym to the published name
s.l. – sine loco
s.n. – sine numero
s.p. – sine pagina
ST – syntype

Abildgaardia laevigata Willd. (in herb., pro syn.)
pro syn. *Abildgaardia monostachya* (L.) Vahl in Link, Jahrb. Gewächsk. 1(3): 81 (1820), and in Steudel, Nomencl. bot. [Steudel] ed. 2 1(1–2): 1 (1840).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit locis calidis et temperatis ad ripam fluminis Magdalenae, prope Hondam et indevexis montis Turimiquiri Cumanensium.], no. 549.
TYPE SPECIMENS: HAL0134413 (AS), B-W01277.

REFERENCES AND COMMENTS: The specimen P00669484 based on the same collection was treated as *Cyperus monostachyus* L. by Kunth, Nov. gen. sp. [H.B.K.] 1(4): 203 (1816).

Abildgaardia monostachya (L.) Vahl see *Abildgaardia laevigata* Willd.

Acaena agrimonioides Kunth see *Acalypha laxiflora* Willd.

Acaena laxiflora Willd. ex Steud. (nom. nud.), Nomencl. bot. [Steudel] ed. 2 1(1–2): 9 (1840).
LABEL [PROTOLOGUE], COLL. NO.: e regno Mexicano, s.n.
TYPE SPECIMENS: HAL0121279 (AS), B-W00610.
REFERENCES AND COMMENTS: Anonymous annotation on the specimen B-W00610 as *Acaena agrimonioides* Kunth, Nov. gen. sp. [H.B.K.] 6(4): 231 (1824). Type specimens of *A. agrimonioides* are P00679395 (HT), P00162035 (IT), P00162034 (IT).

Acalypa villosa Jacq. var. *genuina* Müll. Arg. see *Acalypha morifolia* Willd.

Acalypha morifolia Willd. (in herb., pro syn.)
pro syn. *Acalypha villosa* Jacq. var. *genuina* Müll. Arg. in Müller Argoviensis, Prodr. [DC.] 15(2): 802 (1866).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid., s.n.
TYPE SPECIMENS: HAL0118545 (AS), B-W17832.
REFERENCES AND COMMENTS: The specimen B-W17832 was cited at *Acalypha villosa* Jacq. var. *genuina* Müll. Arg. by Müller Argoviensis, Prodr. [DC.] 15(2): 802 (1866).

Achyranthes filifolia Willd. ex Schult., Syst. veg., ed. 15 bis [Roemer & Schultes] 5: 549 (1819).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [In arenosis ad Angustaram.], no. 1083.
TYPE SPECIMENS: HAL0117856 (ST), B-W05018.

Actinochloa humilis Willd. see *Chondrosum humile* P.Beauv. ex Kunth

Agrostis brachyphylla Willd. see *Vilfa atrovirens* Kunth

Agrostis cespitosa Willd. see *Podosemum quadridentatum* Kunth

Agrostis colorata Willd. see *Podosemum elegans* Kunth

Agrostis cuspidata Willd. see *Deyeuxia tolucensis* Kunth

Agrostis fasciculata Willd. see *Vilfa fasciculata* Kunth

Agrostis gracilis Willd. see *Podosemum gracile* Kunth

Agrostis poaeformis Willd. see *Poa subuniflora* Kunth

Agrostis quitensis Willd. see *Arundo quitensis* Spreng.

Agrostis rigida Willd. (in herb., pro syn.)
pro syn. *Calamagrostis recta* (Kunth) Trin. in Steudel, Nomencl. bot. [Steudel], ed. 2 1: 42 (1840).
LABEL [PROTOLOGUE], COLL. NO.: Mexico [Crescit in subfrigidis regni Mexicani juxta Guanaxuato, Temascatio et Lo de Sierra.], s.n.
TYPE SPECIMENS: HAL0106838 (AS), B-W01700.
REFERENCES AND COMMENTS: The specimen at HAL has a label annotation made possibly by D.F.K. von Schlechtendal with identification as *Podosemum rigidum* Kunth. The specimen at B from the same collection was annotated as possible type of *Deyeuxia recta* Kunth. The relation to *Podosemum rigidum* Kunth (see type specimens BAA00003947, BAA00003948, BAA00003949, P00669382, P00077294, US00624301 (=US-91920, fragm.)) or *Deyeuxia recta* Kunth (see type specimens BM000938558, GH00023420, P00129581, P00129582, P00129583, P00669409, S-R-1465, US00157379 (=US-866021, fragm.)) is unclear.

Agrostis setosa Willd. see *Podosemum setosum* Kunth

Agrostis tenella Willd. see *Calamagrostis tenuifolia* Kunth

Agrostis trichodes Willd. see *Vilfa trichodes* Kunth

Aira poiformis Willd. see *Poa pauciflora* Roem. & Schult.

Alectorium heterophyllum Willd. see *Rhynchotheca diversifolia* Kunth

Allocarpus Kunth see *Allocarpus caracasanus* Kunth

Allocarpus caracasanus Kunth, Nov. gen. sp. [H.B.K.] 4(17): 229, tab. 405 (1820).
≡ *Alloispermum divaricatum* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in temperatis prope urbem Caracas, alt. 450 hex.], s.n.
TYPE SPECIMENS: HAL0064527 (ST), B-W16381, P00135038, P00135039, P02140779.
REFERENCES AND COMMENTS: *Alloispermum divaricatum* Willd. was listed as synonym of *Allocarpus caracasanus* Kunth by Candolle, Prodr. [DC.] 5: 676 (1836). This specimen is type of *Allocarpus* Kunth, Nov. gen. sp. [H.B.K.] 4(17): 228 (1820) and *Alloispermum* Willd., Mag. Neuesten Entdeck. Gesammten Naturk. Ges. Naturf. Freunde Berlin 1(2): 139 (1807), see ING.

Alloispermum Willd. see *Allocarpus caracasanus* Kunth

Alloispermum divaricatum Willd. see *Allocarpus caracasanus* Kunth

Alstroemeria linifolia Kunth, Nov. gen. sp. [H.B.K.] 1(4): 282 (1816).
≡ *Alstroemeria linifolia* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in frigidis Parami de almaguer inter fluvium Marmato et metam Puntaurcu, alt. 1580 hex. Floret Novembri], no. 2059.
TYPE SPECIMENS: HAL0045552 (ST), B-W06805, B100365829 (LT annotated by M. Neuendorf 1984), P00669574.
REFERENCES AND COMMENTS: Coll. no. in B and P identical. For further information see Roemer & Schultes, Syst. veg., ed. 15 bis [Roemer & Schultes] 7(1): 741 (1829).

Alstroemeria linifolia Willd. see *Alstroemeria linifolia* Kunth

Anchusa leucantha Willd. see *Anchusa linifolia* Willd. ex Lehm.

Anchusa linifolia Willd. ex Lehm., Pl. Asperif. nucif. [Lehmann] 1: 215 (1818).
≡ *Anchusa oppositifolia* Kunth, Nov. gen. sp. [H.B.K.] 3(9): 91, tab. 200 (1818).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in crepidinibus prope Teindala et Jaguanquer, inter urbem Pasto et Tulcan, alt. 1400 hex. (Andibus Quiduensium.)], no. 2166, one specimen at P has coll. no. 4337.
TYPE SPECIMENS: HAL0115298 (ST), B-W03315, B-W03316, P00670728, P00606779, P00606780, P00606781 (no. 4337).
REFERENCES AND COMMENTS: Synonymy according to Kunth, Nov. gen. sp. [H.B.K.] 3(13): 451 (1820) and Roemer & Schultes, Syst. veg., ed. 15 bis [Roemer & Schultes] 4: 772 (1819). The specimen B-W03316 with the identical coll. no. 2166 as B-W03315 was identified by Willdenow as *Anchusa leucantha* Willd. (in herb.) and was referred to as *Antiphyllum linifolium* (Willd. ex Lehm.) DC. by Candolle, Prodr. [DC.] 10: 122 (1846).

Anchusa oppositifolia Kunth see *Anchusa linifolia* Willd. ex Lehm.

Anchusa pygmaea Kunth, Nov. gen. sp. [H.B.K.] 3(9): 92 (1818).
≡ *Lithospermum alpinum* Willd. ex Roem. & Schult., Syst. veg., ed. 15 bis [Roemer & Schultes] 4: 742 (1819).
LABEL [PROTOLOGUE], COLL. NO.: in monte Antisana [Crescit in summo monte Antisanae, qua parte Chusolongum spectat, alt. 2104 hex. (Regno Quitensi.)], no. 2260.
TYPE SPECIMENS: HAL0115300 (ST), B-W03300, P00670729, P00606771, P00606772.
REFERENCES AND COMMENTS: Synonymy according to Kunth, Nov. gen. sp. [H.B.K.] 3(13): 453 (1820).

Andromeda bracamorensis Kunth, Nov. gen. sp. [H.B.K.] 3(11): 288, tab. 263 (1819).
≡ *Andromeda myrtifolia* Willd. (in herb.).

LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit locis temperatis Provinciae Bracamorensis, prope S. Felipe et Paramo et Yamoca, alt. 1300 hex. (Regno Novo-Granatensi.)], no. 3564.
TYPE SPECIMENS: HAL0117321 (ST), B-W08287, F0055441F (IT), P00670997 (HT), P00715905 (IT).
REFERENCES AND COMMENTS: Coll. no. in B. and P identical. Synonymy according to Candolle, Prodr. [DC.] 7: 603 (1838). Judd, Fl. neotrop. 66: 311 (1995), noted "holotype, P".

Andromeda myrtifolia Willd. see *Andromeda bracamorensis* Kunth

Annona lanceolata Willd. see *Guatteria maypurensis* Kunth

Annona nitida Willd. see *Guatteria maypurensis* Kunth

Anthemis fastigiata Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid., s.n.
TYPE SPECIMENS: HAL0111425 (AS), B-W16269.
REFERENCES AND COMMENTS: The specimen B-W16269 was annotated by Schultz Bipontinus as *Chrysophania fastigiata* Kunth, Syn. gen. Compos.: 224 (1832), thus HAL0111425 (AS) and B-W16269 are possibly type specimens of the latter species.

Antiphyllum linifolium (Willd. ex Lehm.) DC. see *Anchusa linifolia* Willd. ex Lehm.

Aralia catalpifolia Willd. ex Schult., Syst. veg., ed. 15 bis [Roemer & Schultes] 6: 697 (1820).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid., s.n.
TYPE SPECIMENS: HAL0117399 (ST), B-W06136.
REFERENCES AND COMMENTS: Kunth, Nov. gen. sp. [H.B.K.] 5(23): 432 (1823), listed this name and noted "est mihi ignota".

Aralia reticulata Willd. ex Schult., Syst. veg., ed. 15 bis [Roemer & Schultes] 6: 699 (1820).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid., no. 646.
TYPE SPECIMENS: HAL0117400 (ST), B-W06144, P02286515.
REFERENCES AND COMMENTS: Kunth, Nov. gen. sp. [H.B.K.] 5(23): 432 (1823), listed this name and noted "est mihi ignota".

Arbutus glandulosa M.Martens & Galeotti see *Arbutus villosa* Willd.

Arbutus setosa Willd. (in herb.)
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid., s.n.
TYPE SPECIMENS: HAL0060245 (AS), B-W08313.
REFERENCES AND COMMENTS: J.L. Luteyn (NY) 1986 annotated the specimens at HAL and at B as *Gaultheria anastomosans* (L.f.) Kunth, which was introduced by Kunth, Nov. gen. sp. [H.B.K.] 3(12): 283 (1819), see P00670991.

Arbutus villosa Willd. (in herb., pro syn.)
pro syn. *Arbutus glandulosa* M.Martens & Galeotti in Klotzsch, Linnaea 24: 72 (1851).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid., s.n.
TYPE SPECIMENS: HAL0060233 (AS), B-W08305.

Arcytophyllum Willd. ex Schult. & Schult.f. see *Hedyotis caracasana* Kunth

Arcytophyllum blaerioides Willd. ex Schult. & Schult.f. see *Hedyotis caracasana* Kunth

Ardisia parviflora Willd. see *Ardisia parvifolia* Humb. ex Roem. & Schult.

Ardisia parvifolia Humb. ex Roem. & Schult., Syst. veg., ed. 15 bis [Roemer & Schultes] 4: 804 (1819).
LABEL [PROTOLOGUE], COLL. NO.: e Peru, no. 3602.
TYPE SPECIMENS: HAL0100636 (ST), B-W04491.
REFERENCES AND COMMENTS: Kunth, Nov. gen. sp. [H.B.K.] 3(13): 454 (1820), listed this name as "*Ardisia parviflora* Willd." and noted "haud suppetunt".

Ardisia tetrandra Kunth, Nov. gen. sp. [H.B.K.] 3(11): 243 (1819).

≡ *Cissus arborea* Willd. (in herb.).
≡ *Cissus dendroides* Schult. & Schult.f., Mant. 3 [Schultes & Schultes f.]: 248 (1827).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit regione alsa Andium Quinduensium, alt. 1200 hex. (Regno Novo-Granatensi). Floret Octobri.], s.n.
TYPE SPECIMENS: HAL0095747 (ST), P00670933.
REFERENCES AND COMMENTS: Synonymy according to Kunth, Linnaea 5: 367 (1830).

Arenaria bryoides Willd. ex D.F.K.Schltdl., Mag. Neuesten Entdeck. Gesammten Naturk. Ges. Naturf. Freunde Berlin 7(3): 201 (1816).
LABEL [PROTOLOGUE], COLL. NO.: Monte Toluca Regn. Mexico. (alt. 11400') [Auf den hohen Gebürgen von Südamerika.], no. 4375.
TYPE SPECIMENS: HAL0118134 (ST), B-W08749, F0075443F, P00274231, P00274247, P00335837, P00335838, P00335839.

Arenaria digyna Willd. ex D.F.K.Schltdl., Mag. Neuesten Entdeck. Gesammten Naturk. Ges. Naturf. Freunde Berlin 7(3): 201 (1816).
LABEL [PROTOLOGUE], COLL. NO.: in andibus peruvianus, s.n.
TYPE SPECIMENS: HAL0136848 (ST), B-W08738.

Arenaria nemorosa Kunth, Nov. gen. sp. [H.B.K.] 6(24): 35 (1823).
≡ *Stellaria pubescens* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: Quito [Crescit in umbrosis Novae Andalusiae, prope Cumanacoa, et in nemoribus Regni Quitensis; item locis temperatis Andium Novo-Granatensium, in Alto de Quilquase, alt. 1000 hex.], no. 311.
TYPE SPECIMENS: HAL0118119 (ST), B-W08710, P00679597, P00335799, P00274234.
REFERENCES AND COMMENTS: Synonymy according to Steudel, Nomencl. bot. [Steudel] ed. 2 2: 637 (1841).

Arenaria pauciflora Willd. see *Arenaria serpens* Kunth

Arenaria serpens Kunth, Nov. gen. sp. [H.B.K.] 6(24): 32 (1823).
≡ *Arenaria pauciflora* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex alpibus America meridionali [Crescit in pratis humidis et frigidis, ad radicem montis Chimborazo, alt. 1640 hex.], no. 3194.
TYPE SPECIMENS: HAL0118117 (ST), B-W08788, P00274228, P00335800.
REFERENCES AND COMMENTS: Coll. no. in B and P identical.

Arenaria tetragyna Willd. ex D.F.K.Schltdl., Mag. Neuesten Entdeck. Gesammten Naturk. Ges. Naturf. Freunde Berlin 7(3): 201 (1816).
LABEL [PROTOLOGUE], COLL. NO.: in monte Antisana, alt. 12000 ped. [Auf den Südamerikanischen Gebirgen.], no. 2255.
TYPE SPECIMENS: HAL0118106 (ST), B-W08748, P00274226, P00335803.
REFERENCES AND COMMENTS: Coll. no. in B and P identical.

Aristida bromoides Kunth, Nov. gen. sp. [H.B.K.] 1(3): 122 (1816).
≡ *Aristida humilis* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: Cumana [Crescit in montanis regni Quitensis juxta Tambo de Guamote et Llanos de Tiocaxas, alt. 1600 hexap.], no. 3220.
TYPE SPECIMENS: HAL0106805 (ST), B-W01804, P00669367, P00077290, P00128901, US00139441 (=US-2639929, fragm. ex P-Bonpl.).
REFERENCES AND COMMENTS: Coll. no. in B and P identical. Specimen at B annotated as type by J.T. Henrard.

Aristida humilis Willd. see *Aristida bromoides* Kunth

Aristida setifolia Kunth, Nov. gen. sp. [H.B.K.] 1(3): 122 (1816).
≡ *Aristida setifolia* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: Nova Andalusia [Crescit in apricis Novae Andulasiae, inter Bordones et Cumaná.], s.n.

TYPE SPECIMENS: HAL0106820 (ST), B-W01803, P00128905, US00131354 (=US-1448324, fragm. ex P), photo: US.
REFERENCES AND COMMENTS: Specimen at B annotated as type by C. Mez 1921 and by J.T. Henrard.

Aristida setifolia Willd. see *Aristida setifolia* Kunth

Aristida unilateralis Willd. see *Dinebra aristidoides* Kunth

Arnica cinerarioides Willd. see *Senecio buxifolius* Kunth

Arundo quitensis Spreng., Pl. min. cogn. pug. [Sprengel] 2: 6. (1815).
≡ *Agrostis quitensis* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: Quito, s.n.
TYPE SPECIMENS: HAL0106835 (ST), B-W01690.
REFERENCES AND COMMENTS: Synonymy according to the protologue.

Arundo tenella Spreng. see *Calamagrostis tenuifolia* Kunth

Asclepias parviflora Schult. see *Cynanchum microphyllum* Kunth

Asclepias parvifolia Willd. see *Cynanchum microphyllum* Kunth

Aster arbutifolius Willd. see *Senecio arbutifolius* Kunth

Aster lavandulaceus Willd. see *Diplostephium lavandulifolium* Kunth

Aster lucidus Willd. see *Senecio arbutifolius* Kunth

Aster pichinchensis Willd. see *Aster rupestris* Kunth

Aster rupestris Kunth, Nov. gen. sp. [H.B.K.] 4(15): fol. 74, qu. 94 (1820).
≡ *Aster pichinchensis* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: in monte Picincha, Amer. merid. [Crescit locis illustribus frigidissimis montium Rucu-Pichincha et Antisana, alt. 1800 hex.], no. 3047.
TYPE SPECIMENS: HAL0110891 (ST), B-W15838, F0049085F, H1060754, P00307330, P00670361, P00670362.
REFERENCES AND COMMENTS: Coll. no. in B and P identical. See Hind & Jeffrey, Compositae Newslett. 37: 23–24 (2001).

Atriplex cristata Humb. & Bonpl. ex Willd., Sp. pl., ed. 4 [Willdenow] 4(2): 959 (1806).
LABEL [PROTOLOGUE], COLL. NO.: Cumana [Habitat in arenosis Cumanae.], no. 123.
TYPE SPECIMENS: HAL0107067 (ST), B-W18914, P00136036, P00136037, P00670026.
REFERENCES AND COMMENTS: Coll. no. in B and P identical.

Atriplex linifolia Humb. & Bonpl. ex Willd., Sp. pl., ed. 4 [Willdenow] 4(2): 959 (1806).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Habitat in America meridionali.], s.n.
TYPE SPECIMENS: HAL0107068 (ST), B-W18913.
REFERENCES AND COMMENTS: The specimen B-W18913 probably belongs to plants that were grown from seeds sent by Humboldt to Willdenow.

Avena deyeuxioides Kunth, Nov. gen. sp. [H.B.K.] 1(3): 147 (1816).
≡ *Pteropodium arundinaceum* Willd. (in herb.).
≡ *Deyeuxia triflora* Nees, Linnaea 19: 691 (1847).
LABEL [PROTOLOGUE], COLL. NO.: e Mexico [Crescit in uliginosis temperatis ad ripam Lacus Tezcucensis, alt. 1165 hexap.], no. 4180.
TYPE SPECIMENS: HAL0133995 (ST), B100347028, B-W01766, BM000578802, BM000578803, LE-TRIN-1913.05, P00129664, P00129665, P00128990, P00128991, P00669413, US00156959 (=US-865589, fragm.).
REFERENCES AND COMMENTS: Coll. no. in B and P identical. For further information see Tropicos. *Pteropodium arundinaceum* Willd. was listed as synonym of *Deyeuxia eriantha* Kunth by Schlechtendal & Chamisso, Linnaea 6: 36 (1831).

Avena elongata Kunth, Nov. gen. sp. [H.B.K.] 1(3): 148 (1816).
≡ *Avena elongata* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: in scopulosis montis Chapoltepec prope Mexico [Crescit in scopulosis montis Chapoltepec prope urbem Mexici], s.n.
TYPE SPECIMENS: HAL0107177 (ST), B-W02217, B100347027, P00129663, US00472784 (=US-3102206, fragm. ex P).
REFERENCES AND COMMENTS: Data on the label of HAL0133995 and protologue details corresponding.

Avena elongata Willd. see *Avena elongata* Kunth

Avena tolucensis Kunth, Nov. gen. sp. [H.B.K.] 1(3): 148 (1816).
≡ *Avena tolucensis* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: In apricis frigidis prope urbem Mexicanam Tolucca. [Crescit in apricis frigidis, prope urbem Mexicanam Tolucca.], s.n.
TYPE SPECIMENS: HAL0107180 (ST), B-W02215, B100347060, BAA-3419 (fragm. ex K), BAA-3420 (fragm. ex P), G00168471, P00669415, P00129656, US00472870 (=US-3102205, fragm. ex P).

Avena tolucensis Willd. see *Avena tolucensis* Kunth

Azorella aretioides DC., Prodr. [DC.] 4: 77 (1830).
≡ *Azorella aretioides* Willd. (in herb.).
≡ *Bolax aretioides* Spreng. (nom. illeg.), Sp. Umbell. [Sprengel]: 11 (1818).
LABEL [PROTOLOGUE], COLL. NO.: in summis Andium alpibus, no. 2259.
TYPE SPECIMENS: HAL0026847 (ST), B-W05610, P00680055.
REFERENCES AND COMMENTS: Coll. no. in B and P identical. Probably authentic material for *Pectophytum pedunculare* Kunth (nom. illeg. superfl.), Nov. gen. sp. [H.B.K.] 5(19): 29 (1821).

Azorella aretioides Willd. see *Azorella aretioides* DC.

Azorella pedunculata Willd. see *Bolax pedunculata* Spreng.

Baccharis arbutifolia (Lam.) Kunth see *Baccharis concinna* Willd.

Baccharis buddlejoides Kunth, Nov. gen. sp. [H.B.K.] 4(14): fol. 50, qu. 64 (1820).
≡ *Baccharis buddlejoides* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in Peruvia?], s.n.
TYPE SPECIMENS: HAL0110770 (ST), B-W15569, P00322368, P00755415, US00129278 (=US-1803329).
REFERENCES AND COMMENTS: Typification see Müller, World checklist of *Baccharis* L. (Compositae-Astereae): s.p., no. 41 (2013).

Baccharis buddlejoides Willd. see *Baccharis buddlejoides* Kunth

Baccharis capitata Kunth, Nov. gen. sp. [H.B.K.] 4(14): fol. 41, qu. 53 (1820).
≡ *Baccharis capitata* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit cum praecedente? [=*Baccharis resinosa* Kunth: Crescit in America meridionali.]], s.n.
TYPE SPECIMENS: HAL0112983 (ST), H1016998, F0049678F, P00322335, P00322336, P00594254, P00594255 [photo: F0BN014953].
REFERENCES AND COMMENTS: See Hind & Jeffrey, Compositae Newslett. 37: 14 (2001).

Baccharis capitata Willd. see *Baccharis capitata* Kunth

Baccharis concinna Willd. (in herb.)
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in devexis montis Pichinchae, alt. 1700 hex. (Regn. Quit.)], no. 3035.
TYPE SPECIMENS: HAL0113098 (AS), B-W15568, P00322341 [photo: F0BN014946].

REFERENCES AND COMMENTS: Coll. no. in B and P identical. This collection was treated as *Baccharis arbutifolia* (Lam.) Kunth by Kunth, Nov. gen. sp. [H.B.K.] 4(14): fol. 49, qu. 54 (1820). See Hind & Jeffrey, Compositae Newslett. 37: 14 (2001).

Baccharis conferta Kunth see *Baccharis opaca* Willd.

Baccharis dilatata Willd. see *Baccharis sinuata* Kunth

Baccharis grandiflora Kunth, Nov. gen. sp. [H.B.K.] 4(14): fol. 45, qu. 58 (1820).
≡ *Baccharis lanuginosa* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in alta planitie Quitensi juxta Mulalo, alt. 1600 hex.], no. 3065.
TYPE SPECIMENS: HAL0112794 (ST), B-W15582 (HT), GH00003943, F0044030F, H1017001, P00322352, P00755505, P00755506, P00755507, P00755508, S-R-577 [photo: F0BN014982].
REFERENCES AND COMMENTS: Coll. no. in B any P identical. See Hind & Jeffrey, Compositae Newslett. 37: 15 (2001). Types cited by Müller, World checklist of *Baccharis* L. (Compositae-Astereae): s.p., no. 115 (2013).

Baccharis helianthemifolia Willd. (in herb., pro syn.)
pro syn. *Baccharis phylicoides* Kunth in Malagarriga., Mem. Soc. Ci. Nat. La Salle 37: 151 (1977).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid., no. 3518.
TYPE SPECIMENS: HAL0112980 (AS), B-W15584, P00218223, P00218224, P00218225, P00755657, S-R-593.

Baccharis humifusa Kunth, Nov. gen. sp. [H.B.K.] 4(14): fol. 37, qu. 48 (1820).
≡ *Baccharis humifusa* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: radicibus montis Pichinchae et Antisanae [Crescit in radicibus montis Pichinchae et Antisanae (Regno Quitensi).], no. 2241.
TYPE SPECIMENS: HAL0110964 (ST), B-W15566, F0049693F, H1016997 (AS?), P00322323, P00218370, P00755427, P00755428 [photo: F0BN014994].
REFERENCES AND COMMENTS: Coll. no. in B and P identical. See Hind & Jeffrey, Compositae Newslett. 37: 13 (2001).

Baccharis humifusa Willd. see *Baccharis humifusa* Kunth

Baccharis ilicifolia Lam. see *Baccharis philipensis* Kunth

Baccharis lanceolata Kunth, Nov. gen. sp. [H.B.K.] 4(14): fol. 49, qu. 63 (1820).
≡ *Baccharis phillyraeoides* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in litore Oceani Pacifici prope Santa Peruvianorum.], no. 3757.
TYPE SPECIMENS: HAL0112799 (ST), B-W15588, F0040469F, GH00003947, P00322366, P00692137, P00692138 [photo: F0BN014999].
REFERENCES AND COMMENTS: Typification see Müller, World checklist of *Baccharis* L. (Compositae-Astereae): s.p. (2013).

Baccharis lanuguinosa Willd. see *Baccharis grandiflora* Kunth

Baccharis lloensis Hieron., Bot. Jahrb. Syst. 29: 27 (1901).
≡ *Baccharis saligna* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid., s.n.
TYPE SPECIMENS: HAL0112979 (Paratype), B-W15572 (Paratype), P00594595.
REFERENCES AND COMMENTS: See annotation of J. Müller (JE) 2001 on specimen at B with type designation and note “any isotype existent?”.

Baccharis microphylla Kunth, Nov. gen. sp. [H.B.K.] 4(14): fol. 43, qu. 55 (1820).
≡ *Baccharis tridentata* Willd. (in herb.).
≡ *Chrysocoma tridentata* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: Santa Fe de Bogota [Crescit prope Santa Fe de Bogota.], s.n.

TYPE SPECIMENS: HAL0112798 (ST), B-W15562 (*Baccharis tridentata* Willd.), B-W15252 (*Chrysocoma tridentata* Willd.), F0044035F, P00322344, P00755755, P00755756, P00755757, US00129319 (=US-2515447) [photo: F0BN015018]
REFERENCES AND COMMENTS: The identity of the specimen at HAL needs to be checked since two different labels are present: *Chrysocoma tridentata* and *Baccharis tridentata*. Specimen B-W15262 was designated as type of *B. microphylla* Kunth by Müller, World checklist of *Baccharis* L. (Compositae-Astereae): s.p. (2013), who noted "P-HBK!, holotype, B-Willd-15562!, F!, fragment, P!, 3×, US!, isotypes".

Baccharis opaca Willd. (in herb.)
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in temperatis Regni Mexicani prope Cuernavaca, alt. 860 hex.], s.n.
TYPE SPECIMENS: HAL0112968 (AS) [photo: F0BN014958].
REFERENCES AND COMMENTS: Anonym annotated the specimen at HAL as *Baccharis conferta* Kunth, see also the following specimens referring to this name: H1017002, P00322343, P00755483.

Baccharis philipensis Kunth, Nov. gen. sp. [H.B.K.] 4(14): fol. 43, qu. 55 (1820).
LABEL [PROTOLOGUE], COLL. NO.: s.l. (ex Amer. merid.) [Crescit prope San Felipe], s.n.
TYPE SPECIMENS: HAL0110965 (type prob.), HAL0110820 (ST), B-W15598, P00322342, P00106285 [photo: F].
REFERENCES AND COMMENTS: Willdenow identified the specimen at B as *Baccharis ilicifolia* Lam. For synonyms see Müller, World checklist of *Baccharis* L. (Compositae-Astereae): s.p. (2013).

Baccharis phillyraeoides Willd. see *Baccharis lanceolata* Kunth

Baccharis phylicoides Kunth, Nov. gen. sp. [H.B.K.] 4(14): fol. 39, qu. 49 (1820).
≡ *Baccharis phylicoides* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: Peru [Crescit in devexis Parami de Guamani (Regno Peruviano).], no. 3516.
TYPE SPECIMENS: HAL0110966 (ST), B-W15583, F0043594F (s.n.), F0043594F, GH00003972, P00218226, P00322327, P00691840, P00755656 [photo: F0BN015032].
REFERENCES AND COMMENTS: See Hind & Jeffrey, Compositae Newslett. 37: 13 (2001) and *Baccharis helianthemifolia* Willd.

Baccharis phylicoides Willd. see *Baccharis phylicoides* Kunth

Baccharis polygalifolia Kunth, Nov. gen. sp. [H.B.K.] 4(14): fol. 38, qu. 49 (1820).
≡ *Baccharis polygaloides* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: e Mexico [Crescit juxta Moran Mexicanorum: item in Paramo et declivitate Andinum Popayanensium], no. 100.
TYPE SPECIMENS: HAL0110967 (ST), B-W15564, GH00003976, P00755406, P00755407, P00755411, P00755412, P00755413, P00755414, P00322326 [photo: F].

Baccharis polygaloides Willd. see *Baccharis polygalifolia* Kunth

Baccharis saligna Willd. see *Baccharis lloensis* Hieron.

Baccharis sinuata Kunth, Nov. gen. sp. [H.B.K.] 4(14): fol. 42, qu. 53 (1820).
≡ *Baccharis dilatata* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit regione temperata prope Guancabamba et Sondorillo Peruvianorum, alt. 1000 hex.], no. 3512.
TYPE SPECIMENS: HAL0111226 (IT annotated by J. Müller (JE) 2013), GH00003998, P00322337, P00106284 [photo: F0BN015066].
REFERENCES AND COMMENTS: For typification see Müller, World checklist of *Baccharis* L. (Compositae-Astereae): s.p. (2013), who noted "P-HBK!, holotype". For further information see Heering, Jahrb. Hamburg. Wiss. Anst. 21: 10 (1903).

Baccharis tarchonanthifolia Willd. see *Eupatorium prunifolium* Kunth

Baccharis tridentata Willd. see *Baccharis microphylla* Kunth

Baccharis xalapensis Kunth see *Chrysocoma ilicifolia* Willd.

