



Article

DOI:10.51776/2309-6500_2022_8_2_25

Lectotypification of some names, published by P.S. Pallas, in *Astragalus* L. and *Phaca* L. (Fabaceae)Vyacheslav V. Byalt^{1*} and Andrey K. Sytin¹¹Komarov Botanical Institute RAS, Professor Popov str. 2, St. Petersburg, 197376, Russian Federation*Corresponding author. Email: Byalt66@mail.ru, VByalt@binran.ru

Received: 24 August 2022 | Accepted by Irina V. Belyaeva: 24 October 2022 | Published online: 28 October 2022

Edited by: Keith Chamberlain

Abstract

Typifications were made for the names of 20 species originally described by P.S. Pallas in the genera *Astragalus* L. and *Phaca* L., subsequently transferred to and accepted in the genus *Oxytropis* DC., belonging to the sections *Arctobia* Bunge (*Astragalus nigrescens* Pall., *A. pumilio* Pall., *A. pygmaeus* Pall.), *Baicalia* (Tell.) Bunge (*Astragalus baicalia* Pall., *A. daguricus* Pall., *A. dasyphyllus* Pall., *A. inarius* Pall., *Phaca lanata* Pall., *Ph. myriophylla* Pall., *Ph. oxyphylla* Pall., *Ph. prostrata* Pall.), *Gloecephala* Bunge (*Astragalus leucanthus* Pall.), *Janthina* Bunge (*Astragalus coeruleus* Pall., *A. baicalensis* Pall.), *Ortholoma* Bunge (*Astragalus floribundus* Pall.), *Mesogaea* Bunge (*Astragalus deflexus* Pall., *A. retroflexus* Pall.), *Polyadena* Bunge (*Phaca microphylla* Pall., *Ph. muricata* Pall.), *Xerobia* Bunge (*Astragalus ampullatus* Pall., *A. caespitosus* Pall., *A. leptophyllus* Pall., *A. setosus* Pall., *A. triphyllus* Pall.). Nomenclature and taxonomy are discussed and information on distribution is given for all accepted taxa.

Key words: *Astragalus*, nomenclature, *Oxytropis*, *Phaca*, Russia, South Siberia, taxonomy, typification

Introduction

This work was carried out as part of the project, “Catalogue of type specimens for taxa of vascular plants of Siberia and the Far East stored in the Herbarium of the Komarov Botanical Institute, Russian Academy of Sciences (RAS) (LE).” During the typification of the names in the genus *Oxytropis* DC., we decided to lectotypify the names of some taxa in the genera *Astragalus* and *Phaca* that were published by Peter Simon Pallas in the 18th century.

Most of the species, described by Pallas and currently placed in the genus *Oxytropis* DC., were collected by him, mostly in South Siberia, during his 7-year-long journey which he undertook as a part of the Academic Expeditions of the St. Petersburg Academy of

Sciences. The names and protologues of taxa described by him were published in three volumes of *Reise durch verschiedene Provinzen des Russischen Reichs* (Pallas, 1771, 1773, 1776). Pallas described 25 species in *Astragalus* L. and 7 species in *Phaca* L., following the Linnean understanding of these two genera. Later these and other taxa were included in his monograph *Species Astragalorum* (Pallas, 1800–1803).

Almost simultaneously, Augustin Pyramus de Candolle (1802) published his monograph *Astragalogia*, not knowing that Pallas's work was nearly completed. The publication process of *Species Astragalorum* by Pallas took three years (1800–1803), during which it was published in small separate issues, so that de Candolle could not fully use it in his work. De Candolle cited *Species Astragalorum* but only its first 75 pages (Perret, 1989; Sytin, 2014: 240) and he was able to read the last issues only after his *Astragalogia* was published. In his monograph de Candolle (1802: 66) separated the genus *Oxytropis* which differs from the genus *Astragalus* in its characteristic feature, a subulate outgrowth at the top of the keel: "Carina in mucronem superne desinens." As in the abolished genus *Phaca*, the pods of *Oxytropis* are unilocular. Currently the genus *Oxytropis* includes 586 species (The Plant List, 2013) or 611 (POWO, 2022+). The lectotype of the genus is *Oxytropis montana* (L.) DC., which is also nomen conservandum (Stafleau *et al.*, 1978; Wiersema *et al.*, 2017).

Detailed, historical research on Pallas's life and authentic collections was undertaken by one of the authors of the current paper (Sytin, 1997, 2004, 2014) and by other botanists (Belyaeva and Sennikov, 2008).

Material and methods

Pallas's authentic specimens that are kept in several large Herbaria in Europe, mostly in the Natural History Museum, London (BM – herbarium acronyms follow Thiers, 2022+), with small numbers in the Herbarium of Munich University (M) and in the Komarov Botanical Institute of RAS, St. Petersburg (LE), were studied using herbarium specimens and images from *JSTOR Global Plants* (2022+), *Plants of the World Online* (POWO, 2022+), and the website of the Natural History Museum, London. (Natural History Museum Data Portal, 2022+). The good resolution of the images of scanned herbarium specimens on these websites allowed reliable plant identification which greatly facilitated the task of choosing lectotypes from the preserved authentic specimens of Pallas. The names of the taxa, author abbreviations and places of publication were checked against the protologues and records in the *International Plant Name Index* (IPNI, 2022+). Accepted names are in bold. Taxonomic decisions were made by studying the relevant literature and the data in the taxonomic databases, *Catalogue of Life*

(CoL, 2022+), *Plants of the World Online* (POWO, 2022+), Tropicos (2022+) and the *World Checklist of Vascular Plants* (WCVP, 2022+). Distribution data are provided as recommended in the *World Geographical Scheme for Recording Plant Distribution* (Brummitt, 2001). Nomenclatural decisions were made according to the International Code of Nomenclature for Algae, Fungi, and Plants (Turland *et al.*, 2018).

