

Johan Emanuel Wikström, with Historical Notes on the Genus *Wikstroemia*¹

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ABSTRACT: This paper is a biography of the Swedish botanist Johan Emanuel Wikström (1789–1856), professor at the Bergius Botanic Garden, Stockholm, after whom the plant genus *Wikstroemia* Endl. (Thymelaeaceae) is named. A short history of the Hawaiian taxa of this genus is given.

THE PLANT GENUS *Wikstroemia* Endl. (Thymelaeaceae) consists of about 50 species distributed from Afghanistan to southern and southeastern Asia and Australia and in the Pacific from the Hawaiian Islands to Norfolk Island. In the Hawaiian Islands, it is represented by 12 species the Hawaiians call 'ākia. *Wikstroemia* was named in 1833 by the Austrian botanist and sinologist S. L. Endlicher (1804–1849) to honor the Swedish botanist J. E. Wikström (1789–1856).

Johan Emanuel Wikström

Johan Emanuel Wikström (Figure 1) was born on 1 November 1789 in the small town of Vänersborg in southwestern Sweden. His father, Johan Wikström, a manufacturing estate manager, and mother, Carolina Charlotta Bahrman, came from well-to-do families.

Johan Emanuel entered the University of Uppsala on 18 February 1806. In accordance with his father's wishes, he studied law, and for some time he worked at the district court in Vänersborg. However, the legal profession did not suit Johan Emanuel and he returned to Uppsala as a medical student, graduated in medicine in 1815, became a licentiate in medicine in 1817, and earned the degree of M.D. in the same year. He became a physician at a hospital in Stockholm.

Carl Peter Thunberg (1743–1828), the famous pupil of Linnaeus, was Wikström's teacher in medicine and natural science. Wikström usually spent his vacations in Stockholm at Bergielund, the Bergius Botanic Garden, where he became a good friend of Olof Swartz (1760–1818), Professor Bergianus. Inspired by these two famous botanists, Wikström's interest turned more and more to botany. Most likely, the advanced instruction he received from Swartz became very important to his life's achievement.

In September 1818, Professor Swartz died and Wikström was proposed as his successor. He accepted the offer, left his medical career, and became a full-time botanist. Wikström was appointed to the position on 11 November 1818 and was given the title of professor in 1823.

The horticultural school at the Bergius Foundation was internationally famous for its fruit-tree plantations and vegetable gardens. As director of this garden, Wikström taught and gave demonstrations to the gardeners. Wikström also supervised the botanical museum of the Royal Academy of Sciences. He was the right person for this task and spared no pains in properly caring for the valuable botanical material.

Among the eighteenth-century collections belonging to the academy (currently in the Natural History Museum) there is rich material brought together by several of the pupils of Linnaeus. Specimens collected by Thunberg, Sparrman, and Osbeck often contain notes by Wikström. These notes, written in Wikström's easily read hand (Figure 2 and Burdet 1979: 203–204), are of great value to botanical history.

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FIGURE 1. Johan Emanuel Wikström. Lithograph by O. Cardon. Original in the collection of portraits at the Bergius Foundation, Stockholm. Used with permission.

Wikström also taught natural history at the Stockholm secondary school from 1821 to 1843. For want of subsidies, he taught two-thirds of this time without salary; he had accepted the mastership solely out of devotion to science and youth.

Johan Emanuel Wikström was a retiring individual, very modest, and unwilling to mix in society. He was hardworking and careful, always friendly, and ready to help. According to a statement (1869) by his successor and biographer, N. J. Andersson (1821–1880;

