

Personalities of Russian amateur botany, 3. Ivan M. Schvetzov and Theodor S. Nenukow, prominent experts in the flora of Nizhni Novgorod Region, and the taxonomic identity of plant species described by Nenukow

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Ivan Schvetzov collected many specimens of vascular plants, fungi, mosses and lichens mostly from the western part of Nizhni Novgorod Region of Russia, including the original collections of *Cytisus ruthenicus* var. *zingeri* Nenukow. Theodor Nenukow was a prominent amateur botanist from Nizhni Novgorod. He studied the flora of Nizhni Novgorod Region, weed and meadow flora of Central Russia and vascular plants of Estonia. He described a few infraspecific taxa and two species of vascular plants, *Valeriana estonica* Nenukow (synonymised here with *V. officinalis* subsp. *tenuifolia* (Vahl) Schübl. & G.Martens) and *Odontites estonicus* Nenukow (a synonym of *O. vulgaris* Moench), and the basionym for *Cytisus zingeri* (Nenukow) V.I.Krecz. (a glabrous variety of *C. ruthenicus* Fisch. ex Otto). The places of valid publication are clarified for *C. ruthenicus* var. *zingeri* and *Persicaria linicola*, and the lectotype is designated for *C. ruthenicus* var. *zingeri*.

There is no need to be an expert in order to be engaged with success and benefit into the studies of our national flora; for this purpose one needs just the very zeal for this task and desire that turn a considerable and not always easy work of plant collection and identification into a favourite and habitual occupation and little by little make an experienced expert out of an ordinary amateur.

Zinger 1885: 6

In the 19th century Nizhni Novgorod played an important role in the Russian Empire. Due to the

operation of the Nizhny Novgorod Fair, a large commerce centre of international significance, the town was an informal capital of Russian merchants. Besides the trade, the town was noted as a large transport node, most remarkably for steam boats carrying goods and passengers along the Volga and Oka rivers. With the Sormovo shipyard and machine factory, a large industrial shipbuilding and, subsequently, steam locomotive building factory, which was situated close to the town, Nizhni Novgorod was among the largest Russian industrial centres. As a town of cultural significance, Nizhni Novgorod hosted theatres and mu-

seums; among the latter, the Museum of Natural History was open in 1885 to study the local flora, fauna and soils, to keep the scientific collections and to provide education to the public.

The Museum of Natural History in Nizhni Novgorod was established on the basis of materials collected in the expedition that studied the soil cover of Nizhni Novgorod Region in 1882–1884. The expedition was led by V.V. Dokuchaev, who submitted his proposal to establish the Museum to the local government. The Museum became an important and active centre of botanical studies in the region; it accumulated the collections made by numerous amateurs, and provided guidance and even employment to the most skilful enthusiasts.

Several local botanists contributed to botanical studies in Nizhni Novgorod Region in the period of the Museum of Natural History, whose collections were dissolved in the end of the 1920s in favour of other institutions (notably, the herbarium went to the Nizhni Novgorod State University). In the present contribution, we would like to give a brief essay on the activities of Th.S. Nenukow and I.M. Schvetzov, avid amateur botanists notable for their contributions to the studies of vascular plants in Nizhni Novgorod Region, whose names are linked with the history of *Cytisus zingeri* (Nenukow) V.I.Krecz. (Fabaceae), an alleged endemic of this territory (Tzvelev 1987).

The botanical passion of Ivan Schvetzov

According to the brief biography (Averkiev 1927), Ivan Markelovitsch Schvetzov (Fig. 1) was born in Nizhni Novgorod in 1852. He was graduated from the Gory-Gorki agricultural school (the precursor of Belarusian State Agricultural Academy, Gorki, Belarus) in 1877 to become a teacher of geography and natural sciences. Since 1885, Schvetzov took a job at the excise tax department of Nizhni Novgorod and Vladimir regions and made some herbarium collections during his duty travels. Having retired in 1889, he lived in Vladimir Region but continued collecting activities in his home land. Since 1912, Schvetzov permanently resided in Chernoe (now Dzerzhinsk) of Nizhni Novgorod Region, where he botanised



Figure 1. Ivan Markelovitsch Schvetzov.

extensively. In 1919, Schvetzov became a technical assistant at the Department of plant taxonomy and morphology of the Nizhni Novgorod State University, where he was promoted to the level of teacher in 1921. Schvetzov died in 1924, aged 72.

Schvetzov amassed rich herbarium collections, mostly vascular plants (over 1 350 specimens) but also mosses, lichens and fungi, largely from Balakhna District but also from other districts of Nizhni Novgorod Region (Averkiev 1927; Stankov & Elevterskaya 1927). The plants were nicely pressed and accompanied by calligraphically handwritten (Fig. 2) or stamped labels.

Because of his last employment, the main herbarium collections of Schvetzov are kept at the Herbarium of the Nizhni Novgorod State University (NNSU) but were also present at the former Museum of Natural History in Nizhni Novgorod (Stankov & Elevterskaya 1927) before its transfer to NNSU. Only few specimens of these collections were distributed, mostly as part of Herbarium Florae Rossicae (Korshinsky 1898; Litvinov 1922).

Although Schvetzov collected plants with a great passion and dedication and found sever-

Theodor Nenukow: botanist, intellectual and bohemian

Fedor Stepanovich Nenyukov, who usually transliterated his name as Theodor Nenukow (Figs. 3 and 4), or Nenjukov (Nenjukow) in Estonian spelling, was born on May 13, 1883 to a family of wealthy merchants in Nizhni Novgorod (Nenyukov 2005). In early years he was taught by a French governess, and then attended a school in Yaroslavl (Üksip 1934). To complete his school education, he was sent to Saint-Petersburg, the Gymnasium of Y.G. Gurevich (Üksip 1934) which was among the best private schools in the country.