Bambusa guadua Bonpl., Pl. aequinoct. [Humboldt & Bonpland] 1: 168 (1808).
≡ *Guadua angustifolia* Kunth, Syn. pl. [Kunth] 1: 253 (1822).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in regionibus Americae meridionalis callidis ac temperatis, praesertim in declivitate occidentali Andium Novo-Granatensium et Quitensium, alt. 0–800 hex.], no. 2003.
TYPE SPECIMENS: HAL0107032 (ST), B-W07008, BAA00003222, BAA00003592, COL000006374, P00129686, P00669482, P00129687, P00129688, P00129689, P00129690, US00026617 (=US-79115).
REFERENCES AND COMMENTS: Synonymy according to Kunth, Syn. pl. [Kunth] 1: 253 (1822). Lectotype of *Bambusa guadua* Bonpl. designated by Judziewicz, Fl. Guianas 187: 235 (1990), also by Young & Judd, Ann. Missouri Bot. Gard. 79: 761 (1992), who included further information on the species. *Guadua angustifolia* Kunth is type species of *Guadua* Kunth, J. Phys. Chim. Hist. Nat. Arts 95: 150 (1822), see ING.

Banisteria speciosa Willd. see *Heteropterys argentea* Kunth

Bauhinia armata Willd. see *Pauletia glandulosa* Kunth

Bejaria glauca Bonpl., Pl. aequinoct. [Humboldt & Bonpland] 2: 118, tab. 117 (1809).
LABEL [PROTOLOGUE], COLL. NO.: Silla de Caracas, no. 644.
TYPE SPECIMENS: HAL0117271 (ILT), B-W09124 (NLT), H1400004 (ILT), P00671000 (ILT), F0040412F [photo: F0BN018283].
REFERENCES AND COMMENTS: Syntypes designated by Clemants, Fl. neotrop. 66: 77 (1995): “lectotype, B, destroyed; neolectotype, B-W, n.v.”.

Bignonia triflora Willd. see *Spathodea laurifolia* Kunth

Boebera fastigiata Kunth, Nov. gen. sp. [H.B.K.] 2(7): 217 (1818).
≡ *Tagetes virgata* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: e regno Mexicano [Crescit in locis temperatis Regni Mexicana prope Ario, Pazcuaro et lacum Cuiseo, alt. 1000 hex.], no. 4301.
TYPE SPECIMENS: HAL0110970 (ST), B-W16115, GH00004285, MICH1108936, P02140906, P02140907, P02140908, P02140909, P02140910, P00320195.
REFERENCES AND COMMENTS: Coll. no. in B and P identical. See Hind & Jeffrey, Compositae Newslett. 37: 46 (2001).

Boerhavia virgata Kunth, Nov. gen. sp. [H.B.K.] 2(7): 215 (1818).
≡ *Boerhavia virgata* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in umbrosis Novae Andalusiae prope Queteppe et Cumana.], no. 1224.
TYPE SPECIMENS: HAL0110395 (ST), B-W00766, P00670034.
REFERENCES AND COMMENTS: *Boerhavia virgata* Willd. based on specimen B-W00766 was referred to as *Boerhavia virgata* Kunth by Schlechtendal & Chamisso, Linnaea 5: 92 (1830).

Boerhavia virgata Willd. see *Boerhavia virgata* Kunth

Bolax aretioides Spreng. see *Azorella aretioides* DC.

Bolax pedunculata Spreng., Sp. Umbell. [Sprengel]: 10 (1818).
≡ *Azorella pedunculata* Willd. (in herb.).
≡ *Pectophytum pedunculare* Kunth (nom. illeg. superfl.), Nov. gen. sp. [H.B.K.] 5(19): 29 (1821).
LABEL [PROTOLOGUE], COLL. NO.: in summis Andium alpibus [Crescit in alta planitie montis Antisanae, alt. 2100 hex. (Regno Quitensi.)], no. 2245.
TYPE SPECIMENS: HAL0026833 (ST), B-W05611, P00115335, P00115334.
REFERENCES AND COMMENTS: For the synonymy see Schultes, Syst. veg., ed. 15 bis [Roemer & Schultes] 6: 361 (1820), Kunth, Nov. gen. sp. [H.B.K.] 5(23): 432 (1823) and Candolle, Prodr.

[DC.] 4: 78 (1830). *Pectophytum pedunculare* Kunth is type species of *Pectophytum* Kunth, Nov. gen. sp. [H.B.K.] 5(19): 28 (1821), see ING.

Bougainvillea peruviana Bonpl., Pl. aequinoct. [Humboldt & Bonpland] 1: 174, tab. 49 (1808).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Habitat in Peruviae calidis ad ripas amnis Amazonum et fluminis Guancabambae.], no. 173, no. 3579.
TYPE SPECIMENS: HAL0135058 (ST), B-W07332, G, MA811442 (probably), MPU018935, P00670042, P00712539, P00712540.
REFERENCES AND COMMENTS: Coll. no. in B and P identical. Willdenow identified the collection at B as *Bougainvillea spectabilis* Willd. For further information on this species see Lack, Willdenowia 42: 117–126 (2012).

Bougainvillea spectabilis Willd. see *Bougainvillea peruviana* Bonpl.

Bromus canus Willd. see *Bromus lanatus* Kunth

Bromus lanatus Kunth, Nov. gen. sp. [H.B.K.] 1(3): 150 (1816).
≡ *Bromus canus* Willd. (in herb.).
≡ *Festuca mollis* Kunth (nom. illeg. superfl.), Révis. Gramin. 1(8): 132 (1829).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in devexis montis ignivomi Antisanae (Regni Quitensis).], s.n.
TYPE SPECIMENS: HAL0107013 (ST), B-W02167, BAA00001607, BAA00001608, BAA00001609, BM000617146, BM000617147, COL000006084, COL000006085, K, P00669418, P00128978, P00128979, US00157075 (=US-865493, fragm. ex P) [photo: BM].
REFERENCES AND COMMENTS: Synonymy according to Sprengel, Syst. veg., ed. 16 [Sprengel] 1: 356 (1824). Possible coll. no. 1833.

Bromus lividus Kunth, Nov. gen. sp. [H.B.K.] 1(3): 150 (1816).
≡ *Festuca livida* Willd. ex Spreng., Syst. veg., ed. 16 [Sprengel] 1: 353 (1824).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in alta planitie Tolucana.], s.n.
TYPE SPECIMENS: HAL0107010 (ST), B-W02119, B100002604, BAA00001610, BM, P00669417, US00157076 (=US-865492, fragm.).
REFERENCES AND COMMENTS: Synonymy according to Kunth, Révis. Gramin. 1(8): 131 (1829).

Bromus mucronatus Willd. see *Bromus unioloides* Kunth

Bromus procerus Kunth, Nov. gen. sp. [H.B.K.] 1(3): 150 (1816).
≡ *Festuca eminens* Kunth (nom. nov.), Révis. Gramin. 1(8): 135 (1829).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in temperatis regni Quitensisi, prope Chillo, 1340 hex.], no. 2296.
TYPE SPECIMENS: HAL0134155 (ST), B-W02087, B100002603, BM000938485, BAA00000694, BAA00001627, P00669419, P00128974, P00128975, US00516503 (=US-2875405, fragm. ex P).
REFERENCES AND COMMENTS: Coll. no. in B and P identical. Willdenow identified the collection at B as *Festuca aspera* Poir. ex Lam.

Bromus unioloides Kunth, Nov. gen. sp. [H.B.K.] 1(3): 151 (1816).
≡ *Bromus mucronatus* Willd. (in herb.).
≡ *Festuca quitensis* Spreng., Syst. veg., ed. 16 [Sprengel] 1: 356 (1824).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit locis alsis regni Quitensi prope Chillo, Conocoto et Sangolqui.], no. 2286.
TYPE SPECIMENS: HAL0134160 (ST), B-W02145, B100250745, BAA00001639, BAA00001640, BAA00004583, BM000578762, LP001422, P00669420, P00152246, US00157084 (=US-1009587, fragm. ex P), US01164703 (=US-865479, fragm. ex P).
REFERENCES AND COMMENTS: Synonymy according to the protologue of *Festuca quitensis* Spreng.

Buddleja abbreviata Kunth, Nov. gen. sp. [H.B.K.] 2(8): 281 (1818).
≡ *Buddleja brevifolia* Willd. ex Schult. & Schult.f., Mant. 3 [Schultes & Schultes f.]: 97 (1827).

LABEL [PROTOLOGUE], COLL. NO.: e Mexico [Crescit in locis temperatis, herbosis inter Pachuca et Real de Moran Mexicanorum, alt. 1340 hex.], no. 4059.
TYPE SPECIMENS: HAL0138009 (ST), B-W02899, F0062069F, P00670507, P00136167, P00136163 [photo: BH].
REFERENCES AND COMMENTS: Synonymy according to Kunth, Linnaea 5: 366 (1830). See also Steudel, Nomencl. bot. [Steudel] ed. 2 2: 234 (1841). For further information see below *Buddleja integrifolia* Willd.

Buddleja brevifolia Willd. ex Schult. & Schult.f. see *Buddleja abbreviata* Kunth

Buddleja integrifolia Willd. (in herb., pro syn.).
pro syn. *Buddleja abbreviata* Kunth in Schultes and Schultes f., Mant. 3 [Schultes & Schultes f.]: 96 (1827), and in Steudel, Nomencl. bot. [Steudel] ed. 2 1: 235 (1840).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in locis temperatis, herbosis inter Pachuca et Real de Moran Mexicanorum, alt. 1340 hex.], s.n.
TYPE SPECIMENS: HAL0096022 (AS), B-W02906.
REFERENCES AND COMMENTS: Specimens in the folder B-W02906 were annotated by anonym and A.J.M. Leeuwenberg (WAG) 1977 as *Buddleja pichinchensis* Kunth. The specimen B-W02806030 was annotated as isotype of this species by A.J.M. Leeuwenberg (WAG) 1977. Other type specimens of *B. pichinchensis* Kunth are F0062117F, NY00297543, US00113058 (=US-1706399), P00136159, P00136160, P00136161, P00136162, P00670493 [photo: F0BN003902]. The identification of the specimen at HAL needs to be verified.

Buddleja pichinchensis Kunth see *Buddleja integrifolia* Willd.

Cacalia arborea Kunth, Nov. gen. sp. [H.B.K.] 4(16): fol. 128, qu. 163, tab. 359 (1820).
≡ *Cacalia arborea* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit locis frigidissimis Parami de Almaguer juxta pagum Pansitara, alt. 1600 hex.], no. 2070.
TYPE SPECIMENS: HAL0113446 (ST), B-W15046, F0077031F, P00320224.
REFERENCES AND COMMENTS: Coll. no. in B and P identical. See Hind & Jeffrey, Compositae Newslett. 37: 39 (2001).

Cacalia arborea Willd. see *Cacalia arborea* Kunth

Cacalia vaccinioides Kunth see *Eupatorium myrtilloides* Willd.

Caesalpinia obtusifolia Willd. (in herb.)
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid., no. 395.
TYPE SPECIMENS: HAL0120567 (AS), B-W08025.

Calamagrostis recta (Kunth) Trin. see *Agrostis rigida* Willd.

Calamagrostis tenuifolia Kunth, Nov. gen. sp. [H.B.K.] 1(1–2): 134 (1816).
≡ *Agrostis tenella* Willd. (in herb.).
≡ *Arundo tenella* Spreng. (nom. illeg.), Pl. min. cogn. pug. [Sprengel] 2: 6 (1815).
≡ *Muhlenbergia sprengelii* Trin. (nom. nov.), Gram. unifl. sesquifl.: 189, 297, tab. 5, f. 5 (1824).
LABEL [PROTOLOGUE], COLL. NO.: e Mexico [Crescit juxta urbem Mexico in cultis, alt. 1170 hexap.], s.n.
TYPE SPECIMENS: HAL0106843 (ST), B-W01689, BAA00002234, P00669392 [photo: K].
REFERENCES AND COMMENTS: Synonymy according to Kunth, Révis. Gramin. 1(4): 64 (1829).

Calceolaria argentea Kunth, Nov. gen. sp. [H.B.K.] 2(8): 387, tab. 170 (1818).
≡ *Calceolaria candicans* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit locis obnubilis Parami de Guamani, inter pagos Gualcaquillo et Guancabamba Peruvianorum, alt. 1720 hex.], no. 3503.
TYPE SPECIMENS: HAL0043223 (IT), B-W00413 (IT), P00136139 (IT), P00136140 (IT), P00670565 (LT) [photo: F0BN014047].

REFERENCES AND COMMENTS: *Calceolaria candicans* Willd. was listed as synonym of *C. argentea* Kunth by Link, Jahrb. Gewächsk. 1(3): 53 (1820). Molau, Fl. neotrop. 47: 136 (1988), noted "lectotypes, P; isotypes, B-WILLD, HAL, P".

Calceolaria bifida Willd. see *Calceolaria graminifolia* Kunth

Calceolaria candicans Willd. see *Calceolaria argentea* Kunth

Calceolaria chelidonioides Kunth, Nov. gen. sp. [H.B.K.] 2(8): 378 (1818).
≡ *Calceolaria concinna* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in radicibus montis Javirae prope Quito, alt. 1500 hex.], no. 2214.
TYPE SPECIMENS: HAL0043246 (IT), B-W00394 (LT), F0072333F (IT), G-DC (IT), P00670547 (IT), P00136111 (IT), P00136112 (IT) [photo: F0BN014058].
REFERENCES AND COMMENTS: Molau, Fl. neotrop. 47: 266 (1988), noted "lectotype, B-WILLD; isotope, F (fragment), G-DC, HAL, P".

Calceolaria concinna Willd. see *Calceolaria chelidonioides* Kunth

Calceolaria gnidiifolia Willd. see *Calceolaria lavandulifolia* Kunth

Calceolaria graminifolia Kunth, Nov. gen. sp. [H.B.K.] 2(8): 386 (1818).
≡ *Calceolaria bifida* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in convalli amoena Tarquensi, alt. 1400 hex.], no. 3284.
TYPE SPECIMENS: HAL0043226 (IT), B-W00414 (IT), F0072346F (IT), P00136114, P00670560 (LT), P00136129, P00136130, PH00009871, S04-3236 [photo: F0BN014076].
REFERENCES AND COMMENTS: *Calceolaria bifida* Willd. was listed as synonym of *C. graminifolia* Kunth by Link, Jahrb. Gewächsk. 1: 53 (1820). Molau, Fl. neotrop. 47: 118 (1988), noted "lectotype, P; isotypes, B-WILLD, F (fragment)".

Calceolaria lamiifolia Kunth, Nov. gen. sp. [H.B.K.] 2(8): 383 (1818).
≡ *Calceolaria lamiifolia* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit prope urbem Quito, alt. 1490 hex.], s.n.
TYPE SPECIMENS: HAL0043229 (IT), B-W00401 (IT), F0072351F (IT), P00136125 (IT), P00670555 (LT) [photo: F0BN014095].
REFERENCES AND COMMENTS: Molau, Fl. neotrop. 47: 191 (1988), noted "lectotype, P; isotope, B-WILLD, F (fragment), HAL, P".

Calceolaria lamiifolia Willd. see *Calceolaria lamiifolia* Kunth

Calceolaria lanata Kunth, Nov. gen. sp. [H.B.K.] 2(8): 383 (1818).
≡ *Calceolaria lanata* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit locis temperatis Regni Quitensis inter Alausi et Pomallacta, alt. 1300 hex.], no. 3223.
TYPE SPECIMENS: HAL0043228 (IT), B-W00400 (LT), F0072352F (IT), G (IT), P00136121 (IT), P00136122 (IT), P00136123 (IT), P00136124 (IT), P00670556 (IT), PH00009847 (IT), US00122050 (UW-1706566) (IT), W (IT).
REFERENCES AND COMMENTS: Molau, Fl. neotrop. 47: 233 (1988), noted "lectotype, B-WILLD; isotype, F, G, HAL, P, PH, US, W".

Calceolaria lanata Willd. see *Calceolaria lanata* Kunth

Calceolaria lavandulifolia Kunth, Nov. gen. sp. [H.B.K.] 2(8): 386 (1818).
≡ *Calceolaria gnidiifolia* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in devexis montis ignivomi Pichinchae et Parami de Assuay, alt. 1560 hex.], s.n.
TYPE SPECIMENS: HAL0043237 (ST), B-W00416 (IT), F (IT), P00136118 (IT), P00136119 (IT), P00136120 (IT), P00670561 (LT) [photo: F0BN014096].

REFERENCES AND COMMENTS: *Calceolaria gnidiifolia* Willd. was listed as synonym of *C. lavandulifolia* Kunth by Link, Jahrb. Gewächsk. 1(3): 54 (1920). Molau, Fl. neotrop. 47: 146 (1988), noted "lectotype, P; isotypes, B-WILLD; fragment at P".

Calea leontophthalmum DC. see *Leontophthalmum peruvianum* Kunth

Calophyllum acuminatum Willd., Mag. Neuesten Entdeck. Gesammten Naturk. Ges. Naturf. Freunde Berlin 5: 80 (1811).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid., no. 1723.
TYPE SPECIMENS: HAL0118208 (ST), B-W10118, P00679867.
REFERENCES AND COMMENTS: Coll. no. in B and P identical.

Campanula arida Kunth see *Lobelia diversifolia* Willd. ex Schult.

Cantua quercifolia Juss. see *Cantua sinuata* Willd.

Cantua sinuata Willd. (in herb., pro syn.)
pro syn. *Cantua quercifolia* Juss. in Brand, Pflanzenr. [Engler] 27 (250): 20 (1907).
LABEL [PROTOLOGUE], COLL. NO.: Peru [Crescit prope Nabon in Andibus Quitensium, alt. 1424 hex.], no. 3303.
TYPE SPECIMENS: HAL0115100 (AS), B-W03737, P00670837.
REFERENCES AND COMMENTS: Coll. no. in B and P identical. The collection at P was identified and treated as *Cantua quercifolia* Juss. by Kunth, Nov. gen. sp. [H.B.K.] 3(10): 161 (1819).

Capparis crotonoides Kunth, Nov. gen. sp. [H.B.K.] 5(20): 95, tab. 437 (1821).
≡ *Capparis populifolia* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in calidis, prope Truxillo Peruvianorum, juxta litus Oceani Pacifici.], no. 3710.
TYPE SPECIMENS: HAL0117837 (ST), B100242513, B100242514, F (fragm.), MA811839 (AS?), P00136869, P00136870, P00136871, P00136872, P00669960.
REFERENCES AND COMMENTS: Synonymy according to Eichler, Fl. bras. [Martius] 13(1): 274 (1865).

Capparis incana Kunth, Nov. gen. sp. [H.B.K.] 5(20): 94 (1821).
≡ *Capparis pyrifolia* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in declivitate occidentali montium mexicanorum, inter Mescala et Estola, alt. 300 hex.], no. 3946.
TYPE SPECIMENS: HAL0136875 (IT), B-W10045 (IT), P00679928 (LT) [photo: F0BN009479, WIS].
REFERENCES AND COMMENTS: Types designated by Iltis & Cornejo, Novon 17: 452 (2007), who noted "lectotype, designated here, P; isotypes, B-W 10,045, B-W photo 9479 at WIS".

Capparis populifolia Willd. see *Capparis crotonoides* Kunth

Capparis pyrifolia Willd. see *Capparis incana* Kunth

Capraria biflora L. see *Capraria hirta* Willd.

Capraria hirta Willd. (in herb.)
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit frequentissime in Nova Andalusia prope Cumana etjuxta pagum Turbaco Novo- Granatensium.], no. 17 & no. 1450.
TYPE SPECIMENS: HAL0115337 (AS), B-W11519, P00670511.
REFERENCES AND COMMENTS: Coll. no. in B and P identical. The collection at P was identified and treated as *Capraria biflora* L. by Kunth, Nov. gen. sp. [H.B.K.] 2(8): 354 (1818)

Cardiospermum coluteoides Kunth see *Cardiospermum vesicarium* Humb.

Cardiospermum ulmaceum Willd. see *Urvillea ulmacea* Kunth

Cardiospermum vesicarium Humb., Rel. hist. [Humboldt & Bonpland] 2 (Chap. XV): 39 (1819).
≡ *Cardiospermum vesicarium* Willd. (in herb.).

≡ *Cardiospermum coluteoides* Kunth (non. illeg. superfl.), Nov. gen. sp. [H.B.K.] 5: 100 (1821).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit prope Caracas, locis alpestribus (Quebrada de Tacagua), alt. 500 hex.], no. 664.
TYPE SPECIMENS: HAL0036801 (ST), B-W07735, P00679936.
REFERENCES AND COMMENTS: Synonymy according to Kunth, Syn. pl. [Kunth] 3: 152 (1824).

Cardiospermum vesicarium Willd. see *Cardiospermum vesicarium* Humb.

Cassia cumanenis Willd. see *Cassia venustula* Kunth

Cassia elliptica Kunth, Nov. gen. sp. [H.B.K.] 6(28): 356 (1824).
≡ *Cassia retusa* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit locis calidissimis, prope Cumanam, Turbaco et Campeche.], no. 48, no. 1466.
TYPE SPECIMENS: HAL0120724 (ILT), B-W07942 (LT), P00679247 (no. 1466), P00679248 (no. 48), P00798356 (no. 1466).
REFERENCES AND COMMENTS: Irwin & Barneby, Mem. New York Bot. Gard. 35: 588 (1982), noted "Lectoholotypus Herb. Willd. *7942/1, 2* labelled 'Cumaná, *Humboldt,*' B!, paratypus, labelled '[Humboldt & Bonpland] n. 1466, Turbaco,' P-HBK, this said by Kunth in the protologue to differ slightly from the plant from Cumaná principally described."

Cassia lotoides Kunth, Nov. gen. sp. [H.B.K.] 6(29): 361 (1824).
≡ *Cassia lotoides* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ad Orinocum [Crescit prope Caripe Cumanensium, item locis arenosis prove El Capuchino, ad ripam Orinoci.], s.n.; no. 1058/no. 261.
TYPE SPECIMENS: HAL0120706 (ST), B-W07927, B-W07925, P00679254, P02436097.
REFERENCES AND COMMENTS: Coll. no. in B and P identical.

Cassia lotoides Willd. see *Cassia lotoides* Kunth

Cassia retusa Willd. see *Cassia elliptica* Kunth

Cassia tenella Kunth, Nov. gen. sp. [H.B.K.] 6(29): 365 (1824).
≡ *Cassia tenuis* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in ripa fluminis Orinoci, prope Sab Borja.], no. 1182.
TYPE SPECIMENS: HAL0120731 (IT), B-W07954 (IT), P00679260 (HT), P00836109 (IT) [photo: F0BN001688].
REFERENCES AND COMMENTS: Coll. no. in B and P identical. Irwin & Barneby, Mem. New York Bot. Gard. 35: 712 (1982), cited "Holotypus, labelled 'n. 1182. San Borja Orinocensium,' P-HBK!, isotypi, P (hb. Bonpland) =F Neg. *39839*; B (*hb. Willd. 4954*)!".

Cassia tenuis Willd. see *Cassia tenella* Kunth

Cassia venustula Kunth, Nov. gen. sp. [H.B.K.] 6(28): 352 (1824).
≡ *Cassia cumanensis* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Cerscit locis aridis prope Cumanam.], no. 529.
TYPE SPECIMENS: HAL0120701 (IT), B-W07959 (IT), P00679241 (HT) [photo: F0BN001764].
REFERENCES AND COMMENTS Coll. no. in B and P identical. Irwin & Barneby, Mem. New York Bot. Gard. 35: 538 (1982), noted "Holotypus, labelled 'n. 529. Cumaná', P-HBK!, isotypus B (*hb. Willd. 7959*)!".

Castilleja fissifolia L.f. see *Castilleja fissifolia* L.f. var. *fissifolia* subvar. *virgata* Dombey ex Wedd.

Castilleja fissifolia L.f. var. ***fissifolia*** subvar. ***virgata*** Dombey ex Wedd., Chlor. and. 2(12,13): 119 (1860).
LABEL [PROTOLOGUE], COLL. NO.: e Nova Granada [Crescit locis frigidis Regni Novo-Granatensis inter Zipaquira et Santa Fe de Bogota, alt. 1360 hex.], s.n.
TYPE SPECIMENS: HAL0096092 (ST), B-W11696, P00587587.

REFERENCES AND COMMENTS: This collection was originally identified and treated as *Castilleja fissifolia* L.f. by Willdenow, Sp. pl., ed. 4 [Willdenow] 3(1): 389 (1800), and Kunth, Nov. gen. sp. [H.B.K.] 2(8): 330 (1818).

Castilleja pumila Willd. see *Castilleja tolucensis* Kunth

Castilleja tolucensis Kunth, Nov. gen. sp. [H.B.K.] 2(8): 329 (1818).
≡ *Castilleja pumila* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: e Toluca, Amer. meridionalis [Crescit in montibus Mexicanis propter urbem Tolucae.], s.n.
TYPE SPECIMENS: HAL0116037 (ST), B-W11699, F0072441F, P00670469, P00136104.
REFERENCES AND COMMENTS: The specimen B-W11699 was referred to as *Castilleja tolucensis* Kunth by Chamisso & Schlechtendal, Linnaea 2: 579 (1827).

Cervantesia tomentosa Ruiz & Pav. see *Elaeodendron tomentosum* Willd. ex Schult.

Cestrum bogotense Willd. ex Roem. & Schult. see *Cestrum mariquitense* Kunth

Cestrum mariquitense Kunth, Nov. gen. sp. [H.B.K.] 3(9): 57 (1818).
≡ *Cestrum bogotense* Willd. ex Roem. & Schult., Syst. veg., ed. 15 bis [Roemer & Schultes] 4: 807 (1819)
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit prope S. Ana et Mariquita Novo-Granatensium, alt. 550 hex.], s.n.
TYPE SPECIMENS: HAL0075334 (ST), B-W04454, F0072813F, P00479277, P00531888.
REFERENCES AND COMMENTS: Synonymy according to Kunth, Nov. gen. sp. [H.B.K.] 3(13): 454 (1820), and Steudel, Nomencl. bot. [Steudel] ed. 2 1: 337 (1840).

Chaetospora capitata Kunth, Nov. gen. sp. [H.B.K.] 1(4): 299 (1816).
≡ *Rhynchospora lanceolata* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ad Orinocum [Crescit in sylvaticis ripae Orinocensis, propemontem Duidae et pagam Esmeraldam.], s.n.
TYPE SPECIMENS: HAL0134489 (ST), B-W01145, P00669513 [photo: F0BN011124].
REFERENCES AND COMMENTS: *Rhynchospora lanceolata* Willd. based on specimen B-W01145 was listed as synonym of *R. capitata* (Kunth) Roem. & Schult. by Kunth, Enum. pl. [Kunth] 2: 288 (1838).

Chaetospora pterocarpa Kunth, Nov. gen. sp. [H.B.K.] 1(3): 230 (1816).
≡ *Schoenus hemisphaericus* Humb. ex Link, Jahrb. Gewächsk. 1(3): 75 (1820).
LABEL [PROTOLOGUE], COLL. NO.: s.l. (ex Amer. merid.), s.n.
TYPE SPECIMENS: HAL0109866 (ST), B-W01096, P00264205.
REFERENCES AND COMMENTS: Synonymy according to Kunth, Syn. pl. 1: 159 (1822), and Kunth, Syn. pl. [Kunth] 2: 290 (1837).

Chaptalia runcinata Kunth, Nov. gen. sp. [H.B.K.] 4(14): fol. 5, qu. 6, tab. 303 (1820).
≡ *Tussilago bicolor* Willd. (in herb.).
≡ *Oxydon bicolor* Less. (nom. superfl. illeg.), Linnaea 5: 357 (1830).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit locis temperatis, scopulosis Andinum Novo-Granatensium in ripa fluvii Smita.], no. 2031.
TYPE SPECIMENS: HAL0113172 (ST), B-W15714, P00322235, P00732618, P00732619, SI000891 [photo: MO].
REFERENCES AND COMMENTS: The synonymy and specimen B-W15714 were cited by Lessing, Linnaea 5: 357 (1830). *Oxydon bicolor* Less. is type species of *Oxydon* Less., Linnaea 5: 357 (1830), see ING.

Chelone gentianoides Willd. see *Chelone gentianoides* Kunth

Chelone gentianoides Kunth, Nov. gen. sp. [H.B.K.] 2(7): 363, tab. 172 (1818).
≡ *Chelone gentianoides* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit locis frigidis in declivitate montis nivosi Tolucensis.], no. 4368.

TYPE SPECIMENS: HAL0115321 (ST), B-W11243, P00670524 [photo: F0BN012326].
REFERENCES AND COMMENTS: Coll. no. in B and P identical.

Chiococca parviflora Humb. & Bonpl. ex Schult., Syst. veg., ed. 15 bis [Roemer & Schultes] 5: 202 (1819).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in Insula Cubae, juxta Havanam; item prope Bordones et Caripe Cumanensium, alt. 10–450 hex.], no. 1232.
TYPE SPECIMENS: HAL0113824 (ST), B-W04140.
REFERENCES AND COMMENTS: Synonymy according to Kunth, Nov. gen. sp. [H.B.K.] 3(13): 456 (1820). This collection was identified and treated as *Chiococca racemosa* L. by Kunth, Nov. gen. sp. [H.B.K.] 3(12): 352 (1819).

Chiococca racemosa L. see *Chiococca parviflora* Humb. & Bonpl. & Schult.

Chloris dubia Kunth, Nov. gen. sp. [H.B.K.] 1(3): 169 (1816).
≡ *Festuca obtusiflora* Willd. ex Spreng., Syst. veg., ed. 16 [Sprengel] 1: 356 (1824).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. (e Mexico) [Crescit in apricis, subhumidis prope rupem porphyriticam El Peñon, in convalle Mexicana, alt. 1168 hexap, floret Januario.], no. 4172, no. 4158.
TYPE SPECIMENS: HAL0107044 (ST), B-W02095 (no. 4172), BAA00001728 (no. 4158), BAA00001729 (no. 4172), P00669452 (no. 4172), P032677 (no. 4158), P032678 (no. 4172), P00740206 (no. 4158), PH00014252 (T prob.), US00386284 (=US-865875, no. 4158), US00902031 (=US-865876 fragm. ex P, no. 4172) [microfiche: K].
REFERENCES AND COMMENTS: Coll. no. in B and P identical. Synonymy according to Kunth, Enum. pl. [Kunth] 1(1): 271 (1833). Lectotype (no. 4172) of *Chloris dubia* Kunth designated by Snow et al., J. Bot. Inst. Texas 2(2): 863 (2008), see Tropicos.

Chondrosum humile P.Beauv. ex Kunth, Nov. gen. sp. [H.B.K.] 1(3): 175, tab. 56 (1816).
≡ *Actinochloa humilis* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: in montes prope St. Fe de Bogota [Crescit in frigidis exsiccatis, argillosis propter Llactacunga Quitensium et in monte Guadelupensi, cui urbs Santae Fidei Bogotensium subjecta est, alt. 1480–1690 hex.], s.n.
TYPE SPECIMENS: HAL0134560 (ST), B-W01627, P00669461, US00157254 (=US-865683A, fragm.).
REFERENCES AND COMMENTS: Synonymy according to Kunth, Révis. Gramin. 1(3): 93 (1829), and Roemer & Schultes, Syst. veg., ed. 15 bis [Roemer & Schultes] 2: 417 (1817).

Chrysocoma ilicifolia Willd. (in herb.)
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid., s.n.
TYPE SPECIMENS: HAL0112981 (AS), HAL0112982 (AS), B-W15253.
REFERENCES AND COMMENTS: Anonym annotated the specimen at HAL as *Baccharis xalapensis* Kunth.

Chrysocoma tridentata Willd. see *Baccharis microphylla* Kunth

Chrysophania fastigiata Kunth see *Anthemis fastigiata* Willd.

Cinchona condaminea Bonpl., Pl. aequinoct. [Humboldt & Bonpland] 1: 33, tab. 10 (1808).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Ecuador, Loja.], s.n.
TYPE SPECIMENS: HAL0048887 (ST), B-W04031, F0068763F, P00315872, P00315873, P01900287, P01900288, P01900306, P01900307, P-LA, US00137756 (=US-1706401) [photo: F0BN000115, F0BN000119, F0BN000120].
REFERENCES AND COMMENTS: Lectotype designated by Anderson & Taylor, Fl. Ecuador 50: 50 (1994), see Tropicos.