Nomenclature and taxonomy

Oxytropis DC. belongs to the subtribe *Astragalinae*, tribe *Galegeae*, subfamily Papilionoideae, family Leguminosae (or Fabaceae), and comprises between 300 and 611 species (Polhill, 1981; Lock & Schrire, 2005; POWO, 2022+). De Candolle (1802) recognised two genera by splitting *Astragalus* L. into *Astragalus* and *Oxytropis* and included in *Astragalus* those with an obtuse keel and bilocular pods due to the septum arising from the ventral suture. Bunge (1874) classified 181 *Oxytropis* species into 4 subgenera and 19 sections. Two more subgenera and 9 new sections were added to the subgenera recognised by Bunge (Vassilchenko *et al.*, 1948; Vassilchenko, 1966). De Candolle recognized *Oxytropis* as a genus with a mucronate keel at the apex and bilocular pods due to a septum arising from the dorsal suture (Karaman Erkul and Ayt a, 2013). *Oxytropis* has been revised by numerous researchers, for instance, Gray (1864), Vassilchenko *et al.* (1948), Barneby (1952, 1964, 1989), Ali (1959), Yurtsev (1964, 1986), Vassilchenko (1984), Pavlova (1989), Polozhij (1994, 2006), Grubov (1998), Ranjbar (1999, 2000), Malyshev (2008a, b), Ranjbar and Bayat (2009).

Originally *Oxytropis* was a part of *Astragalus* in the Linnaean circumscription of the genus. Now it is considered one of the closest relatives of *Astragalus* (Karaman Erkul and Ayt a, 2013). Recent molecular studies based on nrDNA ITS and chloroplast *trnL* intron data (Wojciechowski *et al.*, 1999; Wojciechowski, 2005) have clearly demonstrated that *Oxytropis* is monophyletic and not nested within *Astragalus*, but forms instead a separate clade within the larger *Astragalus* clade. It has also been established that *Oxytropis* is of Eurasian origin and is a sister group of *Astragalus* (Ranjbar *et al.*, 2010).

The sections and subsections follow the systems of Bunge (1874) and Vassilchenko *et al.* (1948) and are arranged alphabetically below.

***Oxytropis* sect. *Arctobia* Bunge**

Astragalus nigrescens Pall., Sp. Astragal.: 65. 1800 ≡ ***Oxytropis nigrescens*** (Pall.) Fisch. ex DC., Prodr. 2: 278. 1825 ≡ *Spiesia nigrescens* (Pall.) Kuntze, Revis. Gen. Pl. 1: 207. 1891.

Type: Russia, Russian Far East, Khabarovsk Region, “Inter Aldanum et orient. Oceanum legit Dr. Merk 1788. fr., Herb. Pallas” (BM000997393! – lectotype, **designated here**).

Protologue citation: “*Astragalus nigrescens*. Tab. LIII. Hunc *Astragalum* inter Aldanum fl. et orientalem Oceanum legit D.D. Merk, in ceterioribus dest.”

Note: *Astragalus nigrescens* was described by Pallas (1800–1803) and later transferred by de Candolle to the genus *Oxytropis* (1825). The name, *Oxytropis nigrescens*, is accepted in *Flora of USSR* (Fedchenko and Vassilchenko, 1948), other publications (Polozhij, 1960; Hultén, 1968; Mikhaleva and Perfilieva, 1974; Plieva, 1974; Welsh, 1974; Ivanova, 1976; Yurtsev, 1986; Polozhij, 1994; Yakovlev *et al.*, 1996; Shlotgauer *et al.*, 2001; Yan’kova and Galanin, 2002; Nikiforova, 2005; Malyshev, 2008a) and online taxonomic databases (GBIF, 2022+; POWO, 2022+).

Welsh (1991: 382) did not make a formal typification of the name *Astragalus nigrescens* citing a quotation from the protologue and combining it with the herbarium acronym LE: “Type: “inter Aldanum fl[umen] et Orientalem Oceanum” [between Aldan River and the Sea of Okhotsk, Siberia], D. D. Merk; type LE”. It seems also that typification of Pallas’s names in *Astragalus* was not Welsh’s intention as he cited clearly lectotypes for other names in the same paper (Welsh 1991: 390–393). The authors of the current paper could not find Pallas’s authentic specimens at LE. The only specimen that was found and seen is stored at BM (BM000997393). The text on the label of this specimen corresponds to the protologue and thus the specimen should be considered as a part of the original material. Possibly this plant was used for the description of a new species by Pallas. Based on the illustration and provenance that were included by Pallas in the protologue, the specimen BM000997393 is not the only element of the original material and, thus, should be designated as the lectotype.

There are historical specimens at LE collected by A.K. Mertens, from Karaginsky Island in the Bering Sea and by K. Middendorff, from the Taimyr Peninsula in the Far North of Russia, which were collected later than the species was described and, thus, do not belong to the original material.

Astragalus pumilio Pall., Sp. Astragal.: 67. 1800 ≡ *Oxytropis pumilio* (Pall.) Ledeb., Fl. Ross. 1: 589. 1843 ≡ *Spiesia pumilio* (Pall.) Kuntze, Revis. Gen. Pl. 1: 207. 1891.