Nenukow's father died when he was 7 years old (Üksip 1934). His mother much restricted children in finances and spending habits (Nenyukov 2005); this may be one reason why the young boy went to the politics as high as to become a member of the executive committee of the Northern Union of School Pupils (this illegal organisation tended to support the Russian Social Democratic Labour Party (RSDLP), which followed the course developed by V.I. Lenin) (Volin et al. 1974). In August of 1903, at the time of the 2nd Congress of the RSDLP, Theodor Nenukow was arrested and imprisoned in Nizhni Novgorod

(Volin et al. 1974). This also implied the end of his Russian education (Fedotova & Goncharov 2015).

In May of 1904, Nenukow's mother died (Nenyukov 2005) and her children received the family's property by intestate laws. The share of Theodor was reportedly "a million" (Serpinskaya 2003); with this fortune, he paid ransom for his freedom (Serpinskaya 2003) and, in October of 1904, moved to Moscow (Volin et al. 1974). Nenukow abandoned the ideas of social justice and rented an apartment in the city centre, where he was noted for ten years of prodigal spending and hard drinking in a circle of *jeunesse dorée* (Üksip 1934; Loks 1994; Serpinskaya 2003).

In cultural life, Nenukow was part of the literary society "Serdarda" that was established and run by Yulian Anisimov, a poet of the Silver age of Russian poetry; this society witnessed the rise of Boris Pasternak (Polivanov 2013). Some poetry was dedicated to Nenukow by Anisimov and Arkady Guriev (Polivanov 2013).

Nenukow lived life to the fullest but also paid serious attention to his scientific passions. While studying at the Gymnasium, he already became interested in botany and worked at the professional level. In 1900, at the age of 17, Nenukow made his first scientific collection of vascular



Figure 3. Theodor Nenukow in 1921 (source: <http://russiainestonia.eu>).



Figure 4. Theodor Nenukow in the 1930s (reproduced from Üksip 1934).

plants, among the steppe vegetation at the manor of his parents in Nikitino near Pochinki (now Pochinki District, Nizhni Novgorod Region). He also collected ruderal plants in populated places, including *Galinsoga parviflora* Cav. which was new to Central Russia, and *Matricaria discoidea* DC. which he found as new to Nizhni Novgorod Region. Besides, Nenukow was entrusted by V.A. Raevsky, the oldest researcher of the Nizhni Novgorod flora, to publish a few floristic novelties on his behalf. Nenukow compared his novelties with the synoptic works of Maevsky (1895) and Schmalhausen (1895–1896); in spite of his young age, he expressed criticism to oversights and incorrect records in those academic books. In his treatment, Nenukow compared his identifications with the herbarium collections of the Museum of Natural History in Nizhni Novgorod. His first botanical publication (Nenukow 1902) appeared in Tartu.

Due to the inherited wealth, Nenukow continued botanical studies as a gentleman botanist, exploring the flora of Nizhni Novgorod Region near the lands owned by his family, working in the collections of the Museum of Natural History in Nizhni Novgorod, and communicating records made by other amateur botanists of Nizhni Novgorod Region (Nenukow 1907, 1910, 1911, 1912a, 1915b). In those works, Nenukow consulted many published sources and presented his critical notes in a full context; he also verified his opinions with leading botanists in Moscow (A.A. Khoroshkov, A.N. Petunnikov, D.P. Syreitschikov) and Saint-Petersburg (D.I. Litvinov), and sent his specimens to European experts (G. Kükenthal, O.E. Schultz, K.R. Kupffer). When Nenukow moved to Moscow, he joined the Moscow Society of Naturalists and published his first (and only) report to the Society (Nenukow 1906). In 1907, the Museum of Natural History in Nizhni Novgorod requested Nenukow to compile the comprehensive data on the regional flora; this was a sign of his recognition as the best and most professional botanist of Nizhni Novgorod.

It seems that Nenukow sent nearly all his early scientific results to Yur'ev (now Tartu, Estonia) because of the high reputation, rapid publishing, independent position and liberal nature of botanical periodicals edited by Prof. N.I. Kuznetsov. In those periodicals Nenukow was able to express

his uncompromising (and sometimes harsh) criticism towards established authorities of Russian academic botany. Quite peculiar was a ping pong of personal critical attacks between A.F. Flerov (then at Saint-Petersbourg Botanical Garden) and Nenukow, which was initiated by the arrogant attitude of the first author (Flerov 1906). Nenukow (1908) picked up the glove and responded sarcastically, noting oversights and blunders of Flerov; his response provoked Flerov's outburst of self-excuses and further personal attacks (Flerov 1908), which required a calming note from the editor (Kuznetsov 1908) who took the side of Nenukow in this non-academic discussion. This discussion seemingly contributed to abundant and acute controversies and tensions between "academic" people at the Imperial Botanical Garden in Saint-Petersburg, the institution noted for a high level of botany but even a higher level of self-confidence, and other Russian botanists; this situation was mockingly expressed in a "popular aphorism" attributed to Nenukow: "The Petersburg Botanical Garden is an alms-house for the elderly and a sinecure for the young who develop their activities partly outside the institution" (Üksip 1934, 1975; Vaga 1959).

Nenukow contributed many records on the flora of Nizhni Novgorod Region to the new edition of Maevsky's Flora of Central Russia (Litvinov 1912). Nevertheless, the book was still imperfect in his opinion (Nenukow 1913a, 1914a), and the next edition of this book (Litvinov 1917) again benefited from his extensive contributions.

In botanical studies, Nenukow was not strictly concentrated on the flora of his native region. He broadened his experience with visiting Siberia in 1907, and complemented his education by studying herbarium collections in Germany, England, France and Switzerland. He was also admitted as a special auditor to the University of Genève in 1908 and the Sorbonne University in Paris (Üksip 1934). Nenukow also published on the flora of Tver Region (Nenukow 1913b).