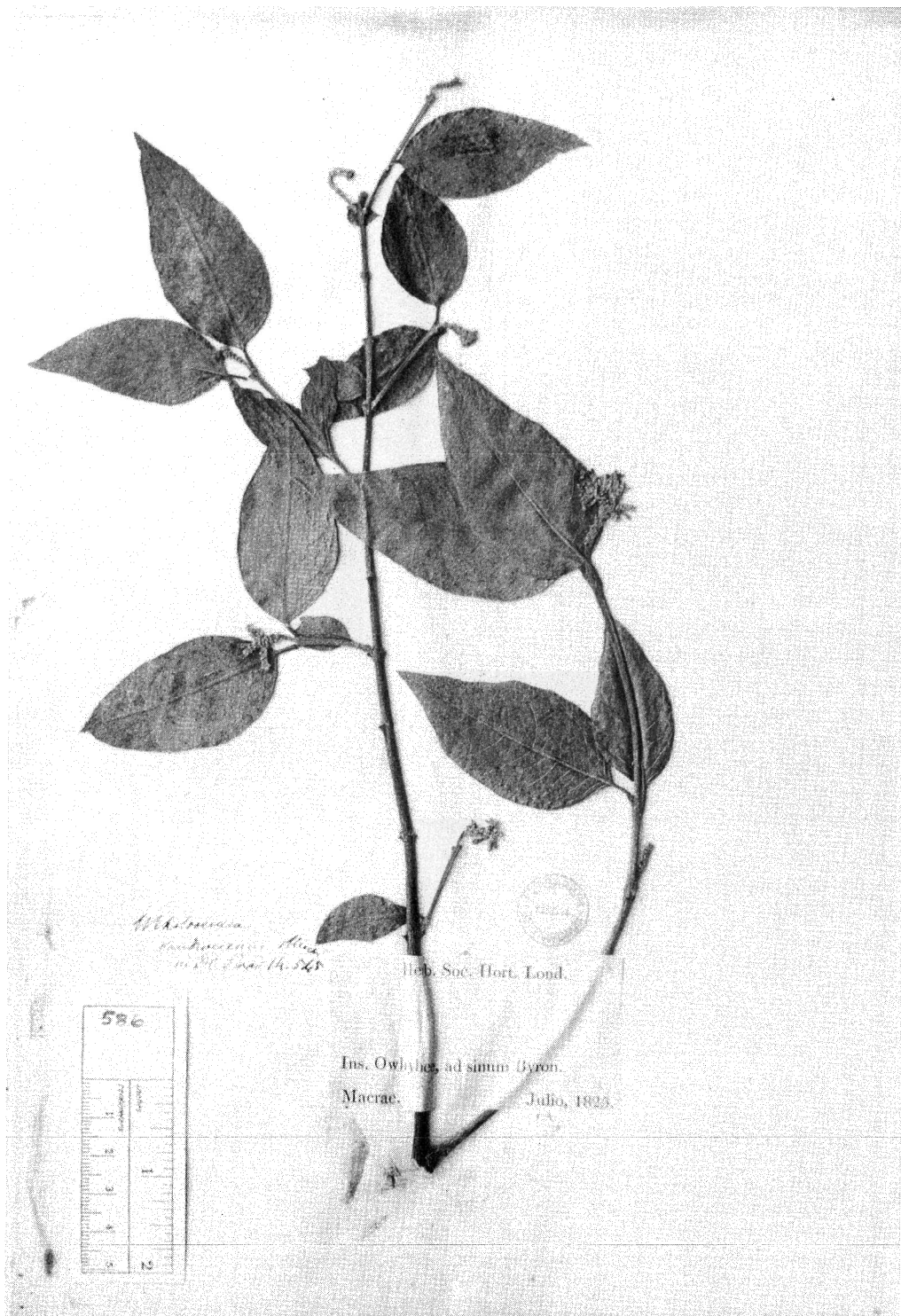


FIGURE 2. Isoholotype of *Wikstroemia sandwicensis* Meisn., 1857, the first described species of *Wikstroemia* of the Hawaiian Islands. Leg. J. Macrae 1825 at Byron's Bay. Herb. K.

circumnavigated the world on the frigate *Eugenie* [1851–1853] and collected on O‘ahu), Wikström’s home was extremely simple and without comfort. He was a loner, only taking pleasure in work.