Cinchona cordifolia Mutis ex Humb., Mag. Neuesten Entdeck. Gesammten Naturk. Ges. Naturf. Freunde Berlin 1: 117 (1807).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid., no. 1751.
TYPE SPECIMENS: HAL0048896 (ST), B-W04035. The type collection includes also specimens from herbarium Mutis P01900352, P01900353, P01900354, US00137757 (=US-1560425).

Cinchona oblongifolia Mutis ex Humb., Mag. Neuesten Entdeck. Gesammten Naturk. Ges. Naturf. Freunde Berlin 1: 118 (1807).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid., no. 1716, no. 1750.
TYPE SPECIMENS: HAL0048901 (ST), B-W04038, B-W04042. The type collection includes also specimens from herbarium Mutis MA671331, MA671332, US00137762 (=US-1560311).

Cissus arborea Willd. see *Ardisia tetrandra* Kunth

Cissus dendroides Schult. & Schult.f. see *Ardisia tetrandra* Kunth

Cistus flexuosus in herb. Link see *Helianthemum flexuosum* Willd.

Citharexylum ilicifolium Kunth see *Dicaryum subdentatum* Willd. ex Roem. & Schult.

Coccocypselum spicatum (Lam.) Kunth see *Higginsia racemosa* Willd. ex Schult. & Schult.f.

Coffea flavicans Humb. & Bonpl. ex Schult., Syst. veg., ed. 15 bis [Roemer & Schultes] 5: 201 (1819).
≡ *Tetramerium jasminoides* Kunth, Nov. gen. sp. [H.B.K.] 3(12): 373, tab. 287 (1819).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit prope urbem Ibague Novo-Granatensium, alt. 700 hex.], s.n.
TYPE SPECIMENS: HAL0113837 (ST), B-W04132, F0068803F, P00671118.
REFERENCES AND COMMENTS: Synonymy according to Kunth, Nov. gen. sp. [H.B.K.] 3(13): 456 (1820).

Columellia sericea Kunth, Nov. gen. sp. [H.B.K.] 2(8): 388 (1818).
≡ *Columellia sericea* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: Peru [Crescit locis sylvaticis Regni Quitensis, in declivitate montis ignivomi Tunguraguae, inter rupem Guandisava et flumen Puella, alt. 1300 hex.], no. 3204.
TYPE SPECIMENS: HAL0117437 (ST), B-W00391, F0054578F, G00322655, P00603418, P00603419, P00603420, US00136341 (=US-1706398) [photo: F0BN014031].
REFERENCES AND COMMENTS: Coll. no. in B and P identical.

Columellia sericea Willd. see *Columellia sericea* Kunth

Conocarpus acutifolius Humb. & Bonpl. ex Schult., Syst. veg., ed. 15 bis [Roemer & Schultes] 5: 574 (1819).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in maritimis prope Cumana (Playa Chica).], no. 1243.
TYPE SPECIMENS: HAL0118788 (ST), B-W04202, P00679493, P00538386.
REFERENCES AND COMMENTS: Coll. no. in B and P identical. This collection was identified and treated as *Conocarpus erecta* L. var. *β* Kunth by Kunth, Nov. gen. sp. [H.B.K.] 6(25): 114 (1824), who also cited the synonym *Conocarpus acutifolius* based on the specimen from herbarium Willdenow.

Conocarpus erecta L. var. *β* Kunth see *Conocarpus acutifolius* Humb. & Bonpl. ex Schult.

Conyza ceratophylla Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: e Mexico, s.n.
TYPE SPECIMENS: HAL0112792 (AS).

Conyza filaginoides Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid.
TYPE SPECIMENS: HAL0135505 (AS).

Conyza lyrata Kunth, Nov. gen. sp. [H.B.K.] 4(14): fol. 55, qu. 70 (1820).
≡ *Conyza rudis* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in humidis prope Guayaquil Quitensium.], no. 1419.
TYPE SPECIMENS: HAL0112793 (ST), B-W15678, P00322294, P01816029 [photo: F0BN014934].

REFERENCES AND COMMENTS: Coll. no. in B and P identical. Synonymy according to Steudel, Nomencl. bot. [Steudel] ed. 2 1: 235 (1840).

Conyza rudis Willd. see *Conyza lyrata* Kunth

Corchorus arenarius Kunth see *Corchorus plicatus* Willd.

Corchorus plicatus Willd. (in herb.)
LABEL [PROTOLOGUE], COLL. NO.: Nova Granada [Crescit in arenosis circa Castellum Araya (Nova Andalusia).], no. 105.
TYPE SPECIMENS: HAL0118245 (AS), B-W10281010.
REFERENCES AND COMMENTS: Anonym annotated the specimen at HAL as *Corchorus arenarius* Kunth, Nov. gen. sp. [H.B.K.] 5(23): 339 (1823). Syntype specimens of *Corchorus arenarius* Kunth are P00679626, US (s.n.).

Coreopsis verbascifolia Willd. (in herb.)
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid., no. 2210.
TYPE SPECIMENS: HAL0112797 (AS), B-W16498.

Coriaria phylicifolia Humb. & Bonpl. ex Willd., Sp. pl., ed. 4 [Willdenow] 4(2): 819 (1806).
LABEL [PROTOLOGUE], COLL. NO.: s.l. (ex Amer. merid.), s.n.
TYPE SPECIMENS: HAL0119098 (ST), B-W18474.

Coutoubea minor Kunth, Nov. gen. sp. [H.B.K.] 3(10): 179 (1819).
≡ *Exacum strictum* Willd. ex Schult. & Schult.f., Mant. 3 [Schultes & Schultes f.]: 101 (1827).
LABEL [PROTOLOGUE], COLL. NO.: ad Orinocum [Crescit in humidis Orinoci, prope cataractam Aturensium], no. 861.
TYPE SPECIMENS: HAL0076386 (ST), B-W02928, F-037454, P00670842.
REFERENCES AND COMMENTS: Synonymy according to Kunth, Linnaea 5: 366 (1830).

Croton adipatus Kunth, Nov. gen. sp. [H.B.K.] 2(5): 68 (1817).
≡ *Croton cuspidatus* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in ripa fluminis Amazonum juxta Tomependa (Prov. Jaen de Bracamoros), alt. 207 hex.], no. 1612.
TYPE SPECIMENS: HAL0119012 (ST), A00257877, B-W17843, B100086845, P00129823, P00669844 [photo: F0BN005049].
REFERENCES AND COMMENTS: Coll. no. in B and P identical. Specimen B-W17843 was referred to as *Croton adipatus* Kunth by Müller Argoviensis, Prodr. [DC.] 15(2): 552 (1862).

Croton alnifolius Kunth see *Croton quitensis* Spreng.

Croton alnifolius var. *quitensis* (Spreng.) Müll. Arg. see *Croton quitensis* Spreng.

Croton canescens Willd. see *Croton thurifer* Kunth

Croton concolor Willd. see *Croton quitensis* Spreng.

Croton coriaceus Kunth, Nov. gen. sp. [H.B.K.] 2(5): 87 (1817).
≡ *Croton sidifolius* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in alta convalli Quitensi prope Turubamba et Lloa., alt. 1480 hex.], no. 3075.
TYPE SPECIMENS: HAL0118976 (ST), B-W17881, P00669888, P00129818, P00129819, P00129820, P00129821, US00109529 (=US-2797901).
REFERENCES AND COMMENTS: Coll. no. in B and P identical. Specimen B-W17881 was referred to as *Croton coriaceus* Kunth by Müller Argoviensis, Prodr. [DC.] 15(2): 533 (1862).

Croton cuspidatus Willd. see *Croton adipatus* Kunth

Croton dioicus Willd. see *Croton gracilis* Kunth

Croton gracilis Kunth, Nov. gen. sp. [H.B.K.] 2(5): 69 (1817).
≡ *Croton dioicus* Willd. (nom. illeg. hom.)., Sp. pl., ed. 4 [Willdenow] 4(1): 534 (1805).

LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit regione alsa in alta convalli Mexicana, prope Actopan, alt. 1050 hex.], s.n.
TYPE SPECIMENS: HAL0118991 (ST), B-W17846, A00305144, P00669845, P00129830, P00129831 [photo: F0BN005106].
REFERENCES AND COMMENTS: The synonyms were cited and specimen B-W17846 was referred to as *Croton gracilis* Kunth by Schlechtendal & Chamisso, Linnaea 5: 86 (1830), and Müller Argoviensis, Prodr. [DC.] 15(2): 691 (1862).

Croton nudus Willd. see *Croton reflexifolius* Kunth

Croton quitensis Spreng. (nom. nov.), Syst. veg., ed. 16 [Sprengel] 3: 872 (1826).
≡ *Croton concolor* Willd. (in herb.).
≡ *Croton alnifolius* Kunth (nom. illeg. hom.), Nov. gen. sp. [H.B.K.] 2(5): 80 (1817).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid., s.n.
TYPE SPECIMENS: HAL0119009 (ST), B-W17847, P00669875.
REFERENCES AND COMMENTS: Specimen B-W17847 was referred to as *Croton alnifolius* var. *quitensis* (Spreng.) Müll. Arg. by Müller Argoviensis, Prodr. [DC.] 15(2): 604 (1862).

Croton reflexifolius Kunth, Nov. gen. sp. [H.B.K.] 2(5): 68 (1817)
≡ *Croton nudus* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in maritimus prope Acapulco Mexicanorum.], no. 3879.
TYPE SPECIMENS: HAL0118986 (ST), B-W17875, A00003169, P00129827, P00129828, P00669842 [photo: F0BN005151].
REFERENCES AND COMMENTS: Coll. no. in B and P identical. The synonyms and specimen B-W17875 were cited by Schlechtendal & Chamisso, Linnaea 6: 359 (1831), and Müller Argoviensis, Prodr. [DC.] 15(2): 518 (1862).

Croton sidifolius Willd. see *Croton coriaceus* Kunth

Croton thurifer Kunth, Nov. gen. sp. [H.B.K.] 2(5): 73 (1817).
≡ *Croton canescens* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in ripa inundata fluminis Amazonum prope Tomependa.], no. 3611, no. 3612.
TYPE SPECIMENS: HAL0118989 (ST), B-W17845 (no. 3611), B100127742 (no. 3611), A00277301 (no. 3611), A00277296 (no. 3611), P00129791 (no. 3611), P00129793 (no. 3611), P00129792 (no. 3611), P00129794 (no. 3612), P00669866 (s.n.) [photo: F0BN005187].
REFERENCES AND COMMENTS: Coll. no. in B and P identical. Specimen B-W17845 was referred to as *Croton thurifer* Kunth by Müller Argoviensis, Prodr. [DC.] 15(2): 606 (1862).

Culcitium nivale Kunth, Nov. gen. sp. [H.B.K.] 4(16): fol. 134, qu. 171, tab. 363 (1820).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit inter nives in monte ignivomo antisanae qua parte Chussulongum spectat.], no. 2249.
TYPE SPECIMENS: HAL0113453 (ST), F0076956F, GH00012169, P00320241, P00659944, P00659945 [photo: F0BN018146].
REFERENCES AND COMMENTS: See Hind & Jeffrey, Compositae Newslett. 37: 41 (2001).

Cuphea linifolia Willd. see *Lythrum album* Kunth

Cynanchum microphyllum Kunth, Nov. gen. sp. [H.B.K.] 3(11): qu. 204, tab. 236 (1819).
≡ *Asclepias parvifolia* Willd. (in herb.).
≡ *Asclepias parviflora* Schult., Syst. veg., ed. 15 bis [Roemer & Schultes] 6: 82 (1820).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit locis frigidis, prope urbem Pasto, alt. 1500 hex.], no. 2156.
TYPE SPECIMENS: HAL0114241 (ST), B-W05277, P00670884, P00644856.
REFERENCES AND COMMENTS: Coll. no. in B and P identical. Synonymy according to Kunth, Nov. gen. sp. [H.B.K.] 5(23): 431 (1823).

Cynanchum suberosum Kunth see *Periploca oblongata* Humb. & Bonpl. ex Schult.

Cyperus aureus Kunth, Nov. gen. sp. [H.B.K.] 1(4): 205 (1816).
≡ *Cyperus aureus* Willd. (in herb.).
≡ *Cyperus quitensis* Spreng., Syst. veg., ed. 16 [Sprengel] 1: 224 (1824).
LABEL [PROTOLOGUE], COLL. NO.: in America austr., locis prope Guayaquil [Crescit locis planis, calidissimis prope Guayaquil Quitensium: item ad radices montis ignivomi Jorullo, alt. 500 hex.], s.n.
TYPE SPECIMENS: HAL0109986 (ST), B-W01326, P00128947, P00128948 [photo: F0BN011234, F0BN011225, LCU].
REFERENCES AND COMMENTS: Synonymy according to Kunth, Enum. pl. [Kunth] 2: 21 (1837).

Cyperus aureus Willd. see *Cyperus aureus* Kunth

Cyperus conglobatus Humb. see *Cyperus conglobatus* Link

Cyperus conglobatus Link, Jahrb. Gewächsk. 1(3): 87 (1820).
≡ *Cyperus conglobatus* Humb. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: Orinoco, no. 845(?), no. 443(?).
TYPE SPECIMENS: HAL0109993 (ST), B-W01389 [photo: F0BN011236].

Cyperus filifolius Willd. ex Kunth (nom. nov.), Enum. pl. [Kunth] 2: 85 (1837).
≡ *Mariscus filiformis* Kunth (nom. illeg. hom.), Kunth, Nov. gen. sp. [H.B.K.] 1(3): 213 (1816).
LABEL [PROTOLOGUE], COLL. NO.: ad Orinocum [ad Orinocum.], s.n.
TYPE SPECIMENS: HAL0134342 (ST), B-W01293, P00542009 [photo: F0BN011239].
REFERENCES AND COMMENTS: Synonyms and specimen B-W01293 from herbarium Willdenow were cited in the protologue of *Cyperus filifolius* Willd. ex Kunth.

Cyperus junceus Link, Jahrb. Gewächsk. 1(3): 85 (1820).
≡ *Cyperus junceus* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ad Orinocum, no. 867.
TYPE SPECIMENS: HAL0134337 (ST), B-W01340.

Cyperus junceus Willd. see *Cyperus junceus* Link

Cyperus melanostachyus Kunth, Nov. gen. sp. [H.B.K.] 1(4): 207 (1816).
≡ *Cyperus melanostachyus* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: Amer. merid., in regni Novogranatensis [Crescit in praeruptis temperatis regni Novogranatensis, cum ad radices Andium Quinduensium prope Combeima, tum iter Alto de Gascas et Santa Fe de Bogota, alt. 700–900 hex.], s.n.
TYPE SPECIMENS: HAL0053169 (IT annotated by G.C. Tucker (DUKE) 1984-10), B-W01317, P00254470, P00254471, P00254472 [photo: F0BN011230].
REFERENCES AND COMMENTS: Synonymy according to Kunth, Enum. pl. [Kunth] 2: 10 (1837), who also cited specimen B-W01317.

Cyperus melanostachyus Willd. see *Cyperus melanostachyus* Kunth

Cyperus monostachyus L. see *Abildgaardia laevigata* Willd.

Cyperus oligostachyus Kunth, Nov. gen. sp. [H.B.K.] 1(3): 204 (1816).
≡ *Cyperus oligostachys* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ad Orinocum, Bordone in Nova Andalusia [Crescit locis planis, calidis, umbrosis convallis Bordonensis (Prov. Novae Andalusiae).], no. 546.
TYPE SPECIMENS: HAL0110136 (ST), B-W01300.
REFERENCES AND COMMENTS: Synonymy according to Kunth, Enum. pl. [Kunth] 2: 20 (1837), who also cited specimen B-W01300.

Cyperus oligostachys Willd. see *Cyperus oligostachyus* Kunth

Cyperus quitensis Spreng. see *Cyperus aureus* Kunth

Cyperus seslerioides Kunth, Nov. gen. sp. [H.B.K.] 1(4): 209 (1816).
≡ *Cyperus seslerioides* Willd. (in herb.).

LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid., ad ripa fluminis Orinoci prope Atures [Crescit ad ripa fluminis Orinoci prope Atures.], s.n.
TYPE SPECIMENS: HAL0110009 (ST), B-W01310, P00128940, P00128941.
REFERENCES AND COMMENTS: Synonymy according to Kunth, Enum. pl. [Kunth] 2: 44 (1837), who also cited specimen B-W01310.

Cyperus seslerioides Willd. see *Cyperus seslerioides* Kunth

Dalea microphylla Kunth, Nov. gen. sp. [H.B.K.] 6(29): 482 (1824).
≡ *Dalea microphylla* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit locis montosis Peruviae, inter Loxam et San Felipe, prope Guancabambam], no. 4112, no. 3536.
TYPE SPECIMENS: HAL0119395 (ST), B-W14116 (no. 4112), P00582108 (no. 4112), P00582109 (no. 4112), P00659950 (no. 3536) [photo: F0BN000726].
REFERENCES AND COMMENTS: Coll. no. in B and P identical.

Dalea microphylla Willd. see *Dalea microphylla* Kunth

Dalea ternata Willd. (in herb.)
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid., no. 4209.
TYPE SPECIMENS: HAL0119396 (AS), B-W14126.

Daphne elaeagnoides Humb. ex Wikstr., Diss. Daphne, ed. 1 [Wikström]: 53 (1817).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid., s.n.
TYPE SPECIMENS: HAL0110392 (ST), B-W04551, NY00386219 (fragm. ex B).

Darea fumarioides Willd., Sp. pl., ed. 4 [Willdenow] 5(1): 299 (1810).
LABEL [PROTOLOGUE], COLL. NO.: Caracas, no. 573.
TYPE SPECIMENS: HAL0036703 (ST), B-W19563.
REFERENCES AND COMMENTS: Database of B notes on B-W19563: "label '573. Iguerote' is misassigned; determination (*Acrostichum aureum*) and description ('pinnis oblong. integerr.') in Journal Botanique no. 573 do not fit this specimen".

Declieuxia Kunth see *Houstonia fruticosa* Willd. ex Roem. & Schult.

Declieuxia chiococcoides Kunth see *Houstonia fruticosa* Willd. ex Roem. & Schult.

Deyeuxia eriantha Kunth, Nov. gen. sp. [H.B.K.] 1(3): 145 (1816).
≡ *Pteropodium heterophyllum* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: Mexico [Crescit in apricis, montanis inter Mexico et Tezcuco.], s.n.
TYPE SPECIMENS: HAL0107130 (ST), B-W01765.
REFERENCES AND COMMENTS: For synonymy see Steudel, Nomencl. bot. [Steudel] ed. 2 2(11): 414 (1841). See also *Avena deyeuxioides* Kunth.

Deyeuxia poiformis Kunth see *Poa subuniflora* Kunth

Deyeuxia recta Kunth see *Agrostis rigida* Willd.

Deyeuxia tolucensis Kunth, Nov. gen. sp. [H.B.K.] 1(1–2): 143 (1816).
≡ *Agrostis cuspidata* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: Mexico prope Toluca [Crescit in alta planitie Mexicana juxta Toluca, alt. 1380 hex.], s.n.
TYPE SPECIMENS: HAL0107126 (ST), B-W01708, BM000938570, P00669407, P00128996, P00128997, P00128998, P00128999, P00129000, P00129577, MSC0091613, US00133527 (US-87875, fragm. ex P), US00157383 (US-866025).
REFERENCES AND COMMENTS: Synonymy according to Steudel, Nomencl. bot. [Steudel] ed. 2 1(8): 40 (1840). For further information see Tropicos.

Deyeuxia triflora Nees see *Avena deyeuxioides* Kunth

Dicaryum subdentatum Willd. ex Roem. & Schult., Syst. veg., ed. 15 bis [Roemer & Schultes] 4: 802 (1819).
LABEL [PROTOLOGUE], COLL. NO.: e monte Pichincha.
TYPE SPECIMENS: HAL0083650 (ST), B-W04599.
REFERENCES AND COMMENTS: Kunth, Nov. gen. sp. [H.B.K.] 3(13): 454 (1820), listed *Dicaryum subdentatum* Willd. and noted "est mihi ignotum". Radlkofer annotated the specimen B-W04599 as *Citharexylum ilicifolium* Kunth, Nov. gen. sp. [H.B.K.] 2(7): 256 (1818). Type specimens for the latter name are P00689421, P00689422, P00689423, P00670102, P00670103.

Dichromena caracasana Kunth, Enum. pl. [Kunth] 2: 281 (1837).
≡ *Rhynchospora filiformis* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: Caracas [Caracas.], no. 538.
TYPE SPECIMENS: HAL0109883 (ST), B-W01134010 [photo: F0BN011125].
REFERENCES AND COMMENTS: Synonymy according to the protologue.

Dichromena gracilis (Spreng.) Kunth see *Rhynchospora tenuis* Willd. ex Link.

Dinebra aristidoides Kunth, Nov. gen. sp. [H.B.K.] 1(3): 171 (1816).
≡ *Aristida unilateralis* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: in frigidis Tolucensis [Crescit in asperia frigidis convallis Tolucensis], no. 67. TYPE SPECIMENS: HAL0107167 (ST), B-W01817, B100347072, BAA00003420, P00669457, P00129620, P00129621, P00129622, US01231814 (=US-102032).

Dioscorea piperifolia Humb. & Bonpl. ex Willd., Sp. pl., ed. 4 [Willdenow] 4(2): 795 (1806).
LABEL [PROTOLOGUE], COLL. NO.: s.l. (ex Amer. merid.), no. 2219.
TYPE SPECIMENS: HAL0062126 (IT annotated by O. Téllez & B.G. Schubert (MEXU) 1990-04), B-W18423, P00748408, P00748409, P00748410, P00669566 [photo: F0BN010530].
REFERENCES AND COMMENTS: Coll. no. in B and P identical.

Diplostephium Kunth see *Diplostephium lavandulifolium* Kunth

Diplostephium lavandulifolium Kunth, Nov. gen. sp. [H.B.K.] 4(15): fol. 76, qu. 97 (1820).
≡ *Aster lavandulaceus* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit locis arenosis exustis in radicibus montium ignivomorum Illinisae et Cotopaxi, juxta Mulalo.], no. 3064.
TYPE SPECIMENS: HAL0110662 (ST), B-W15839, F0049382F, P00320039, P00594554, P00594555, P00594556.
REFERENCES AND COMMENTS: Coll. no. in B and P identical. Synonymy according to Nees, Gen. sp. Aster. [Nees]: 189 (1832). *Diplostephium lavandulifolium* Kunth is type species of *Diplostephium* Kunth, Nov. gen. sp. [H.B.K.] 4(15): 96 (1820), see ING.

Disterigma (Klotzsch) Nied. see *Vaccinium empetrifolium* Kunth

Disterigma empetrifolium (Kunth) Drude see *Vaccinium empetrifolium* Kunth

Dodonaea bialata Kunth, Nov. gen. sp. [H.B.K.] 5(21): 134 (1822).
≡ *Dodonaea bialata* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: America calida [Crescit in arenosis maritimis, prope Cumana.], no. 355.
TYPE SPECIMENS: HAL0036834 (IT), B-W07316, P00679965.

Dodonaea bialata Willd. see *Dodonaea bialata* Kunth

Draba alyssoides Kunth, Nov. gen. sp. [H.B.K.] 5(20): 79 (1821).
≡ *Draba alyssoides* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in Provincia Pastoensi, prope Zapayes, Guachucal et Quarchu.], no. 2188.
TYPE SPECIMENS: HAL0107962 (ST), B-W11800, P00136890 [photo: F0BN013895].
REFERENCES AND COMMENTS: Coll. no. in B and P identical.

Draba alyssoides Willd. see *Draba alyssoides* Kunth

Draba aretioides Kunth, Nov. gen. sp. [H.B.K.] 5(20): 77 (1821).
≡ *Draba aretioides* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [In devexis montis Antisanae (Andibus Quitensium).], no. 2256.
TYPE SPECIMENS: HAL0107493 (ST), B-W11792, B100243553.

Draba aretioides Willd. see *Draba aretioides* Kunth

Drymaria Willd. ex Schult. see *Drymaria arenarioides* Humb. & Bonpl. ex Schult.

Drymaria arenarioides Humb. & Bonpl. ex Schult., Syst. veg., ed. 15 bis [Roemer & Schultes] 5: 406 (1819).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. (e Mexico), s.n.
TYPE SPECIMENS: HAL0117875 (ST), B-W04991.
REFERENCES AND COMMENTS: *Drymaria arenarioides* Humb. & Bonpl. ex Schult. is type species of *Drymaria* Willd. ex Schult., Syst. veg., ed. 15 bis [Roemer & Schultes] 5: 406 (1819), see ING.

Dulongia Kunth see *Phyllonoma ruscifolia* Willd. & Schult.

Dulongia acuminata Kunth see *Phyllonoma ruscifolia* Willd. ex Schult.

Elaeodendron tomentosum Willd. ex Schult., Syst. veg., ed. 15 bis [Roemer & Schultes] 5: 345 (1819).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in sylvis prope Contumasa Peruvianorum, inter Caxamarca et Truxillo, alt. 1100 hex.], no. 3714.
TYPE SPECIMENS: HAL0118479 (ST), B-W04833, P00322227.
REFERENCES AND COMMENTS: Coll. no. in B and P identical. Kunth, Nov. gen. sp. [H.B.K.] 7(32): 190 (1825), reduced *Elaeodendron tomentosum* Willd. ex Schult. to synonymy of *Cervantesia tomentosa* Ruiz & Pav.

Eleocharis geniculata (L.) Roem. & Schult. see *Scirpus elegans* Kunth

Elichrysum lavandulifolium Willd. see *Helichrysum lavandulifolium* Kunth

Epilobium bonplandianum Kunth, Nov. gen. sp. [H.B.K.] 6(25): 95 (1823).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit locis humidis Andium Popayanensium, in Páramo de Purace, alt. 1700 hex.], no. 2009.
TYPE SPECIMENS: HAL0043265 (probably ILT), B-W07199 (ILT), F0066342F (ILT), P01819404 (ILT), P01819405 (ILT), P01819406 (ILT) [photo: GH, MO (LT)].
REFERENCES AND COMMENTS: Willdenow identified the collection at B as *Epilobium denticulatum* Ruiz & Pav. Lectotype designated by J.C. Solomon (MO), Ann. Missouri Bot. Gard. 69: 271 (1982). Tropicos notes: "LT: Humboldt & Bonpland s.n.; Nov-Dec 1801; Colombia: Dpto. Cauca: Andes de Popayán. Páramo de Puracé, 2900 m (P (photo, MO); ILT: F (probable), HAL (probable), P (photo, GH), P (probable))".

Epilobium denticulatum Ruiz & Pav. see *Epilobium bonplandianum* Kunth

Eranthemum cuspidatum Nees see *Eranthemum filiforme* Willd.

Eranthemum filiforme Willd. (in herb., pro syn.)
pro syn. *Justicia caripensis* Kunth in Link, Jahrb. Gewächsk. 1(3): 46 (1820).
pro syn. *Eranthemum cuspidatum* Nees in Nees, Prodr. [DC.] 11: 451 (1847).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid., no. 217.
TYPE SPECIMENS: HAL0071935 (AS), B-W00266.

Erigeron pubescens Kunth, Nov. gen. sp. [H.B.K.] 4(15): fol. 69, qu. 88 (1820).
≡ *Erigeron pubescens* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit locis temperatis juxta Moran Mexicanorum, alt. 1330 hex.], s.n.
TYPE SPECIMENS: HAL0111180 (ST), B-W15702, P00320033.
REFERENCES AND COMMENTS: See Hind & Jeffrey, Compositae Newslett. 37: 22 (2001).

Erigeron pubescens Willd. see *Erigeron pubescens* Kunth

Eriocaulon caulescens Willd. see *Eriocaulon dendroides* Kunth

Eriocaulon dendroides Kunth, Nov. gen. sp. [H.B.K.] 1(3): 252 (1816).
≡ *Eriocaulon caulescens* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in frigidis montanae Bogotensis.], s.n.
TYPE SPECIMENS: HAL0109752 (ST), B100243900.
REFERENCES AND COMMENTS: Synonymy according to Kunth, Enum. pl. [Kunth] 3: 507 (1841).

Eriocaulon pilosum Kunth, Nov. gen. sp. [H.B.K.] 1(3): 251 (1816).
≡ *Eriocaulon pilosus* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: in planitiei montanae Bogotensis, Amer. merid. [Crescit in frigidis montanae planitiei Bogotensis inter Suba et Suacha.], s.n.
TYPE SPECIMENS: HAL0109743 (ST), B-W02371, B100243899, LL00374585.
REFERENCES AND COMMENTS: Synonymy according to Kunth, Enum. pl. [Kunth] 3: 518 (1841).

Eriocaulon pilosus Willd. see *Eriocaulon pilosum* Kunth

Eriocaulon sphacelatum Willd. see *Schoenus paradoxum* Spreng.

Eryngium cylindraceum Willd. see *Eryngium phyteumae* F.Delaroche

Eryngium phyteumae F.Delaroche, Eryng. Alep. hist. [Delaroche]: 51 (1808).
≡ *Eryngium cylindraceum* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: e Mexico [Crescit in pratis, prope urbem Tolucae Mexicanorum, alt. 1330 hex.], no. 4385.
TYPE SPECIMENS: HAL0025167 (ST), B-W05557, P00680057, P00130461.
REFERENCES AND COMMENTS: Details of the type location were cited by Kunth, Nov. gen. sp. [H.B.K.] 5(19): 30 (1821). Synonymy according to Sprengel, Syst. veg., ed. 16 [Sprengel] 1: 872 (1825).

Eugenia albida Bonpl., Pl. aequinoct. [Humboldt & Bonpland] 2: 107, tab. 113 (1809).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Habitat in Peruviae nemoribus, prope Loxam.], no. 1781.
TYPE SPECIMENS: HAL0089640 (ST), B-W09528, F0065074F, P00679469, P01902334, P01902335, P01902336, P01902337.
REFERENCES AND COMMENTS: Coll. no. in B and P identical.

Eugenia peruviana Willd. see *Myrtus discolor* Kunth

Eupatorium celosioides Willd. see *Eupatorium iresinoides* Kunth

Eupatorium iresinoides Kunth, Nov. gen. sp. [H.B.K.] 4(15): fol. 83, qu. 106, tab. 340 (1820).
≡ *Eupatorium celosioides* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in radicibus Andinum Novo-Granatensium prope Ibague.], no. 1819.
TYPE SPECIMENS: HAL0111151 (ST), B-W15151, P00320049.
REFERENCES AND COMMENTS: Coll. no. in B and P identical. See Hind & Jeffrey, Compositae Newslett. 37: 26 (2001)

Eupatorium myrtilloides Willd. (in herb.)
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid., s.n.
TYPE SPECIMENS: HAL0113449 (AS), B-W15184.
REFERENCES AND COMMENTS: The specimen at HAL was annotated as "*Cacalia vaccinioides* Kunth".

Eupatorium niveum Kunth, Nov. gen. sp. [H.B.K.] 4(15): fol. 90, qu. 115 (1820).
≡ *Eupatorium niveum* Willd. (in herb.).

LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit juxta Popayan?], s.n.
TYPE SPECIMENS: HAL0110852 (ST), B-W15153, P00320067, P00742516 [photo: F0BN016309].
REFERENCES AND COMMENTS: See Hind & Jeffrey, Compositae Newslett. 37: 28 (2001).

Eupatorium niveum Willd. see *Eupatorium niveum* Kunth

Eupatorium origanoides Kunth, Nov. gen. sp. [H.B.K.] 4(15): fol. 89, qu. 114 (1820).
≡ *Eupatorium origanoides* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in Regno Novo-Granatensi?], s.n.
TYPE SPECIMENS: HAL0110853 (ST), B-W15172, P00320066 [photo: F0BN016315].
REFERENCES AND COMMENTS: See Hind & Jeffrey, Compositae Newslett. 37: 28 (2001).

