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Nomenclature and typification of *Actinidia kolomikta* (Actinidiaceae)

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Summary. The nomenclature and lectotypification of the name *Actinidia kolomikta* (Maxim.) Maxim. are discussed. The correct authorship and date of publication of its basionym is specified, namely *Prunus kolomikta* Maxim., 27 XI 1856. The currently known original material of *Prunus kolomikta* (\equiv *Actinidia kolomikta*) is represented by 5 specimens all stored in the Herbarium of the Komarov Botanical Institute, St. Petersburg, Russia (LE). The specimen LE 01081775 is designated here as the lectotype of *Prunus kolomikta*, its duplicate LE 01081774 being cited as an isolectotype. The indication of the “holotype” and “isotypes” in the Tropicos database available on the Internet is shown to be erroneous.

Номенклатура и типификация *Actinidia kolomikta* (Actinidiaceae)

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Аннотация. В статье обсуждается номенклатура и лектотипификация названия *Actinidia kolomikta* (Maxim.) Maxim. Показано, что правильное цитирование авторства и даты обнародования базионима этой комбинации – *Prunus kolomikta* Maxim., 27 XI 1856. Известный в настоящее время первоначальный материал *Prunus kolomikta* (\equiv *Actinidia kolomikta*) представлен пятью гербарными образцами, хранящимися в секторе Сибири и Дальнего Востока Гербария (LE) Ботанического института им. В. Л. Комарова РАН (Санкт-Петербург). Образец LE 01081775, собранный Л. фон Шренком и К. И. Максимовичем 28 июня 1856 г. возле селения Пульса на Амуре, обозначается в качестве лектотипа *Prunus kolomikta*, его дублет LE 01081774, собранный в ту же дату, является изолектотипом. Показано, что указание «голотипа» и «изотипов» в базе данных на интернет-ресурсе Tropicos ошибочно.

The genus *Actinidia* Lindl. (Actinidiaceae Engl. et Gilg) comprises from 36 (H. L. Li, 1952) to about 55 (J. Q. Li et al., 2007) species. *Actinidia kolomikta* (Maxim.) Maxim. is a climbing summer-green woody liane, with a native range in the East Asia (Russian Far East, China, Japan, Korea), and cul-

tivated in Europe, temperate and subtropical Asia, and North America (GBIF Secretariat, 2021; POWO, 2022). Usually, its flowers are unisexual and plants dioecious, or rarely plants monoecious with unisexual and/or bisexual flowers. In the Russian Far East, the flowers appear in June – July, and green striate

fruits ripen in late August through September. *Actinidia kolomikta* is a species of interest as both ornamental and fruit plant. Its value lies in a high content of vitamin C in fruits, namely up to 9300 mg/kg, or 10–13 times more than in citrus fruits, combined with a highest cold-resistance as compared to other species of *Actinidia* (Zhukovskiy, 1971: 520). Noteworthy, the author of the species referred to its fruits as “omnium fructuum terrae Amurensis suavissimus, ajunt incolae [the most delicious of all the fruits of the Amur land, say the inhabitants]” (Maximowicz, 1859: 64).

Nomenclatural account

The species was originally published under the name *Prunus kolomikta* Maxim. (Maximowicz, Ruprecht, 1856: 129). To notice, its authorship is differently cited in different sources: “Maxim.” (Pojarkova, 1949: 188; Czerepanov, 1973: 25; IPNI, 2022; POWO, 2022), or “Maxim. et Rupr.” (Ohwi, 1965: 627; J. Q. Li et al., 2007: 338; X. W. Li et al., 2007: 637; Kim, Oh, 2013: 290; Chang et al., 2014: 204; GBIF Secretariat, 2021; Tropicos.org, 2022), or even “Maxim. ex Rupr.” (Buch, 1991: 118), and with a different year of publication (1856 or 1857).