The vagabond nature of Nenukow was reflected not only in his life style but also in the places he indicated at the time of submission of his early papers. Among his floristic notes, Nenukow (1902) was submitted from Saint-Petersburg (Gymnasium of Y.G. Gurevich), Nenukow (1907) was sent from Omsk (Hotel 'Russia', which was

among the most fashionable and luxurious hotels), Nenukow (1910) came from Pochinki (Nikitino near Pochinki in Nizhni Novgorod Region, at that time it was a manor of his brother, Sergei Stepanovich Nenukow: Nenyukov 2005), and Nenukow (1912a) arrived from Nizhni Novgorod (the house of his parents in Nizhni Novgorod was inherited by his brother, Nikolai Stepanovich Nenukow: Nenyukov 2005).

In 1912–1914, Nenukow organised floristic and soil studies in Nizhni Novgorod Region; at that time he became interested in practical aspects like agriculture (including weeds) and improvement of grasslands (including cultivation of clover). He published a number of reports on these topics (listed in Averkiev 1927), most notably comments on the distribution of some weeds in the region (Nenukow 1912b, 1914b). Nenukow (1915a) was also interested in the flora of local meadows, which he compared with meadows in Tver Region.

During that period Nenukow visited Chernoe Village, where a summer house of his family was situated (Nenyukov 2005). He befriended a local amateur botanist, Ivan M. Schvetzov, whose communications and private herbarium collections he used in his work.

When his fortune had been drained, Nenukow was employed as a technical assistant and weed expert at the Seed Control Station of the Moscow Agricultural Society since the beginning of 1915 (Üksip 1934; Fedotova & Goncharov 2015). In October of 1916 he was recruited to the army, and returned back in November of 1917 (Fedotova & Goncharov 2015).

Since January of 1918, Nenukow was employed as a senior technical assistant at the Bureau of Applied Botany, Saint-Petersburg, with specialisation in meadow plants (Fedotova & Goncharov 2015). His orientation to the studies of meadows and weeds apparently prevailed and will continue to the end of his life. Part of his duties was coordination of works on seed control stations, including one at Sagnitz in Estonia.

With the retreat of the German Army from Estonia, which marked the end of the First World War, the Russian Army entered the country to regain its territory in November of 1918; by January of 1919, the Russians occupied most of the territory of Estonia except for the north-western

part with Tallinn and Pärnu, and the Red Latvian Rifle Regiment controlled its southern part including Tartu and Valga. In the beginning of 1919, Nenukow was sent to Estonia by the Director of the Bureau of Applied Botany, Robert Regel. Nenukow was about to visit Schloss Sagnitz (Sangaste mõis, north-east of Valga), which was a famous plant and animal breeding station privately owned by the von Berg family, and also had to go to Tartu in order to rescue botanical manuscripts and printed sheets from the printing house (Fedotova & Goncharov 2015). He inspected the station at Sagnitz and sent a letter to Regel on January 25 (Fedotova & Goncharov 2015). The Estonian counter-offensive started already in early January of 1919; Tartu was liberated rapidly, and the Latvian Riflemen were pushed away from Valga by the end of January. Nenukow remained in independent Estonia.

In the changed situation, Nenukow joined the Northern Corps of the White Army. This military force grew into the North-Western Army and (May 1919) started an offensive to Pskov, Yamburg and, ultimately, Petrograd. Although the White Army had successfully advanced to the south-western outskirts of Petrograd in October of 1919, in November it was kicked back to Estonia; in January of 1920, it was dissolved under the pressure of the Estonian government. At the time of retreat, Nenukow acted as capitaine d'armes of the First Infantry Regiment in the North-Western Army (Volkov 2020). Apparently because of having watched (and attended!) so many Russian revolutions, Nenukow used to say, following a famous aphorism of Georg Wilhelm Friedrich Hegel (2011): "History is a science from which nobody has ever learned anything" (Üksip 1934).

In Estonia, Nenukow went to Tallinn to visit Carl Rudolf Leibert (1858–1928), who at that time owned the Town Hall Pharmacy in Tallinn, the oldest European pharmacy in continuous operation. Leibert was a well-known amateur botanist; he helped Nenukow in his early life in Estonia (Üksip 1934). With the establishment of the Estonian Seed Control Station on March 20, 1920, Nenukow became its acting director (Ratt 1935). On May 1 of 1921, he was appointed vice-director and weed expert, managed the quality in import and export of seeds and remained at the station until his last days (Ratt 1935).

Besides his direct practical duties, Nenukow explored the flora of Estonia. He published a checklist of vascular plants of Estonia (Nenukow 1928), two series of contributions to the flora of Estonia (Nenukow 1927, 1935) and some minor papers, mostly of practical character (listed in Üksip 1934 and Ratt 1935). The checklist received much criticism from Kupffer (1930) who noted quite a number of omissions, incorrect or doubtful records and other inaccuracies. But in general, Nenukow's floristic expertise was much appreciated and sought (Üksip 1934, 1975). For example, Nenukow contributed to the Estonian exsiccatae, as a collector (Lippmaa & Eichwald 1933) and an expert (Lippmaa & Eichwald 1933, 1935; Eichwald 1938).

Perhaps due to the vice of intemperance, to which Nenukow was addicted until his last years (Üksip 1975), he developed a heart disease and died on July 26, 1934 (Üksip 1934). He was buried on the Siselinna Cemetery in Tallinn, Estonia (Fig. 5).



Figure 5. Burial place of Theodor Nenukow on the Siselinna Cemetery, Tallinn. Source: www.kalmistud.ee

The early herbarium collections of Nenukow are kept at the Nizhni Novgorod State University (NNSU), the successor of the Museum of Natural History in Nizhni Novgorod. His collections from the Estonian period are preserved mostly at the Estonian Museum of Natural History (TAM) but also at the Tartu University (TU) and, possibly, the former seed control station (now Agricultural Research Centre, Ministry of Rural Affairs, Estonia).