Eupatorium origanoides Willd. see *Eupatorium origanoides* Kunth

Eupatorium prunifolium Kunth, Nov. gen. sp. [H.B.K.] 4(14): fol. 104, qu.132, tab. 349 (1820).
≡ *Baccharis tarchonanthifolia* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: Peru? [Crescit in convalli Tarquiensi juxta urbem Quito, alt. 1350 hex.], no. 3287.
TYPE SPECIMENS: HAL0111223 (ST), B-W15585, P00320108, P00742611, P00742614 [photo: F0BN016335].
REFERENCES AND COMMENTS: Coll. no. in B and P identical.

Euphorbia ammannioides Kunth, Nov. gen. sp. [H.B.K.] 2(5): 55 (1817).
≡ *Euphorbia maritima* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: in arenosis maritinius Cumanae [Crescit in arenosis maritinius Cumanae.], no. 406.
TYPE SPECIMENS: HAL0118588 (ST), B-W09293, A00047852, F0056630F, F0076189F, P00607193, P00669821 [photo: MO].
REFERENCES AND COMMENTS: Coll. no. in B and P identical. Epithet spelled "*amannioides*" by Kunth. Synonymy according to Boissier, Prodr. [DC.] 15 (2.1): 28 (1862).

Euphorbia ascendens Willd. see *Euphorbia orbiculata* Kunth

Euphorbia buxifolia Lam. see *Euphorbia litoralis* Kunth

Euphorbia litoralis Kunth, Nov. gen. sp. [H.B.K.] 2(5): 54 (1817).
≡ *Euphorbia salina* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in arenosis maritimis Cumanae, prope Bordones.], no. 401 (Notes at database entry B-W09268: "Determination by Kunth '*Euphorbia litoralis* N. G. & Sp.' in Journal Botanique, no. 401").
TYPE SPECIMENS: HAL0118595 (ST), B-W09268, F0056647F, P00669819.
REFERENCES AND COMMENTS: *Euphorbia salina* Willd. was listed as synonym of *E. buxifolia* Lam. by Boissier, Prodr. [DC.] 15 (2.1): 15 (1862).

Euphorbia maritima Willd. see *Euphorbia ammannioides* Kunth

Euphorbia orbiculata Kunth, Nov. gen. sp. [H.B.K.] 2(5): 52 (1817).
≡ *Euphorbia ascendens* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: e Santa Fe [Crescit in alta planitie prope Santa Fé de Bogotá, alt. 1360 hex.], s.n.
TYPE SPECIMENS: HAL0118629 (ST), B-W09279, B-W09280, A00047892, P00669813, P00136060, P00136061.
REFERENCES AND COMMENTS: For synonymy see Boissier, Prodr. [DC.] 15(2.1): 31 (1862).

Euphorbia salina Willd. see *Euphorbia litoralis* Kunth

Exacum strictum Willd. ex Schult. & Schult.f. see *Coutoubea minor* Kunth

Festuca andicola Kunth, Nov. gen. sp. [H.B.K.] 1(3): 153 (1816).
≡ *Festuca coarctata* Willd. (in herb.).

≡ *Festuca racemosa* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: in America austr. [Crescit in excelsis frigidis regni Quitensis, in devexis montis Boliche inter Tulcan et Chumban.], s.n.
TYPE SPECIMENS: HAL0106997 (IT), HAL0107043 (IT), B-W02120 (IT), B100002555, BAA00003512, BAA00003513, P00669424, P00115192, P00115193, P00115194, US00513384 (=US-2875373, fragm.).
REFERENCES AND COMMENTS: Synonymy according to Sprengel, Syst. veg., ed. 16 [Sprengel] 1: 352 (1824). Type designated by Alexeev, Novosti Sist. Vyss. Rast. 23: 15 (1986): "Typus: s. loc., ex herb. Humboldt et Bonpland (P, isotypus – B!)".

Festuca aspera Poir. ex Lam. see *Bromus procerus* Kunth

Festuca coarctata Willd. see *Festuca andicola* Kunth

Festuca eminens Kunth see *Bromus procerus* Kunth

Festuca livida Willd. ex Spreng. see *Bromus lividus* Kunth

Festuca mollis Kunth see *Bromus lanatus* Kunth

Festuca obtusiflora Willd. ex Spreng. see *Chloris dubia* Kunth

Festuca orgyalis Willd. see *Festuca procera* Kunth

Festuca procera Kunth, Nov. gen. sp. [H.B.K.] 1(3): 154 (1816)
≡ *Festuca orgyalis* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit locis alsis, subfrigidis regni Quitensis prope Chillo, San Antonio de Lulumbamba et Lloa.], no. 2285.
TYPE SPECIMENS: HAL0134165 (ILT), B-W02088 (LT), B100002600, BAA00003564, BAA00003565, P00624358, P00624359, P00669426, P00624360.
REFERENCES AND COMMENTS: Coll. no. in B and P identical. Synonymy according to Sprengel, Syst. veg., ed. 16 [Sprengel] 1: 351 (1824). Lectotype designated by Alexeev, Novosti Sist. Vyss. Rast. 23: 12 (1986): "B! – selectus hoc loco".

Festuca quitensis Spreng. see *Bromus unioloides* Kunth

Festuca racemosa Willd. see *Festuca andicola* Kunth

Ficus radula Humb. & Bonpl. ex Willd., Sp. pl., ed. 4 [Willdenow] 4(2): 1144 (1806).
≡ *Ficus radula* Kunth (nom. illeg.), Nov. gen. sp. [H.B.K.] 2(5): 47 (1817).
LABEL [PROTOLOGUE], COLL. NO.: s.l. (ex Amer. merid.) [Crescit in sylvis Orinocensibus, et ad ripas Fluvii Nigri et Cassiquiaris], no. 1094.
TYPE SPECIMENS: HAL0110220 (ST), B-W19300, P00669787.

Ficus radula Kunth see *Ficus radula* Humb. & Bonpl. ex Willd.

Fimbristylis leucostachya (Kunth) Roem. & Schult. see *Isolepis leucostachya* Kunth

Fimbristylis tenuis Roem. & Schult. see *Isolepis gracilis* Kunth

Freziera costata Willd. see *Freziera nervosa* Bonpl.

Freziera nervosa Bonpl., Pl. aequinoct. [Humboldt & Bonpland] 1: 31, tab. 9 (1808).
≡ *Freziera costata* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in frigidis Provinciae Pastoensis; prope Guachucal, alt. 1550.], no. 2064.
TYPE SPECIMENS: HAL0060621 (ST), B-W10172, F0073804F, P00136790, P00136791, P00136792, P00136793, P00136794.
REFERENCES AND COMMENTS: See type annotation on the specimens at B and P by Weitzman 1987.

Fuchsia longiflora Willd. see *Fuchsia quinduensis* Kunth

Fuchsia pepiolaris Kunth var. *typica* Munz see *Fuchsia quinduensis* Kunth

Fuchsia quinduensis Kunth, Nov. gen. sp. [H.B.K.] 6(24): 105 (1823).
≡ *Fuchsia longiflora* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: in montes Andibus [Crescit in Andibus Quinduensium (in monte Quindiu).], s.n.
TYPE SPECIMENS: HAL0120040 (ST), B-W07304, P00679571.
REFERENCES AND COMMENTS: *Fuchsia quinduensis* Kunth was listed as synonym of *Fuchsia pepiolaris* Kunth var. *typica* by Munz, Proc. Calif. Acad. Sci., ser. 4 25: 35 (1943), who included information on type localities.

Fuchsia thymifolia Kunth, Nov. gen. sp. [H.B.K.] 6(24): 104, tab. 535 (1823).
≡ *Lopezia thymifolia* Humb. & Bonpl. ex Link (nom. nud.), Jahrb. Gewächsk. 1(3): 25 (1820).
≡ *Lopezia thymifolia* Humb. & Bonpl. ex Schult. & Schult.f. (nom. nud.), Mant. 3 [Schultes & Schultes f.]: 97 (1827).
LABEL [PROTOLOGUE], COLL. NO.: Mexico [Crescit in Regno Mexicano, prope Pazcuaro.], no. 4106.
TYPE SPECIMENS: HAL0120041 (ST), B-W00046010, GH (fragm. ex P), P00679569, P02143387, US (fragm. ex P).
REFERENCES AND COMMENTS: For synonyms see the protologue. For localities of type specimens see also Munz, Proc. Calif. Acad. Sci., ser. 4 25: 88 (1943).

Gahnia ferruginea Willd. see *Rhynchospora kunthii* Nees ex Kunth

Galinsogea balbisioides Kunth, Nov. gen. sp. [H.B.K.] 4(17): 253 (1820).
≡ *Piotea diversifolia* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit locis temperatis Regni Mexicani, inter Valle de Santiago et lacum Palangeo, alt. 920 hex.], no. 4292.
TYPE SPECIMENS: HAL0112795 (ST), B-W16383, P02140790, P02140791, P00320247.
REFERENCES AND COMMENTS: Coll. no. in B and P identical.

Galphimia glandulosa Cav. see *Galphimia humboldtiana* Bartl.

Galphimia glandulosa Kunth see *Galphimia humboldtiana* Bartl.

Galphimia humboldtiana Bartl., Linnaea 13: 555 (1839).
≡ *Galphimia glandulosa* Kunth (nom. illeg. hom.), Nov. gen. sp. [H.B.K.] 5(21): 172, tab. 452 (1822).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in declivitate occidentali montium Mexicanorum, inter Alto de los Caxones et Acaguisotla, alt. 520 hex.], no. 3936.
TYPE SPECIMENS: HAL0119109 (ST), B-W08828, P00542177, P00542179, P00680000.
REFERENCES AND COMMENTS: Willdenow identified the collection at B as *Galphimia glandulosa* Cav.

Gardoquia grandiflora Kunth, Nov. gen. sp. [H.B.K.] 2(8): 314 (1818).
≡ *Gardoquia incana* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in convalli temperata fluminis Chambo inter montem ignivomum Tunguragua et pagum Penipe.], no. 3200.
TYPE SPECIMENS: HAL0114381 (ST), B-W10799, P00679154, P00679155, P00136221.
REFERENCES AND COMMENTS: Coll. no. in B and P identical. Synonymy according to Bentham, Linnaea 11: 331 (1837).

Gardoquia incana Willd. see *Gardoquia grandiflora* Kunth

Gardoquia tomentosa Kunth, Nov. gen. sp. [H.B.K.] 2(8): 314 (1818).
≡ *Gardoquia tomentosa* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in arenosis altae planitiei Quitensis juxta Llactacunga, Hambato et Riobamba Nuevo, alt. 1500 hex.], no. 3067.
TYPE SPECIMENS: HAL0114379 (ST), B-W10800, P00679151, P00136213, P00136214, P00679152, P00679153.
REFERENCES AND COMMENTS: Coll. no. in B and P identical. Synonymy according to Bentham, Linnaea 11: 332 (1837).

Gardoquia tomentosa Willd. see *Gardoquia tomentosa* Kunth

Gaultheria anastomosans (L.f.) Kunth see *Arbutus setosa* Willd.

Gaultheria salicifolia Willd. see *Gaultheria tomentosa* Kunth

Gaultheria tomentosa Kunth, Nov. gen. sp. [H.B.K.] 3(12): 287 (1819).
≡ *Gaultheria salicifolia* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: in Andibus Quitensibus [Crescit in Paramo de Saraguru Andium Quitensium, Loxam inter et pagum Nabon.], no. 3302.
TYPE SPECIMENS: HAL0060235 (probably IT), B-W08294, F0055379F (IT), L0007161, P00670996 (HT), P00549213, P00549214, P00486631, US00026912 (=US-1706403, IT) [photo: F, NY].
REFERENCES AND COMMENTS: Luteyn, Fl. neotrop. 66: 434 (1995), noted "holotype, P, photo NY, s.n.; probably isotypes, F, US. Possible isotypes include *Humboldt s.n.* (HAL) and *Humboldt 3302* (B-Willd. no. 8294, photo NY s.n.)".

Gentiana caespitosa Willd. ex Schult. see *Gentiana sedifolia* Kunth

Gentiana floribunda Willd. ex Schult. see *Gentiana liniflora* Kunth

Gentiana diffusa Kunth see *Gentiana rapunculoides* Willd. Schult.

Gentiana limoselloides Kunth, Nov. gen. sp. [H.B.K.] 3(10): 167, tab. 221 (1819).
≡ *Gentiana peduncularis* Willd. ex Schult., Syst. veg., ed. 15 bis [Roemer & Schultes] 6: 185 (1820).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in planitie frigida montis ignivomi Antisanae, in humidis, alt. 2100 hexap.], no. 2266.
TYPE SPECIMENS: HAL0083630 (ST), B-W05513, P00670843, P00151782, P00151783, P00151784 [photo: F0BN010338, US].
REFERENCES AND COMMENTS: Synonymy according to Kunth, Nov. gen. sp. [H.B.K.] 5(23): 431 (1823).

Gentiana liniflora Kunth, Nov. gen. sp. [H.B.K.] 3(10): 171 (1819).
≡ *Gentiana floribunda* Willd. ex Schult., Syst. veg., ed. 15 bis [Roemer & Schultes] 6: 185 (1820).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in temperatis montium Peruvianorum, prope pagum Ayavaca, alt. 1400 hex.], no. 3475.
TYPE SPECIMENS: HAL0083622 (ST), B-W05512, P00670852, P00608353, P00151781 [photo: F0BN010339].
REFERENCES AND COMMENTS: Synonymy according to Kunth, Nov. gen. sp. [H.B.K.] 5(23): 431 (1823).

Gentiana peduncularis Willd. ex Schult. see *Gentiana limoselloides* Kunth

Gentiana rapunculoides Willd. ex Schult., Syst. veg., ed. 15 bis [Roemer & Schultes] 6: 185 (1820).
≡ *Gentiana diffusa* Kunth (nom. illeg. hom.), Nov. gen. sp. [H.B.K.] 3(10): 172 (1819).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in fissuris rupium, juxta villam Antisanae, alt. 2100 hex. (Provinica Quitensi.)], no. 2265.
TYPE SPECIMENS: HAL0114324 (ST), B-W05511, P00670853, P00151790, P00151791 [photo: F0BN010304].
REFERENCES AND COMMENTS: Synonymy according to Kunth, Nov. gen. sp. [H.B.K.] 5(23): 431 (1823).

Gentiana sedifolia Kunth, Nov. gen. sp. [H.B.K.] 3(10): 173, tab. 225 (1819).
≡ *Gentiana caespitosa* Willd. ex Schult., Syst. veg., ed. 15 bis [Roemer & Schultes] 6: 185 (1820).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in toto jugo Andium Quitensium et Popayanensium, v.c. in montibus ignivomis Antisanae, Puracè, Paramo de Almaguer, etc. Alt. 1600–1800 hex.], no. 2021.

TYPE SPECIMENS: HAL0083641 (ST), B-W05526, K000438885, P00608830, P00608831, P00670855, W [photo: F, MSC].
REFERENCES AND COMMENTS: Synonymy according to Kunth, Nov. gen. sp. [H.B.K.] 5(23): 431 (1823).

Geranium cucullatum Kunth see *Geranium bolivarianum* Dayton

Geranium bolivarianum Dayton (nom. nov.), Phytologia 4(4): 245 (1953).
≡ *Geranium cucullatum* Kunth (nom. illeg. hom.), Nov. gen. sp. [H.B.K.] 5(22): 231 (1822).
≡ *Geranium ciliatum* Willd. ex Spreng. (nom. illeg. hom.), Syst. veg., ed. 16 [Sprengel] 3: 71 (1826).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in frigidis montium Popayanensium, prope Paramento de Almaguer, alt. 1690 hex.], s.n.
TYPE SPECIMENS: HAL0084326 (ILT annotated by C. Aedo (CSIC) 1999), B-W12531 (LT), H1367036, P00136927.
REFERENCES AND COMMENTS: Synonymy according to Weddell, Chlor. andina 2: 285 (1857). Type at B designated and synonyms cited by Knuth, Pflanzenr. [Engler] IV. 129 (Heft 53): 88 (1912). For further information on typification ("lectotype, designated by Knuth, 1912: 88, B-Willd. 12531 photo!; isotypes H, HAL, P"), phylogeny and systematics see Aedo et al., Blumea 47: 205–297 (2002), with comments on this taxon on pp. 273–278.

Geranium ciliatum Willd. ex Spreng. see *Geranium bolivarianum* Dayton

Geranium sericeum Willd. ex Spreng., Syst. veg., ed. 16 [Sprengel] 3: 70 (1826).
LABEL [PROTOLOGUE], COLL. NO.: America australis [Crescit in Andibus Quitensium, prope Hacienda de Antisana, alt. 2100 hex.], s.n.
TYPE SPECIMENS: HAL0084324 (ILT annotated by C. Aedo (CSIC) 2000), B-W12529 (LT), BH (ILT), F, P00136928 (ILT), P00136929 (ILT) [photo: F0BN004797].
REFERENCES AND COMMENTS: Compare specimens in B and P. Type at B designated by Knuth, Pflanzenr. [Engler] IV. 129 (Heft 53): 88 (1912). Lectotype designated by Aedo et al., Blumea 47: 271 (2002): "Type: Humboldt s.n. (lectotype, here designated, B-Willd.-12529; probably isolectotypes BH, HAL, P), without locality (isolectotypes of BH and P from Ecuador: Antisania)". This publication also contains further information on taxonomy and phylogenetics.

Gnaphalium alatum Kunth, Nov. gen. sp. [H.B.K.] 4(15): fol. 62, qu. 79 (1820).
≡ *Gnaphalium alausense* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. allulit. [Crescit cum praecendente [= *Gnaphalium candicans* Kunth: Crescit in Regno Quitensi inter pagum Ticsan et urbem Alausi, alt. 1250 hex.]], no. 3243.
TYPE SPECIMENS: HAL0112146 (ST), B-W15471, F0077060F, P00322303, P01816464, P01816465, P01816466, P01816467.
REFERENCES AND COMMENTS: Coll. no. in B and P identical. See Hind & Jeffrey, Compositae Newslett. 37: 20 (2001).

Gnaphalium alausense Willd. see *Gnaphalium alatum* Kunth

Gnaphalium rufescens Kunth see *Gnaphalium rufidulum* Willd.

Gnaphalium rufidulum Willd. (in herb.)
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid., s.n.
TYPE SPECIMENS: HAL0112148 (AS), HAL0112149 (AS).
REFERENCES AND COMMENTS: *Gnaphalium rufescens* Kunth, Nov. gen. sp. [H.B.K.] 4(15): fol. 61, qu. 78 (1820), is possibly based on the same collection. Type specimens of this species are B-W15470, P00307355, P00603645.

Gnaphalium splendens Willd. see *Gnaphalium viscosum* Kunth

Gnaphalium viscosum Kunth, Nov. gen. sp. [H.B.K.] 4(15): fol. 64, qu. 82 (1820).
≡ *Gnaphalium splendens* Willd. (in herb.).

LABEL [PROTOLOGUE], COLL. NO.: e Mexicano Regno [Crescit in radicibus montis Chapoltepec juxta urbum Mexici, alt. 1170 hex.], no. 4153.
TYPE SPECIMENS: HAL0112162 (ST), B-W15462, P00322308, P00704569 [microfiche: P (ICD microfiche 6209. 96.III.3), photo: MO (neg. no. 37613)].
REFERENCES AND COMMENTS: Coll. no. in B and P identical.

Guadua Kunth see *Bambusa guadua* Bonpl.

Guadua angustifolia Kunth see *Bambusa guadua* Bonpl.

Guatteria maypurensis Kunth, Nov. gen. sp. [H.B.K.] 5(19): 64 (1821).
≡ *Annona lanceolata* Willd. (in herb.).
≡ *Annona nitida* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: s.l. (ex Amer. merid.) [Crescit prope Maypures. (Missiones del Orinoco.)], no. 902.
TYPE SPECIMENS: HAL0076475 (IT annotated by P.J M. Maas (NHN) 1996), B-W10420010 (*Annona nitida* Willd.), B-W10420020 (*Annona lanceolata* Willd.), P00322486.
REFERENCES AND COMMENTS: For synonymy see Steudel, Nomencl. bot. [Steudel], ed. 2 1(1–3): 100–101 (1840).

Halimium glomeratum (Lag.) Lag. see *Helianthemum flexuosum* Willd.

Hedyosmum bonplandianum Kunth, Nov. gen. sp. [H.B.K.] 7(32): 165, tab. 634 (1825).
≡ *Thoa serrata* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in monte Quindiu alt. 1200–1400 hex. (Nova Granata.)], no. 1860.
TYPE SPECIMENS: HAL0134537 (ST), B-W17717, P00136959 (LT), P00136960, P00136961.
REFERENCES AND COMMENTS: For further information see Solms-Laubach, Prodr. [DC.] 16: 481 (1869). Lectotype at P designated by Todzia, Fl. neotrop. 48: 67 (1988), who cited no other syntypes.

Hedyotis caracasana Kunth, Nov. gen. sp. [H.B.K.] 3(13): 393 (1820).
≡ *Arcytophyllum blaerioides* Willd. ex Schult. & Schult.f., Mant. 3 [Schultes & Schultes f.]: 108 (1827).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in declivitate australi montis Silla de Caracas, alt. 800 hex.], no. 648.
TYPE SPECIMENS: HAL0114179 (ST), B-W02894, F0069438F (IT), P00671140 (HT), P02273964 [photo: F0BN000562].
REFERENCES AND COMMENTS: Synonymy according to Kunth, Linnaea 5: 366 (1830). For further information see Tropicos. *Arcytophyllum blaerioides* Willd. ex Schult. & Schult.f. is type species of *Arcytophyllum* Willd. ex Schult. & Schult.f., Mant. 3 [Schultes & Schultes f.]: 5, 108 (1827), see ING.

Hedyotis cervantesii Kunth see *Hedyotis pygmaea* Roem. & Schult.

Hedyotis coarctata Willd. ex Roem. & Schult., Syst. veg., ed. 15 bis [Roemer & Schultes] 3: 527 (1818).
LABEL [PROTOLOGUE], COLL. NO.: Quito [Crescit prope Pasto, Quito, etc., alt. 1340–1500 hex.], s.n.
TYPE SPECIMENS: HAL0114182 (ST), B-W02597.
REFERENCES AND COMMENTS: Synonymy according to Kunth, Nov. gen. sp. [H.B.K.] 3(13): 391 (1820), who discussed this collection as *Hedyotis thymifolia* Ruiz & Pav. (see P00671137).

Hedyotis microphylla Kunth see *Hedyotis microphylla* Willd. ex Roem. & Schult.

Hedyotis microphylla Willd. ex Roem. & Schult., Syst. veg., ed. 15 bis [Roemer & Schultes] 3: 526 (1818).
≡ *Hedyotis microphylla* Kunth, Nov. gen. sp. [H.B.K.] 3(13): 389 (1820).
LABEL [PROTOLOGUE], COLL. NO.: Peru [Crescit in Regno Peruviano, prope fodinas Gualyagoc et urbem Micuipampa, alt. 1800 hex.], no. 3695.

TYPE SPECIMENS: HAL0114266 (ST), B-W02590, P00671134 [photo: F0BN000055].
REFERENCES AND COMMENTS: Synonymy according to Kunth, Syn. pl. [Kunth] 3: 44 (1824).

Hedyotis pumila Willd. see *Hedyotis pygmaea* Roem. & Schult.

Hedyotis pygmaea Roem. & Schult., Syst. veg., ed. 15 bis [Roemer & Schultes] 3: 536 (1818).
≡ *Hedyotis pumila* Willd. (in herb.).
≡ *Hedyotis cervantesii* Kunth (nom. illeg. superfl.), Nov. gen. sp. [H.B.K.] 3(13): 390 (1820).
LABEL [PROTOLOGUE], COLL. NO.: e Mexico [Crescit in Nova Hispania.], s.n.
TYPE SPECIMENS: HAL0114267 (ST), B-W02591, P00671136 [photo: F0BN000019, MO].
REFERENCES AND COMMENTS: Synonymy according to the protologue of *Hedyotis cervantesii* Kunth and to Kunth, Syn. pl. [Kunth] 3: 45 (1824).

Hedyotis serpens Kunth see *Houstonia microphylla* Willd. ex Roem. & Schult.

Hedyotis thesioides Willd. (in herb., pro syn.).
pro syn. *Hedyotis thymifolia* Ruiz & Pav. in Kunth, Nov. gen. sp. [H.B.K.] 3(13): 391 (1820).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit prope Pasto, Quito, etc., alt. 1340–1500 hex.], no. 2142.
TYPE SPECIMENS: HAL0114183 (AS), B-W02598.
REFERENCES AND COMMENTS: Synonymy according to Kunth, Nov. gen. sp. [H.B.K.] 3(13): 391 (1820), who he discussed this collection as *Hedyotis thymifolia* Ruiz & Pav. (see specimen P00671137). See also *Hedyotis coarctata* Willd. ex Roem. & Schult.

Hedyotis thymifolia Ruiz & Pav. see *Hedyotis coarctata* Willd. ex Roem. & Schult. and *Hedyotis thesioides* Willd.

Helianthemum flexuosum Willd. (in herb., pro syn.)
pro syn. *Halimium glomeratum* (Lag.) Lag. in Engler, Pflanzenr. [Engler] IV. 14 (193): 47 (1903).
LABEL [PROTOLOGUE], COLL. NO.: e Mexico, no. 4090.
TYPE SPECIMENS: HAL0117820 (AS), B-W10201.
REFERENCES AND COMMENTS: *Helianthemum flexuosum* Willd. was referred to as "*Cistus flexuosus* in herb. Link" by Engler, Pflanzenr. [Engler] IV. 14(193): 47 (1903) and treated as synonym of *Halimium glomeratum* (Lag.) Lag.

Helianthus alausensis Willd. see *Helianthus aureus* Kunth

Helianthus aureus Kunth, Nov. gen. sp. [H.B.K.] 4(16): 224 (1820).
≡ *Helianthus alausensis* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: in apricis prope Alausin prope Quito [Crescit locis apricis prope Alausi Quitensium.], no. 3225.
TYPE SPECIMENS: HAL0111224 (ST), B-W16467010, P00322403 [photo: F0BN015270].
REFERENCES AND COMMENTS: Coll. no. in B and P identical.

Helichrysum lavandulifolium Kunth, Nov. gen. sp. [H.B.K.] 4(15): fol. 68, qu. 86 (1820).
≡ *Elichrysum lavandulifolium* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: in frigidis Andium Mexicanorum [Crescit in frigidis Andium Mexicanorum in nobilissimo monte Nauhcampatepetle juxta urbem Perote.], no. 4461.
TYPE SPECIMENS: HAL0112156 (ST), B-W15532, GH00008844, P00322318, P00659925.
REFERENCES AND COMMENTS: Coll. no. in B and P identical.

Helicteres biflora Willd. see *Helicteres guazumifolia* Kunth

Helicteres guazumifolia Kunth, Nov. gen. sp. [H.B.K.] 5(22): 304 (1822).
≡ *Helicteres biflora* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ad Orinocum [Crescit ad ripam Orinoci, inter Uruana et Angostura; item prope Caripe Cumanensium, alt 10–400 hex.], (no. 192) no. 1075.
TYPE SPECIMENS: HAL0118306 (ST), B-W12607, P00679780.

REFERENCES AND COMMENTS: Synonymy and specimen B-W12607 were cited by Lessing, Linnaea 6: 424 (1831). Lectotype designated by C.L. Cristóbal, Bonplandia 11: 140 (2001), see Tropicos.

Heliotropium cinereum Kunth, Nov. gen. sp. [H.B.K.] 3(9): 89 (1818).
≡ *Heliotropium cinereum* Willd. (in herb.).
≡ *Heliotropium humboldtianum* Roem. & Schultes, Syst. veg., ed. 15 bis [Roemer & Schultes] 4: 737 (1819).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit locis calidis, in ripa fluminis apures, prope Arichuna.], no. 58, no. 1202.
TYPE SPECIMENS: HAL0071600 (ST annotated by H. Förther (M) 1996-04), B-W03240010 (no. 58), B-W03240020 (no. 1202), P00670723 (no. 1202), P00136364 (no. 1202), P00136365 (no. 58).
REFERENCES AND COMMENTS: Synonymy according to Kunth, Nov. gen. sp. [H.B.K.] 3(13): 452 (1820).

Heliotropium cinereum Willd. see *Heliotropium cinereum* Kunth

Heliotropium decumbens Lehm., Neue Schriften Naturf. Ges. Halle 3(2): 16 (1817).
≡ *Heliotropium decumbens* Willd. (in herb.).
≡ *Heliotropium procumbens* Kunth (nom. illeg. hom.), Nov. gen. sp. [H.B.K.] 3(9): 88 (1818).
LABEL [PROTOLOGUE], COLL. NO.: Cumana [Crescit locis sylvaticis prope Cumana, Bordones et Cumanacoa.], no. 57.
TYPE SPECIMENS: HAL0071575 (IT annotated by H. Förther (M) 1993-05), B-W03239, P00670722, P00610235, P00610236 [microfiche: P, MO].
REFERENCES AND COMMENTS: Coll. no. in B and P identical.

Heliotropium decumbens Willd. see *Heliotropium decumbens* Lehm.

Heliotropium humboldtianum Roem. & Schult. see *Heliotropium cinereum* Kunth

Heliotropium procumbens Kunth see *Heliotropium decumbens* Lehm.

Herpestis dentata Kunth (in herb.)
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid., no. 1765.
TYPE SPECIMENS: HAL0115851 (AS), B-W11543 [photo: F0BN012393].

Heteropterys argentea Kunth, Nov. gen. sp. [H.B.K.] 5(21): 164, tab. 450 (1822).
≡ *Banisteria speciosa* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: s.l. (ex Amer. merid.) [Crescit in Regno Novo-granatensi.], s.n.
TYPE SPECIMENS: HAL0136894 (ILT), B-W08848, P00679991, P00689851.

Higginsia racemosa Willd. ex Schult. & Schult.f., Mant. 3 [Schultes & Schultes f.]: 128 (1827).
LABEL [PROTOLOGUE], COLL. NO.: in umbrosis prope Cumanae [Crescit in umbrosis humidis prope Santa Cruz Cumanensium et in Provincia Novo-Granatensi.], no. 281.
TYPE SPECIMENS: HAL0114294 (ST), B-W02849, P00671151.
REFERENCES AND COMMENTS: This collection was treated as *Coccocypselum spicatum* (Lam.) Kunth by Kunth, Nov. gen. sp. [H.B.K.] 3(13): 406 (1820). Synonymy according to Kunth, Linnaea 5: 366 (1830).

Hippia pusilla Willd. see *Soliva pygmaea* Kunth

Houstonia fruticosa Willd. ex Roem. & Schult., Syst. veg., ed. 15 bis [Roemer & Schultes] 3: 527 (1818).
≡ *Declieuxia chiococcoides* Kunth, Nov. gen. sp. [H.B.K.] 3(12): 354, tab. 281 (1819).
LABEL [PROTOLOGUE], COLL. NO.: Caripe [Crescit in ripa Orinocensi; item prope caenobium Caripense (Nova Andalusia), alt. 50–500 hex.], no. 223.
TYPE SPECIMENS: HAL0114302 (ST), B-W02688, P00135082.

REFERENCES AND COMMENTS: Synonymy according to Kunth, Syn. pl. [Kunth] 3: 22 (1825). *Declieuxia chiococcoides* Kunth is type species of *Declieuxia* Kunth, Nov. gen. sp. [H.B.K.] 3(12): 352 (1819), see ING and Tropicos.