Type: Russia, Russian Far East, Sakhalin region, Kurile Islands, “sine loco[= Kuril Isl.]. s.d. [= 1788], [= K. Merck] Herb. Pall. № 3” (BM000795546! – lectotype, **designated here**).

Protologue citation: “*Astragalus pumilio*. Tab. LV ... Specimina e quibus plantam descropsi et iconem delineari curavi. In insula Curilis lecta fuerunt.”

Note: *Astragalus pumilio* was described by Pallas (1800–1803) and transferred by Ledebour (1842) to the genus *Oxytropis*. The name, *Oxytropis pumilio*, is accepted in *Flora of USSR* (Fedchenko and Vassilchenko, 1948), other publications (Yurtsev, 1986; Pavlova, 1989; Shlotgauer *et al.*, 2001; Polozhij *et al.*, 2003; Yakubov and Chernyagina, 2004; Probatova *et al.* 2007; Malyshev, 2008a; Barkalov, 2009) and online taxonomic databases (GBIF, 2022+; POWO, 2022+).

A specimen by Pallas which is stored at BM (BM000795546) was possibly collected by Carl Merck (1761–1799) who was a participant in the expedition of I. Bellings and G. Sarychev (1786–1793) on one of the Kuril Islands and may have collected this specimen in 1788 (Barkalov, 2009). Merck's gatherings were mentioned by Pallas in his works. The specimen from Pallas's herbarium which is stored at BM (BM000795546) is in good condition, corresponds to the protologue and is a part of the original material. The specimen, BM000795546, has no collector's name or location. However, based on this specimen, an illustration was made for *Species Astragalorum* whose similarity with the preserved specimen is clear. Based on the illustration and provenance that were included by Pallas in the protologue, the specimen BM000795546 is not the only element of the original material and, thus, should be designated as the lectotype.

Astragalus pygmaeus Pall., Sp. Astragal.: 66, tab. 54. 1800 ≡ *Oxytropis nigrescens* var. *pygmaea* (Pall.) Cham., Linnaea, 6(4): 546. 1831 ≡ *Oxytropis pygmaea* (Pall.) Fernald., Rhodora, 30(356): 153. 1928, nom. illeg., non Tausch ex Hayek Verh. K. K. Zool.-Bot. Ges. Wien 59: 316. 1909, ≡ *Oxytropis nigrescens* subsp. *pygmaea* (Pall.) Hultén., Acta Univ. Lund., 2, 43(1): 1103. 1947.

Type: Russia, Russian Far East, Chukotka, “In terriis arcticis apud Tschuktschos. s.d., [fr.], legit D. Merk. Herb. Pallas” (BM000997389! – lectotype, **designated here**).

Protologue citation: “*Astragalus pygmaeus*. Tab. LIV. . . . Specimina aliquot fructifera in terris arcticis Sibiriae ad orientem ultimae, Tschucktschis habitatae, legit D. D. Merk.”

Note: *Astragalus pygmaeus* was described by Pallas (1800–1803) and transferred by Fernald (1928) to the genus *Oxytropis*. The species, *Oxytropis pygmaea*, which is an illegitimate later homonym, was not accepted in *Flora of USSR* (Fedchenko and Vassilchenko, 1948) and other publications (Pavlova, 1989; Polozhij, 1994). Some authors treated this taxon as a variety or subspecies of *O. nigrescens* (Pall.) Fisch. ex DC. Currently, this taxon is known as *O. gorodkovii* Jurtzev (Yurtzev and Zhukova, 1968: 1538; Yurtsev, 1986; Pavlova, 1989, 4: 249; Yakovlev *et al.* 1996: 316) or as a subspecies, *O. nigrescens* (Pall.) Fisch. ex DC. subsp. *pygmaea* (Pall.)

Hultén (Hultén, 1947, 1968). *Astragalus pygmaeus* is treated in online taxonomic databases (GBIF, 2022+; POWO, 2022+) as a synonym of *Oxytropis gorodkovii* Jurtzev.

The specimen, BM000997389, corresponds to the protologue and belongs to the original material. Authentic specimens of this taxon at LE have not been found.

Oxytropis* sect. *Baicalia (Tell.) Bunge

Astragalus baicalia Pall., Sp. Astragal.: 93, tab. 77, fig. 1. 1800 ≡ *Oxytropis baicalia* (Pall.) Pers., Syn. Pl., 2(2): 333. 1807 ≡ *Spiesia baicalia* (Pall.) Kuntze, Revis. Gen. Pl. 1: 206. 1891.

Type: Tab. 77, fig. 1 in Pallas, 1800–1803, *Species Astragalorum* (lectotype, **designated here**), Fig. 1.

Protologue citation: “*Astragalus Baicalia*. Tab. LXXVII. Fig. 1. ... Baicaliae species, Steller. herb. *Astragalus pedunculis radicans, foliolis quaternis et quinis, radiatim petioles amplexantibus, floribus ochroleucis*, Gmelin. Flor. ircuit. MS. n. 566. Flor. sibir. IV. p. 62 ... Circa Baicalem lacum observavit Stellerus, e cujus horto sicco mihi non oblatam speciem describo.”