Plant species described by Theodor Nenukow

Nenukow (1912a, 1916) started publishing new taxa at the rank of forma and variety. One of those taxa, *Cytisus zingeri* (Nenukow) V.I.Krecz., was originally described at the rank of variety (Nenukow 1916) but elevated to the species rank later (Kreczetowicz 1940). During his Estonian period, Nenukow kept an eye on critical taxa and named two new species, *Valeriana estonica* Nenukow (Nenukow 1932) and *Odontites estonicus* Nenukow (Nenukow 1928). Nenukow (1927) introduced but not validly published the combination *Persicaria linicola* (Sutulov) Nenukow, comb. inval. (nom. provis.) for a specialised weed of flax fields; this combination was unintentionally validated later by Tzvelev (1996: 131).

Cytisus zingeri (Nenukow) V.I.Krecz.

In 1914, during his work for the Museum of Natural History in Nizhni Novgorod, Nenukow received a set of plant specimens from Ivan Schvetzov, which were collected on pine forest margins near the place of his residence at Chernoe Village, Nizhni Novgorod Region. The specimens were identified as "*Cytisus ratisbonensis* f. *glabrus*" by the collector (Fig. 6). Nenukow added a comment that this variety belongs to *C. ruthenicus* Fisch. ex Otto and differs from the typical plants by the complete absence of pubescence on its leaves, flowers and branches (Fig. 7); this variety was already noted and described by Zinger (1885) who left it nameless. Nenukow proposed to name it in honour of prominent mathematician, amateur botanist and philosopher Vasily Zinger

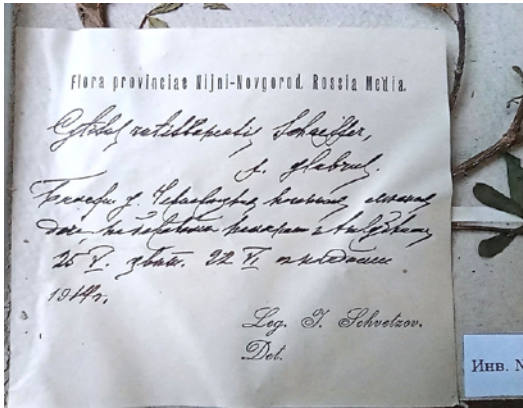


Figure 6. Original herbarium label of the type collection of *Cytisus ruthenicus* var. *zingeri* Nenukow (handwriting of I. M. Schvetzov, NNSU).

(1836–1907). Under this name, *C. ruthenicus* var. *zingeri* Nenukow, this plant was distributed in Herbarium Florae Rossicae (Nenukow 1916). The voucher retained by Schvetzov was originally preserved at the Museum of Natural History and is currently kept at the Nizhni Novgorod State University (Biryukova et al. 2016).

Kreczetowicz (1940) elevated the variety described by Nenukow to the species rank, as *Cytisus zingeri* (Nenukow) V.I.Krecz. He circum-

scribed the taxon differently, including not only the forms with the complete absence of pubescence but also sparsely hairy plants. In this circumscription, he reported the taxon from a wide area between Poland and the Urals.

Kreczetowicz (1940) noted that his *Cytisus zingeri* readily hybridises with *C. ruthenicus* when the two species co-occur. He described the alleged hybrid as *C. ssyreiszczikovii* V.I.Krecz. The abundance of hybrids admitted by Kreczetowicz led Fedtschenko (1940) to doubt this classification and to reduce the diversity in the *C. rutilloides* group in Central Russia to a single species, *C. ruthenicus*. This broad treatment still prevails in major Central Russian publications (Marjov 2014).

Tzvelev (1987) accepted *Cytisus zingeri* and restricted its circumscription to the original meaning, the completely glabrous forms of *C. ruthenicus*. The taxon was treated as endemic to a narrow territory at the confluence of the Oka and Volga Rivers (Nenukow 1916; Tzvelev 1987), and endemic to Nizhni Novgorod Region (Khrynova 2017); according to the herbarium data (MW), it is also present in the neighbouring territory of Vladimir Region. Nevertheless, completely glabrous forms of *C. ruthenicus*, virtually identical



Figure 7. *Cytisus ruthenicus* var. *zingeri* in Nizhni Novgorod Region. Source: www.inaturalist.org/observations/46356188