The authorship of the whole article is specified as “Beobachtungen von C. Maximowicz, redigirt vom Akademiker Ruprecht [Observations by C. Maximowicz, edited by academician Ruprecht]” (Maximowicz, Ruprecht, 1856: 120). In fact, F. J. Ruprecht was a real co-author, who wrote some Latin descriptions and proposed some taxa names. The section containing an overview of trees and shrubs of the Amur region (“Ueber die wichtgeren Bäume und Sträucher des Amurlandes”) is ascribed to C. J. Maximowicz, and the name *Prunus kolomikta* is ascribed to him, too (Maximowicz, Ruprecht, 1856: 123, 129). The protologue of the new species contains two descriptions: Latin one by Ruprecht (marked by “(R.)”), and German one without author specified, but obviously by Maximowicz, the latter containing characteristics of a living plant (trunk height and thickness, flower fragrance, etc.) rather than herbarium specimen(s) (Maximowicz, Ruprecht, 1856: 129–130). The Ruprecht’s description notwithstanding, the authorship should be accepted as ascribed, i. e. to Maximowicz, as he was the author of both the name and publication (Turland et al., 2018: Art. 46.2, Ex. 3; see also Ex. 11). Concerning the date of publication, the *Bulletin de la Classe physico-mathématique de l’Académie impériale des sciences de Saint-Pétersbourg* was published in separate fascicles, and on the last page of the fascicle 8–9, there is the date “Émis [Published]

le 27 novembre 1856” (Maximowicz, Ruprecht, 1856: 144).

The second oldest name of this species is *Kalomikta mandshurica* Regel (Maximowicz, Regel, 1857: 219). Obviously, E. Regel changed the epithet to avoid tautonymy. The Maximowicz’s specific epithet *kolomikta*, however, does not repeat the generic name *Kalomikta* exactly as stipulated by ICN (Turland et al., 2018: Art. 23.4), so the Regel’s name is nomenclaturally superfluous and illegitimate. In the postscript to the same article, the Ruprecht’s combination *Trochostigma*¹ *kolomikta* (Maxim.) Rupr. was validly published by means of the following sentence: “Hr. Akad. Ruprecht hat seitdem die räthselhafte *Kolomikta* entziffert. Es ist dies eine neue Art der Gattung *Trochostigma* (*T. Kolomikta* Rupr.) [Mr. Akad. Ruprecht has since deciphered the enigmatic *Kolomikta*. This is a new species of the genus *Trochostigma* (*T. Kolomikta* Rupr.)” (Maximowicz, Regel, 1857: 238; see Turland et al.: Art. 46.2, Ex. 9). And finally, the species was transferred to *Actinidia* by Maximowicz (1859: 63).

In view of the foregoing, the correct synonymy of the name is as follows:

Actinidia kolomikta (Maxim.) Maxim. 1859, *Mém. Acad. Imp. Sci. St.-Pétersbourg Divers Savans* 9: 63 (Prim. Fl. Amur.).

≡ *Prunus? kolomikta* Maxim. 27 XI 1856, *Bull. Cl. Phys.-Math. Acad. Imp. Sci. Saint-Pétersbourg* 15(8–9): 129. ≡ *Kalomikta mandshurica* Regel, 17 I 1857, *Bull. Cl. Phys.-Math. Acad. Imp. Sci. Saint-Pétersbourg* 15(14–15): 219, pro nom. nov., superfl. ≡ *Trochostigma kolomikta* (Maxim.) Rupr. 17 I 1857, in Maxim. et Regel, *Bull. Phys.-Math. Acad. Sci. Pétersb.* 15(14–15): 238, in nota; Rupr. u. Maack, 15 II 1857, *Bull. Phys.-Math. Acad. Sci. Pétersb.* 15(17): 261.

Typification

Judging from the results of our search through available sources, no lectotype of *Actinidia kolomikta* (≡ *Prunus kolomikta*) has been designated so far. The type of the name (or rather, *locus classicus*) was referred to as “Описан с среднего Амура. Тип в Ленинграде [Described from the Middle Amur. Type in Leningrad]” (Pojarkova, 1949: 189), or “Описан из Японии [Described from Japan – sic!]” (Buch, 1991: 118), or “Russia. Amur River, C. J. Maximowicz s. n.” (Li et al., 2007: 637), or as a brief enumera-

¹ The genus *Trochostigma* Siebold et Zucc. was described by Siebold and Zuccarini (1843: 728) independently from the earlier *Actinidia* Lindl. (Lindley, 1836: 439). Now the former name is a synonym of the latter.

tion of its gatherings of 1855 and 1856, with a comment “Syntypes: probable LE, not seen” (Kim, Oh, 2013: 290).