Houstonia microphylla Willd. ex Roem. & Schult., Syst. veg., ed. 15 bis [Roemer & Schultes] 3: 527 (1818).
≡ *Hedyotis serpens* Kunth, Nov. gen. sp. [H.B.K.] 3(13): 390 (1820).
LABEL [PROTOLOGUE], COLL. NO.: in monte Quindiu [Crescit in monte ignimovo Antisanae, alt. 2000 hex. (Regno Quitensi.)], no. 2190.
TYPE SPECIMENS: HAL0114265 (ST), B-W02682, P00671135, P00135083 [photo: F0BN000015].
REFERENCES AND COMMENTS: Synonymy according to Kunth, Syn. pl. [Kunth] 3: 44 (1824), and to the protologue of *Hedyotis serpens* Kunth

Hydrolea mollis Willd. ex Schult. see *Wigandia caracasana* Kunth

Ilex elliptica Willd. see *Ilex kunthiana* Triana

Ilex kunthiana Triana, Ann. Sci. Nat., Bot., sér. 5. 16: 375 (1872).
≡ *Ilex elliptica* Willd. (in herb.)
≡ *Ilex paltoria* Kunth, Nov. gen. sp. [H.B.K.] 7(31): 69 (1824), nec Juss. nec Pers.
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit prope Contumasa Peruvianorum, regione calida.], no. 3225.
TYPE SPECIMENS: HAL0118472 (ST), B-W03177, F0048468F [photo: F0BN013222], additional specimens collected by Triana.
REFERENCES AND COMMENTS: This collection was treated as *Ilex paltoria* Juss. by Kunth, Nov. gen. sp. [H.B.K.] 7(31): 69 (1824). *Ilex elliptica* Willd. was listed as synonym of *I. paltoria* Juss. by Kunth, Linnaea 5: 368 (1830). *Ilex kunthiana* Triana is nom. nov. for *I. paltoria* sensu Kunth.

Ilex myricoides Kunth, Nov. gen. sp. [H.B.K.] 7(31): 72 (1824).
≡ *Myginda myricoides* Willd. ex Schult. & Schult.f., Mant. 3 [Schultes & Schultes f.]: 349 (1827).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit locis montosis, inter Meneses et Pasto (Nova Granata).], no. 2151.
TYPE SPECIMENS: HAL0118469 (ST), B-W03223, PP0660076, P02142245 [photo: F0BN013230].
REFERENCES AND COMMENTS: Synonymy according to Kunth, Linnaea 5: 369 (1830).

Ilex paltoria Juss. and *I. paltoria* Pers. see *Ilex kunthiana* Triana

Inga lanceolata Humb. & Bonpl. ex Willd., Sp. pl., ed. 4 [Willdenow] 4(2): 1005 (1806).
LABEL [PROTOLOGUE], COLL. NO.: e Nova Barcellona, s.n.
TYPE SPECIMENS: HAL0120847 (ST), P00679307, P00135186.

Ionidium angustifolium Kunth, Nov. gen. sp. [H.B.K.] 5(23): 337 (1823).
≡ *Ionidium linarifolium* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit locis humidis prope Carichana, in sylvis Orinocensium.], no. 835.
TYPE SPECIMENS: HAL0136874 (ST), B-W04876, P00307273, P00603806.
REFERENCES AND COMMENTS: Details of the type locality on the specimens in B and P and in the protologue are identical.

Ionidium circaeoides Kunth, Nov. gen. sp. [H.B.K.] 5(23): 379 (1823).
≡ *Ionidium circaeoides* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: prope Guayaquil, ad litt. Maris Pacifici. [Crescit prope Guayaquil, locis umbrosis, ad litora Maris Pacifici.], no. 3843.
TYPE SPECIMENS: HAL0117752 (ST), B-W04873, G00210070 (type possible), P00531886, P00594923, P00594924 [photo: F].

REFERENCES AND COMMENTS: Coll. no. in B and P identical. Details of the type locality on the specimens in B and P and in the protologue are identical.

Ionidium circaeoides Willd. see *Ionidium circaeoides* Kunth

Ionidium linarifolium Willd. see *Ionidium angustifolium* Kunth

Ionidium microphyllum Kunth, Nov. gen. sp. [H.B.K.] 5(23): 374, tab. 495 (1823).
≡ *Viola microphylla* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit inter saxa, prope Lactacunga Quitensium, alt. 1480 hex.], no. 3130.
TYPE SPECIMENS: HAL0117749 (AS), B-W04950, G00210053 (type possible), G00210066 (type possible), P00679661, P02141229, P02141230, P02141231.
REFERENCES AND COMMENTS: *Viola microphylla* Willd. was listed as synonym of *V. parvifolia* L.f. by Schultes, Syst. veg., ed. 15 bis [Roemer & Schultes] 5: 391 (1819). According to Kunth, Syn. pl. [Kunth] 3: 300 (1824), *V. microphylla* Willd. is synonym of *Ionium microphyllum* Kunth.

Isolepis bufonia Kunth, Nov. gen. sp. [H.B.K.] 1(3): qu. 222 (1816).
≡ *Scirpus bufonius* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in humidis, umbrosis Novae Andalusiae prope coenobium Caripense, alt. 420 hex.], no. 536.
TYPE SPECIMENS: HAL0134486 (ST), B-W01219.
REFERENCES AND COMMENTS: Synonymy according to Kunth, Enum. pl. [Kunth] 2: 212 (1837). Further synonyms and the specimen B-W01219 were cited by Schlechtendal & Chamisso, Linnaea 6: 26–27 (1831).

Isolepis capillaris (L.) Roem. & Schult. see *Scirpus humilis* Willd.

Isolepis exilis Kunth, Nov. gen. sp. [H.B.K.] 1(3): 224 (1816).
≡ *Scirpus exilis* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit locis planis apricis prope Cumana et Punta Delgada.], s.n.
TYPE SPECIMENS: HAL0134414 (ST), B-W01223, P00234044.
REFERENCES AND COMMENTS: Synonymy according to Kunth, Enum. pl. [Kunth] 2: 228 (1837).

Isolepis gracilis Kunth, Nov. gen. sp. [H.B.K.] 1(3): qu. 223 (1816).
≡ *Scirpus gracilis* Willd. (in herb.).
≡ *Fimbristylis tenuis* Roem. & Schult. (nom. illeg.), Syst. veg., ed. 15 bis [Roemer & Schultes] 2: 94 (1817).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in ripa arenosa Orinoci prope confluentem Araucam et pagum Carichana.], s.n.
TYPE SPECIMENS: HAL0134461 (ST), B-W01266, P00669508, P00223035.
REFERENCES AND COMMENTS: Synonymy according to Kunth, Syn. pl. [Kunth] 1: 153 (1822) and Kunth, Enum. pl. [Kunth] 2: 227 (1837).

Isolepis humboldtii Roem. & Schult., Syst. veg., ed. 15 bis [Roemer & Schultes] 2: 112 (1817).
≡ *Scirpus sesquipollicaris* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in ripa inundata Orinoci prope Caycara.], s.n.
TYPE SPECIMENS: HAL0134479 (ST), B-W01200.
REFERENCES AND COMMENTS: Synonymy according to Kunth, Enum. pl. [Kunth] 2: 203 (1837). This collection was treated as *Isolepis squarrosa* (L.) Kunth by Kunth, Nov. gen. sp. [H.B.K.] 1(3): 201 (1816).

Isolepis junciformis Kunth, Nov. gen. sp. [H.B.K.] 1(3): qu. 222 (1816).
≡ *Scirpus juncoides* Willd. (in herb.).
≡ *Scirpus humboldtii* Spreng., Syst. veg., ed. 16 [Sprengel] 1: 213 (1824).

LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in temperatis, montanis prope speluncam Guachari et villam Cocollari.], no. 537.
TYPE SPECIMENS: HAL0134477 (ST), B-W01268, P00669507, P00072003.
REFERENCES AND COMMENTS: Synonymy according to Kunth, Enum. pl. [Kunth] 2: 211 (1837).

Isolepis leucostachya Kunth, Nov. gen. sp. [H.B.K.] 1(3): 220 (1816).
≡ *Scirpus leucostachyus* Willd. (in herb.).
≡ *Fimbristylis leucostachya* (Kunth) Roem. & Schult., Syst. veg., ed. 15 bis [Roemer & Schultes] 2: 92 (1817).
LABEL [PROTOLOGUE], COLL. NO.: in opacis arenosis prope Atures ad Orinocum [Crescit locis humidis in sylvis Orinocensibus Maypurem inter et insulam Tomo.], s.n.
TYPE SPECIMENS: HAL0109639 (ST), B-W01166, P00669501, P00238331.
REFERENCES AND COMMENTS: Synonymy according to Kunth, Enum. pl. [Kunth] 2: 206 (1837).

Isolepis paradoxa (Spreng.) Kunth see *Schoenus paradoxum* Spreng.

Isolepis squarrosa (L.) Kunth see *Isolepis humboldtii* Roem. & Schult.

Jacquinia mucronata Willd. ex Roem. & Schult., Syst. veg., ed. 15 bis [Roemer & Schultes] 4: 802 (1819).
≡ *Jacquinia pubescens* Kunth, Nov. gen. sp. [H.B.K.] 3(11): 251, tab. 246 (1819).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in ripa fluminis Amazonum, prope Tomependa, alt. 200 hex. (Provincia Bracamorensi.)], no. 3581.
TYPE SPECIMENS: HAL0064817 (ILT annotated B. Ståhl 1989), B-W04496, F0047402F, P00650026 (ILT), P00650027 (ILT), P00670949 (ILT), PH00016504.
REFERENCES AND COMMENTS: Synonymy according to Kunth, Nov. gen. sp. [H.B.K.] 3(13): 454 (1820). Lectotype designated by Ståhl, Nordic J. Bot. 15: 508 (1996). See Tropicos.

Jacquinia pubescens Kunth see *Jacquinia mucronata* Willd. ex Roem. & Schult.

Jarava arundinacea Willd. see *Stipa eriostachya* Kunth.

Johannia insignis Willd., Sp. pl., ed. 4 [Willdenow] 3(3): 1705 (1804).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in declivitate montis Antisanae, alt. 1700 hex. (Regno Quitensi.)], no. 2278.
TYPE SPECIMENS: HAL0112990 (ST), B-W14990, G, P00135001, P00135002, P00135003, F0050467F [photo: F0BN015883].
REFERENCES AND COMMENTS: For ruther information see Humboldt & Bonpland, Pl. aequinoct. 1: 153 (1808), and Kunth, Nov. gen. sp. [H.B.K.] 4(14): 18 (1820).

Juncus coarctatus Willd. see *Juncus platycaulos* Kunth

Juncus platycaulos Kunth, Nov. gen. sp. [H.B.K.] 1(4): 236 (1816).
≡ *Juncus coarctatus* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in ripa Orinoci prope Atures de Carichana: item in declivitate montis Quinduensis inter Ibague et La Palmilla, alt. 80–950 hex.], s.n.
TYPE SPECIMENS: HAL0108217 (IT annotated by H. Balslev 1993), B-W06844, AAU, MO-104734 (IT), MO-104735 (IT), P00135239 (LT), P00135240 [photo: F0BN010727, MO].
REFERENCES AND COMMENTS: Synonymy according to Sprengel, Syst. veg., ed. 16 [Sprengel] 2: 109 (1825). Balslev, Fl. neotrop. 68: 82 (1996), noted “lectotype, P!, here selected, photo AAU!; isotype, MO”.

Jussiaea sedoides Bonpl., Pl. aequinoct. [Humboldt & Bonpland] 1: 13 (1808).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid., no. 1757.
TYPE SPECIMENS: HAL0097644 (ST), B-W08126 (ILT), P00679561 (LT), P00136825, P00136826.

REFERENCES AND COMMENTS: For information on the type locality see Munz, Darwiniana 4: 179–284 (1942).

Justicia caripensis Kunth see *Eranthemum filiforme* Willd.

Knoxia dichotoma Willd. ex Roem. & Schult., Syst. veg., ed. 15 bis [Roemer & Schultes] 3: 532 (1818).
≡ *Spermacoce dichotoma* Kunth, Nov. gen. sp. [H.B.K.] 3(12): 348 (1819).
LABEL [PROTOLOGUE], COLL. NO.: Tungurahua [Crescit prope Ayavaca Peruvianorum et in declivitate montis ignivomi Tunguraguae, alt. 1400–1600 hex.], s.n.
TYPE SPECIMENS: HAL0113626 (ST), B-W02676, P00671092.
REFERENCES AND COMMENTS: Synonymy according to the protologue of Kunth, Nov. gen. sp. [H.B.K.] 3(12): 348 (1820).

Knoxia simplex Willd. ex Roem. & Schult., Syst. veg., ed. 15 bis [Roemer & Schultes] 3: 532 (1818).
≡ *Spermacoce diversifolia* Kunth, Nov. gen. sp. [H.B.K.] 3(12): 341 (1819).
LABEL [PROTOLOGUE], COLL. NO.: e Mexico [Crescit in Regno Mexicano, prope pagum Santa Rosa de la Sierra, alt. 1290 hex.], s.n.
TYPE SPECIMENS: HAL0113636 (ST), B-W02678, P00671083 [photo: MO].
REFERENCES AND COMMENTS: Synonymy according to the protologue of Kunth, Nov. gen. sp. [H.B.K.] 3(12): 341 (1819).

Lamourouxia sylvatica Kunth, Nov. gen. sp. [H.B.K.] 2(8): 337 (1818).
≡ *Rhinanthus secundus* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in sylvis prope pagum Ayavaca Peruvianorum.], no. 3465.
TYPE SPECIMENS: HAL0116038 (ST), B-W11159, P00670477, P00136092.
REFERENCES AND COMMENTS: Coll. no. in B and P identical.

Laurus bogotensis Willd. see *Persea mutisii* Kunth

Laurus cinnamomoides Kunth, Nov. gen. sp. [H.B.K.] 2(7): 169 (1818).
≡ *Laurus cinnamomoides* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: Regno Novogranatensi: prope Mariquitam [Crescit in regione umbrosa, temperata Andaquiorum (Regno Novogranatensi), uni Canela nuncupatur: colitur prope Mariquitam, alt. 500 hex.], no. 1722.
TYPE SPECIMENS: HAL0010369 (ST), B-W07770, NY00355160, P00128749, P00128750, P00128751, P00128763 [photo: F0BN003839].
REFERENCES AND COMMENTS: *Laurus cinnamomoides* Willd. was cited as synonym of *Nectandra cinnamomoides* (Kunth) Nees by Nees, Syst. Laur.: 307 (1836).

Laurus cinnamomoides Willd. see *Laurus cinnamomoides* Kunth

Laurus glaucescens Willd. see *Litsea glaucescens* Kunth

Laurus psychotrioides Willd. see *Ocotea psychotrioides* Kunth

Leontophthalmum Willd. see *Leontophthalmum peruvianum* Kunth

Leontophthalmum peruvianum Kunth, Nov. gen. sp. [H.B.K.] 4(18): 296 (1820).
≡ *Leontophthalmum rugosum* Willd. (in herb.).
≡ *Calea leontophthalmum* DC. (nom. illeg. superfl.), Prodr. [DC.] 5: 675 (1836).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in temperatis Peruviae.], s.n.
TYPE SPECIMENS: HAL0055682 (LT annotated by J.F. Pruski (MO) 1984), B-W16401, F, P00135042, P00135043, P00320289.
REFERENCES AND COMMENTS: Tropicos notes: “This locality is in error and the correct locality is in Colombia, to where this species is endemic (J. Pruski, 2002).” *Leontophthalmum peruvianum* Kunth is type species of *Leontophthalmum* Willd., Mag. Neuesten Entdeck. Gesammten Naturk. Ges. Naturf. Freunde Berlin 1: 140 (1807), see ING).

Leontophthalmum rugosum Willd. see *Leontophthalmum peruvianum* Kunth

Leptothrium Kunth see *Leptothrium rigidum* Kunth

Leptothrium rigidum Kunth, Révis. Gramin. 1(10): 156 (1829).
≡ *Zoysia rigida* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ad Orinocum [America calidor.], s.n.
TYPE SPECIMENS: HAL0107036 (ST), B-W01516, US00610989 (=US-92007, fragm.).
REFERENCES AND COMMENTS: Synonymy according to the protologue. *Leptothrium rigidum* Kunth is type species of *Leptothrium* Kunth, Révis. Gramin. 1: 156 (1829), see ING.

Lithospermum alpinum Willd. ex Roem. & Schult. see *Anchusa pygmaea* Kunth

Lithospermum ramosum Willd. ex Lehm., Pl. Asperif. nucif. [Lehmann] 2: 328 (1818).
≡ *Myosotis albida* Kunth, Nov. gen. sp. [H.B.K.] 3(9): 91 (1818).
LABEL [PROTOLOGUE], COLL. NO.: e Mexico [Crescit in alta planitie Mexicana, prope San Juan del Rio et Hacienda de Lira, alt. 1000 hex.], s.n.
TYPE SPECIMENS: HAL0115296 (ST), B-W03292, P00606772.
REFERENCES AND COMMENTS: For synonymy see Steudel, Nomencl. bot. [Steudel] ed. 2 2: 57 (1841).

Litsea glaucescens Kunth, Nov. gen. sp. [H.B.K.] 2(7): 168 (1818).
≡ *Laurus glaucescens* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: Acapulco [Crescit ad litora Mexicana prope Acapulco: item in declivitate montium orienti soli oppositorum juxta Xalapam, alt. 700 hex.], no. 4443.
TYPE SPECIMENS: HAL0103848 (ST), B-W07771, P00128719, P00128720, P00128721.
REFERENCES AND COMMENTS: *Laurus glaucescens* Willd. was listed as synonym of *Tetranthera glaucescens* (Kunth) Spreng. by Nees, Syst. Laur.: 538 (1836).

Lobelia androsacea Willd. ex Schult. see *Lysipomia acaulis* Kunth

Lobelia bryoides Willd. ex Schult., Syst. veg., ed. 15 bis [Roemer & Schultes] 5: 41 (1819).
LABEL [PROTOLOGUE], COLL. NO.: in monte Antisana, s.n.
TYPE SPECIMENS: HAL0118133 (ST), B-W04011.
REFERENCES AND COMMENTS: Kunth, Nov. gen. sp. [H.B.K.] 3(13): 454 (1820), listed this name and noted “est mihi ignota”.

Lobelia diversifolia Willd. ex Schult., Syst. veg., ed. 15 bis [Roemer & Schultes] 5: 68 (1819).
≡ *Lobelia heterophylla* Willd. (in herb.)
≡ *Campanula arida* Kunth, Nov. gen. sp. [H.B.K.] 3(12): 310 (1819).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in aridis calidis prope fluvium Guallabamba, Provincia Quitensis, alt. 1030 hex.], no. 3083.
TYPE SPECIMENS: HAL0113408 (ST), B-W03967, P00650040, P00650041, P00671014.
REFERENCES AND COMMENTS: Synonymy according to Kunth, Nov. gen. sp. [H.B.K.] 3(13): 455 (1820).

Lobelia fastigiata Kunth, Nov. gen. sp. [H.B.K.] 3(12): fol. 244, qu. 313 (1819).
≡ *Lobelia tenuifolia* Willd. ex Schult., Syst. veg., ed. 15 bis [Roemer & Schultes] 5: 56 (1819).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit proper urbem Popayan et Chillo Quitensium, alt. 900–3000 hex.], s.n.
TYPE SPECIMENS: HAL0113405 (ST), B-W03975, P00671042 [photo: F0BN009106].
REFERENCES AND COMMENTS: Synonymy according to Kunth, Nov. gen. sp. [H.B.K.] 3(13): 455 (1820).

Lobelia foliosa Kunth, Nov. gen. sp. [H.B.K.] 3(12): 310 (1819).
≡ *Lobelia foliosa* Willd. ex Schult. Syst. veg., ed. 15 bis [Roemer & Schultes] 5: 56 (1819).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in humidis Regni Quitensis, juxta pagum Guancabamba, alt. 1030 hex.], no. 3551.
TYPE SPECIMENS: HAL0113410 (ST), B-W03988, G00329435, P00671035.

REFERENCES AND COMMENTS: Synonymy according to Kunth, Nov. gen. sp. [H.B.K.] 3(13): 455 (1820).

Lobelia foliosa Willd. ex Schult. see *Lobelia foliosa* Kunth

Lobelia heterophylla Willd. see *Lobelia diversifolia* Willd. ex Schult.

Lobelia limoselloides Willd. ex Schult. see *Lysipomia montioides* Kunth

Lobelia tenuifolia Willd. ex Schult. see *Lobelia fastigiata* Kunth

Lonicera gibbosa Willd. ex Schult., Syst. veg., ed. 15 bis [Roemer & Schultes] 5: 257 (1819).
≡ *Xylosteon mexicanum* Kunth (nom. illeg. superfl.), Nov. gen. sp. [H.B.K.] 3(13): 426 (1820).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. austr. [Crescit locis sylvaticis, juxta Real del Monte, alt. 1430 hex. (Nova Hispania.)], no. 4076.
TYPE SPECIMENS: HAL0114094 (ST), B-W04173, P00639634, P00322210.
REFERENCES AND COMMENTS: Synonymy and detailed location according to Kunth, Nov. gen. sp. [H.B.K.] 3(13): 456 (1820).

Lopezia thymifolia Humb. & Bonpl. ex Link see *Fuchsia thymifolia* Kunth

Lopezia thymifolia Humb. & Bonpl. ex Schult. & Schult.f. see *Fuchsia thymifolia* Kunth

Loranthus arboreus Mutis see *Loranthus tagua* Kunth

Loranthus laurifolius Kunth, Nov. gen. sp. [H.B.K.] 3(13): 436 (1820).
≡ *Loranthus laurinus* Willd. ex Schult. & Schult.f., Syst. veg., ed. 15 bis [Roemer & Schultes] 7(1): 162 (1829).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit prope Santa Fe de Bogota, alt. 1360 hex.], no. 2014.
TYPE SPECIMENS: HAL0110275 (ST), B-W06959, P00215987.
REFERENCES AND COMMENTS: Coll. no. in B and P identical. Specimen P00215985, type of *Loranthus puracensis* Kunth, also has the coll. no. 2014.

Loranthus laurinus Willd. ex Schult. & Schult.f. see *Loranthus laurifolius* Kunth

Loranthus puracensis Kunth. see *Loranthus laurifolius* Kunth

Loranthus tagua Kunth, Nov. gen. sp. [H.B.K.] 3(13): 436 (1820).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit prope Santa Fe de Bogota, alt. 1360 hex.], s.n.
TYPE SPECIMENS: HAL0109931 (ST), B-W06963, P00215988.
REFERENCES AND COMMENTS: Willdenow identified the collection at B as *Loranthus arboreus* Mutis. Synonymy according to Eichler, Fl. bras. [Martius] 5(2): 48 (1868).

Loranthus tubulosus Willd. ex Schult. & Schult.f., Syst. veg., ed. 15 bis [Roemer & Schultes] 7(1): 162 (1829).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid., s.n.
TYPE SPECIMENS: HAL0136859 (ST), B-W06960.
REFERENCES AND COMMENTS: For synonyms and further information see Eichler, Fl. bras. [Martius] 5(2): 46 (1868).

Lycurus Kunth see *Lycurus phleoides* Kunth

Lycurus phalaroides Kunth, Nov. gen. sp. [H.B.K.] 1(3): 142 (1816).
≡ *Lycurus phalaroides* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: in montibus regno Mechoacanensis [Crescit in montanis regni Mechoacanensis juxta Valladolid, Alberca de Palangeo et Patzcuaro.], s.n.
TYPE SPECIMENS: HAL0106845 (ST), B-W01630, BAA00003620, BM000578768, BM000596874, P00669405, US00610837 (=US-91988).

Lycurus phalaroides Willd. see *Lycurus phalaroides* Kunth

Lycurus phleoides Kunth, Nov. gen. sp. [H.B.K.] 1(3): 142, tab. 45 (1816).

≡ *Lycurus phleoides* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: Mexico [Crescit in temperatis Mexici, inter Guanaxuato et Temascatio et in radicibus aridissimi montis La Buffa.], no. 4212.
TYPE SPECIMENS: HAL0106846 (ST), B-W01631, BAA (fragm.), BAA00003621, BM000938663, BM000938664, P00669404, US-610840 (=US-3376157, fragm.), US-610841 (=US-3376155, fragm.).
REFERENCES AND COMMENTS: *Lycurus phleoides* Kunth was designated type species of *Lycurus* Kunth by Hitchcock, U.S. Dept. Agric. Bull. 772: 139 (1920).

Lycurus phleoides Willd. see *Lycurus phleoides* Kunth

Lysipomia acaulis Kunth, Nov. gen. sp. [H.B.K.] 3(12): 321 (1819).
≡ *Lobelia androsacea* Willd. ex Schult., Syst. veg., ed. 15 bis [Roemer & Schultes] 5: 41 (1819).
LABEL [PROTOLOGUE], COLL. NO.: s.l. (ex Amer. merid.) [Crescit in alta planitie montis ignivomi Antisanae, et in radicibus Chussulongi, alt. 2100 hex.], no. 2252.
TYPE SPECIMENS: HAL0113285 (ST), B-W03948, P00671053 [photo: GH, UC, US].
REFERENCES AND COMMENTS: Synonymy according to Kunth, Nov. gen. sp. [H.B.K.] 3(13): 454 (1820).

Lysipomia montioides Kunth, Nov. gen. sp. [H.B.K.] 3(12): 320 (1819).
≡ *Lobelia limoselloides* Willd. ex Schult., Syst. veg., ed. 15 bis [Roemer & Schultes] 5: 41 (1819).
LABEL [PROTOLOGUE], COLL. NO.: s.l. (ex Amer. merid.) [Crescit in alta planitie montis Antisanae, alt. 2104 hex, locis humidis. (Regno Quitensi.)], s.n.
TYPE SPECIMENS: HAL0113286 (ST), B-W03949, P00671051 [photo: F0BN009080].
REFERENCES AND COMMENTS: Synonymy according to Kunth, Nov. gen. sp. [H.B.K.] 3(13): 454 (1820).

Lythrum album Kunth, Nov. gen. sp. [H.B.K.] 6(25): 193 (1824).
≡ *Cuphea linifolia* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit prope Salamancam Mexicanorum, alt. 900 hex.], no. 4210.
TYPE SPECIMENS: HAL0120093 (ST), B-W09201, F0062540F, P00679412, P01901942.
REFERENCES AND COMMENTS: Coll. no. in B and P identical.

Lythrum lycioides Willd. see *Lythrum maritimum* Kunth

Lythrum maritimum Kunth, Nov. gen. sp. [H.B.K.] 6(26): 194 (1824).
≡ *Lythrum lycioides* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in litore Oceani Pacifici, prope Patibilcam Peruvianorum.], s.n.
TYPE SPECIMENS: HAL0120087 (ST), B-W09184, F0062542F, P00679413, P01901941.
REFERENCES AND COMMENTS: Synonymy and specimen B-W09184 were cited by Chamisso & Schlechtendal, Linnaea 2: 357 (1827).

Malachra bahiensis Willd. (in herb.)
LABEL [PROTOLOGUE], COLL. NO.: e Brasilia, s.n.
TYPE SPECIMENS: HAL0118321 (AS), B-W12736.

Mariscus filiformis Kunth see *Cyperus filifolius* Willd. ex Kunth

Melica pallida Kunth, Nov. gen. sp. [H.B.K.] 1(4): 164 (1816).
≡ *Melica pallida* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: Quito [Crescit in temperatis montium Quitensium inter Alausi et Ticsan.], no. 3222.
TYPE SPECIMENS: HAL0028292 (ST), B-W01870, BAA00003634, BAA00003635, LP001545, P00669444, P00624210, P00624211, P00624212, S05-10106, US01164841 (=US-100057).
REFERENCES AND COMMENTS: Coll. no. in B and P identical.

Melica pallida Willd. see *Melica pallida* Kunth

Melicocca coriacea Willd. (in herb., pro syn.).
pro syn. *Talisia oliviformis* (Kunth) Radlk. in Radlkofer, Sitzungsber. Math.-Phys. Cl. Königl. Bayer. Akad. Wiss. München 8(3): 342 (1878).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit prope Turbaco Novo-Granatensium, alt. 200 hex.], no. 772.
TYPE SPECIMENS: HAL0120130 (AS), B-W07262.

Mertensia glaucescens Humb. & Bonpl. ex Willd., Sp. pl., ed. 4 [Willdenow] 5(1): 72 (1810).
LABEL [PROTOLOGUE], COLL. NO.: in Novae Andalusiae aridis ad St. Cruz, s.n.
TYPE SPECIMENS: HAL0137760 (ST), B-W19464 [photo: US].

Milium repens Willd. see *Reimaria acuta* Flüggé

Montia fontana L. see *Montia lamprosperma* Cham.

Montia lamprosperma Cham., Linnaea 6: 564 (1831).
≡ *Montia pentandra* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: e monte Pichincha [Crescit in montibus ignivomis Antisanae et Rucu-Pichinchae, alt. 1700 hex. (Regno Quitensi.)], no. 2247.
TYPE SPECIMENS: HAL0032799 (ST), B-W02377, P05248944, P05248945, P05248946, P05248947, P05248948, P00679544 (coll. no. 3039, loc. Roucou Pichincha, possible type).
REFERENCES AND COMMENTS: This collection was treated as *Montia fontana* L. by Kunth, Syn. pl. [Kunth] 3: 378 (1824). For synonymy see the protologue of *Montia lamprosperma* Cham.

Montia pentandra Willd. see *Montia lamprosperma* Cham.

Muhlenbergia alpestris (Kunth) Kunth see *Podosemum alpestre* Kunth

Muhlenbergia elegans (Kunth) Kunth see *Podosemum elegans* Kunth

Muhlenbergia gracilis (Kunth) Trin. see *Podosemum gracile* Kunth

Muhlenbergia quadridentata (Kunth) Kunth see *Podosemum quadridentatum* Kunth

Muhlenbergia setosa (Kunth) Trin. see *Podosemum setosum* Kunth

Muhlenbergia sprengelii Trin. see *Calamagrostis tenuifolia* Kunth

Mutisia microphylla Willd. ex DC., Prodr. [DC.] 7(1): 6 (1838).
LABEL [PROTOLOGUE], COLL. NO.: inter monte ignio Pinchincha et Quito [Inter Quito et mont. igniv. Pichincha.], s.n.
TYPE SPECIMENS: HAL0112995 (ST), B-W15989, P00135281, P00135282, P00135283, P00135284.

Myginda myricoides Willd. ex Schult. & Schult.f. see *Ilex myricoides* Kunth

Myginda myrsinites Willd. see *Myginda myrsinoides* Kunth

Myginda myrsinoides Kunth, Nov. gen. sp. [H.B.K.] 7(31): 68, tab. 620 (1824).
≡ *Myginda myrsinites* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in Regno Peruviano, prope Contumasa, regione calida.], no. 3708.
TYPE SPECIMENS: HAL0118477 (ST), B-W03225, P00660070, P02274042, P02274043.
REFERENCES AND COMMENTS: Coll. no. in B and P identical.

Myosotis albida Kunth see *Lithospermum ramosum* Willd. ex Lehm.

Myrsine tetrandra Willd. ex Roem. & Schult., Syst. veg., ed. 15 bis [Roemer & Schultes] 4: 803 (1819).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid., s.n.
TYPE SPECIMENS: HAL0095754 (ST), B-W04737.

REFERENCES AND COMMENTS: Kunth, Nov. gen. sp. [H.B.K.] 3(13): 454 (1820) listed this name and noted “est mihi ignota”.

Myrtus albida (Bonpl.) Kunth see *Eugenia albida* Bonpl.

Myrtus discolor Kunth, Nov. gen. sp. [H.B.K.] 6(25): 134 (1823).
≡ *Eugenia peruviana* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: Peru [Crescit prope San Felipe (Provinciae Jaen de Bracamoros).], s.n.
TYPE SPECIMENS: HAL0089613 (ST), B-W09494, F0040060F, P00679452, P030167, P01902472.
REFERENCES AND COMMENTS: See type annotation by R. McVaugh (1966) on the specimen at B.