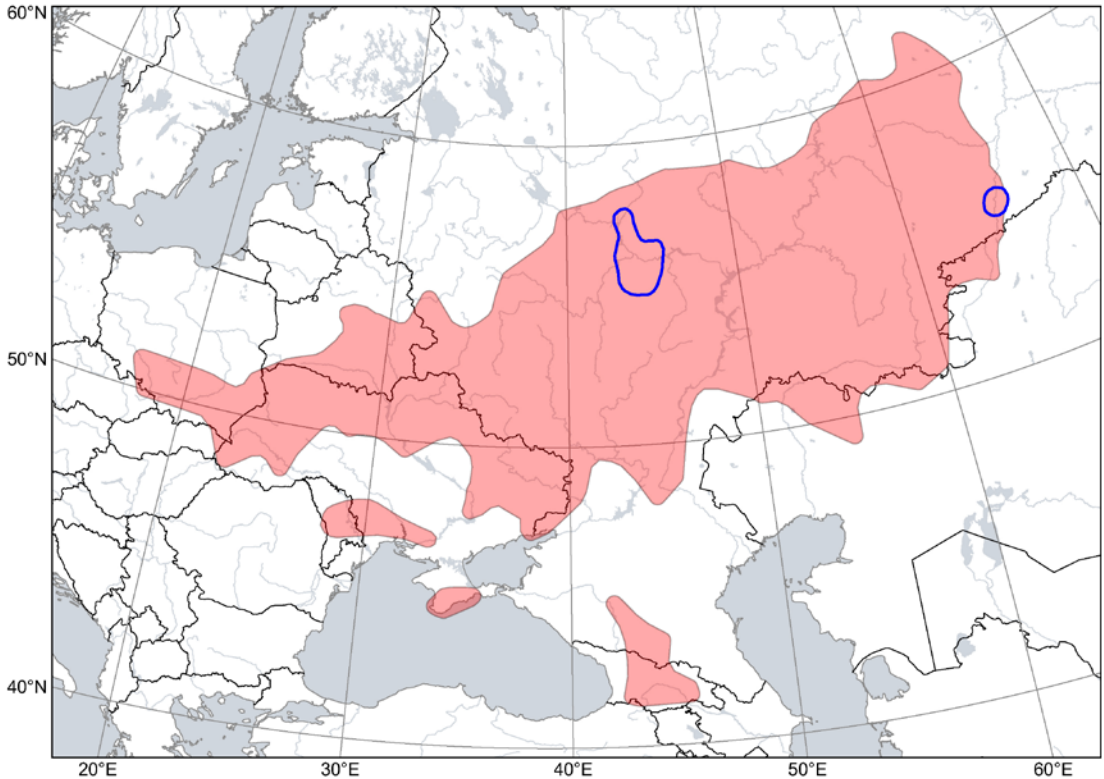


Figure 8. Verified distribution areas of *Cytisus ruthenicus* (red-shaded area, based on unpublished specimen records and observations and Heydemann 1986) and *C. ruthenicus* var. *zingeri* (blue contours, based on Naumenko 2012, Khrynova 2017, and unpublished specimen records).

to the original plants, were found far away from Volga along the Tobol River in Kurgan Region (Naumenko 2012). These records fall within the distribution area of *C. ruthenicus* s. str. (Fig. 8).

The scattered occurrence of glabrous variants, their co-occurrence with hairy plants (Nenukow 1916), the presence of intermediates that gradually fill the morphological gap between glabrous and hairy variants, and the absence of other characters delimiting these variants provide sufficient evidence that these variants are part of the infraspecific variability of a single species, which should be called *Cytisus ruthenicus* (syn. *C. zingeri*, *C. ssyreiszczikovii*). The glabrous variant may be distinguished as *C. ruthenicus* var. *zingeri*, in agreement with Cristofolini (1991).

The name *Cytisus ruthenicus* var. *zingeri* was validly published on printed labels of the widely distributed exsiccatae, Herbarium Florae Rossicae. The labels and herbarium specimens with a booklet constituting fasciculus 52 of these ex-

siccatae were distributed and therefore effectively published in April 1916, whereas a complete book of volume 8 containing fasciculus 52 was printed and distributed in 1922 (Sennikov 2005). Priority in valid publication of this plant name has been commonly (Kreczetowicz 1940, 1941; Tzvelev 1987) but erroneously given to Litvinov (1917), which is therefore later than Nenukow's contribution to Litvinov (1916, 1922).

According to the dates on printed labels, two gatherings were distributed under No. 2552 as *Cytisus ruthenicus* var. *zingeri*. In the reference set of these exsiccatae which is kept at LE (Fig. 9), each specimen contains fragments (branches about 25 cm long) with flowers or well-developed pods, which correspond to two different gatherings indicated in the protologue. We designate a single gathering in fruits as lectotype, to make it sure that the designated type is not heterogeneous and corresponds to a single collection as defined in the Code. The collection dates on printed labels