The indication “HT: KUN; IT: NY, PE” in the Tropicos database (Tropicos.org, 2022. URL: <http://www.tropicos.org/Name/50002138>) is most probably resulted partly from misinterpreted indication of the type of *A. leptophylla* C. Y. Wu (“holotype, KUN!; isotype, PE!” – X. W. Li et al., 2007: 637), a heterotypic synonym of *A. kolomikta*. Anyway, Liu En-De, the curator of the Kunming Institute of Botany Herbarium, answered to our inquiry that there was no type specimen of *A. kolomikta* stored at KUN. The specimen referred to as “isotype, NY!” by X. W. Li et al. (2007: 637) is most likely NY00428819 (image available on the Internet – URL: <http://sweetgum.nybg.org/science/vh/specimen-details/?irn=72632>). It is labelled: “Ex herb. horti bot. Petropolitani. | Maximowicz. Iter secundum. | *Actinidia Kolomikta* Rupr. | Turma [= Turme, now Kazakevichevo]. 1859”, i. e. was collected by Maximowicz after publication of the basionym, and therefore does not belong to the original material (Turland et al., 2018: Art. 9.4). The duplicates of this gathering are stored in a number of Herbaria (e. g. M0212908, P04468147, P04468156, etc.).

The protologue of *Prunus kolomikta* contains very indistinct reference to the species distribution: “Mehr... am nördlichen (ob uberall vorkommend?) und am mittlern Amur, ...am südlichen selten und klein [Mostly... at the northern (or occurring anywhere?) and middle Amur..., at the southern rare and few]” (Maximowicz, Ruprecht, 1856: 130).

The first precise citation of the localities of *Actinidia kolomikta* was provided in “Primitiae florum amurensis” (Maximowicz, 1859: 63): “Hab. Am untern Amur, in sehr schattigem Laub- oder lichterm grasreicherem Nadelwalde [On the lower Amur, in very shady deciduous or lighter rich in grass coniferous forest]: nach Eingeborenen selbst noch bei Path [according to the natives even near Path (= Pad', former village)]; bei [near] Pulssá, 28 Juni 1855 (flor., L. v. Sch[ren]k.); um den Kaddarfels bei Borbi ziemlich häufig [around Kaddar cliff near Borbi (= Bol'bi, former settlement) fairly common], 9 Juli 1856 (flor.); Beller, häufig [Beller (= Bölör), frequent], 1 Juli (fr. immat.); Messur am Chöchziergebirge [Messur on Khekhtsir Ridge], 30 Juli 1855 (fr. delapsis). Nom. Oltschis et Goldis [Named by Olcha (= Ulch) and Goldi (= Nanai) people]: Kotomiktá vel Kolomiktá”.

It is notable that some above-cited localities of 1855 are not inconsistent with Maximowicz's brief outline of his joint itinerary with L. von Schrenck up the Amur River in late June – early August 1855.

Thus, the total distance from Kisi (= Kizi) to the place of the first find of *Actinidia kolomikta*: “Etwa 25 Werst oberhalb Kisi sah ich zum letzten Mal *Juniperus nana*... 30 Werst höher... sah ich zuerst... *Prunus glandulifolia* Rupr. ...Noch 15 Werst höher... treten hier auf: ...ein niederliegender Strauch mit weit hinkriechenden ruthenförmigen Aesten, weisen sehr wohlriechenden Blüten und (blauen?) essbaren elliptischen Früchten (Kalomikta, *Kalomikta mandshurica*) [About 25 versts above Kisi I saw *Juniperus nana* for the last time... 30 versts higher... I saw first... *Prunus glandulifolia* Rupr. ...Another 15 versts higher... appear: ...a prostrate shrub with creeping rod-shaped branches, white very fragrant flowers and (blue?) edible elliptical fruits (Kalomikta, *Kalomikta mandshurica*)]” (Maximowicz, Regel, 1857: 234) – is approximately equal to that measured from the lower part of the Lake Kizi along the water to the mouth of the Palsa River (70 versts ≈ 75 km). Then, the account of the trip about the Lower Ussuri: “Am Nordabhange des Chöchzier-Gebirges, das das rechte Ufer des Ussuri an seiner Mündung bildet... sieht man wieder Nadelwald... Nach einem dreitägigen Aufenthalte an der Ussuri-Mündung gingen wir den Ussuri acht Tage lang aufwärts... wir das Chöchzier-Gebirge passirt, d. h. ungefähr 15 Werst gemacht... [On the northern slope of the Khekhtsir Ridge, which forms the right bank of the Ussuri at its mouth... one sees coniferous forest again... After a three-day stay at the Ussuri estuary, we went up the Ussuri for eight days... we passed the Khekhtsir Ridge, i. e. made about 15 versts...]” (Maximowicz, Regel, 1857: 235–236) matches well to another locality of *A. kolomikta*: “Messur am Chöchziergebirge, 30 Juli 1855” (Maximowicz, 1859: 63).