In spite of his duties and recurring periods of illness, it was possible for Wikström to do research. He completed a special study of the genus *Daphne* (1817, 1820) and published a comprehensive summary of Thymelaeaceae (1818). He described several new species in the genera *Lonchostoma*, *Eriocaulon*, *Rosa*, and *Fritillaria*. These as well as two papers on new species of *Equisetum* and *Filices* were published in the *Kungliga Svenska Vetenskapsakademiens Handlingar*. His reviews of the flora of St. Bartholomew (1825) and Guadeloupe Island (1827) are based on material collected by the Swedish travelers B. A. Euphrasén (1756–1796) and J. E. Forsström (1775–1824). Wikström’s extensive excursions in the surroundings of Stockholm resulted in the publication of the first comprehensive description of the flora of that city. This work also included important geological and faunistic surveys.

The academy had entrusted Wikström with the task of publishing an annual review of current domestic and foreign botanical research. These reports appeared from 1822 to 1852; some of them were translated into German. This magnum opus contains more than 12,000 pages. Another work, *Conspectus literaturae botanicae in Suecia*, covered most of the Swedish botanical literature published from ancient times through 1831 and made Wikström the first historian of Swedish botanical literature.

Wikström was elected to the Royal Swedish Academy of Sciences in 1820 and the Royal Swedish Academy of Agriculture in 1821. He was also a member of several foreign learned societies.

Outside Sweden, Wikström traveled only to Denmark and Germany. He visited Hamburg in 1820 and Copenhagen in 1847 to attend meetings with natural scientists.

From his early years, Wikström had very poor health and in his last years he was confined to his bed for the most part. He died a bachelor on 4 May 1856.

Historical Notes on the Genus Wikstroemia

Endlicher is not the only botanist who named a genus after Wikström. In 1821, Heinrich Schrader (1767–1836) established a genus *Wikstroemia* (now *Laplacea* H.B.K. of Theaceae), and in the same year Kurt Sprengel (1766–1833) honored Wikström in describing *Wikströmia glandulosa*, which turned out, however, to be a species of *Eupatorium*.

The specimens from which Endlicher described the genus *Wikstroemia* originated from Norfolk Island and were part of the collections made by Ferdinand Bauer (1760–1826), Austrian botanical artist on the expedition (1774–1814) of the British explorer M. Flinders to Terra Australis (1801–1803). Endlicher corrected his original spelling “*Wikstroemia*” (1833) in 1841. The type species for *Wikstroemia* established by Endlicher, *W. australis*, is endemic to Norfolk Island. *Wikstroemia* Endl. has been listed as a nom. gen. cons. against *Capura* L., 1771, but is now listed as a conserved generic name in the International Code of Botanical Nomenclature. It is also conserved against the earlier homonyms *Wikstroemia* Schrader, 1821, and *Wikströmia* Sprengel, 1821.

Wikström was not aware of the fact that the genus *Wikstroemia* forms an interesting part of the Hawaiian flora. The first documented specimens of *Wikstroemia* from the island of Hawai‘i were collected in 1779, but no species of this genus from the Hawaiian Islands was described until after Wikström’s death.

David Nelson (?–1789), naturalist on Captain James Cook’s third world voyage (1776–1780), made the first collections of *Wikstroemia* spp. from the Hawaiian Islands (St. John 1976, 1978, 1979). The collections were made 26–29 January 1779 during a mountain trip on the slopes of Mauna Loa, above Kealahou Bay on the island of Hawai‘i. The specimens are deposited in the Natural History Museum, London.