Myrtus microphylla Bonpl. (nom. illeg.), Pl. aequinoct. [Humboldt & Bonpland] 1: 19, tab. 4 (1808).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [In frigidis Paramo de Saraguru. Loxa.], no. 3299.
TYPE SPECIMENS: HAL0089791 (ST), B-W09541, P00679445.
REFERENCES AND COMMENTS: See type annotation by R. McVaugh (1966) on the specimen at B.

Nectandra cinnamomoides (Kunth) Nees see *Laurus cinnamomoides* Kunth

Ocotea psychotrioides Kunth, Nov. gen. sp. [H.B.K.] 2(7): 162 (1818).
≡ *Laurus psychotrioides* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: Xalapa [Crescit regione temperata Regni Mexicani, in convalle Xalapensi fontibus madente, alt. 680 hex.], no. 4434.
TYPE SPECIMENS: HAL0010492 (ST), B-W07800, P00129623.
REFERENCES AND COMMENTS: Synonymy according to Nees, Syst. Laur.: 452 (1836).

Oresigonia grandiflora Willd. see *Werneria nubigena* Kunth

Oresigonia latifolia Willd. see *Werneria disticha* Kunth

Oresigonia pycnophylla Willd. see *Werneria rigida* Kunth

Osteomeles glabrata Kunth, Nov. gen. sp. [H.B.K.] 6(26): 210 (1824).
≡ *Pyrus cassinoides* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in sylvis Andium Popayanensium, prope La Erre, inter Almaguer et Pasto.], no. 2107.
TYPE SPECIMENS: HAL0120065 (ST), B-W09674, P00679370, P00162150.
REFERENCES AND COMMENTS: Coll. no. in B and P identical.

Oxalis albicans Kunth see *Oxalis albicans* var. *sericea* DC.

Oxalis albicans Kunth var. ***sericea*** DC., Prodr. [DC.] 1: 693 (1824).
≡ *Oxalis marginata* Willd. (in herb.).
≡ *Oxalis albicans* Kunth, Nov. gen. sp. [H.B.K.] 5(22): 244 (1822), p.p.
LABEL [PROTOLOGUE], COLL. NO.: Peru / Mexico [Crescit prope Moran Mexicanorum et Llactacunga Quitensium.], no. 3140.
TYPE SPECIMENS: HAL0118840, HAL0119664 (ST), B-W09000, P02274489.
REFERENCES AND COMMENTS: Candolle cited in the protologue “Llactacunga Quitensium” as locus typi, which corresponds to the label information on the specimens with collection no. 3140 (B-W09000, P02274489).
Oxalis marginata Willd. based on B-W09000 was listed as synonym of *O. albicans* var. *sericea* DC. by Knuth, Pflanzenr. [Engler] 95: 155 (1930). According to an annotation label of V. Byalt (LE) 2013-04-05 on the specimen HAL0119664, *O. marginata* Willd. is a synonym of *O. microphylla* Kunth (nom. illeg. hom.), Nov. gen. sp. [H.B.K.] 5(22): 245 (1822) ≡ *O. parvifolia* DC. (nom. nov.), Prodr. [DC.] 1: 693 (1824).

Oxalis dendroides Kunth, Nov. gen. sp. [H.B.K.] 5(22): 250 (1822).
≡ *Oxalis viva* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in Regno Novo-Granatensi, inter urbem Guaduas et Quebrada de la Carbonera.], no. 1744 bis.
TYPE SPECIMENS: HAL0119752 (ST), B-W09026, F0066513F, P00679824, P02440415, P02440416, P02440417, P02440418.
REFERENCES AND COMMENTS: *Oxalis viva* Willd. based on B-W09026 was listed as synonym of *O. dendroides* by Schlechtendal & Chamisso, Linnaea 5: 224 (1830).

Oxalis marginata Willd. see *Oxalis albicans* Kunth var. *sericea* DC.

Oxalis microphylla Kunth see *Oxalis albicans* Kunth var. *sericea* DC.

Oxalis parvifolia DC. see *Oxalis albicans* Kunth var. *sericea* DC.

Oxalis viva Willd. see *Oxalis dendroides* Kunth

Oxydon Less. see *Chaptalia runcinata* Kunth

Oxydon bicolor Less. see *Chaptalia runcinata* Kunth

Palicourea costata Kunth, Nov. gen. sp. [H.B.K.] 3(12): 366 (1819).
≡ *Psychotria aristata* Humb. & Bonpl. ex Schult., Syst. veg., ed. 15 bis [Roemer & Schultes] 5: 191 (1819).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit ad ripam Orinoci et Fluminis Nigri.], s.n.
TYPE SPECIMENS: HAL0113738 (ST), B-W04104 [photo: F0BN000557].
REFERENCES AND COMMENTS: Synonymy according to Kunth, Nov. gen. sp. [H.B.K.] 3(13): 456 (1820), and Candolle, Prodr. [DC.] 4: 530 (1830).

Palicourea elliptica Kunth, Nov. gen. sp. [H.B.K.] 3(12): 370 (1819).
≡ *Psychotria elliptica* Humb. & Bonpl. ex Schult., Syst. veg., ed. 15 bis [Roemer & Schultes] 5: 185 (1819).
LABEL [PROTOLOGUE], COLL. NO.: Amer. merid. Caripe [Crescit in monte Tumiriquiri Provinciae Novae Andalusia.], no. 274.
TYPE SPECIMENS: HAL0113736 (ST), HAL0113737 (ST), B-W04062, F0069960F.
REFERENCES AND COMMENTS: Tropicos notes that *Palicourea elliptica* Kunth is "based on the same specimen as *Psychotria elliptica* R. & S."

Pallasia dentata Bonpl., Pl. aequinoct. [Humboldt & Bonpland] 2: 101, tab. 111 (1809).
≡ *Pallasia ilicifolia* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in calidis Regni Quitensis inter Penipe et Riobamba; item in convalli arenosa fluvii Mirae et ad ripam Chambi.], no. 2193?, no. 3201?.
TYPE SPECIMENS: HAL0111225 (ST), B-W16506, F0043682F, P00322380, P02140376 [photo: F0BN015335].
REFERENCES AND COMMENTS: See Hind & Jeffrey, Compositae Newslett. 37: 47 (2001). The detailed location was stated by Kunth, Nov. gen. sp. [H.B.K.] 4(16): 205 (1820).

Pallasia ilicifolia Willd. see *Pallasia dentata* Bonpl.

Panicum densiflorum Willd. ex Spreng., Syst. veg., ed. 16 [Sprengel] 1: 320 (1824).
LABEL [PROTOLOGUE], COLL. NO.: ad Orinocum, s.n.
TYPE SPECIMENS: HAL0082561 (ST), B-W18782, BM000938705, US00148416 (=US-2903513).

Panicum gracile Willd. see *Panicum granuliferum* Kunth

Panicum granuliferum Kunth, Nov. gen. sp. [H.B.K.] 1(3): 105 (1816).
≡ *Panicum gracile* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in ripa fluminum Apure, Atabapo et Tuamini (Prov. Novae Guyanae).], s.n.

TYPE SPECIMENS: HAL0063370 (ST), B-W18737, B100249051, BAA00003698, BM000938711, P00128861, P00128862, US00148548 (=US-974563).
REFERENCES AND COMMENTS: *Panicum gracile* Willd. was wrongly listed as synonym of *P. micranthum* Kunth by Sprengel, Syst. veg., ed. 16 [Sprengel] 1: 320 (1824). D.F.L. von Schlechtendal annotated the specimen at HAL as *P. granuliferum* Kunth. Its provenance corresponds with the locality stated in the protologue of *P. granuliferum* Kunth but not with the original locality of *P. micranthum* Kunth, Nov. gen. sp. [H.B.K.] 1(3): 105 (1816).

Panicum micranthum Kunth see *Panicum granuliferum* Kunth

Panicum saccharoides Kunth (nom. illeg. hom.), Révis. Gramin. 2: 237, tab. 30 (1830).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in India occidentali (Insula St. Christophori); in Nova Andalusia prope Tumiriquiri, Caripe et montem cocollar; in Nova Granata inter Fusagasugam et Pandi et prope Ibaque.], s.n.
TYPE SPECIMENS: HAL0082565 (ST), B-W01501, PH00032651.
REFERENCES AND COMMENTS: Willdenow identified this collection as *Saccharum polydactylum* (L.) Thunb. Kunth referred to the specimen from herbarium Willdenow B-W01501 in the protologue as *Panicum saccharoides* Kunth. For synonymy see Steudel, Nomencl. bot. [Steudel], ed. 2 2(11): 490 (1841).

Papyrus giganteus (Vahl) Schrad. ex Nees see *Papyrus odoratus* Willd.

Papyrus odoratus Willd. (in herb.)
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid., s.n.
TYPE SPECIMENS: HAL0134338 (AS), B-W01418.
REFERENCES AND COMMENTS: The specimen folder B-W01418 contains several sheets. *Papyrus odorata* Willd. based on specimen B-W014180010 was listed as synonym of *P. spectabilis* Schrad. ex Nees, Fl. bras. [Martius] 2(1): 58 (1842). *Papyrus odorata* Willd. based on specimen B-W014180020 was listed as synonym of *P. giganteus* (Vahl) Schrad. ex Nees in Nees, Fl. bras. [Martius] 2(1): 58 (1842). The specimen at HAL named *Papyrus odoratus* Willd. is a duplicate from collection B-W01418 but it is unclear from which of the different sheets. Its identification needs to be clarified. The specimen at HAL is possibly type material of *Papyrus spectabilis* Schrad. ex Nees.

Papyrus spectabilis Schrad. ex Nees see *Papyrus odoratus* Willd.

Paspalum bonplandianum Flüggé, Gram. monogr., *Paspalum* [Flüggé]: 71 (1810).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Flüggé noted: Peruvia; Kunth noted: Crescit in pascuis regni Quitensis, juxta El Paramo de Puntas et in radicibus montis Chimborazo, alt. 1700 hex.], no. 3081.
TYPE SPECIMENS: HAL0133192 (ST), B-W01569, BAA00002437, BAA00002438, BM, LE-TRIN-0423.01 (fragm. and illustr. no. 135), P00128919, P00128920, P00128921, P00669331, US00140418 (=US-2942159, fragm.).
REFERENCES AND COMMENTS: Coll. no. in B and P identical. Kunth, Nov. gen. sp. [H.B.K.] 1(1-2): 87 (1816), discussed this collection and stated detailed information on the locations. For further infortmation see Hitchcock, Contr. U.S. Natl. Herb. 24(8): 444 (1927).

Paspalum humboldtianum Flüggé, Gram. monogr., *Paspalum* [Flüggé]: 67 (1810).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Kunth: Crescit in Regno Quitensi, prope Puembo.], no. 3104.
TYPE SPECIMENS: HAL0079365 (ST), B-W01567, B100365507, BAA00002487, BM000578784, BM000578785, P00128915, P00128960, P00669330, US00028460 (=US-2855277, fragm.), US00028459 (=US-601340, fragm.).
REFERENCES AND COMMENTS: The detailed location was stated by Kunth, Nov. gen. sp. [H.B.K.] 1(1–2): 86, tab. 23 (1816).

Paspalum lenticulare Kunth, Nov. gen. sp. [H.B.K.] 1(1–2): 92 (1816).

LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit regione montana et subalpina Novae Andalusiae, in declivitate montis Cocollar, in valle Caripensi, et juxta Cumanacoa, alt. 100 et 450 hex.], s.n.
TYPE SPECIMENS: HAL0063602 (ST), B-W01602, LE-TRIN-0482.01a (fragm.), US00140485 (=US-80080, fragm.).

Paspalum pallidum Kunth, Nov. gen. sp. [H.B.K.] 1(1–2): 88 (1816).
≡ *Paspalum pellitum* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in alta planitie Regni Quitensis, prope Pintac et Chillo.], no. 2233.
TYPE SPECIMENS: HAL0063596 (ST), B-W01571, B100367480, BAA00003812, LE-TRIN-0506.01 (fragm.), P00128927, P00128928, P00669333, US00140576 (=US-2942550, fragm.).
REFERENCES AND COMMENTS: Coll. no. in B and P identical. For synonymy see Steudel, Nomencl. bot. [Steudel], ed. 2 2(10): 275 (1841).

Paspalum pellitum Willd. see *Paspalum pallidum* Kunth

Paspalum pulchellum Kunth (nom. nov.), Nov. gen. sp. [H.B.K.] 1(1–2): 90 (1816).
≡ *Reimaria elegans* Humb. & Bonpl. ex Flüggé, Gram. monogr., *Paspalum*: 216 (1810).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in ripa fluminis Orinoci inter Atures et Raudal de Javariveni.], s.n.
TYPE SPECIMENS: HAL0063533 (ST), B-W01617, B100365863, P00669338, P00745909.
REFERENCES AND COMMENTS: Synonymy according to the protologue and to Kunth, Enum. pl. [Kunth] 1(1): 50 (1833).

Paspalum stellatum Humb. & Bonpl. ex Flüggé, Gram. monogr., *Paspalum* [Flüggé]: 62 (1810).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in radicibus Andium Novogranatensium, prope Ibaque et La Palmilla, altit. 800 hex.], s.n.
TYPE SPECIMENS: HAL0063592 (ST), B-W01564, US00140840 (=US-80051, fragm.).
REFERENCES AND COMMENTS: The detailed location was stated by Kunth, Nov. gen. sp. [H.B.K.] 1(1–2): 85 (1816).

Patrisia dentata Kunth, Nov. gen. sp. [H.B.K.] 5(23): 357 (1823).
≡ *Ryania coccinea* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid., Atures et Maypures [Crescit locis umbrosis, arenosis, inter Atures et Maypures (Missiones del Orinoco).], no. 891.
TYPE SPECIMENS: HAL0041982 (IT annotated by H. Sleumer (NHN) 1975), B-W10128, P00679641 [photo: F0BN013633].

Pauletia glandulosa Kunth, Nov. gen. sp. [H.B.K.] 6(27): 314 (1824)
≡ *Bauhinia armata* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit ptope Nueva Barcelona.], no. 47.
TYPE SPECIMENS: HAL0120737 (ST), B-W07889, P00679180.
REFERENCES AND COMMENTS: Coll. no. in B and P identical.

Pectis minuta Willd. see *Pectis pygmaea* Kunth

Pectis pygmaea Kunth, Nov. gen. sp. [H.B.K.] 4(17): 262 (1820).
≡ *Pectis minuta* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: Nova Granada [Crescit locis calidis juxta Honda, in ripa fluminis Magdalenae, alt. 130 hex. (Regno Novo-Granatensi.)], no. 310.
TYPE SPECIMENS: HAL0058581 (IT annotated by D.J. Keil (OBI) 1985), B-W16134, F0050901F, P00135044, P00135045 [photo: F0BN015476].
REFERENCES AND COMMENTS: Coll. no. in B and P identical. Synonymy and specimen B-W16134 were cited by Lessing, Linnaea 6: 713 (1831).

Pectophytum Kunth see *Bolax pedunculata* Spreng.

Pectophytum pedunculare Kunth see *Azorella aretioides* DC. and *Bolax pedunculata* Spreng.

Periploca oblongata Humb. & Bonpl. ex Schult., Syst. veg., ed. 15 bis [Roemer & Schultes] 6: 129 (1820).
≡ *Periploca oblongata* Willd. (in herb.).
≡ *Cynanchum suberosum* Kunth (nom. illeg. hom.), Nov. gen. sp. [H.B.K.] 3(11): 205 (1819).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit prope Cumana.], no. 91.
TYPE SPECIMENS: HAL0114171 (ST), B-W05211, P00670886.
REFERENCES AND COMMENTS: Synonymy according to Kunth, Nov. gen. sp. [H.B.K.] 5(23): 431 (1823).

Periploca oblongata Willd. see *Periploca oblongata* Humb. & Bonpl. ex Schult.

Persea mutisii Kunth, Nov. gen. sp. [H.B.K.] 2(7): 158 (1818).
≡ *Laurus bogotensis* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in alta planitie montana inter Facatativa et Santa Fé de Bogota, alt. 1360 hex.], no. 2030.
TYPE SPECIMENS: HAL0110393 (ST), B-W07806, F0061759F, P00128712, P00128713, P00128714, P00128715, P00128716, P00128717, P00128718 [photo: F0BN003589].
REFERENCES AND COMMENTS: Synonymy according to Nees, Syst. Laur. 163 (1836).

Petrea rugosa Kunth, Nov. gen. sp. [H.B.K.] 2(8): qu. 282 (1818).
≡ *Petrea rugosa* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in Provinciae Caracasana?], no. 1688.
TYPE SPECIMENS: HAL0115106 (ILT), B-W11491, P00670134 (LT), P00689468 (ILT), F0074431F (ILT) [photos: F, MO, NY, TEX].
REFERENCES AND COMMENTS: Specimen B-W11491 was cited by Chamisso, Linnaea 7: 370 (1832). Lectotype designated by Rueda, Novon 3: 181 (1993): "lectotype, selected here, P-HB; isolectotypes, F, P; photo of lectotype, TEX; photo of isolectotype, F, MO, NY(2), TEX".

Petrea rugosa Willd. see *Petrea rugosa* Kunth

Phyllanthus microphyllus Kunth, Nov. gen. sp. [H.B.K.] 2(5): 109 (1817).
≡ *Phyllanthus microphyllus* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ad Orinocum [Crescit in ripa Orinoci?], s.n.
TYPE SPECIMENS: HAL0118938 (ST), P00669939 [photo: F0BN005034].
REFERENCES AND COMMENTS: The specimen B-W17983 of *Phyllanthus microphyllus* Willd. was collected by Hoffmannsegg in Brazil and not by Humboldt (see note on this specimen). Identical locations on the specimens at HAL, P and in the protologue.

Phyllanthus microphyllus Willd. see *Phyllanthus microphyllus* Kunth

Phyllonoma Willd. ex Schult. see *Phyllonoma ruscifolia* Willd. ex Schult.

Phyllonoma ruscifolia Willd. ex Schult., Syst. veg., ed. 15 bis [Roemer & Schultes] 6: 210 (1820).
≡ *Dulongia acuminata* Kunth (nom. illeg. superfl.), Nov. gen. sp. [H.B.K.] 7(31): 78, tab. 623 (1824).
LABEL [PROTOLOGUE], COLL. NO.: in Popayan [Crescit prope Popayan, alt. 915 hex.], s.n.
TYPE SPECIMENS: HAL0118478 (ST), B-W05449, F, P00136941, P00136942, P00136943, P00136944 [photo: MO].
REFERENCES AND COMMENTS: Synonymy according to Kunth, Syn. pl. [Kunth] 4: 191 (1825). Freire-Fierro, Fl. Ecuador 73: 85–86 (2004) considered specimen B-W05449 as holotype (photo: MO). *Phyllonoma ruscifolia* Willd. ex Schult. is type species of *Phyllonoma* Willd. & Schult., Syst. veg., ed. 15 bis [Roemer & Schultes] 6: xx, 210 (1820), see ING. *Dulongia acuminata* Kunth is type species of *Dulongia* Kunth, Nov. gen. sp. [H.B.K.] 7(31): 76 (1824), see ING, Tropicos.

Piotea diversifolia Willd. see *Galinsogea balbisioides* Kunth

Piper attenuatum Willd. see *Piper laevigatum* Kunth

Piper laevigatum Kunth, Nov. gen. sp. [H.B.K.] 1(3): 56 (1816).
≡ *Piper attenuatum* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ad fluv. Magdalenae [Crescit in ripa fluminis Magdalenae, prope San Bartholomé et montem Barbacoa.], no. 1618.
TYPE SPECIMENS: HAL0101692 (ST), B-W00690, P00614503, P00614504, P00669269 [photo: F0BN010979].
REFERENCES AND COMMENTS: Coll. no. in B and P identical. Synonymy according to Link, Jahrb. Gewächsk. 1(3): 62 (1820), and Kunth, Linnaea 13: 603 (1839).

Piper piluliferum Humb. & Bonpl. see *Piper piluliferum* Kunth

Piper piluliferum Kunth, Nov. gen. sp. [H.B.K.] 1(3): 53 (1816).
≡ *Piper piluliferum* Humb. & Bonpl. (in herb.).
≡ *Sphaerostachys humboldtii* Miq. (nom. nov. superfl.), Syst. Piperac.: 376 (1844).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in declivitate Andium, inter Cuenca et Tambo de Burgay (Regno Quitensi).], s.n.
TYPE SPECIMENS: HAL0101700 (ST), B-W00673, P00669258, P01645936, P01645937.
REFERENCES AND COMMENTS: Specimen B-W00673 was referred to as *Schilleria pilulifera* (Kunth) Kunth by Kunth, Linnaea 13: 723 (1839), and in the protologue to *Sphaerostachys humboldtii* Miq. *Sphaerostachys humboldtii* Miq. is type species of *Sphaerostachys* Miq., Syst. Piperac.: 376 (1844), see ING.

Pisonia capitata Willd. see *Pisonia hirtella* Kunth

Pisonia hirtella Kunth, Nov. gen. sp. [H.B.K.] 2(7): 217 (1817).
≡ *Pisonia capitata* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in Regno Mexicano locis temperatis juxta Queretaro, alt. 1000 hex.], no. 4197.
TYPE SPECIMENS: HAL0111245 (ST), B-W07120, F0066071F, P00712591, P00712592 [photo: F0BN003237].
REFERENCES AND COMMENTS: Coll. no. in B and P identical.

Pistacia mexicana Kunth, Nov. gen. sp. [H.B.K.] 7(30): 22, tab. 608 (1824).
≡ *Pistacia pubescens* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit prope Chilpancingo Mexicanorum.], s.n.
TYPE SPECIMENS: HAL0118674 (ST), B-W18334, P00660039, P00135290, P00135291.
REFERENCES AND COMMENTS: The locations annotated on the specimens in B and P and in the protologue are identical.

Pistacia pubescens Willd. see *Pistacia mexicana* Kunth

Poa arenaria Willd. ex Spreng. see *Poa prostrata* Kunth

Poa atrovirens Willd. see *Poa nigricans* Kunth

Poa depauperata Kunth see *Poa pauciflora* Roem. & Schult.

Poa havanensis Willd. ex Steud. (nom. nud.), Nomencl. bot. [Steudel] ed. 2 2(10): 360 (1841).
LABEL [PROTOLOGUE], COLL. NO.: ex Havana, in arenosis, no. 1298.
TYPE SPECIMENS: HAL0133223 (AS), B-W01915.

Poa nigricans Kunth, Nov. gen. sp. [H.B.K.] 1(4): 159 (1816).
≡ *Poa atrovirens* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: Quito [Crescit cum praecedente prope Conocoto, Chillo et Sangolqui, 1360 hex.], no. 2291.
TYPE SPECIMENS: HAL0133221 (ST), B-W01917, BAA00002724, BAA00001980, COL000006397, LE-TRIN-2371.01, P00669437, P00622420, P00622421, P00622422, P00716095, US00513250 (=US-2891495, fragm.).
REFERENCES AND COMMENTS: Coll. no. in B and P identical. Synonymy according to Sprengel, Syst. veg., ed. 16 [Sprengel] 1: 340 (1824).

Poa pauciflora Roem. & Schult. (nom. nov.), Syst. veg., ed. 15 bis [Roemer & Schultes] 2: 549 (1817).
≡ *Aira poiformis* Willd. (in herb.).
≡ *Poa depauperata* Kunth (nom. illeg. hom.), Nov. gen. sp. [H.B.K.] 1(1–2): 162 (1816).
LABEL [PROTOLOGUE], COLL. NO.: e Mexico [Crescit in apricis regni Quitensis prope Chillo et Pintac, inter alt. 1350–1590 hex.], s.n.
TYPE SPECIMENS: HAL0107175 (AS), B-W01863, BAA00002670, BAA00002672, P00102461, P00102462, P00102463, US00386477 (=US-89675A, fragm.), US00156959 (=US-865589C, fragm.)
REFERENCES AND COMMENTS: *Aira poiformis* Willd. was listed as synonym of *Poa depauperata* Kunth by Steudel, Nomencl. Bot. [Steudel], ed. 2 1: 45 (1840). Kunth annotated the specimen at B as *Poa depauperata* Kunth. Tropicos notes for *Poa depauperata* Kunth: "US-865589C (fragm. ex P-HBK) mounted with type of *Avena deyeuxioides*, has '*Poa depauperata*?' 'HBK', this is clearly a species of *Poa* (dorsal web present) and nothing like the other plants fragments mounted on this sheet [rjs 2011]".

Poa prostrata Kunth, Nov. gen. sp. [H.B.K.] 1(3): 157 (1816).
≡ *Poa arenaria* Willd. ex Spreng. (nom. illeg. hom.), Syst. veg., ed. 16 [Sprengel] 1: 342 (1824).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit copiose in valle temperata, amoena Caripensi, alt. 420 hex., (Prov. Novae-Andalusiae), floret Septembri], no. 4161.
TYPE SPECIMENS: HAL0063387 (ST), B-W01947, BAA00002739, BM000938597, P00669433, P00077286, P00077287, US00513252 (=US-2891494), US01165213 (=US-100387).
REFERENCES AND COMMENTS: Coll. no. in B and P identical. Synonymy according to Kunth, Enum. pl. [Kunth] 1(1): 326 (1833).

Poa subuniflora Kunth (nom. nov.), Révis. Gramin. 1(7): 115 (1829).
≡ *Agrostis poaeformis* Willd. (in herb.).
≡ *Deyeuxia poiformis* Kunth, Nov. gen. sp. [H.B.K.] 1(3): 146 (1816).
LABEL [PROTOLOGUE], COLL. NO.: Mexico, Toluca [Crescit in regno Mexicano, in radicibus montis ignivomi Jorullo, alt. 490 hex.], s.n.
TYPE SPECIMENS: HAL0106922 (ST), B-W01722, BAA00001856.
REFERENCES AND COMMENTS: For synonymy see Steudel, Nomencl. bot. [Steudel] ed. 2 1(1–2): 42 (1840).

Poa tenax Kunth, Nov. gen. sp. [H.B.K.] 1(3): 160 (1816)
≡ *Poa tenax* Link (nom. illeg. hom.), Enum. hort. berol. alt. 1: 87 (1821).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in apricis regni Quitensis, prope Chillo et Rio Guangopolo, alt. 1350 hex.], no. 3023.
TYPE SPECIMENS: HAL0106982 (ST), B-W01936, BAA00001995, BM000938624, BM000938625, LINN-HS127-90, P00669440, P00622467, P00622468, P00622460, US0116500 (=US-2891441, fragm.).
REFERENCES AND COMMENTS: Coll. no. in B and P identical.

Poa tenax Link see *Poa tenax* Kunth

Poa thalassica Humb. see *Poa thalassica* Kunth

Poa thalassica Kunth, Nov. gen. sp. [H.B.K.] 1(3): 157 (1816).
≡ *Poa thalassica* Humb. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in littore Oceani Pacifici prope Callao de Lima, Guamang et Urbem Santa Peruvianorum], no. 3719.
TYPE SPECIMENS: HAL0106907 (ST), B-W01946, BAA00001921, BM000938598, BM000938599, P00669434, P00077284, P00077285, US00513257 (=US-2891486, fragm.).
REFERENCES AND COMMENTS: Coll. no. in B and P identical.

Podosemum alpestre Kunth, Nov. gen. sp. [H.B.K.] 1(1–2): 131 (1816).
≡ *Stipa alpestris* Willd. (in herb.).

LABEL [PROTOLOGUE], COLL. NO.: Silla de Caracas [Crescit in summo monte Silla de Caracas, alt. 1350 hexap.], s.n.
TYPE SPECIMENS: HAL0106830 (ST), B-W01783, LE-TRIN-1509.01 (fragm. ex B-W), P00129635, P00669387, US00512727 (=US-3153136, fragm.).
REFERENCES AND COMMENTS: *Stipa alpestris* Willd. was listed as synonym of *Muhlenbergia alpestris* (Kunth) Kunth by Steudel, Nomencl. bot. [Steudel], ed. 2 2(13): 642 (1841).

Podosemum elegans Kunth, Nov. gen. sp. [H.B.K.] 1(1–2): 130 (1816).
≡ *Agrostis colorata* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: Andes Quitensis [Crescit in alta planitie Regni Quitensis, prope Pintac et Chillo.], no. 3092.
TYPE SPECIMENS: HAL0106834 (ST), B-W01707, BAA00003942, P00669385, P00077292, P00129629, P00129630, P00129631.
REFERENCES AND COMMENTS: *Agrostis colorata* Willd. was listed as synonym of *Muhlenbergia elegans* (Kunth) Kunth by Steudel, Nomencl. bot. [Steudel], ed. 2 1(1–2): 40 (1840).

Podosemum gracile Kunth, Nov. gen. sp. [H.B.K.] 1(3): 131 (1816).
≡ *Agrostis gracilis* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: in aridis Volcan de de Jorullo [Crescit in aridis exustis montis mexicani, Volcan de Jorullo.], s.n.
TYPE SPECIMENS: HAL0106836 (ST), B-W01703, BAA00003944, BM000938643, BM000938644, BM000938645, LE-TRIN-1501.02, P00669389, P00129650, P00129651, P00129652, US00169883 (=US-86636, fragm.).
REFERENCES AND COMMENTS: *Agrostis gracilis* Willd. was listed as synonym of *Muhlenbergia gracilis* (Kunth) Trin. by Steudel, Nomencl. bot. [Steudel], ed. 2 1: 40 (1840).

Podosemum quadridentatum Kunth, Nov. gen. sp. [H.B.K.] 1(3): 130 (1816).
≡ *Agrostis cespitosa* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: s.l. (ex Amer. merid.) [Crescit in siccis apricis regni Mexico prope Toluca et Playas de Jorullo.], s.n.
TYPE SPECIMENS: HAL0106837 (ST), B-W01705, BAA00003946, BM000938661, BM000938662, COL000006385, G00099667, GH00024042, P00669386, P00129641, P00129642, P00129643, P00129644, SI002921, US00141244 (=US-2557456, fragm. ex P), US00169881 (=US-86634, fragm. ex P), US00169882 (=US-86635, fragm.).
REFERENCES AND COMMENTS: *Agrostis caespitosa* Willd. was listed as synonym of *Muhlenbergia quadridentata* (Kunth) Kunth by Steudel, Nomencl. bot. [Steudel], ed. 2 1(1–2): 39 (1840). For typification see McVaugh, Fl. Novo-Gal. 14: 253 (1983), see Tropicos.

Podosemum rigidum Kunth see *Agrostis rigida* Willd.

Podosemum setosum Kunth, Nov. gen. sp. [H.B.K.] 1(3): 129 (1816).
≡ *Agrostis setosa* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in alta planitie Mexicana inter Gueguetoque et Tula, alt. 1100 hex.], no. 4174.
TYPE SPECIMENS: HAL0106839 (ST), B-W01706, P00669381, P00129648, P00129649, US00624300 (=US-91917, fragm. ex P).
REFERENCES AND COMMENTS: *Agrostis setosa* from herbarium Willdenow was listed as synonym of *Muhlenbergia setosa* (Kunth) Trin. by Steudel, Nomencl. bot. [Steudel], ed. 2 2: 134 (1841).

Podosemum stipoides Kunth, Nov. gen. sp. [H.B.K.] 1(3): 131 (1816).
≡ *Stipa patens* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: e Regno Quitensi [Crescit in planatie temperata amoena Llano de Cachapamba, juxta Chillo (Regno Quitensi).], no. 2230.
TYPE SPECIMENS: HAL0106841 (ST), B-W01777, BAA00002233, BAA00002244, BM000938516, BM000938517, P00669388, P00129625, P00129626, P00129627, P00129628, US00512728 (=US-3153135, fragm.).

REFERENCES AND COMMENTS: Coll. no. in B and P identical. Synonymy and the specimen B-W01777 were cited by Schlechtendal & Chamisso, Linnaea 6: 36 (1831).

Podosemum tenellum Kunth see *Streptachne scabra* Kunth

Polygala glandulosa Kunth see *Viola punctata* Humb. & Bonpl. ex Schult.