Note: *Astragalus baicalia* was described by Pallas (1800–1803) and transferred by Persoon (1807) to the genus *Oxytropis*. The name is accepted in *Flora of USSR* (Shishkin, 1948), other publications (Borissova, 1954; Peshkova, 1979; Yakovlev *et al.* 1996; Polozhij *et al.*, 2003; Ulziykhutag, 2003; Nikiforova, 2005; Polozhij, 2006) and online taxonomic databases (GBIF, 2022+; POWO, 2022+). Unlike other authors, Malyshev (2008a) believed that *O. baicalia* (Pall.) Pers. is a nomen confusum and on this occasion he wrote: “The white-flowered strongly pubescent form *O. oxyphylla* was mistaken for *Oxytropis baicalia* (Popov and Busik, 1966: 94).”

Based on the illustration and provenance that were included by Pallas in the protologue, the illustration Tab. 77, fig. 1 in Pallas’s *Species Astragalorum* is not the only element of the original material and, thus, should be designated as the lectotype since authentic specimens have not yet been found.

Astragalus inarius Pall., Sp. Astragal.: 94, t. 77, f. 2. 1800 ≡ *Oxytropis inaria* (Pall.) DC., Prodr. 2: 279. 1825 ≡ *Spiesia inaria* (Pall.) Kuntze, Revis. Gen. Pl. 1: 207. 1891.

Type: Russia, Western Siberia, Altay, “*Astragalus oxyphyllus* Ad fl. Inja circa Tigerek. s.d., [fl.], *Schangin*. Herb. Fischer”, “*Astragalus oxyphyllus* Pall. itinera *Astragalus inarius* Pall. *Astragalorum*. Okolo r. Yena i po goristym mestam poblizosti ... ? v podolye. Altayskiy gerbariy

TAB. LXXVII.



ASTRAGALUS 1. *Baicalia* 2. *juvatus*.

Figure 1. Lectotype of *Astragalus baicalia* Pall. (from Pallas, 1800–1803, “Species astragalorum descriptae et iconibus coloratis illustratae”, Table 77, fig. 1). Reproduced by kind permission of the Library of RAS, St. Petersburg

[Around the River Jena and the mountainous places nearby ... ? in the valley. Altay herbarium]. *Astragalus inarius* W. Schangin. Herb. Fischer)", "*Inarius* Pall. D. Schangin. Herb. Fischer" (LE01081418! – lectotype, **designated here**), Fig. 2. Syntype: Western Siberia, "*Phaca striata* Pall. *Phaca* Sibiria. s.d., [fl.], HB. Schangin", "*Oxytropis inaria* (Pall.) DC. (Isotypus! 1961 Teste: Yurtzev)" (LE01081466!).

Protologue citation: "*Astragalus Innarius*. Tab. LXXVII. Fig. 2. ... Plantam e speciminibus ab Amiciss. P. Schangin missis describe, qui observant, copiosam provenire in montibus subalpinis apricis, siccis ad fluv. Inae, in vicinia fortalitii Tigerek, ubi etiam minuta varietas *A. oxyphylli* occurrit, qualem J. Sievers itidem legit ad Dslar-gurban, in Irтин a parte Kirgistica influentem."

Note: *Astragalus inarius* was described by Pallas (1801–1803). De Candolle (1825) placed it in the genus *Oxytropis*. The name, *Oxytropis inaria*, is accepted in *Flora of USSR* (Shishkin, 1948), other publications (Krylov, 1933; Borissova, 1954; Popov, 1955, 1957; Popov and Busik, 1966; Peshkova, 1979; Polozhij, 1994; Yakovlev *et al.* 1996; Grubov, 1998; Antonyuk, 2000; Polozhij *et al.* 2003; Ulziykhutag, 2003; Nikiforova, 2005; Zarubin *et al.*, 2005; Polozhij and Shaulo, 2007) and online taxonomic databases (GBIF, 2022+; POWO, 2022+). Malyshev (2008a) has synonymised this name with *O. pumila* Fisch. ex DC. which is usually treated as a separate species (Krylov, 1933; Shishkin, 1948; Yurtsev, 1964; Polozhij, 1994; Yakovlev *et al.* 1996; Sheremetova, 1998; Nikiforova, 2005; Shmakov, 2006; Polozhij and Shaulo, 2007; Gal'kin and Shmakov, 2016). There are two specimens at LE that correspond to the protologue and belong to the original material. The specimen, LE01081418, which is in better condition is selected here as the lectotype. The other specimen, LE01081466, from the collection by Pallas and Shangin is a syntype.

Phaca lanata Pall., Reise Russ. Reich. 3: 746. 1776 ≡ *Oxytropis lanata* (Pall.) DC., Astragalogia: 89. 1802 ≡ *Astragalus dasyphyllus* Pall., Sp. Astragal.: 91, tab. 75. 1800 ≡ *Spiesia lanata* (Pall.) Kuntze, Revis. Gen. Pl. 1: 207. 1891.

Type: Russia, Siberia, "sine loco. s.d., [fl.], Herb. Pallas" (BM000751054! – lectotype, **designated here**; isoelectotype: BM000751053!).

Protologue citation: "*Phaca? lanata*. Tab. Aa. fig. 2. A. Astragaloides hirsuta minor, non ramosa, floribus purpurascens Amman. stirp. p. iii. n. 149. t.9. fig, 1. Astragalus radicebus caulescentibus, foliolis 4. et 5. rhachin radiatim cingentibus Gmel. Flor. Sibir. IV. p. 63. 11. 81. *Phaca sibirica?* Lin. Spec. pl. II. p. 1064 ... Abundat in arenis aridissimis circa Selengam, a pumila Ammannianae, ad Iconis nostrae staturam varians; Sub finem Junii-atque initio Julii floridissima."