In the herbarium collection of the Komarov Botanical Institute of the Russian Academy of Sciences, St. Petersburg (LE), there are 5 specimens of *Actinidia kolomikta* (≡ *Prunus kolomikta*) with original labels in Maximowicz's handwriting and collected prior to the date of submitting the manuscript of the article, where the basionym is published (“Lu le 7 novembre 1856” – see Maximowicz, Ruprecht, 1856: 120). In 4 of them, the dates and localities on the labels coincide with those specified in “Primitiae florum amurensis” (Maximowicz, 1859: 63):

“*Actinidia Kolomikta* Rupr. | 28 VI 1855 [fl. ♂] | In Nadelwäldern unterhalb Pulssa (zwischen Borbi und Sarna liegend) an grasigen Stellen” (LE 01081774);

“*Actinidia Kolomikta* Rupr. | “1 VII 1855 [fl. ♂] | Bölör, in Laubwäldern häufig” (LE 01081777);

“*Actinidia Kolomikta* Rupr. | 30 VII 1855 [fl. ♂, defl.] | Messur, im Laubwalde ziemlich häufig” (LE 01081776);

“*Actinidia Kolomikta* Rupr. | Fl. Amur. Maximowicz | Cap. Kaddar. 9 VII 1856 [fl. ♂]” (LE 01081779).

The label of the specimen LE 01081775 has no indication of locality but only the description of the plant habit and habitat: “*Prunus? Kolomikta* Maxim. | 28 VI 1855 fl. ult. | Niederliegender ausgebreiteter Strauch, vorzugsweise in kleinen Bodenvertiefungen grasiger Nadelwälder, diese/lapsu ganz ausfüllend [Prostrate, spreading shrub, preferably in small depressions in the ground of grassy coniferous forests, completely filling them]”. The date of the collection, however, implies that it was gathered together with LE 01081774, i. e. “unterhalb Pulssa”. When citing this gathering, Maximowicz (1859: 63) specified Schrenck as a collector. This part of the journey, however, was made by Schrenck and Maximowicz jointly (Maximowicz, Regel, 1857: 233). This and the field labels written by Maximowicz’s hand clearly show that Maximowicz was a direct participant of collecting the plants.

The labels of the specimens LE 01081774, LE 01081775, LE 01081776, and LE 01081777 contain more or less detailed notes on the morphology of the newly discovered species (Fig. 1). Their style and content suggest that Maximowicz described living plants directly in the field, and their comparison with the protologue definitely indicates that they altogether made the basis of the Maximowicz’s German description of *Prunus kolomikta* (Maximowicz, Ruprecht, 1856).