Polygala jasione Willd. see *Polygala longicaulis* Kunth

Polygala longicaulis Kunth, Nov. gen. sp. [H.B.K.] 5(23): 396 (1823).
≡ *Polygala jasione* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in Regno Novae Andalusiae, prope caenobium Caripense, locis aridis; item in ripa fluminis Magdalenae, juxta urbem Hondae Novo-Granatensium.], no. 323.
TYPE SPECIMENS: HAL0112039 (ST), B-W12964, P00307493 (LT annotated by W.T. Iltis, 1976-06-01), P00307494 (ST).
REFERENCES AND COMMENTS: Coll. no. in B and P identical. For syntype designation see Rankin Rodriguez & Greuter, Taxon 50: 1243 (2001).

Polygonum acre Kunth (nom. illeg.), Nov. gen. sp. [H.B.K.] 2(7): 179 (1818).
≡ *Polygonum tenuiflorum* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in locis abditis, udis prope Havanam et Caracas (ad ripas Guayri, Calle de San Juan et de San Bartholomé).], no. 633, no. 1263, no. 1615.
TYPE SPECIMENS: HAL0110225 (ST), B-W07643010a (no. 633), B-W07643010b (no. 1263), B-W07643020 (no. 1615), P00136035 (no. 1615).
REFERENCES AND COMMENTS: Coll. no. in B and P identical.

Polygonum tenuiflorum Willd. see *Polygonum acre* Kunth

Polylepis emarginata Willd. see *Polylepis lanuginosa* Kunth var. *microphylla* Wedd.

Polylepis incana Kunth, Nov. gen. sp. [H.B.K.] 6(26): 227 (1824).
≡ *Polylepis incana* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit prope Guachucal, in ripa Rio Blanco, alt. 1614 hex. (Provincia de los Pastos.)], no. 2191.
TYPE SPECIMENS: HAL0095897 (ST), B-W10065, P00162084, P00162085, P00162086, P00679390 [photo: F0BN003386].
REFERENCES AND COMMENTS: Coll. no. in B and P identical.

Polylepis incana Willd. see *Polylepis incana* Kunth

Polylepis lanuginosa Kunth var. ***microphylla*** Wedd., Chlor. and. 2(15): 238 (1861).
≡ *Polylepis emarginata* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: e Peru [Chimborazo.], no. 3141.
TYPE SPECIMENS: HAL0016309 (ST), B-W10067, P00162081, P00162082, P00162083.
REFERENCES AND COMMENTS: Coll. no. in B and P identical. *Polylepis emarginata* Willd. was listed as synonym of *P. microphylla* (Wedd.) Bitter by Bitter, Bot. Jahrb. Syst. 45: 611 (1911).

Polylepis microphylla (Wedd.) Bitter see *Polylepis lanuginosa* Kunth var. *microphylla* Wedd.

Polypogon elongatus Kunth, Nov. gen. sp. [H.B.K.] 1(3): 134 (1816).
≡ *Polypogon elongatus* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: e Peru [Crescit in temperatis regni Quitensis prope Chillo.], no. 3022.
TYPE SPECIMENS: HAL0107133 (ST), B-W01559, BAA00002790, P00669393, P00135063, US01164879 (=US-100144, fragm. ex P).

Polypogon elongatus Willd. see *Polypogon elongatus* Kunth

Psilurus loliaceus Willd. (in herb.)
LABEL [PROTOLOGUE], COLL. NO.: e Mexico, s.n.

TYPE SPECIMENS: HAL0107116 (AS).

Psychotria aristata Humb. & Bonpl. ex Schult. see *Palicourea costata* Kunth

Psychotria elliptica Humb. & Bonpl. ex Schult. see *Palicourea elliptica* Kunth

Pteropodium arundinaceum Willd. see *Avena deyeuxioides* Kunth

Pteropodium heterophyllum Willd. see *Deyeuxia eriantha* Kunth

Pyrus cassinoides Willd. see *Osteomeles glabrata* Kunth

Quercus crassipes Bonpl., Pl. aequinoct. [Humboldt & Bonpland] 2: 37 (1809).
≡ *Quercus crassipes* var. *communis* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: Nova Hispanica [Crescit haud frequens in Novae Hispanie montibus vestilis, juxta Santa Rosa et Ario, altit. 1100–1300 hexap.], no. 4407.
TYPE SPECIMENS: HAL0060338 (ST annotated by D.E. Breedlove (CAS) 1986), B-W17590, P00320012, P00129734.
REFERENCES AND COMMENTS: The detailed location was stated by Kunth, Nov. gen. sp. [H.B.K.] 2(5): 6–7 (1817).

Quercus crassipes Bonpl. var. ***angustifolia*** Bonpl., Pl. aequinoct. [Humboldt & Bonpland] 2: 38 (1809).
LABEL [PROTOLOGUE], COLL. NO.: Nova Hispanica [Crescit haud frequens in Novae Hispanie montibus vestilis, juxta Santa Rosa et Ario, altit. 1100–1300 hexap.], s.n.
TYPE SPECIMENS: HAL0060339 (ST annotated by D.E. Breedlove (CAS) 1986), B-W17591, P00669713, P00129729, P00129730, P00129731, P00129732, P00129733, UCSB000078, UCSB000079.
REFERENCES AND COMMENTS: The detailed location was stated by Kunth, Nov. gen. sp. [H.B.K.] 2(5): 6–7 (1817).

Quercus crassipes var. *communis* Willd. see *Quercus crassipes* Bonpl.

Quercus depressa Bonpl., Pl. aequinoct. [Humboldt & Bonpland] 2: 50, tab. 92 (1809).
LABEL [PROTOLOGUE], COLL. NO.: Nova Hispanica [Crescit frequentissime cum praecedente. [= *Quercus repanda* Bonpl.: Crescit in algentibus, opacatis, subhumidis Novae Hispaniae, inter Real del Monte et Moran, alt. 1200 et 1350 hex.]], no. 4145.
TYPE SPECIMENS: HAL0060340 (IT annotated by D.E. Breedlove (CAS) 1994), B-W17621 (IT annotated by D.E. Breedlove (CAS) 1987), P00129727, P00129728, P00669719, UCSB000555.
REFERENCES AND COMMENTS: The detailed location was stated by Kunth, Nov. gen. sp. [H.B.K.] 2(5): 9(1817).

Quercus lanceolata Bonpl., Pl. aequinoct. [Humboldt & Bonpland] 2: 34, tab. 81 (1809).
LABEL [PROTOLOGUE], COLL. NO.: Nova Hispanica [Crescit regione temperata Regni Mexicani, arboribus proceris opacissima, inter Moran et Santa Rosa sylvas eformans magnae vastitatis.], s.n.
TYPE SPECIMENS: HAL0060336 (IT annotated by D.E. Breedlove (CAS) 1987), B-W17592, P00669715, P00129719, P00129724, P00129725.
REFERENCES AND COMMENTS: The detailed location was stated by Kunth, Nov. gen. sp. [H.B.K.] 2(5): 7 (1817).

Quercus laurina Bonpl., Pl. aequinoct. [Humboldt & Bonpland] 2: 32, tab. 80 (1809).
LABEL [PROTOLOGUE], COLL. NO.: Nova Hispanica [Crescit in temperatis Novae Hispaniae prope Pachuca, Totonilco et Grande et in declivitate montis Cerro de las Nabajas.], no. 4143.
TYPE SPECIMENS: HAL0060342 (IT annotated by D.E. Breedlove (CAS) 1987), B-W17593, P00669718, P00129720, P00129721, P00129722, P00129723, UCSB000243, UCSB000244.
REFERENCES AND COMMENTS: The detailed location was stated by Kunth, Nov. gen. sp. [H.B.K.] 2(5): 8 (1817).

Reimaria acuta Flüggé, Gram. monogr., *Paspalum* [Flüggé]: 217 (1810).
≡ *Milium repens* Willd. (in herb.).

LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in ripa humida fluminis Orinoci, prope Atures, San Fernando de Atabapo et Ventuarii ostia.], s.n.
TYPE SPECIMENS: HAL0063536 (ST), B-W01667, B100383297, BAA00002801, P00669329.
REFERENCES AND COMMENTS: Synonymy is listed on the specimen B-W01667. The detailed location was stated by Kunth, Nov. gen. sp. [H.B.K.] 1(1–2): 84 (1817). *Reimarochloa acuta* (Flüggé) Hitchc. is type species of *Reimarochloa* Hitchc., Contr. U.S. Natl. Herb. 12: 198 (1909), see the protologue and ING.

Reimaria elegans Humb. & Bonpl. ex Flüggé see *Paspalum pulchellum* Kunth

Reimarochloa Hitchc. see *Reimaria acuta* Flüggé

Reimarochloa acuta (Flüggé) Hitchc. see *Reimaria acuta* Flüggé

Rhinanthus secundus Willd. see *Lamourouxia sylvatica* Kunth

Rhynchospora capitata (Kunth) Roem. & Schult. see *Chaetospora capitata* Kunth

Rhynchospora filiformis Willd. see *Dichromena caracasana* Kunth

Rhynchospora kunthii Nees ex Kunth, Enum. pl. [Kunth] 2: 296 (1837).
≡ *Gahnia ferruginea* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: Amer. merid. prope Plaque. [Mexico.], s.n.
TYPE SPECIMENS: HAL0109869 (ST), B-W07005.
REFERENCES AND COMMENTS: Synonymy according to the protologue and to Nees, Linnaea 9: 297 (1834).

Rhynchospora lanceolata Willd. see *Chaetospora capitata* Kunth

Rhynchospora tenuis Willd. ex Link, Jahrb. Gewächsk. 1(3): 76 (1820).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid., s.n.
TYPE SPECIMENS: HAL0134381 (ST), B-W01135.
REFERENCES AND COMMENTS: For synonymy and citation of specimen B-W01135 see *Dichromena gracilis* (Spreng.) Kunth published by Kunth, Enum. pl. [Kunth] 2: 280 (1837).

Rhynchotheca diversifolia Kunth, Nov. gen. sp. [H.B.K.] 5(22): 233, tab. 465 (1822).
≡ *Alectorium heterophyllum* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit cum praecendente, prope Pomallactam, alt. 1500 hex.], no. 3248.
TYPE SPECIMENS: HAL0118917 (ST), B-W07762, F0041224F, P00835308, P00835309, P00835310, P00835311, P00835312, P00679800, P00679801.
REFERENCES AND COMMENTS: Coll. no. in B and P identical.

Ribes frigidum Kunth see *Ribes hirtum* Willd. & Schult.

Ribes hirtum Willd. ex Schult., Syst. veg., ed. 15 bis [Roemer & Schultes] 5: 501 (1819).
≡ *Ribes frigidum* Kunth (nom. nov. superfl.), Nov. gen. sp. [H.B.K.] 6(24): 62 (1823).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit locis frigidis montis Antisanae, alt. 1700 hex. (Regno Quitensi.)], no. 2282.
TYPE SPECIMENS: HAL0117496 (ST), B-W04861, P00679525 [photo: F0BN004153, MO].
REFERENCES AND COMMENTS: Coll. no. in B and P identical. Synonymy and the detailed location were listed by Kunth, Nov. gen. sp. [H.B.K.] 6(24): 62 (1823).

Rolandra reptans Willd. see *Trichospira menthoides* Kunth

Rubia hirta Kunth see *Rubia triflora* Willd.

Rubia nitida Kunth see *Rubia triflora* Willd.

Rubia orinocensis Kunth see *Rubia triflora* Willd.

Rubia triflora Willd. (in herb., pro syn.)
pro syn. *Rubia orinocensis* Kunth in Schlechtendal & Chamisso, Linnaea 3: 228 (1828).
LABEL [PROTOLOGUE], COLL. NO.: in monte Pichincha, s.n.

TYPE SPECIMENS: HAL0113132 (AS), B-W02784.
REFERENCES AND COMMENTS: Annotation '*Rubia nitida* Kunth' made by anonym (probably D.F.K. von Schlechtendal) on the old folder envelope of specimen at HAL. Annotations '*Rubia hirta* Kunth' and '*Rubia orinocensis* Kunth' made by D.F.L. von Schlechtendal on the specimen B-W02784.

Ryania coccinea Willd. see *Patrisia dentata* Kunth

Saccharum polydactylum (L.) Thunb. see *Panicum saccharoides* Kunth

Salvia collina Kunth, Nov. gen. sp. [H.B.K.] 2(8): 288 (1818).
≡ *Salvia spicata* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: Peru [Crescit in Nova Hispania.], no. 3192.
TYPE SPECIMENS: HAL0114420 (ST), B-W00508, F0061182F, P00136230, P00136229, P00670417, UC1943398.
REFERENCES AND COMMENTS: Coll. no. in B and P identical. For further information see below *Salvia saligna* Willd.

Salvia humboldtiana F.Dietr. see *Salvia saligna* Willd.

Salvia humboldtii Spreng. see *Salvia saligna* Willd.

Salvia pulchella Kunth see *Salvia saligna* Willd.

Salvia saligna Willd. (in herb.)
LABEL [PROTOLOGUE], COLL. NO.: e Quito, s.n.
TYPE SPECIMENS: HAL0114373 (AS), B-W00509.
REFERENCES AND COMMENTS: It is possible that several *Salvia* names have been confounded. Link, Jahrb. Gewächsk. 1(3): 59 (1820), wrote "*Salvia pulchella* (*spicata* herb.), *collina* (*saligna* herb.)." The name *Salvia spicata* Willd. ex Schult. (nom. illeg. superfl.), was introduced by Schultes, Mant. 1 [Schultes]: 202 (1822), who cited *S. pulchella* Kunth (nom. illeg. hom.), Nov. gen. sp. [H.B.K.] 2(7): 233 (1818) and *S. humboldtiana* F.Dietr., Nachtr. vollst. Lex. Gärtn. 7: 419 (1821), as synonyms. Schultes, Mant. 1 [Schultes]: 188 (1822), listed *S. saligna* Willd. (in herb.) as synonym of *S. collina* Kunth. This information was possibly based on Link (l.c.). *Salvia humboldtiana* F.Dietr. is a nom. nov. for *S. pulchella*. The new names *S. saligna* Willd. ex A.Dietr., Sp. pl., ed. 6. [A. Dietrich] 1: 307 (1839), and *S. spicata* Willd. ex Schult., two nom. illeg. superfl., are nomenclaturally formal synonyms of *S. humboldtiana* since the latter name was cited in the protologues of the two former names. *Salvia humboldtii* Spreng. (nom. nov.) was introduced by Sprengel, Syst. veg., ed. 16 [Sprengel] 1: 64 (1824), for *S. pulchella* Kunth. According to an annotation in the database of B to B-W00509 (s.n.), *S. saligna* belongs to *S. humboldtiana*. For *Salvia pulchella* Kunth see specimens P00136272, P00136273, P00670148; for *Salvia humboldtiana* F. Dietr. see specimen F0061201F.

Salvia saligna Willd. ex A. Dietr. see *Salvia saligna* Willd.

Salvia spicata Willd. see *Salvia collina* Kunth

Salvia spicata Willd. ex Schult. see *Salvia saligna* Willd.

Saxifraga andicola Kunth see *Saxifraga peruviana* Sternb.

Saxifraga bonplandii D.Don see *Saxifraga peruviana* Sternb.

Saxifraga cordillerarum Presl var. *donii* Sternb. see *Saxifraga peruviana* Sternb.

Saxifraga peruviana Sternb., Rev. Saxifrag. [Sternberg]: 55, tab. 22 (1810).
≡ *Saxifraga bonplandii* D.Don, Trans. Linn. Soc. London 13: 431 (1822).
≡ *Saxifraga andicola* Kunth (nom. illeg. hom), Nov. gen. sp. [H.B.K.] 6(24): 48, tab. 519 (1823).
≡ *Saxifraga cordillerarum* Presl var. *donii* Sternb., Revis. Saxifrag. suppl. 1: 74 (1831).

LABEL [PROTOLOGUE], COLL. NO.: in andibus peruvianus [Habitat in devexis montos Rucu-Pichinchae regni quitensis, alt. 1700 hexap.], no. 3043.
TYPE SPECIMENS: HAL0117712 (ST), B-W08458, P00077301, P00679608, P00709230, P00709231.
REFERENCES AND COMMENTS: Coll. no. in B and P identical. The detailed location was stated by Kunth. Synonymy and specimen B-W08458 were cited by Sternberg, Revis. Saxifrag. suppl. 1: 74 (1831). The diagnosis written by Willdenow on specimen B-W08458 was listed word-for-word in the protologue of *Saxifraga peruviana* Sternb.

Schilleria pilulifera (Kunth) Kunth see *Piper piluliferum* Kunth

Schoenus hemisphaericus Humb. ex Link see *Chaetospora pterocarpa* Kunth

Schoenus paradoxum Spreng. (nom. nov.), Syst. veg., ed. 16 [Sprengel] 1: 190 (1824).
≡ *Eriocaulon sphacelatum* Willd. (in herb.).
≡ *Schoenus spadiceus* Kunth (nom. illeg.), Nov. gen. sp. [H.B.K.] 1(3): 227, tab. 69, f. 1 (1816).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in crepidinibus montis Sillae de Caracas, prope El Pexual, alt. 990 hex.], no. 755.
TYPE SPECIMENS: HAL0096243 (ST), B-W02361, P00669512.
REFERENCES AND COMMENTS: *Eriocaulon sphacelatum* Willd. based on the specimen B-W02361 was listed by Kunth, Enum. pl. [Kunth] 2: 206 (1837), as synonym of *Isolepis paradoxa* (Spreng.) Kunth (nom. illeg.), non Schrad.

Schoenus spadiceus Kunth see *Schoenus paradoxum* Spreng.

Schwenckia adscendens Link, Jahrb. Gewächsk. 1(3): 51 (1820).
≡ *Schwenckia adscendens* Willd. (in herb.).
≡ *Schwenckia americana* Kunth (nom. illeg. hom.), Nov. gen. sp. [H.B.K.] 2(8): 375 (1818).
≡ *Schwenckia adscendens* Schult. (nom. illeg. hom.), Mant. 1 [Schultes]: 118 (1822).
LABEL [PROTOLOGUE], COLL. NO.: ad Orinocum [Crescit regione calidissima in sylvis opacis Orinocensibus juxta Atures, Maypure, Carichana et Esmeralda.], no. 1149.
TYPE SPECIMENS: HAL0117276 (ST), B-W00386, P00670542, P00478875.
REFERENCES AND COMMENTS: Coll. no. in B and P identical. Synonyms according to the protologue of *Schwenckia adscendens* Schult.

Schwenckia adscendens Schult. see *Schwenckia adscendens* Link

Schwenckia adscendens Willd. see *Schwenckia adscendens* Link

Schwenckia americana Kunth see *Schwenckia adscendens* Link

Scirpus bufonius Willd. see *Isolepis bufonia* Kunth

Scirpus elegans Kunth, Nov. gen. sp. [H.B.K.] 1(3): 226 (1816).
≡ *Scirpus sphacelatus* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: Peru [Crescit in ripa rivi Tucutunemo prope Villa de Cura, et in convalle Araguensi prope Victoria, alt. 270 hex; item locis planis prope littus Oceani Pacifici, inter Guamang et Truxillo Peruvianorum.], no. 764.
TYPE SPECIMENS: HAL0134532 (ST), B-W01193, P00307278, P00130501, P00224452.
REFERENCES AND COMMENTS: *Scirpus elegans* Kunth and *S. sphacelatus* Willd. were listed as synonyms of *Eleocharis geniculata* (L.) Roem. & Schult. by Kunth, Enum. pl. [Kunth] 2: 152 (1837), who also listed the specimen from herbarium Willdenow B-W01193.

Scirpus exilis Willd. see *Isolepis exilis* Kunth

Scirpus gracilis Willd. see *Isolepis gracilis* Kunth

Scirpus humboldtii Spreng. see *Isolepis junciformis* Kunth

Scirpus humilis Willd. (in herb., pro syn.)
pro syn. *Isolepis capillaris* (L.) Roem. & Schult in Kunth, Enum. pl. [Kunth] 2: 211 (1837).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid., s.n.

TYPE SPECIMENS: HAL0134487 (AS), B-W01218.

Scirpus juncoides Willd. see *Isolepis junciformis* Kunth

Scirpus leucostachyus Willd. see *Isolepis leucostachya* Kunth

Scirpus sesquipollicaris Willd. see *Isolepis humboldtii* Roem. & Schult.

Scirpus sphacelatus Willd. see *Scirpus elegans* Kunth

Scleria capitata Willd., Sp. pl., ed. 4 [Willdenow] 4(1): 319 (1805).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in ripa Atabapi, multis inumbrata arboribus, prope Guarinumae cataractam (Missiones de la Guayana).], s.n.
TYPE SPECIMENS: HAL0082160 (ST), B-W17335, P00669516.
REFERENCES AND COMMENTS: The detailed location was stated by Kunth, Nov. gen. sp. [H.B.K.] 1(3): 231 (1816).

Scleria cyperina Willd. ex Kunth, Enum. pl. [Kunth] 2: 345 (1837).
LABEL [PROTOLOGUE], COLL. NO.: Cumana [Cumana.], s.n.
TYPE SPECIMENS: HAL0082159 (ST), B-W17337 [photo: F0BN011201].
REFERENCES AND COMMENTS: Kunth cited in the protologue the specimen from herbarium Willdenow B-W17337.

Scleria nutans Willd. ex Kunth, Enum. pl. [Kunth] 2: 351 (1837).
LABEL [PROTOLOGUE], COLL. NO.: Cumana [Guiana, Brasilia, Chili, Mexico.], s.n.
TYPE SPECIMENS: HAL0082042 (ST), B-W17336, P00669517, P00274463, P00274464 [photo: K].
REFERENCES AND COMMENTS: Kunth cited in the protologue the specimen from herbarium Willdenow B-W17336.

Scutellaria heterophylla Willd. see *Scutellaria rumicifolia* Kunth

Scutellaria rumicifolia Kunth, Nov. gen. sp. [H.B.K.] 2(8): 324 (1818).
≡ *Scutellaria heterophylla* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: (ad fluviorum Magdalaena?) Amer. merid. [Crescit in humidis frondosis montium Mexicanarum prope Xalapa, alt. 680 hex.], s.n.
TYPE SPECIMENS: HAL0114457 (ST), B-W11093, P00136206, P00136207 (AS possible).
REFERENCES AND COMMENTS: For synonymy see Steudel, Nomencl. bot. [Steudel], ed. 2 2(13): 548 (1841) and Bentham, Linnaea 11: 345 (1837).

Senebiera pectinata DC., Syst. nat. [DC.] 2: 523 (1821).
≡ *Sennebiera pectinata* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: Quito, no. 2224.
TYPE SPECIMENS: HAL0118336 (ST), B-W11861, G00203886.

Senecio arbutifolius Kunth, Nov. gen. sp. [H.B.K.] 4(16): fol. 143, qu. 182 (1820).
≡ *Aster arbutifolius* Willd. (in herb.).
≡ *Aster lucidus* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit locis frigidis Andium Peruvianorum?], s.n.
TYPE SPECIMENS: HAL0112114 (ST), B-W15836 (*A. lucidus* Willd.), B-W15837 (*A. arbutifolius* Willd.), F0076843F, P00320167, P02296486, P02296487.
REFERENCES AND COMMENTS: The specimen at HAL has two names, *Aster lucidus* Willd. and *A. arbutifolius* Willd. The specimen B-W15836 named *A. lucidus* Willd. has an anonymous label annotation “hardly different to *Senecio arbutifolius*”.

Senecio buphthalmoides Willd. (in herb.)
LABEL [PROTOLOGUE], COLL. NO.: s.l. (ex Amer. merid.), s.n.
TYPE SPECIMENS: HAL0112221 (AS), B-W15814.
REFERENCES AND COMMENTS: See specimen at B with anonymous annotation “*Senecio procumbens* Kunth”.

Senecio buxifolius Kunth, Nov. gen. sp. [H.B.K.] 4(16): fol. 147, qu. 188, tab. 367 (1820).
≡ *Arnica cinerarioides* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: in monte Pichincha [Crescit cum praecedente. [= *Senecio pulchellus* Kunth: Crescit locis frigidis Andium Quitenium, alt. 1800 hex.]], s.n.
TYPE SPECIMENS: HAL0113451 (ST), B-W16080, F0077029F, P00320176, P00670367, P00670368.

Senecio procumbens Kunth see *Senecio buphthalmoides* Willd.

Sennebiera pectinata Willd. see *Senebiera pectinata* DC.

Serjania mollis Willd. see *Serjania pubescens* Kunth

Serjania pubescens Kunth, Nov. gen. sp. [H.B.K.] 5(20): 110 (1821).
≡ *Serjania mollis* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in convallibus Araguensium, prope urbem La Victoria, alt. 270 hex. (Provincia Caracasana.)], no. 711.
TYPE SPECIMENS: HAL0119085 (ST), B-W07725, P00679945.
REFERENCES AND COMMENTS: Synonymy according to Schlechtendal, Linnaea 18: 45 (sphalmate 61) (1844), and Radlkofer, Monogr. *Serjania* 239 (1875).

Sida abscissa Willd. ex Spreng., Syst. veg., ed. 16 [Sprengel] 3: 117 (1826).
LABEL [PROTOLOGUE], COLL. NO.: ad Orinocum, s.n.
TYPE SPECIMENS: HAL0118157 (ST), B-W12649, P02285480.

Solanum annonaefolium Dunal, Solan. syn.: 15 (1816).
≡ *Solanum annonaefolium* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: Nova Granada [Kunth: Crescit inter Tenerife et Mompox, in ripa flufii Magdalenae. (Regno Novo-Granatensi.)], s.n.
TYPE SPECIMENS: HAL0010991 (ST), B-W04338, F0073202F, P00670616, P00136353 [photo: F0BN002888].
REFERENCES AND COMMENTS: The detailed location was stated by Kunth, Nov. gen. sp. [H.B.K.] 3(9): 27 (1818).

Solanum annonaefolium Willd. see *Solanum annonaefolium* Dunal

Solanum brevifolium Dunal, Solan. syn.: 22 (1816).
≡ *Solanum brevifolium* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: Quito [Dunal: In regno Quitoense. Kunth: Crescit ad arbores prope urbem Ibarrae, alt. 1184 hex. (Regno Quitensi.)], no. 2201.
TYPE SPECIMENS: HAL0010966 (ST), B-W04327, MPU012768, P00136316, P00136317, P00307139, P00506023 [photo: F0BN002891].
REFERENCES AND COMMENTS: Coll. no. in B and P identical. The detailed location was stated by Kunth, Nov. gen. sp. [H.B.K.] 3(9): 36 (1818).

Solanum brevifolium Willd. see *Solanum brevifolium* Dunal

Soliva pygmaea Kunth, Nov. gen. sp. [H.B.K.] 4(18): fol. 238, qu. 303 (1820).
≡ *Hippia pusilla* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Andium Quinduensium [Crescit locis temperatis Andium Quinduensium, alt. 1130 hex.], s.n.
TYPE SPECIMENS: HAL0111961 (ST), B-W16742, P00320296.

Spathodea laurifolia Kunth, Nov. gen. sp. [H.B.K.] 3(10): 146 (1819).
LABEL [PROTOLOGUE], COLL. NO.: Cumana [Crescit in sylvis Novae Andalusiae, prope Bordones et Cumana.], no. 108.
TYPE SPECIMENS: HAL0116239 (ST), B-W11419, P.
REFERENCES AND COMMENTS: Willdenow identified this collection as *Bignonia triflora* Willd. (in herb.). The specimen at HAL has an annotation, probably by Schlechtendal, as *Spathodea orinocensis* Kunth, Nov. gen. sp. [H.B.K.] 3(10): 147 (1819), whereas the specimen at B is annotated as *S. laurifolia* Kunth. *Spathodea orinocensis* Kunth was collected on river Orinoco,

near Carichana. *Spathodea laurifolia* Kunth was collected in Cumaná as cited in the protologue, which corresponds to the annotations on the labels.

Spathodea orinocensis Kunth see *Spathodea laurifolia* Kunth

Spermacoce capitata Willd. see *Spermacoce tenella* Kunth

Spermacoce dichotoma Kunth see *Knoxia dichotoma* Willd. ex Roem. & Schult.

Spermacoce diversifolia Kunth see *Knoxia simplex* Willd. ex Roem. & Schult.

Spermacoce tenella Kunth, Nov. gen. sp. [H.B.K.] 3(13): 345 (1820).
≡ *Spermacoce capitata* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ad Orinocum [Crescit in ripa umbrosa, humida Orinoci, prope S. Fernando.], no. 913.
TYPE SPECIMENS: HAL0098363 (ST), B-W02637, P00671089.
REFERENCES AND COMMENTS: Synonymy according to the protologue of Kunth, Nov. gen. sp. [H.B.K.] 3(13): 345 (1820).

Sphaerostachys Miq. see *Piper piluliferum* Kunth

Sphaerostachys humboldtii Miq. see *Piper piluliferum* Kunth

Stellaria pubescens Willd. see *Arenaria nemorosa* Kunth

Stevia elatior Kunth see *Stevia rhombifolia* Willd.

Stevia elongata Kunth see *Stevia rhombifolia* Willd.

Stevia fastigiata Kunth see *Stevia fastigiata* Willd.

Stevia fastigiata Willd. (in herb.)
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid., s.n. or no. 560 or no. 650.
TYPE SPECIMENS: HAL0032757 (ST), B-W15205.
REFERENCES AND COMMENTS: Possibly type of *Stevia fastigiata* Kunth, Nov. gen. sp. [H.B.K.] 4(15): fol. 116, qu. 148 (1820), or *S. glutinosa* Kunth, Nov. gen. sp. [H.B.K.] 4(15): fol. 116, qu. 148, tab. 353 (1820). For further information see Schulz Bipontius, Linnaea 25: 289 (1852).

Stevia glutinosa Kunth see *Stevia fastigiata* Willd.

Stevia microphylla Kunth, Nov. gen. sp. [H.B.K.] 4(15): 140 (1820).
≡ *Stevia microphylla* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit locis uliginosis inter Tasco et Tehuilotepec Mexicanorum, alt. 920 hex.], no. 3963.
TYPE SPECIMENS: HAL0032755 (IT), B-W15209, P00320124, P00704417, P00704418.
REFERENCES AND COMMENTS: Coll. no. in B and P identical. For synonymy see Schulz Bipontius, Linnaea 25: 268 (1852).

Stevia microphylla Willd. see *Stevia microphylla* Kunth

Stevia rhombifolia Kunth see *Stevia rhombifolia* Willd.

Stevia rhombifolia Willd. (in herb.)
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid., no. 1772 or s.n.
TYPE SPECIMENS: HAL0032680 (AS), B-W15208.
REFERENCES AND COMMENTS: The specimen at HAL was identified by J.L. Grashoff (TEX) 1972 as *Stevia elatior* Kunth, Nov. gen. sp. [H.B.K.] 4(15): fol. 112, qu. 144 (1820). The specimen B-W15208010 with coll. no. 1772 was annotated as *S. rhombifolia* Kunth, Nov. gen. sp. [H.B.K.] 4(15): fol. 112, qu. 144 (1820), possibly by Kunth. The type specimen of *S. rhombifolia* Kunth at P (P00320133) has the different coll. no. 4399.The specimen B-W15208020 without coll. no. was identified by Schulz Bipontius as *S. elatior* Kunth and referred to as *S. elatior* by Schulz Bipontius, Linnaea 25: 270, 278 (1852). The coll. no. 1772 is present also on the type specimens of *S. elatior* Kunth at P (P00704285, P00320136,

P00704286, P00704287) and on the type specimen of *S. elongata* Kunth, Nov. gen. sp. [H.B.K.] 4(15): fol. 113, qu. 144 (1820), at P (P00320135).