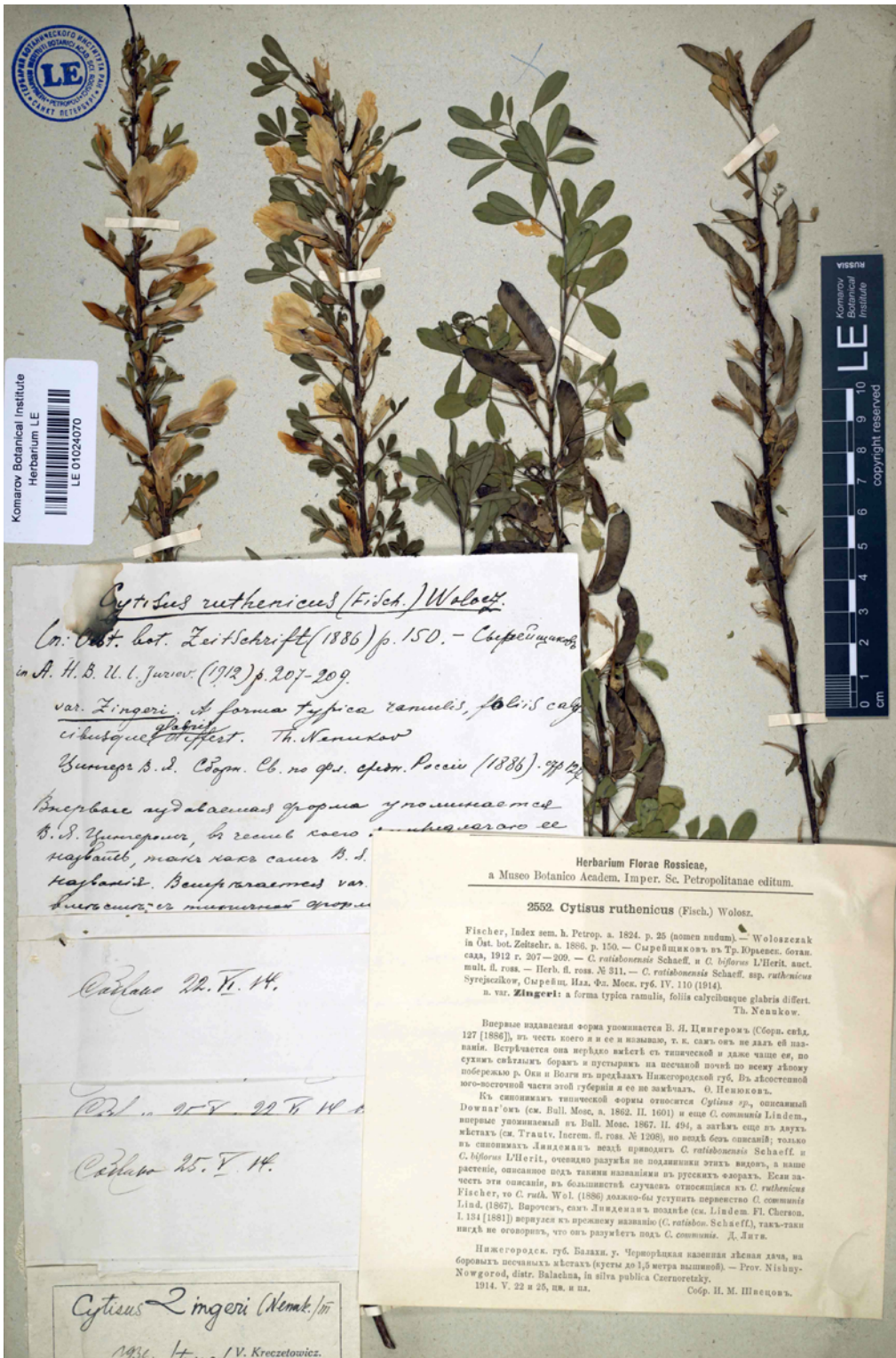


Figure 9. Lectotype specimen of *Cytisus ruthenicus* var. *zingeri* Nenukow (LE01024070), with the protologue and original annotations by D. I. Litvinov, I. M. Schvetzov and V. I. Kreczetowicz.

are erroneous; according to the original labels in the collector's handwriting, the plants were collected on 25 May and 22 June rather than on 22 and 25 May.

Cytisus ruthenicus* var. *zingeri Nenukow in Litvinov, Spisok Rast. Gerb. Russk. Fl. Bot. Muz. Rossiisk. Akad. Nauk 8(52): 1. 1916 ≡ *Cytisus zingeri* (Nenukow) V.I.Krecz. in Bot. Zhurn. SSSR 25: 260. 1940 ≡ *Chamaecytisus zingeri* (Nenukow) Klásk. in Preslia 30: 214. 1958.

Type: Russia. Nizhni Novgorod Region, Balakhna District. Chernoretsk State Forest District, pine forests on sands, 22.06.1914, I.M. Schvetzov [Herbarium Florae Rossicae No. 2552(pt.)] (LE01024070, two fragments from the right (with well-developed leaves and pods), lectotype designated here by Sennikov & Tikhomirov; isolecotypes H1279755, KW000114831, KW000114832, LE01024071, LE01024072, M0210776, MW0593001, NNSU, NS0031789, and many other collections).

Odontites estonicus Nenukow

Nenukow (1928) described *Odontites estonicus* from two localities situated at Sangaste Village (Valga County) and Lake Võrtsjärv (at the border of Viljandi, Tartu and Valga counties), southern mainland Estonia. In the protologue, Nenukow compared *O. estonicus* with '*O. rubra* Pers.' (apparently applying this latter name to both *O. vernus* (Bellardi) Dumort. and *O. vulgaris* Moench), and also accepted *O. simplex* (Hartm.) Krok (= *O. litoralis* (Fr.) Fr.). No type specimen has been traced.

Nenukow distinguished *Odontites estonicus* largely because of its "yellowish-white" (vs. pinkish) flower colour and autogamous flowers. The autogamy is sporadically found in the *O. vulgaris* complex (Bolliger 1996) and is not restricted to any taxon separated in this group. The absence of pink colour on flowers and the pale green (vs. dark green) colour of the whole plant in *O. estonicus* indicates the lack of anthocyanin in these plants; the plants of *Odontites* taxa coloured by anthocyanin and those which are green may be found growing together (Snogerup 1982). The flower colour in *O. vulgaris* varies from purplish to reddish pink but may be pale pink some-

times; the absence of anthocyanin in the flowers of *O. estonicus* may indicate a rare case of its extreme reduction. As assumed by Kupffer (1930), *O. estonicus* falls within the variability of *O. vulgaris* and does not deserve taxonomic separation.

Odontites estonicus was tentatively placed into the synonymy of *O. vulgaris* subsp. *pumilus* (Nordst.) Tzvelev by Tzvelev (1981), who was not aware of the protologue because it was not recorded in Index Kewensis. This placement was based on the erroneous assumption that the species was described from the seashore.

The morphological comparison made in the protologue does not include all diagnostic characters used in modern treatments (Tzvelev 1981; Snogerup 1983); nevertheless, the ecology of the new species (paludified grasslands on turf soils) suggests that *Odontites estonicus* is likely a later synonym of *O. vulgaris* subsp. *rothmaleri* (U.Schneid.) Tzvelev (syn. *O. pratensis* (Wirtg.) Borbás). Snogerup (1983) advised against the taxonomic recognition of this taxon at any rank because of the presence of individuals with intermediate morphology. In agreement with this conclusion, we treat *O. estonicus* as a synonym of *O. vulgaris*. It seems that this conclusion was implied by Kask (1969) who omitted *O. estonicus* from the synonymy but noted the flower colour of *O. vulgaris* as "pink, seldom whitish".

Odontites vulgaris Moench, Meth. Pl.: 439.

1794 ≡ *Euphrasia odontites* L., Sp. Pl. 2: 604. 1753.