All above-cited specimens, except LE 01081775, were named by Maximowicz “*Actinidia Kolomikta* Rupr.”, therefore their determinations were written most probably when preparing “*Primitiae florum amurensis*” (Maximowicz, 1859), and certainly after the articles of 1856 and 1857 (Maximowicz, Ruprecht, 1856; Maximowicz, Regel, 1857) were published. The only specimen labelled by the earliest name: “*Prunus? Kolomikta* Maxim.” is LE 01081775, and it was most likely the only one sent to St. Petersburg and available to Ruprecht prior to publication of his Latin description of *Prunus kolomikta* (Maximowicz, Ruprecht, 1856). Noteworthy, all original specimens of 1855 and 1856 happened to be male, so neither Maximowicz nor Ruprecht saw the ovaries or fruits of the new plant at that time. Hence the Maximowicz’s erroneous taking it for a species of *Prunus*, and his mistakes when describing its fruits as “hearsay” from local people: “Thren Aussagen nach ist die Frucht schwarzblau, sehr wohlschmeckend. Blüht in den letzten Wochen des Juni, Ende Juli’s waren

die Früchte bereits abgefallen [According to them (locals) fruit black-blue, very tasty. Flowers in last weeks of June, by the end of July fruits were already fallen]” (Maximowicz, Ruprecht, 1856: 130). When reporting on fruits fallen in late July, Maximowicz obviously mistook the pedicels of faded male flowers for the fruitstalks of fallen fruits.

Since the specimen LE 01081775 was the only one available to the authors of both validating descriptions of *Prunus kolomikta*, we are designating it as the lectotype of this name and of all subsequent combinations (Turland et al., 2018: Art. 9.3, 9.12, 7.3):

Prunus kolomikta Maxim. 1856, Bull. Cl. Phys.-Math. Acad. Imp. Sci. Saint-Petersbourg 15(8–9): 129.

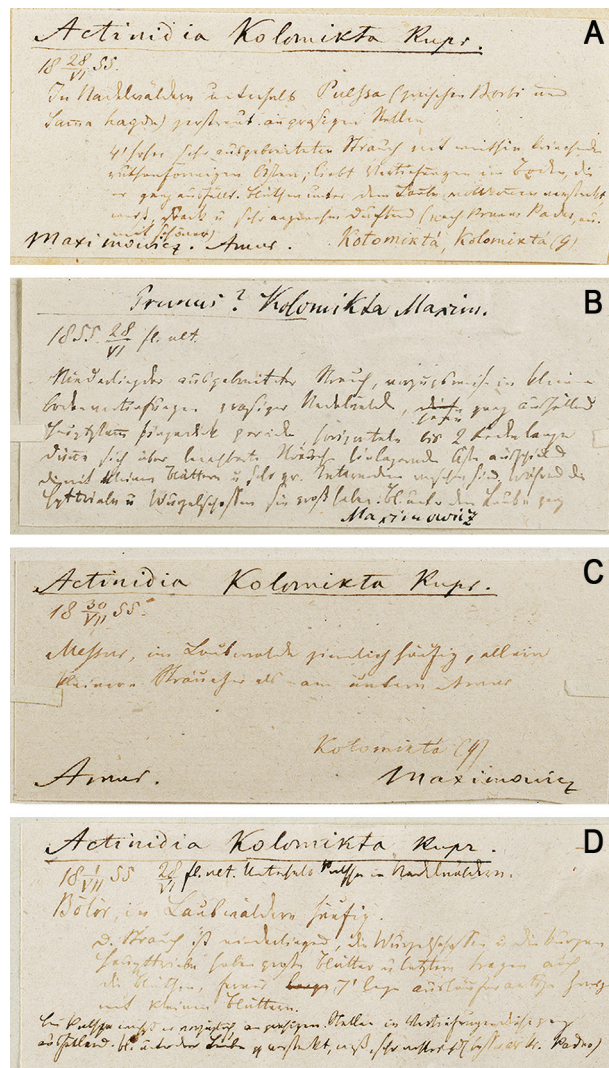


Fig. 1. Maximowicz’s handwritten labels on original specimens of *Actinidia kolomikta*: A – LE 01081774; B – LE 01081775; C – LE 01081776; D – LE 01081777.