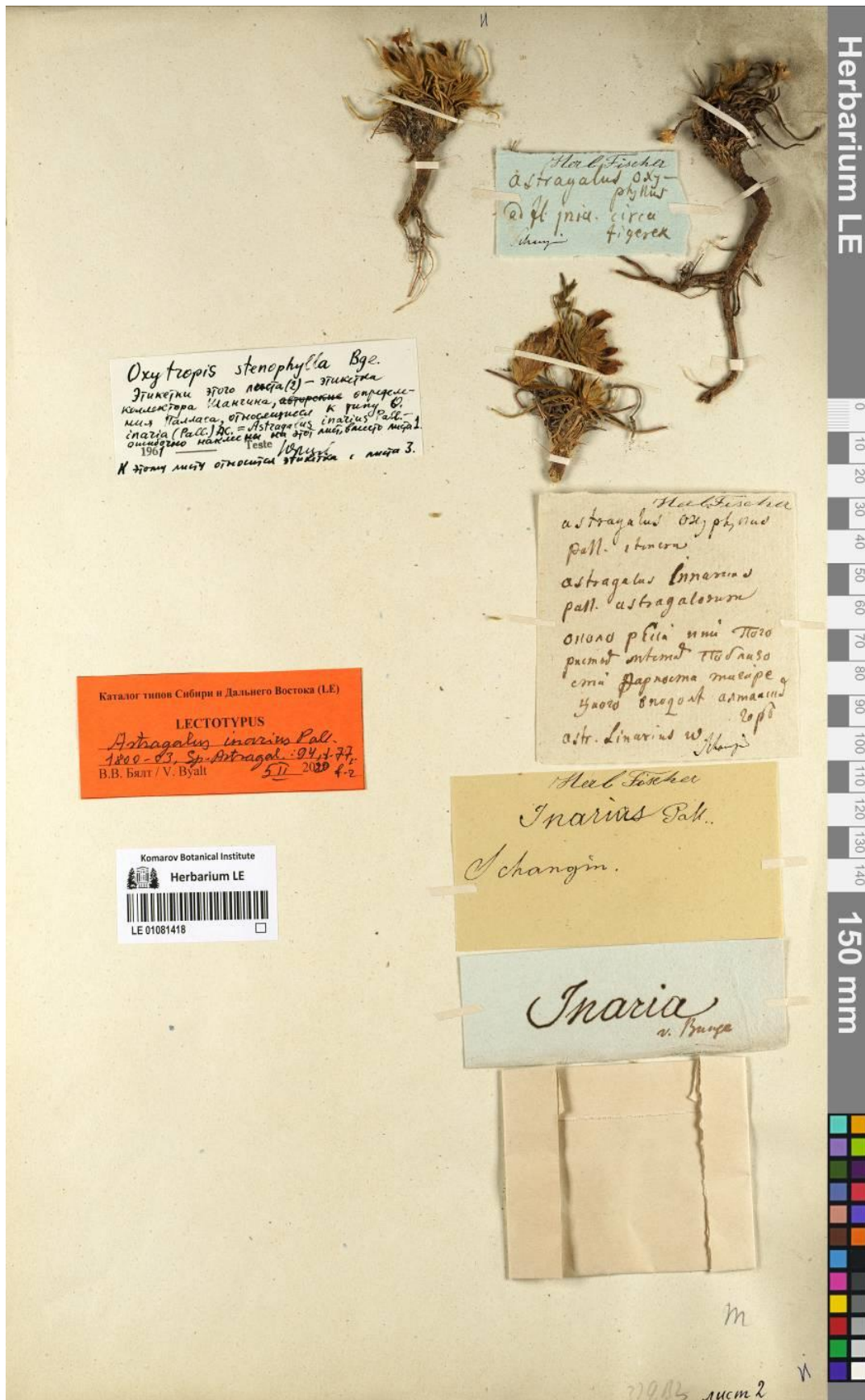


Figure 2. Lectotype of *Astragalus inarius* Pall. (LE01081418). Reproduced by kind permission of the Herbarium of the Komarov Botanical Institute, RAS, St. Petersburg

Note: *Phaca lanata* was described by Pallas (1776). Later he transferred it to the genus *Astragalus* and gave it a new name, *A. dasyphyllus*, as the name *A. lanatus* had already been used (Labillardière, 1791 Icon. Pl. Syr. 1: 21, pl. 11). De Candolle (1802) placed this taxon in the genus *Oxytropis*. The name, *Oxytropis lanata*, is accepted in *Flora of USSR* (Shishkin, 1948), other publications (Borissova, 1954; Popov, 1955, 1957; Yurtsev, 1964; Mikhaleva and Perfilieva, 1974; Peshkova, 1979; Perfilieva, 1987; Polozhij, 1994; Yakovlev *et al.* 1996; Grubov, 1998; Yan'kova, Galanin, 2002; Ulziykhutag, 2003; Nikiforova, 2005; Zarubin *et al.*, 2005; Galanin and Belikovich, 2015) and online taxonomic databases (GBIF, 2022+; POWO, 2022+).

Pallas's specimen stored at BM (BM000751054), from Siberia but without an exact locality, is in good condition, corresponds to the protologue and belongs to the original material. Based on the illustration and provenance that were included by Pallas in the protologue, the specimen BM000751054 is not the only element of the original material and, thus, should be designated as the lectotype. Authentic Pallas's specimens at LE have not yet been found.