Type: Probably Germany ("Germania, Dania"). Herb. Burser XIII: 68 (UPS, lectotype designated by Snogerup 1983: 4).

= *Odontites estonicus* Nenukow, Index plantarum estonicarum, ed. 2: 37. 1928, "*estonica*".

Described from southern Estonia. Type not designated.

Valeriana estonica Nenukow

Kreyer (1930) produced a taxonomic system of *Valeriana officinalis* s. latiss., which was based on the ideas of nomogenesis (Berg 1922), a theory of evolution assuming regular and unidirectional development of similar forms in related groups through pre-defined (usually quantitative) steps. In this case, Kreyer postulated that the

evolution aimed at developing new forms (species) with different shapes of leaves, in the direction from simple to dissected ones, by gradual increase of the number of pairs in lateral leaflets. In East Europe, Kreyer separated a group of closely related forms occurring in the forest zone, without underground stolons and with reduced pubescence (leaves glabrous or with very short bristles below), which he called the *Valeriana nitida* group. The known members of this group, *V. wolgensis* Kazak. (4–5 pairs of lateral leaflets) and *V. nitida* Kreyer (6–8 pairs of lateral leaflets) have numerous lateral leaflets; Kreyer assumed that the "primitive" forms of this taxonomic group with undivided leaves or with only a few pairs of lateral leaflets had gone extinct or remained undiscovered.

In 1932, Nenukow revised some critical groups of vascular plants in the herbarium collection of Gerhard Pahnsh, which was kept at the Museum of the Estonian Literary Society (now Estonian Museum of Natural History, herbarium acronym TAM). This revision was published much later (Üksip 1943). In this revision, the most interesting finding was seemingly a new species of *Valeriana*, which was described separately (Nenukow 1932).

Nenukow's revision of *Valeriana* was entirely based on Kreyer (1930). In herbarium collections he noticed a small plant with a low (2–3(4)) number of lateral leaflets, which were seemingly subglabrous (covered by very short bristles below). Because of its short pubescence, Nenukow (1932) referred the specimen to the *V. nitida* group and decided that it constitutes a missing link towards the increase of the number of lateral leaflets. With this identification, he described the specimen as a "missing" species that was "predicted" by Kreyer, *V. estonica*. The taxonomic assignment of *V. estonica* to the *V. nitida* group was maintained by Eichwald (1969) when he lowered its taxonomic rank to variety.

The sole basis for the new species was the holotype specimen cited in the protologue, which was collected in 1878 (Fig. 10). The specimen is a complete plant ca. 30 cm tall, with remnants of a single basal leaf that is about half as long as the plant itself. The cauline leaves are poorly developed but have much larger apical segments, thus indicating their imperfect dissection because of

modification. The plant is in full bloom in spite of the very late season (end of August). Late blooming and modified stem leaves indicate that the plant had grown under unusual conditions (flowering the second time after damage, or the plant base was buried in the substrate) and was therefore abnormally developed.

The collection site is Pärsti Village in Viljandi County, south-western Estonia. Since 1877, Pahnsh resided in Fellin (now Viljandi) and collected plant specimens extensively in several places (mostly manors) near the town. The plant was collected on a paludified meadow at a lake side.

Kirschner & Raab-Straube (2017) tentatively referred *Valeriana estonica* to the synonyms of *V. excelsa* subsp. *salina* (Pleijel) Hiitonen. This taxon is a seashore race whereas Pahnsh collected his specimen in the mainland. Besides, the octoploid species *V. excelsa* Poir. is characterised by large flowers, fruits and bracteoles; the latter are 6–8 mm long in *V. excelsa* (Voroshilov 1978), whereas the bracteoles in the specimen collected by Pahnsh are 3.5–4 mm long. This character safely excludes its identity with *V. excelsa* subsp. *sambucifolia* (Pohl) Holub, which is present but very rare in southern Estonia (Kukk & Kull 2005).

The *Valeriana nitida* group delimited by Kreyer (1930) corresponds to the tetraploid species *V. wolgensis* Kazak. (syn. *V. nitens* Kreyer) in present-day taxonomy. Nenukow recorded this taxon from Estonia (Üksip 1943, 1953); although some authors indicate that this species is absent from Estonia (Voroshilov 1959, 1978), its presence is possible because of Russian occurrences in Pskov Region, which are very close to the border with Estonia (Tzvelev 2000) and were situated in Estonia before the border changed in 1945. The long hairs at the stem nodes and on margins of the basal parts of petioles, observed in the type specimen of *V. estonica*, with certainty exclude its identity with *V. wolgensis*, which has only short papillae on its stems (Voroshilov 1978).

The short bracteoles on the type specimen of *Valeriana estonica* indicate its identity with *V. officinalis*, a diploid species which is absolutely common in Estonia (Kukk & Kull 2005). Because of its subtire lateral leaflets, this specimen belongs to the race that may be called *V. officinalis*

subsp. *tenuifolia* (Vahl) Schübl. & G.Martens (syn. *V. officinalis* var. *tenuifolia* Vahl) (Kirschner & Zeisek 2017).