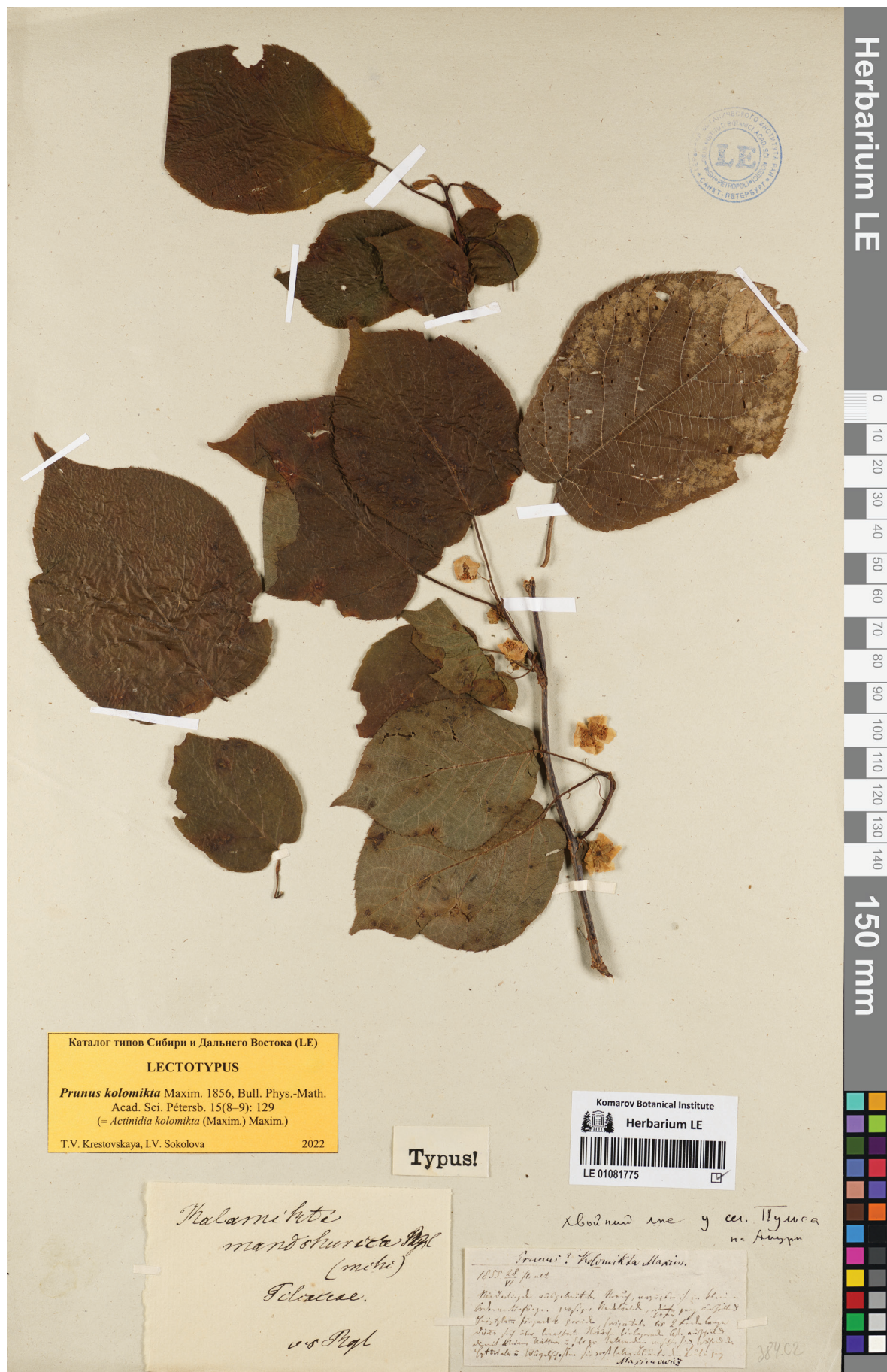


Fig. 2. Lectotype specimen of *Actinidia kolomikta* (LE 01081775).

Lectotype (Krestovskaya, Sokolova, designated here):

Label 1: “*Prunus? Kolomikta* Maxim. | 28 VI 1855 fl. ult. [fl. ♂] | Niederliegender ausgebreiteter Strauch, vorzugsweise in kleinen Bodenvertiefungen grasiger Nadelwälder, diese/lapsu ganz ausfüllend | Hauptstam[m] fingerdick ...² ... bis 2 ... lange | ... sich über ... hinlagernde Äste aus ... | die mit kleinen Blättern u[nd] sehr gr[ößen] Internodien versehen sind. Während die | ... u[nd] Wurzelschossen sie groß haben. Bl.[üthen] unter dem Laube ganz. | Maximowicz [hand of Maximowicz]”; label 2: “*Kalamikta* [sic!] *mandshurica* Rgl (mihi) | *Tiliaceae* | v. s. Rgl [hand of Regel]”; inscription on the herbarium sheet: “Хвойный лес у сел. Пульса | на Амуре [hand of Komarov]”; label 3: “Typus! [printed]” (LE: barcode LE 01081775) (Fig. 2).