There is an old specimen of this taxon stored at LE01193201 with the label "*Oxytropis lanata* Sibiria orientalis. Coll. Antique". Probably, by 'coll. antique' was meant Johan Georg Gmelin or Georg Wilhelm Steller. If so, this specimen is a syntype as there are in the protologue references to specimens collected by Gmelin and Steller which Pallas could see when he worked at the St. Petersburg Academy of Sciences.

Phaca myriophylla Pall., Reise Russ. Reich. 3: 745. 1776 ≡ *Oxytropis myriophylla* (Pall.) DC., Astragalogia: 87. 1802 ≡ *Spiesia myriophylla* (Pall.) Kuntze, Revis. Gen. Pl. 1: 207. 1891.

Type: Russia, Eastern Siberia, Zabaikalsky Region, "*Astragalus verticillaris* L. – *myriophyllus* Pall. Astr. Hab. in Sibiriae arenosis. s.d., [fl.], Dr. Pallas, dedit. 1778." (LE01081435! – lectotype, **designated here**), Fig. 3. Syntypes: Russia, Eastern Siberia, "*Astragalus millifoliatus*. *Phaca arenaria* Itiner. III. s. l., s. d., Herb. Pallas" (BM000958895!); "Flora Rossica. E Davuria? s.d., [fl.], *Pallas*" (M0185398!)

Protologue citation: "*Phaca? myriophylla*. Tab. Z. Astragaloides incana, non ramosa, floribus carneis. Ammann. Stirp. p. 113. n. 150. tab. 19. fig. 2. Astragalus pedunculis radicatis, foliolis linearibus quaternis et quinis radiatim rhachin amplestentibus. Gmel. Flor. Sibir. IV. p. 63. n. 80. *Astragalus verticillaris*. Lin. Mantiss. p. 275. ... In regionibus trausalpinis Davuriae vulgatissima et pulcherrima planta; citra Alpes rarior, minorque, ut quasi extra patriam. Ad Selengam in arenosis variat flore pallide coerulescente, vexillo alisque fere albidis; sed forma in omni solo constantissima. Floret maxime post medium Junii."



Herbarium LE

0
10
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40
50
60
70
80
90
100
110
120
130
140

150 mm



Komarov Botanical Institute
Herbarium LE
LE 01081435

Каталог типов Сибири и Дальнего Востока (LE)
LECTOTYPUS
Phaca myriophylla Pall. 1776
Reise Rus. Reich 7: 246
В.В. Бялт / V. Byalt 5 IV 2019
A. S. Lin

Phaca myriophylla L.
myriophylla Pall. Agrag.
Hab. in Sibirie arvensis
Hibdon legit Dr. Pallard. tit. 1778.

Herbarium Academiae
Scientiarum Petropol.

Figure 3. Lectotype of *Phaca myriophylla* Pall. (LE01081435).
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63. n. 80. *Astragalus verticillaris*. Lin. Mantiss. p. 275. ... In regionibus trausalpinis Davuriae vulgatissima et pulcherrima planta; citra Alpes rarior, minorque, ut quasi extra patriam. Ad Selengam in arenosis variat flore pallide coerulescente, vexillo alisque fere albidis; sed forma in omni solo constantissima. Floret maxime post medium Junii.”

Note: *Phaca myriophylla* was collected by Pallas at Selenga River, in Dahuria and described in 1776. Later de Candolle (1802) transferred this taxon to the genus *Oxytropis*. The name, *Oxytropis myriophylla*, is accepted in *Flora of USSR* (Shishkin, 1948), other publications (Borissova, 1954; Popov, 1955, 1957; Yurtsev, 1964; Peshkova, 1979; Kitagawa, 1979; Pavlova, 1989; Polozhij, 1994; Yakovlev *et al.* 1996; Grubov, 1998; Polozhij *et al.*, 2003; Nikiforova, 2005; Ulziykhutag, 2003; Galanin and Belikovich, 2015) and online taxonomic databases (GBIF, 2022+; POWO, 2022+).

Pallas’s specimen with flowers and unripe fruits which is stored at LE (LE01081435) that corresponds to the protologue and belongs to the original material is selected here as the lectotype. Specimens from BM (BM000958895) and Munich (M0185398) are syntypes.

Phaca oxyphylla Pall., Reise Russ. Reich. 3: 743. 1776 ≡ *Oxytropis oxyphylla* (Pall.) DC. Astragalogia: 84. 1802 ≡ *Spiesia oxyphylla* (Pall.) Kuntze, Revis. Gen. Pl. 1: 207. 1891.

Type: Russia, Eastern Siberia, Zabaikalsky krai, “Противъ Верхнеупхунскаго Караулу на правой стороне Онону в бору [Against Verkhneupkhunsky Guard on the right side of Onon in the pine forest], *s.d.*, fl., Herb. Pallas” (BM000958896! – lectotype, **designated here**). Syntype: East Siberia, “[*Oxytropis*] *oxyphylla* (vidit Bge.) Dahuria. *s.d.* Pallas, Herb. Fischer», mounted on one sheet with a non-type specimen: “*Vlassof.* Herb. Fischer.”

Protologue citation: “*Phaca?* (*) *oxyphylla*. Tab. X. fig. 2. ... Crescit in collibus apricis, siccis, glareosis, ad Jeniseam et in Davuria, ab initio aestatis florens et usque in autumnum semina perficiens.”