Two of the *Wikstroemia* species collected by Nelson are endemic on the island of Hawai‘i, *W. sandwicensis* Meisn. and *W. phillyreifolia* A. Gray. A small twig of *W. uvaursi* A. Gray is also present in Nelson’s col-

lections. This species is common even today very near the coast at Waimea, Kaua'i. There is no evidence that Nelson went ashore on Kaua'i, but William Anderson did collect a specimen of *Argemone* there. Perhaps he also collected *W. uva-ursi* and gave a specimen to Nelson. The present distribution area for *W. uva-ursi* includes Kaua'i, O'ahu, Moloka'i, and Maui. Nelson's collection of *W. uva-ursi* is cited by Seeman in *Flora vitiensis* (1867: 206) as *W. buxifolia* A. Gray. This name (now a synonym of *W. phillyreifolia*) is also written in pencil at the bottom of the sheet. In 1957, Carl Skottsberg determined the specimen as *W. uva-ursi*. Skottsberg doubted the correctness of the locality because the collection was not mentioned in his monograph of the genus (1972). It is peculiar that Skottsberg did not see Nelson's collections of *W. sandwicensis* and *W. phillyreifolia*. Neither of these specimens is mentioned in his monograph.

The next collection of *Wikstroemia* in Hawai'i was made by Archibald Menzies (1754–1842), British physician and naturalist. Menzies served on HMS *Discovery* under Captain George Vancouver (1792–1794). During that voyage Menzies collected on the Sandwich Islands. One specimen of *W. oahuensis* (A. Gray) Rock var. *oahuensis* by Menzies from Mowee [Maui] is preserved at Bishop Museum.

In 1857, Carl Meisner published his great monograph of Thymelaeaceae and he noted there the first species of a Hawaiian *Wikstroemia*. *Wikstroemia sandwicensis* is based on a collection made in July 1825 at Byron's Bay, Hawaiian Islands, by James Macrae (?–1830). Macrae, a Scottish horticulturist, served on board HMS *Blonde* (1824–1826) under Captain Lord Byron (George Anson), who was a cousin of the poet. The *Blonde* carried the bodies of King Kamehameha II (Liholiho) and Queen Kamāmalu from England to Honolulu (the king and his queen had died of measles during a visit to King George II).

In the second half of the nineteenth century, several new Hawaiian species and varieties of *Wikstroemia* were described. The French botanist and traveler Jules Rémy (1826–1893) visited the Hawaiian Islands from 1851 to

1855. *W. oahuensis* and *W. uva-ursi* were among the specimens Rémy collected. The famous American botanist Asa Gray (1810–1888) described *W. oahuensis* and *W. uva-ursi* in 1865 based on Rémy's specimens. Gray also described *W. buxifolia* and *W. phillyreifolia* as well as *W. elongata* in the same year. However, the specimens from which these species were described came from the material collected during the U.S. Exploring Expedition (1828–1842) under command of Charles Wilkes (1798–1877).

Heinrich Wawra (1831–1887, Austrian ship's surgeon and botanist) published a series of botanical papers from 1872 to 1875 as *Beiträge zur Flora der hawai'schen Inseln*. He named a large-leaved species of *Wikstroemia* he collected on Kaua'i *W. hanalei* (1875). This species has been found only a few times, the last in 1916. It may now be extinct. Wawra dedicated the reprint of his *Beiträge* to "his Majesty Kalakaua by his most obedient and humble servant, the Author."

In the *Flora of the Hawaiian Islands* ([1888] 1981), W. Hillebrand (1821–1886) described two new taxa of *Wikstroemia*: *W. villosa* and *W. bicornuta*, both locally very rare. Hillebrand, a German physician and botanist, lived in Hawai'i from 1851 to 1871.

The American botanist and teacher A. A. Heller (1867–1944) rejected the name *Wikstroemia* Endl. in his paper on Hawaiian plants (1897) because he considered it to be a later homonym of the earlier *Wikstroemia* Schrader. He published 11 new combinations of previously published names under the genus *Diplomorpha* Meisn., 1841, and added one new name, which was not validly published because it lacked a description.

Wikstroemia fauriei was erected in 1911 by the French botanist and clergyman H. Lévillé (1863–1918) based on a collection from Hilo, Hawai'i, made by Pere Urbain Faurie (1847–1915), a French missionary and collector. The species was placed under *W. sandwicensis* in 1913 by Joseph Rock (1884–1962), the "father of Hawaiian botany." Rock's *The Indigenous Trees of the Hawaiian Islands* (1913) deals only with arboreal species; therefore, only three species of *Wik-*

stroemia are mentioned: *W. oahuensis*, *W. sandwicensis*, and *W. furcata*.