The specimen LE 01081774 collected on the same date as LE 01081775 is therefore an isolectotype (Turland et al., 2018: Art. 9.4, footnote), and the other above-mentioned ones are the uncited specimens comprising the original material (Turland et al., 2018: Art. 9.4):

Isolectotype: label: “*Actinidia Kolomikta* Rupr. | 28 VI 1855 [fl. ♂] | In Nadelwäldern unterhalb Pulssa (zwischen Borbi und Sarna liegend) an grasigen Stellen | 4' hoher sehr ausgebreiteter Strauch mit weithin kriechenden ruthenförmigen Ästen; liebt Vertiefungen im Boden, die er ganz ausfüllt. Blüten unter dem Laube unddarinnen versteckt, und so stark und sehr angenehm duftend (nach *Prunus Padus*, nur weit schöner) | Kotomiktá, Kolomiktá (G) | Maximowicz. Amur [hand of Maximowicz]”; inscription on the herbarium sheet: “Лесные опушки | у сел. Пульса на | Амуре 28 VI 1855 г. | К. И. Максимович [hand of Komarov]” (LE 01081774).

Original specimen: label: “*Actinidia Kolomikta* Rupr. | 1 VII 1855 [fl. ♂] | 28 VI fl. ult. Unterhalb Pulssen in Naderwäldern. | Bölör, in Laubwäldern häufig. | Der Strauch ist niederliegend, die Wurzelschossen u[nd] die kurzen Haubtriebe haben große Blätter u[nd] letztere tragen auch die Blüten, ferner 7' lange ausläuferartige zweige mit kleinen Blättern. | Bei Pulssa wächst er vorzüglich an grasigen Stellen in Vertiefungen dese ganz ausfüllend. Bl.[üthen] unter dem Laube ... versteckt, weiß, sehr wohlriechend (... *Pr. Padus*) [hand of Maximowicz]” (LE 01081777).

² Hereinafter in the label citations, the ellipses are put instead of illegible fragments of handwritten text.

Original specimen: label: “*Actinidia Kolomikta* Rupr. | 30 VII 1855 [fl. ♂, defl.] | Messur, im Laubwalde ziemlich häufig, allein kleinere Sträucher als am untern Amur | Kolomiktá (G) | Amur. Maximowicz [hand of Maximowicz]”; inscription on the herbarium sheet: “Сел. Мессур в устье р. | Уссури, листв. лес, довольно часто [hand of Komarov]”; note: “Est! | D. Vorobiev | 1947” (LE 01081776).

Original specimen: inscription 1 on the herbarium sheet: “*Actinidia Kolomikta* Rupr. | Fl. Amur. Maximowicz | Cap. Kaddar. 9 VII 1856 [hand of Maximowicz]”; inscription 2 on the herbarium sheet: “Амур у мыса Каддар | 9 VII 1856. К. И. Максимович [hand of Komarov]”; note: “Est! | D. Vorobiev | 1947” (LE 01081779).

The specimen LE 01081778 was collected in 1859 and labelled by Maximowicz, therefore it is authentic but not original. The above-mentioned specimens sent out to other Herbaria (M0212908, NY00428819, P04468147, P04468156) are very likely its duplicates.

Authentic specimen: label: “*Actinidia Kolomikta* Rupr. | 7 VIII 1859 [fr.] | Im Hochwalde bei Turme (Kasakewitschewa) häufig, am Boden liegend u[nd] dann meist steril, oder auf Bäume kletternd. | Fr.[ucht] grün, wenn reif sehr duftig und süß und saftig. | Amur. Maximowicz [hand of Maximowicz]” (LE 01081778).

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