Note: *Phaca oxyphylla* is distributed in Altay, Southern and Eastern Siberia and was described by Pallas (1776). De Candolle (1802) transferred it to the genus *Oxytropis*. The name, *Oxytropis muricata*, is accepted in *Flora of USSR* (Shishkin, 1948), other publications (Borissova, 1954; Popov, 1955, 1957; Popov and Busik, 1966; Peshkova, 1979; Polozhij, 1994; Yakovlev *et al.* 1996; Grubov, 1998; Polozhij *et al.*, 2003; Ulziykhutag, 2003; Nikiforova, 2005; Zarubin *et al.*, 2005; Polozhij and Shaulo, 2007; Malyshev, 2008a; Galanin and Belikovich, 2015) and online taxonomic databases (GBIF, 2022+; POWO, 2022+).

A specimen from Pallas’s herbarium collected from Siberia and stored at BM (BM000958896) corresponds to the protologue, is in good condition and belongs to the original

material. Based on the illustration and provenance that were included by Pallas in the protologue, the specimen BM000958896 is not the only element of the original material and, thus, should be designated as the lectotype.

There is a specimen by Pallas, collected in Dahuria, at LE (LE01193202) which is a syntype.

Phaca prostrata Pall., Reise Russ. Reich. 3: 744. 1776 ≡ *Astragalus daguricus* Pall., Sp. Astragal: 88. 1800 ≡ *Oxytropis prostrata* (Pall.) DC., Astragalogia: 85. 1802 ≡ *Spiesia prostrata* (Pall.) Kuntze, Revis. Gen. Pl. 1: 207. 1891.

Type: Russia, Eastern Siberia, Buryatia, lake Tarei “*sine loco*, s. d., [fl.], Herb. Pallas” (BM000958898! – lectotype, **designated here**). Syntype: Russia, Eastern Siberia, Buryatia (Chitinskaya oblast’, Tareiskaya kotlovina [Chita Region, Tarey basin]) “Flora rossica: Davuria? s.d., [fl.], Pallas” (M0185392!).

Protologue citation: “*Phaca? prostrata*. Tab. X. fig. 2... In arenosis salsis circa Lacum exsiccatum Tarei copiose florebat sub finem Maii, reliquis hic descriptis praecocior; nec alibi observata fuit.”

Note: *Phaca prostrata* was collected by Pallas in Transbaikalia (Torreyskaya Basin) and described in 1776. Later Pallas (1800–1803) transferred it to the genus *Astragalus* and replaced it with *A. daguricus* because the name, *A. prostratus*, was already used by Scopoli (1787). De Candolle (1802) placed this taxon in the genus *Oxytropis*. The name, *Oxytropis prostrata*, is accepted in *Flora of USSR* (Shishkin, 1948), other publications (Borissova, 1954; Popov, 1957; Yurtsev, 1964; Peshkova, 1979; Polozhij, 1994; Yakovlev *et al.* 1996; Grubov, 1998; Polozhij *et al.*, 2003; Ulziykhutag, 2003; Nikiforova, 2005; Malyshev, 2008a; Galanin and Belikovich, 2015) and online taxonomic databases (GBIF, 2022+; POWO, 2022+).

The specimen from Pallas’s herbarium collected in Eastern Siberia which is stored at BM (BM000958898) corresponds to the protologue, is in good condition and belongs to the original material. Based on the illustration and provenance that were included by Pallas in the protologue, the specimen BM000958898 is not the only element of the original material and, thus, should be designated as the lectotype.

There are specimens from Pallas’s collection at M that are syntypes. None of Pallas’s specimens of this taxon have yet been found at LE. Specimens, collected by Turczaninov which are mistakenly stored at LE as authentic material do not belong to the original material.

***Oxytropis* sect. *Gloeocephala* Bunge**

Astragalus leucanthus Pall., Sp. Astragal.: 59, tab. 47. 1800 ≡ ***Oxytropis leucantha*** (Pall.) Pers., Syn. Pl. 2(2): 331. 1807 ≡ *Spiesia leucantha* (Pall.) Kuntze, Revis. Gen. Pl. 1: 207. 1891. **Type:** Russia, Eastern Siberia, “E Sibiria orientali. *s.d.*, [fl.], Herb. Pallas”, “... Belia reka ... № 36[?]” (BM000958887! – lectotype, **designated here**). Syntype: East Siberia “*Astragalus albus humilis*, non ramosum spica brevior. Ind. Jen. [Steller]. Herb. Pallas” [+ 2 Gmelin’s labels?...] (BM000958888!).

Protologue citation: “*Astragalus leucanthus*. Tab. XLVII. *Astragalus albus humilis*, spica glomerata, Gmel. adnot. MS. *Astragalus albus humilis*, non ramosus, spica brevior, Gmel. Index Jeniseens. MS. *Astragalus pedunculis radicatis*, floribus laxo spicatis, leguminibus ovatis apiculatis. Gmelin. herbar. MS. An? *Artragalus scapis aphyllis*, foliis ovato-lanceolatis glabris, siliquis inflatis hirsutis erectis Haller. Helv. Ed. II. p, 173. n. 407. ... In Sibiriae orientalis borealioribus saxosis, a fluv. Jenisea usque ad sinum Ochotensem non infrequens planta, quam circa Aldanum, Bjelam et reliquos maxime orientales fluvios legit Majo et Junio D. D. Merk.”