Professor Carl Skottsberg (1880–1963) worked for several years on a monograph of *Wikstroemia*. In 1922, during Skottsberg's first visit to the Hawaiian Islands, he became interested in the genus *Wikstroemia*. During his next three botanical expeditions to the Islands (1926; 1938, accompanied by Professor O. H. Selling; 1948, accompanied by Professor F. Fagerlind), the volume of field notes on and herbarium material of *Wikstroemia* collected increased considerably. Skottsberg's *Vascular Plants from the Hawaiian Islands* included two parts on *Wikstroemia* (1936: 124–146; 1944: 400–402, 518), illustrated with several skillful drawings, especially of flower details. Skottsberg described 15 new species and several infraspecific taxa. Among them were the very conspicuous *W. pulcherrima*, endemic on the island of Hawai'i, and the tree-formed *W. monticola*, endemic and very abundant on East Maui.

Professor O. H. Degener (1899–1988) supported Skottsberg's work with *Wikstroemia* by sending him a tremendous amount of material, sometimes living. Each collection consisted of a great number of specimens showing the remarkable variation within the Hawaiian *Wikstroemia*.

Skottsberg had intended to publish some of the new species before his monograph. They appeared in a paper, *Wikstroemia novae hawaiienses*, edited and published by B. Sparre in 1964 with a supplement by Sparre. Unfortunately, Skottsberg never completed his monograph on *Wikstroemia*; after his death, his handwritten manuscript was edited and published in 1972. I had worked on African and Asiatic Thymelaeaceae for some years and had discussed problems within the Thymelaeaceae with Skottsberg. I was involved in the editing of *The Genus Wikstroemia Endl. in the Hawaiian Islands*.

To gain a better understanding of the variation in the Hawaiian species of *Wikstroemia*, I took a botanical trip to the Hawaiian Islands in 1981. I studied several species in the field on the islands of O'ahu and Maui. With a grant from the Swedish Natural Science Research Council, I had the opportunity

to visit the Islands again from 1983 to 1984. Besides further field studies on O'ahu, I studied the endemic species on Kaua'i and the island of Hawai'i. For my revision of the genus *Wikstroemia* in the *Manual of the Flowering Plants of Hawai'i* (Wagner et al. 1990), it was most valuable to see the living material and to study the rich herbarium collections at the Herbarium Pacificum.

The field investigations were critical to understanding the enormous variation within the genus *Wikstroemia* that certainly is a result of adaptation to different sites. It is well known that variation is tremendous within many species of Thymelaeaceae, but the polymorphism of the Hawaiian taxa is extreme. The transitions between the different extremes make it impossible to keep all the described intermediate forms. In the *Manual of the Flowering Plants of Hawai'i* the number of species of *Wikstroemia* has been reduced from 26 to 12. I am very much aware of the fact that this number may be reduced after further investigations if such studies include experimental methods.

All Hawaiian species of *Wikstroemia* are endemic to the Islands. They are shrubs that grow in various habitats or even trees. The flowers are yellow or green-yellow and sweet scented in the evening. The decorative foliage and the red or orange to brilliant red fruits make species of *Wikstroemia* worthy of cultivation and landscaping. Johan Emanuel Wikström has been commemorated botanically with a genus of attractive and graceful plants.