The character of subglabrous leaves with very short bristles below misled Nenukow to the *Valeriana nitida* group. Besides *V. wolgensis*, this

character can also be found in the mainland variant of *V. officinalis* with subentire leaves which is common in Estonia and north-western Russia. This variant was (incorrectly) called *V. palustris* Kreyer by Voroshilov (1959), who also recognised another narrow-leaved variant along

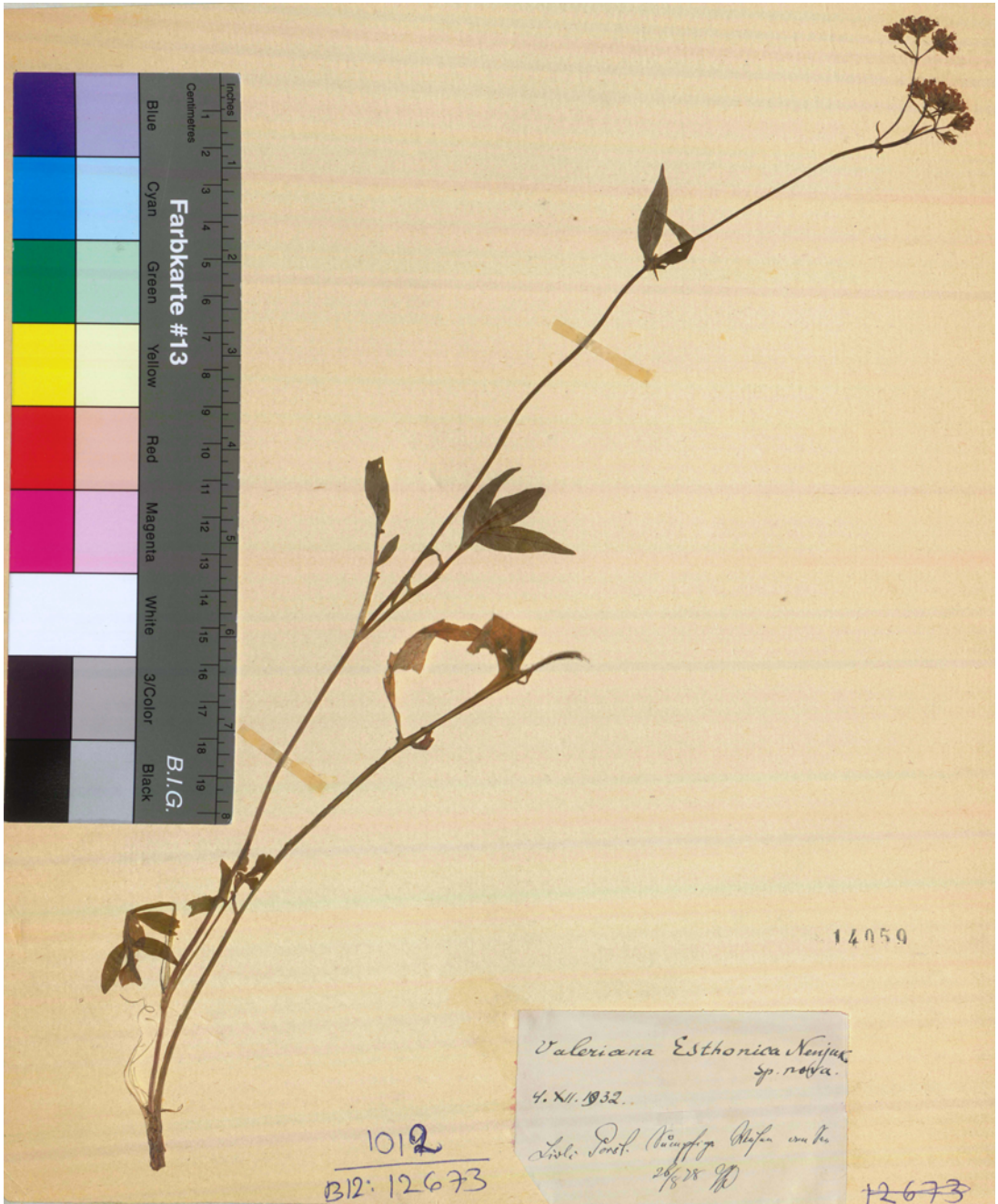


Figure 10. Holotype specimen of *Valeriana estonica* Nenukow (TAM0099479).

the seashores, which he called *V. officinalis* L. s. str.; both variants were subsequently treated as a single narrowly delimited taxon (Tzvel-ev 2000), whose correct name should be *V. officinalis* subsp. *tenuifolia*. This variant, as described by Voroshilov (1959), is in perfect match with the specimen described by Nenukow, and we therefore reduce *V. estonica* to a synonym of *V. officinalis* subsp. *tenuifolia*.

Valeriana officinalis subsp. *tenuifolia* (Vahl)

Schübl. & G.Martens, Fl. Württemberg: 25. 1834 ≡ *Valeriana officinalis* var. *tenuifolia* Vahl, Enum. Pl. 2: 6. 1805.

Type: "*Valeriana officinalis* L. S. N. 44.5, Hb. Vahlit" (C, lectotype designated by Kirschner & Zeisek 2017: 195). Epitype (designated by Kirschner & Zeisek 2017: 195): Czech Republic. Bohemia centr., distr. Mělník, distr. phytogeogr. 11a. Všetatské Polabí, pagus Všetaty, in fossa ad viam publicam ad compitum viae et ferroviae, c. 1.5 km merid. a pago [50.2657°N, 14.5879°E], 16 Jun 1986, J. Kirschner K-28 & J. Hašková (PRA00011994; isopotypes: B, BM, PRA00011995, PRA00011996, W, WU).

= *Valeriana estonica* Nenukow in Tartu Ülikooli Juures Oleva Loodusuurijate Seltsi Aruanded 39(3–4): 220. 1932, syn. nov. ≡ *Valeriana officinalis* subsp. *estonica* (Nenukow) Üksip in Haberman, Loodusuurijate Seltsi juubelikoguteos: 112. 1953, nom. inval. (Art. 41.5) ≡ *Valeriana officinalis* var. *estonica* (Nenukow) K.Eichw. in Eesti NSV Floora 4: 276. 1969.

Type: Estonia. Viljandi County. "Perst [Pärsti], sumpfigen Wiesen am See", 26.08.1878, G. Pahnsh in Herb. Balticum 12151 (TAM0099479, holotype) (Ehrlich 2021).

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