Stipa alpestris Willd. see *Podosemum alpestre* Kunth

Stipa avenacea Willd. see *Stipa fimbriata* Kunth

Stipa eriostachya Kunth, Nov. gen. sp. [H.B.K.] 1(1–2): 127, tab. 41 (1816).
≡ *Jarava arundinacea* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: Quito [Crescit locis planis regni Quitensis juxta Riobamba, inter Ticsam et Guamote et prope Mulalo in radicibus montis Cotopaxi; item in temperatis regni Mexicani prope Moran, inter 1300 et 1400 hex.], no. 3060.
TYPE SPECIMENS: HAL0133131 (ST), B-W01505, BAA00002895, BM000578807, P00128888, P00128889, P00128890, P00128913, P00669378, S-R-5957, S-R-5958, US00157525 (=US-3088246, fragm.).
REFERENCES AND COMMENTS: Coll. no. in B and P identical.

Stipa fimbriata Kunth, Nov. gen. sp. [H.B.K.] 1(3): 126 (1816).
≡ *Stipa avenacea* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: Mexico [Crescit in alta planitie mexicana inter Burras et Guanaxuato, prope mina de Billalpando, inter 1050 et 1330 hexap.], no. 4224.
TYPE SPECIMENS: HAL0136155 (ST), B-W01778, BAA00004048, BAA00004049, G00168544, P00669376, US00157422 (=US-2767421, fragm.).
REFERENCES AND COMMENTS: Coll. no. in B and P identical.

Stipa patens Willd. see *Podosemum stipoides* Kunth

Stipa stricta Lam. see *Streptachne scabra* Kunth

Streptachne scabra Kunth, Nov. gen. sp. [H.B.K.] 1(3): 124, tab. 40 (1816).
LABEL [PROTOLOGUE], COLL. NO.: ex Andibus Mexicanae [Crescit in frigidis, montanis regni Mexicani juxta Tolucca et Islahuaca, altit. 1240 m hexap.], s.n.
TYPE SPECIMENS: HAL0106842 (ST), B-W01793, P00669372, P00117118, P00128904, US01165101 (=US-2764390, fragm.).
REFERENCES AND COMMENTS: Willdenow identified the collection at B as *Stipa stricta* Lam. The specimen B-W01793 was annotated by Kunth as *Streptachne scabra* Kunth. The specimen at HAL has an annotation label written by D.F.K. von Schlechtendal as *Podosemum tenellum* Kunth.

Swartzia robiniifolia Willd. ex Vogel, Linnaea 11: 171 (1837).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [prode Radigas de Honde], no. 1704.
TYPE SPECIMENS: HAL0120321 (ST), B-W10289, BM000931980, F0059897F, NY00032088, P02272903, P02272904, P02272905, US00002851 (=US-1480437), US00458774 (=US-1480439), US00458773 (=US-1480440).
REFERENCES AND COMMENTS: Coll. no. in B and P identical. Vogel cited in the protologue the specimen B-W10289.

Swertia brevicornis Kunth, Nov. gen. sp. [H.B.K.] 3(10): 174 (1819).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit locis temperatis prope villam Chillo Quitensium, alt. 1400 hexap.], no. 3112.
TYPE SPECIMENS: HAL0076396 (ST), B-W05476, P00307319.
REFERENCES AND COMMENTS: Coll. no. in B and P identical.

Swertia pauciflora Humb. & Bonpl. ex Schult. see *Swertia plantaginea* Kunth

Swertia plantaginea Kunth, Nov. gen. sp. [H.B.K.] 3(10): 175 (1819).
≡ *Swertia pauciflora* Humb. & Bonpl. ex Schult., Syst. veg., ed. 15 bis [Roemer & Schultes] 6: 135 (1820).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in monte ingivomo Jorullo, alt. 500 hex.], s.n.
TYPE SPECIMENS: HAL0076394 (ST), B-W05475, P00307321 [photo: F, MO, US].

REFERENCES AND COMMENTS: Kunth, Nov. gen. sp. [H.B.K.] 5(23): 431 (1823), listed *Swertia pauciflora* Humb. & Bonpl. ex Schult. and noted "est mihi ignota". The specimen at B has the annotated location "Jorullo", which corresponds to the location stated in the protologue. For synonymy and cited specimen from herbarium Willdenow B-W05475 see Grisebach, Gen. sp. Gent.: 327 (1838).

Tagetes angustifolia Kunth, Nov. gen. sp. [H.B.K.] 4(16): fol. 152, qu. 194 (1820).
≡ *Tagetes stricta* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: in montibus Mexicanorum [Crescit locis frigidis montium Mexicanorum prope Toluca, alt. 1400 hex.], no. 4365.
TYPE SPECIMENS: HAL0110980 (ST) (as *Tagetes angustifolia*), B-W16120 (as *Tagetes stricta* Willd.), GH00052462, P00320187, P00135028 [photo: F0BN015485].
REFERENCES AND COMMENTS: The type specimens of *Tagetes angustifolia* Kunth have coll. no. 4365 such as specimen B-W16120, which was identified by Willdenow as *T. stricta*. *Tagetes stricta* Willd. based on B-W16120 was referred to as *Tagetes clandestina* Lag., Gen. sp. pl.: 28 (1816), by Lessing, Linnaea 5: 160 (1830).

Tagetes clandestina Lag. see *Tagetes angustifolia* Kunth

Tagetes pusilla Kunth, Nov. gen. sp. [H.B.K.] 4(16): fol. 152, qu. 194 (1820).
≡ *Tagetes pusilla* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: in Regno Quitensis [Crescit prope Chillo Quitensium, alt. 1340 hex.], no. 2293.
TYPE SPECIMENS: HAL0110968 (ST), B-W16123 (s.n.), F0051597F, P00320186, P00135019, P00135020, P00135021, P00135022 [photo: F0BN015491].

Tagetes pusilla Willd. see *Tagetes pusilla* Kunth

Tagetes stricta Willd. see *Tagetes angustifolia* Kunth

Tagetes virgata Willd. see *Boebera fastigiata* Kunth

Tagetes zypaquirensis Bonpl., Pl. aequinoct. [Humboldt & Bonpland] 2: 18 (1809).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. regn. Nova Granada [Crescit in regno Novae Granatae, Zypaquira.], s.n.
TYPE SPECIMENS: HAL0110969 (ST), B-W16125, P00135016, P00135017, P00135018, P00320189.

Talisia oliviformis (Kunth) Radlk. see *Melicocca coriacea* Willd.

Telipogon angustifolius Kunth, Nov. gen. sp. [H.B.K.] 1(4): 336 (1816).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit ad arbores in temperatis Regni Novogranatensis, juxta Santa Ana et Mariquita, alt. 400 hex.], s.n.
TYPE SPECIMENS: HAL0109764 (ST), B-W06350, G00169135, P00669639, P00436596, P00436597, P00436598, P00436599.
REFERENCES AND COMMENTS: Synonymy according to F. Dietrich, Neu. Nachtr. vollst. Lex. Gärtn. 8: 605 (1838). The collection at B was treated as *Tradescantia nervosa* L. by Willdenow, Sp. pl., ed. 4 [Willdenow] 2(1): 18 (1799).

Tetramerium jasminoides Kunth see *Coffea flavicans* Humb. & Bonpl. & Schult.

Tetranthera glaucescens (Kunth) Sprengl. see *Litsea glaucescens* Kunth

Theophrasta pungens Willd. ex Roem. & Schult., Syst. veg., ed. 15 bis [Roemer & Schultes] 4: 787 (1816).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid., no. 3819.
TYPE SPECIMENS: HAL0056986 (ST annotated by B. Ståhl 1984-10), B-W03549 (LT), P00649985.
REFERENCES AND COMMENTS: Kunth, Nov. gen. sp. [H.B.K.] 3(13): 453 (1820), listed this name and noted "est mihi ignota". Lectotype designated by Ståhl, Opera Bot. 107: 48 (1991), see Tropicos.

Thibaudia scabra Willd. see *Thibaudia scabriuscula* Kunth

Thibaudia scabriuscula Kunth, Nov. gen. sp. [H.B.K.] 3(11): 272 (1819).
≡ *Thibaudia scabra* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in Andibus Quinduensium, alt. 1500–1600 hex.], s.n.
TYPE SPECIMENS: HAL0137309 (ST), B-W08227, F0040449F, P00135136, P00135137, P00135138, P00670979 (LT), P00670980.
REFERENCES AND COMMENTS: Lectotype designated by Luteyn, Fl. neotrop. 35: 140 (1983), who noted "…(lectotype, P, photo F neg. 38232). There is one more sheet of the species collected by Humboldt & Bonpland at P and a fragment ex P at F. However, since these collections are without number, no isolectotypes are designated".

Thoa serrata Willd. see *Hedyosmum bonplandianum* Kunth

Tillaea diffusa Willd. ex Schult. & Schult.f see *Tillaea rubescens* Kunth

Tillaea rubescens Kunth, Nov. gen. sp. [H.B.K.] 6(24): 43 (1823).
≡ *Tillaea diffusa* Willd. ex Schult. & Schult.f., Mant. 3 [Schultes & Schultes f.]: 345 (1827).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit prope Alausi Quitensium, alt. 1248 hex.], no. 1802(?).
TYPE SPECIMENS: HAL0117654 (ST), B-W03219, K000486217, P00679602, P00077298 [microfiche: MO].
REFERENCES AND COMMENTS: Synonymy according to Kunth, Linnaea 5: 369 (1830).

Tillandsia trichoides Kunth, Nov. gen. sp. [H.B.K.] 1(4): 290 (1816).
≡ *Tillandsia trichoides* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in Cuchilla de Guanaguana et prope Caripe Cumanensium, ut ceterae speceis mox enumerande, arboribus adhaerens, alt. 412 hex.], no. 347.
TYPE SPECIMENS: HAL0045495 (IT), B-W06338, P00669588.
REFERENCES AND COMMENTS: Coll. no. in B and P identical. For typification see Till, Linzer. biol. Beitr. 27: 420 (1995).

Tillandsia trichoides Willd. see *Tillandsia trichoides* Kunth

Tradescantia nervosa L. see *Telipogon angustifolius* Kunth

Trichasterophyllum hyssopifolium Willd. ex Link (nom. nud.), Jahrb. Gewächsk. 1(3): 69 (1820).
≡ *Trichasterophyllum hyssopifolium* Willd. ex Schult. (nom. nud.), Mant. 1 [Schultes]: 350 (1822).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid., s.n.
TYPE SPECIMENS: HAL0117819 (AS), B-W00874.

Trichasterophyllum hyssopifolium Willd. ex Schult. see *Trichasterophyllum hyssopifolium* Willd. ex Link

Trichodium affine Willd. see *Vilfa elegans* Kunth

Trichospira Kunth see *Trichospira menthoides* Kunth

Trichospira menthoides Kunth, Nov. gen. sp. [H.B.K.] 4(15): fol. 22, qu. 28 (1820).
≡ *Rolandra reptans* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in arenosis fluvii Apures (Provincia Varinensi.)], no. 810.
TYPE SPECIMENS: HAL0110614 (ST), B-W16785, P00322264, P00135012 [photo: F0BN015324].
REFERENCES AND COMMENTS: Coll. no. in B and P identical. For synonymy see Lessing, Linnaea 4: 343 (1829) and Candolle, Prodr. [DC.] 5: 91 (1836). *Trichospira menthoides* Kunth

is type species of *Trichospira* Kunth, Nov. gen. sp. [H.B.K.] 4(15): fol. 21, qu. 28 (1820), see ING.

Triticum attenuatum Kunth, Nov. gen. sp. [H.B.K.] 1(3): 180 (1816).
≡ *Triticum attenuatum* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in temperatis siccis, apricis propter Burropotrero et Chillo Quitensis, alt. 1350 hexap.], no. 2295.
TYPE SPECIMENS: HAL0107047 (ST), B-W02352, BAA00003040, BAA00003041, P00669464, P00129691, US01268681 (=US-75301, fragm.).
REFERENCES AND COMMENTS: Coll. no. in B and P identical.

Triticum attenuatum Willd. see *Triticum attenuatum* Kunth

Trixis neriifolia Bonpl., Rel. hist. [Humboldt & Bonpland] 1 (Chap. XIII): 605 (1814).
LABEL [PROTOLOGUE], COLL. NO.: Silla de Caracas, s.n.
TYPE SPECIMENS: HAL0112801 (ST), HAL0113153 (ST), B-W16672 [photo: F0BN016103].
REFERENCES AND COMMENTS: Tropicos notes on citation: "Original not seen, this protologue verified in reprint, name is validly published; most authors cite p. 605, but DC. cites p. 645. Publ. as '*nereifolia*'. Authorship of this name sometimes incorrectly attributed to Kunth. !CMT & JP 2013." The protologue was checked in this study: p. 605 is correct. Tropicos notes on typification: "Type cited by A.C. Smith, Brittonia 1(7): 530 (1935) as at P, which can be considered a lectotypification; Diazgranados, Phytotaxa 16: 36 (2012) cites the lectotype as B-WILLD 16672, the sterile sheet of the two specimens there, unlabelled, and the isolectotype as Bonpland 652 at P. with no information on place where these were designated and no citation of the second, fertile sheet in B-WILLD. !CMT 2013".

Tussilago bicolor Willd. see *Chaptalia runcinata* Kunth

Unona xylopioides Dunal, Monogr. Anonac.: 117. tab. 21 (1817).
≡ *Uvaria febrifuga* Humb. & Bonpl. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: s.l. (ex Amer. merid.) [In America meridionali ad flumen Orenocum.], no. 894.
TYPE SPECIMENS: HAL0098071 (ST), B-W10393, P00322483.
REFERENCES AND COMMENTS: Synonymy according to Candolle, Syst. nat. [DC.] 1: 498 (1817).

Urtica serpyllacea Kunth, Nov. gen. sp. [H.B.K.] 2(5): 37 (1817).
≡ *Urtica serpyllacea* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: Nova Granada [Crescit montibus vestitis juxta pagum Sebondoy at ad fluvium Juanambu, inter Almaguer et Pasto, alt. 760 hex. (Regno Novogranatensi.)], no. 2143.
TYPE SPECIMENS: HAL0098191 (ST), B-W17422, P00601966, P00601967.
REFERENCES AND COMMENTS: Coll. no. in B and P identical. Specimen B-W17422 was referred to as *Urtica serpyllacea* Kunth by Schlechtendal & Chamisso, Linnaea 6: 356 (1831).

Urtica serpyllacea Willd. see *Urtica serpyllacea* Kunth

Urvillea ulmacea Kunth, Nov. gen. sp. [H.B.K.] 5(20): 105 (1821).
≡ *Cardiospermum ulmaceum* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit locis alpinis prope Caracas, alt. 500 hex.], no. 629.
TYPE SPECIMENS: HAL0092763 (ST), B-W07736, P00679942, P00166633.
REFERENCES AND COMMENTS: For synonyms see Humboldt & Bonpland, Rel. hist. 2 [Humboldt & Bonpland] (chap. XV): 38 (1819).

Utricularia fimbriata Humb. see *Utricularia fimbriata* Kunth

Utricularia fimbriata Kunth, Nov. gen. sp. [H.B.K.] 2(8): 225 (1818).
≡ *Utricularia fimbriata* Humb. (in herb.).

LABEL [PROTOLOGUE], COLL. NO.: ad Orinocum [Crescit locis humidis juxta catarractam Aturensium in ripa fluvii Orinoci.], no. 860.
TYPE SPECIMENS: HAL0134760 (ST), B-W00446, P00670049, P00445807.

Uvaria febrifuga Humb. & Bonpl. see *Unona xylopioides* Dunal

Vaccinium empetrifolium Kunth, Nov. gen. sp. [H.B.K.] 3(11): 263, tab. 248 (1819).
≡ *Vaccinium empetrifolium* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: in montes ignivomi Antisanae amer. [Crescit in declivitate occidentali montis ignivomi Antisanae, inter Pintac et Pinantura.], no. 2279.
TYPE SPECIMENS: HAL0117265 (ST), B-W07352, P00670963 [photo: NY].
REFERENCES AND COMMENTS: *Disterigma empetrifolium* (Kunth) Drude based on *Vaccinium empetrifolium* Kunth is type species of *Disterigma* (Klotzsch) Nied. For typification (type at P) see Smith, Brittonia 1: 217 (1933).

Vaccinium empetrifolium Willd. see *Vaccinium empetrifolium* Kunth

Valeriana aretioides Kunth, Nov. gen. sp. [H.B.K.] 3(13): 324 (1820).
≡ *Valeriana aretioides* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: in monte Antisana [Prope cacumen Andium Quitensium, in alta planitie Antisanae et Assuay.], s.n.
TYPE SPECIMENS: HAL0005384 (ST), P00671055.
REFERENCES AND COMMENTS: Identical locations annotated on the label at HAL and in the protologue.

Valeriana aretioides Willd. see *Valeriana aretioides* Kunth

Valeriana trinervia Willd. (in herb.)
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid., s.n.
TYPE SPECIMENS: HAL0005322 (AS).

Valeriana veronicifolia Willd. ex Link (nom. nud.), Jahrb. Gewächsk. 1(3): 67 (1820)
≡ *Valeriana veronicifolia* Willd. ex Steud. (nom. nud.), Nomencl. bot. [Steudel] ed. 2 2(12–13): 742 (1841).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid., no. 2093.
TYPE SPECIMENS: HAL0006963 (AS), B-W00793.

Valeriana veronicifolia Willd. ex Steud. see *Valeriana veronicifolia* Willd. ex Link

Verbena heterophylla Willd. see *Verbena inflata* Kunth

Verbena inflata Kunth, Nov. gen. sp. [H.B.K.] 2(7): qu. 273, tab. 135 (1818).
≡ *Verbena heterophylla* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: Quito [Crescit locis aridis in Regno Quitensi juxta Mulato, Riobamba et Tambillo, alt. 1500 hex.], s.n.
TYPE SPECIMENS: HAL0115256 (ST), B-W11116, F0074518F, P00136081, P00713620, SI003709.
REFERENCES AND COMMENTS: Synonymy according to Sprengel, Syst. veg., ed. 16 [Sprengel] 2: 749 (1825).

Verbesina dentata (Bonpl.) Kunth see *Pallasia dentata* Bonpl.

Verbesina turbacensis Kunth, Nov. gen. sp. [H.B.K.] 4(16): fol. 159, qu. 203 (1820).
≡ *Verbesina verbascifolia* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit prope Turbaco Novo-Granatensium, alt. 130 hex.], no. 1456.
TYPE SPECIMENS: HAL0112796 (ST), B-W16386, F0051701F, P00729863, P00729866 [photo: F0BN015353, MO].
REFERENCES AND COMMENTS: Coll. no. in B and P identical.

Verbesina verbascifolia Willd. see *Verbesina turbacensis* Kunth

Vernonia canescens Kunth, Nov. gen. sp. [H.B.K.] 4(14): fol. 28, qu. 35 (1820).
≡ *Vernonia cordifolia* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit prope Guancabamba Peruvianorum in regione temperata, alt. 127 hex.], no. 3529.
TYPE SPECIMENS: HAL0110521 (ST), B-W14827, P00322272, P00682588.
REFERENCES AND COMMENTS: Coll. no. in B and P identical. *Vernonia cordifolia* Willd. based on the specimen B-W14827 was referred to as of *V. cordata* Kunth, Nov. gen. sp. [H.B.K.] 4(14): fol. 31, qu. 39 (1820), by Lessing, Linnaea 4: 267 (1829). For type specimens of *V. cordata* with coll. no. 3559 see P00322279, P00682611, P00682612, P00682614 [photo: F0BN014524]. See also below *Vernonia geminata* Kunth.

Vernonia cordata Kunth see *Vernonia canescens* Kunth

Vernonia cordifolia Willd. see *Vernonia canescens* Kunth

Vernonia cuspidata Willd. see *Vernonia suaveolens* Kunth

Vernonia geminata Kunth, Nov. gen. sp. [H.B.K.] 4(15): fol. 28, qu. 35 (1820).
≡ *Vernonia reticulata* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit prope Guancabamba Peruvianorum in regione temperata.], no. 3435.
TYPE SPECIMENS: HAL0110851 (ST), B-W14824, P00322273, P00682591 [photo: MO sub neg. no. 37326 and no. 14599].
REFERENCES AND COMMENTS: Coll. no. in B and P identical. Specimen B-W14824 was referred to as *Vernonia canescens* Kunth, Nov. gen. sp. [H.B.K.] 4(15): fol. 28, qu. 35 (1820), by Lessing, Linnaea 4: 284 (1829) and Linnaea 6: 657 (1831). See also above *Vernonia canescens* Kunth.

Vernonia reticulata Willd. see *Vernonia geminata* Kunth

Vernonia suaveolens Kunth, Nov. gen. sp. [H.B.K.] 4(14): fol. 30, qu. 38 (1820).
≡ *Vernonia cuspidata* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit prope Ayavaca (Ayabanca?) et fluvium Cutaco.], no. 3488.
TYPE SPECIMENS: HAL0110522 (ST), B-W14825, P00307102, P00682971, P00682973, P00682974 [photo: F0BN014529, MO].
REFERENCES AND COMMENTS: Coll. no. in B and P identical. For synonymy see Lessing, Linnaea 4: 265 (1829).

Vilfa atrovirens Kunth, Nov. gen. sp. [H.B.K.] 1(3): 138 (1816).
≡ *Agrostis brachyphylla* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. (e Mexico) [Crescit in valle Mexicana prope El Penon del Marques, 1170 hexap.], no. 4169, no. 4175.
TYPE SPECIMENS: HAL0106851 (ST), B-W01741010 (no. 4176 – possibly wrong no.?), B-W01741020 (no. 4169), BAA00003054(no. 4175), BAA00003055 (no. 4175), BM000578763 (s.n.), P00124435 (no. 4175), P00124436 (no. 4169, no. 4175), P00124437 (no. 4169), P00124438 (no. 4169), P00669399 (no. 4175).
REFERENCES AND COMMENTS: For synonymy see Steudel, Nomencl. bot. [Steudel], ed. 2 1(1–2): 36 (1840).

Vilfa elegans Kunth, Nov. gen. sp. [H.B.K.] 1(3): 139 (1816).
≡ *Trichodium affine* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in planitis Cochapamba, in regione temerata regni Quitensis, alt. 1340 hexap.], no. 3010.
TYPE SPECIMENS: HAL0106913 (ST), B-W01761, BM000938529, P00740586, P00740587, P00740588, P00669401.
REFERENCES AND COMMENTS: For synonymy see Steudel, Nomencl. bot. [Steudel] ed. 2 1(1–2): 40 (1840).

Vilfa fasciculata Kunth, Nov. gen. sp. [H.B.K.] 1(3): 139 (1816).

≡ *Agrostis fasciculata* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit juxta pagum Lulumbamba, in montibus Quitensium, alt. 1300 hexap.], s.n.
TYPE SPECIMENS: HAL0106915 (ST), B-W01719, LE-TRIN-1610.01 (fragm.), P00669402, P00740548, P00740549, US00156821 (=US-556240, fragm.).

Vilfa trichodes Kunth, Nov. gen. sp. [H.B.K.] 1(3): 139 (1816).
≡ *Agrostis trichodes* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in crepidinibus Andium Peruvianum justa Montan, Santa Cruz et Guambos, alt. 1350 hexap.], s.n.
TYPE SPECIMENS: HAL0106929 (ST), B-W01720.
REFERENCES AND COMMENTS: For synonymy see Steudel, Nomencl. bot. [Steudel], ed. 2 1(1–3): 43 (1840).

Viola microphylla Willd. see *Ionidium microphyllum* Kunth

Viola parvifolia L.f. see *Ionidium microphyllum* Kunth

Viola punctata Humb. & Bonpl. ex Schult., Syst. veg., ed. 15 bis [Roemer & Schultes] 5: 391 (1819).
≡ *Polygala glandulosa* Kunth (nom. illeg. superfl.), Nov. gen. sp. [H.B.K.] 5(23): 404 (1823).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit locis temperatis Novae Hispaniae, in collibus prope speluncam Puente de la Madre de Dios, alt. 880 hex.], no. 4119.
TYPE SPECIMENS: HAL0117778 (ST), B-W04951, P00679681.
REFERENCES AND COMMENTS: For synonymy see the protologue of *Polygala glandulosa* Kunth. For further information see Rankin Rodriguez & Greuter, Taxon 50: 1241–1242 (2001).

Viola scandens Humb. & Bonpl. ex Schult., Syst. veg., ed. 15 bis [Roemer & Schultes] 5: 391 (1819).
≡ *Viola scandens* Kunth (nom. illeg. superfl.), Nov. gen. sp. [H.B.K.] 5(23): 371, tab. 493 (1823).
LABEL [PROTOLOGUE], COLL. NO.: Peru prope Loxa [Crescit prope Loxam Peruvianorum, alt. 1060 hex.], s.n.
TYPE SPECIMENS: HAL0117773 (ST), B-W04945, P00679658.
REFERENCES AND COMMENTS: Synonymy according to the protologue and Kunth, Syn. pl. [Kunth] 3: 299 (1824).

Viola scandens Kunth see *Viola scandens* Humb. & Bonpl. ex Schult.

Viola teucriifolia Humb. & Bonpl. ex Schult., Syst. veg., ed. 15 bis [Roemer & Schultes] 5: 391 (1819).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid., s.n.
TYPE SPECIMENS: HAL0117770 (ST).

Waltheria indica L. see *Waltheria pedunculata* Willd. ex Steud.

Waltheria pedunculata Willd. ex Steud. (nom. nud.), Nomencl. bot. [Steudel] ed. 2 2(12–13): 783 (1841).
LABEL [PROTOLOGUE], COLL. NO.: ad Bordones, Amer. merid., no. 147.
TYPE SPECIMENS: HAL0118228 (AS), B-W12301.
REFERENCES AND COMMENTS: *Waltheria pedunculata* Willd. based on specimen B-W12301 was referred to as synonym of *W. indica* L. by Schlechtendal, Linnaea 3: 274 (1828), who also listed further synonyms.

Weinmannia brachystachya Willd. see *Weinmannia microphylla* Kunth

Weinmannia elliptica Kunth, Nov. gen. sp. [H.B.K.] 6(24): 50 (1823).
≡ *Weinmannia elliptica* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: Amer. merid. Peru prope Loxam [Crescit in Regno Peruviano, prope Loxa, alt. 1050 hex.], s.n.

TYPE SPECIMENS: HAL0082860 (IT annotated by L. Bernardi (G) 1963-02), B-W07613, B109009885, F0063228F, P00679609, P00135298, P00136844 [photo: F0BN004118].

Weinmannia elliptica Willd. see *Weinmannia elliptica* Kunth

Weinmannia microphylla Kunth, Nov. gen. sp. [H.B.K.] 6(24): 54, tab. 223 (1823).
≡ *Weinmannia brachystachya* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: Loxa in Peru [Crescit in sylvis, prope Loxa, alt. 1050 hex. (Peruvia.)], no. 3344.
TYPE SPECIMENS: HAL0082863 (IT annotated by L. Bernardi (G) 1963-02), B-W07608, B109009847, F0063248F, P00135302, P00135303, P00136847, P00679614.
REFERENCES AND COMMENTS: *Weinmannia brachystachya* Willd. was listed as synonym of *W. microphylla* Kunth by Engler, Linnaea 36: 606 (1870).

Weinmannia sorbifolia Kunth, Nov. gen. sp. [H.B.K.] 6(24): 57 (1823).
≡ *Weinmannia sorbifolia* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex Amer. merid. [Crescit in Nova Granata?], s.n.
TYPE SPECIMENS: HAL0082854 (IT annotated by L. Bernardi (G) 1963-02), B-W07604, B100216109, P00135304, P00679619, P00136848, P00136849 [photo: F0BN004134].

Weinmannia sorbifolia Willd. see *Weinmannia sorbifolia* Kunth

Werneria Kunth see *Werneria nubigena* Kunth

Werneria disticha Kunth, Nov. gen. sp. [H.B.K.] 4(16): fol. 151, qu. 193, tab. 369 (1820).
≡ *Oresigonia latifolia* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: s.l. (ex Amer. merid.) [Crescit in summo monte ignivomo AQntisanae, alt. 2100 hex.], no. 2272.
TYPE SPECIMENS: HAL0113454 (ST), B-W16429, P00320185, P02088530, P02088542.
REFERENCES AND COMMENTS: Coll. no. in B and P identical. *Oresigonia latifolia* Willd. was listed as synonym of *Werneria disticha* Kunth by Lessing, Syn. gen. Compos.: 393 (1832) but as synonym of *W. nubigena* Kunth by Rockhausen, Bot. Jahrb. 70(3): 301, 302 (1939).

Werneria nubigena Kunth, Nov. gen. sp. [H.B.K.] 4(16): fol. 150, qu. 193, tab. 368, f. 2 (1820).
≡ *Oresigonia grandiflora* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex summis Andibus [Crescit in frigidis montis Chimborazi, alt. 1700 hex. (Regno Quitensi.)], no. 3191.
TYPE SPECIMENS: HAL0113455 (ST), B-W16428, P00320184.
REFERENCES AND COMMENTS: Coll. no. in B and P identical. *Oresigonia grandiflora* Willd. was listed as synonym of *Werneria nubigena* Kunth by Rockhausen, Bot. Jahrb. 70(3): 301, 302 (1939). *Werneria nubigena* Kunth is type species of *Werneria* Kunth, Nov. gen. sp. [H.B.K.] 4(16): 148 (1820), see ING.

Werneria rigida Kunth, Nov. gen. sp. [H.B.K.] 4(16): fol. 149, qu. 191 (1820).
≡ *Oresigonia pycnophylla* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: ex summis Andibus [Crescit in summis Andibus Quitensium, alt. 1800–2000 hex.], s.n.
TYPE SPECIMENS: HAL0113456 (ST), B-W16432, P02088567, P02088569, P02088570, P00320180.
REFERENCES AND COMMENTS: Synonymy according to Weddell, Chlor. andina 1: 83 (1856), and Rockhausen, Bot. Jahrb. 70(3): 292 (1939).

Wigandia Kunth see *Wigandia caracasana* Kunth

Wigandia caracasana Kunth, Nov. gen. sp. [H.B.K.] 3(10): fol. 98, qu. 128 (1819).
≡ *Hydrolea mollis* Willd. ex Schult., Syst. veg., ed. 15 bis [Roemer & Schultes] 5: 190 (1819).
LABEL [PROTOLOGUE], COLL. NO.: prope Caracas [Crescit prope Caracas, in Quebrada de Cotecita.], no. 587.
TYPE SPECIMENS: HAL0115729 (ST), B-W05460, P00648974, P00670794.

REFERENCES AND COMMENTS: Synonymy according to Kunth, Nov. gen. sp. [H.B.K.] 5(23): 431 (1823). *Wigandia caracasana* Kunth is type species of *Wigandia* Kunth, Nov. gen. sp. [H.B.K.] 3(10): 98 (1819), see ING.

Xylosteon mexicanum Kunth see *Lonicera gibbosa* Willd. ex Schult.

Zinnia angustifolia Kunth, Nov. gen. sp. [H.B.K.] 4(17): fol. 197, qu. 251 (1820).
≡ *Zinnia angustifolia* Willd. (in herb.).
LABEL [PROTOLOGUE], COLL. NO.: e Mexico [Crescit prope Guanaxuato Mexicanorum, alt. 1100 hex.], no. 4207.
TYPE SPECIMENS: HAL0110971 (ST), B-W16157, P00320244, US00128557 (=US-1803401, fragm.).
REFERENCES AND COMMENTS: See Hind & Jeffrey, Compositae Newslett. 37: 55 (2001).

Zinnia angustifolia Willd. see *Zinnia angustifolia* Kunth

Zoysia rigida Willd. see *Leptothrium rigidum* Kunth

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Address of the authors

Natalia Tkach, Bettina Heuchert, Christina Krüger, Heike Heklau, Denise Marx, Uwe Braun and Martin Röser, Martin Luther University, Institute of Biologie, Geobotany and Botanical Garten, Herbarium, Neuwerk 21, 06099 Halle (Saale), Germany.

(E-mails: natalia.tkach@botanik.uni-halle.de; bettina.heuchert@botanik.uni-halle.de; wortelemente@web.de; heike.heklau@botanik.uni-halle.de; denise.marx@botanik.uni-halle.de; uwe.braun@botanik.uni-halle.de; martin.roeser@botanik.uni-halle.de)