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LITERATURE CITED

- ANDERSSON, N. J. 1869. Johan Emanuel Wikström. *Levnadsteckn. öfver K. Sven.*

- Vetenskapakad. Ledamöter. 1:49–58. Stockholm.
- BURDET, H. M. 1979. Cartulae ad botanicorum graphicem, XV. *Candollea* 34: 167–218.
- ENDLICHER, S. 1833. *Prodromus florum Norfolkiæ*. Vindobonæ.
- . 1841. *Enchiridion botanicum*. Lipsiæ, Viennæ.
- GRAY, A. 1865. New or little-known Polynesian Thymeleae. *Botany (Lond.)* 3: 302–306.
- HELLER, A. A. 1897. Observations on the ferns and flowering plants of the Hawaiian Islands. *Minn. Bot. Stud. Bull.* 9: 760–922.
- HILLEBRAND, W. [1888] 1981. *Flora of the Hawaiian Islands*. Facsimile ed., Lubrecht & Cramer, Monticello, New York.
- LÉVEILLÉ, H. 1911. *Plantae novae sandwicensis*. II. *Feddes Repert. Specierum Nov. Regni Veg.* 10: 149–157.
- MEISNER, C. F. 1841. Ueber die Ostindischen Thymelæen. *Denkschr. K. Bayer. Bot. Ges. Regensburg* 3: 273–294.
- . 1857. *Tymelaeaceae*. Pages 493–605 in A. de Candolle, *Prod. Syst. Nat. Regni Veg.* 14.
- ROCK, J. F. [1913] 1974. *The indigenous trees of the Hawaiian Islands*. Reprint, Charles E. Tuttle Co., Rutland, Vermont.
- ST. JOHN, H. 1976. Biography of David Nelson, and an account of his botanizing in Hawai'i. *Pac. Sci.* 30: 1–5.
- . 1978. The first collection of Hawaiian plants by David Nelson in 1779. *Hawaiian plant studies* 55. *Pac. Sci.* 32: 315–324.
- . 1979. The vegetation of Hawai'i as seen on Captain Cook's voyage in 1779. *Pac. Sci.* 33: 79–83.
- SCHRADER, H. A. 1821. *Illustrationes super plantis quibusdam novis et minus cognitis*. Pages 706–719 in *Göttingische gelehrte Anzeigen*.
- SEEMAN, B. 1865–1873. *Flora vitiensis*. London.
- SKOTTSBERG, C. 1936. Vascular plants from the Hawaiian Islands. II. *Acta Horti Gotob.* 10: 97–193.
- . 1944. Vascular plants from the Hawaiian Islands. IV. *Acta Horti Gotob.* 15: 275–531.
- . 1972. The genus *Wikstroemia* Endl. in the Hawaiian Islands. *Acta Regiæ Soc. Sci. Litt. Gothob. Bot.* 1.
- SPRENGEL, K. 1821. *Wikströmia*, novum plantae genus. K. *Sven. Vetenskapsakad. Handl.* 1821: 167–168, pl. 3.
- WAGNER, W. L., D. R. HERBST, and S. H. SOHMER. 1990. *Manual of the flowering plants of Hawai'i*. University of Hawai'i Press and Bishop Museum Press, Honolulu.
- WAWRA, H. 1875. Beiträge zur Flora der hawai'schen Inseln. *Flora* 58: 171–176, 184–192.
- WIKSTRÖM, J. E. 1817. *Dissertatio de Daphne Upsaliæ*. (Ed. altera Stockholmiae 1820.)
- . 1818. Granskning af de till Thymelæarum växtordning hörande släkten och arter. K. *Sven. Vetenskapsakad. Handl.* 1818: 263–349.
- . 1822–1852. *Öfversigt af de sednare årens botaniska arbeten och upptäckter (för åren 1820–53). Årsberättelser om vetenskapernas framsteg, afgifne af Vet.-Akad:s embetsmän. 1822–52*. Stockholm (with various titles).
- . 1825. *Öfversigt af ön Sanct Bartholomi's flora*. K. *Sven. Vetenskapsakad. Handl.* 1825: 411–434.
- . 1827. *Öfversigt af ön Guadeloupe's flora*. K. *Sven. Vetenskapsakad. Handl.* 1827: 51–79.
- . 1831. *Conspectus litteraturæ botanicæ in Suecia ab antiquissimis temporibus usque ad finem anni 1831*. Holmiae.