Note: *Astragalus leucantha* was described by Pallas (1800–1803) and later transferred by Persoon (1807) to the genus *Oxytropis*. The name, *Oxytropis leucantha*, is accepted in *Flora of USSR* (Fedchenko and Vassilchenko, 1948), other publications (Polozhij, 1960; Hultén, 1973; Peshkova, 1979; Yurtsev, 1986; Pavlova, 1989; Polozhij, 1994; Yakovlev *et al.* 1996; Yakubov and Chernyagina, 2004; Nikiforova, 2005; Pavlova, 2006; Malyshev, 2008a) and online taxonomic databases (GBIF, 2022+; POWO, 2022+).

The specimen, collected in East Siberia, from Pallas’s herbarium in BM (BM000958887) corresponds to the protologue, is in good condition and belongs to the original material. The drawing in *Species Astragalorum* is very similar to the specimen BM000958887. Based on the illustration and provenance that were included by Pallas in the protologue, the specimen BM000958887 is not the only element of the original material and, thus, should be designated as the lectotype.

The specimens collected by Gmelin and Steller mounted on one herbarium sheet at BM (BM000958888) are syntypes.

***Oxytropis* sect. *Janthina* Bunge**

Astragalus coeruleus Pall., Reise Russ. Reich. 3: 293. 1776 ≡ ***Oxytropis coerulea*** (Pall.) DC., Astragalogia: 68. 1802 ≡ *Spiesia coerulea* (Pall.) Kuntze, Revis. Gen. Pl. 1: 206. 1891 ≡ *Astragalus baicalensis* Pall., Sp. Astragal.: 64, tab. 52. 1800, nom. illeg. superfl. ≡ *Oxytropis baicalensis* Pall. ex Bess., Flora 17 (1, Beibl.): 10. 1834, nom. illeg.

Type: Russia, Siberia, “*Astragalus baicalensis* Pall. / *Oxytropis caerulea* Dec. sine loco, s.d., [fl., fr.], Herb. Pallas” (BM000838166! – lectotype, **designated here**).

Protologue citation: “*Astragalus coeruleus* (**) ... (**) *Astragalus scapis radicans* folio aliquanto longioribus ... Flor. Sibir. IV. p. 55. n. 71. tab. 26. fig. 2. und vielleicht tab. 23. B.”

Note: *Astragalus coeruleus* was described by Pallas (1776) and transferred by de Candolle (1825) to the genus *Oxytropis*. The name, *Oxytropis caerulea*, is accepted in *Flora of USSR* (Fedchenko and Vassilchenko, 1948), other publications (Borissova, 1954; Popov, 1955, 1957; Peshkova, 1979; Kitagawa, 1979; Filimonova, 1983; Polozhij, 1994; Yakovlev *et al.* 1996; Grubov, 1998; Polozhij *et al.*, 2003 Ulziykhutag, 2003; Nikiforova, 2005; Zarubin *et al.*, 2005; Galanin and Belikovich, 2015; Starchenko and Darman, 2019) and online taxonomic databases GBIF (2022+); POWO (2022+).

The name, *Astragalus baicalensis*, published by Pallas is illegitimate as the author included in the synonymy the name *A. coeruleus* published by him earlier (Pallas, 1776). De Candolle (1825) transferred this taxon to the genus *Oxytropis* as a synonym of *Oxytropis caerulea* (Pall.) DC. which was based on the name published by Pallas. Thus, the combination based on this name in *Oxytropis* was not made and is not accepted in *Flora of USSR* (Fedchenko and Vassilchenko, 1948) and other publications. Currently this name is a synonym of *O. coerulea* (Pall.) DC. (Yakovlev *et al.* 1996; Polozhij *et al.* 2003; Malyshev, 2008a).

A specimen from Pallas’s herbarium that was collected in East Siberia and which is stored at BM (BM000838166) corresponds to the protologue, is in good condition and belongs to the original material. There is at LE, a duplicate of Pallas’s specimen from the personal herbarium collection of Fisher. Specimen originale: [East Siberia] “*Oxytropis*. s.d., [fl.], Pallas. Herb. Fischer” [mounted together with specimens by Panmer on the same herbarium sheet]. As the specimen BM000838166 is not the only element of the original material it should be designated as the lectotype.

There is another specimen (BM000532533) at BM with the original label “*Astragalus baicalensis* nov. spec.” which is a syntype.

Oxytropis sect. *Ortholoma* Bunge

Astragalus floribundus Pall., Sp. Astragal.: 47, t. 37. 1800 ≡ *Oxytropis floribunda* (Pall.) DC., Astragalogia: 94. 1802 ≡ *Spiesia floribunda* (Pall.) Kuntze, Revis. Gen. Pl. 1: 206. 1891.

Type: Eastern Kazakhstan, The East Kazakhstan region, “In arenosis Irtin. s.d., [fl., fr.], Herb. Pallas” (BM000958871! – lectotype, **designated here**). Syntypes: West Siberia, “*Astragalus floribundus* Ex Sibiria Comm. Stephan” (LE01193206!); West Siberia, “*Oxytropis floribundus*

Altai, s.d., *Schangin*” (LE01193204!), West Siberia, “Altai *Schangin* / Altai. *Schangin*” (LE01193205!); West Siberia, “92 *Oxytropis floribunda*? vidit Bunge / aut Helmii F.? e Reliquis Schanginianis comm. amiciss. Prescott Herb. Fischer” (LE01193203).

Protologue citation: “*L. Astragalus floribundus*, Tab. XXXVII ... *Astragalus hedysaroides*, Sievers collectan. MS. *Astragalus pedunculis radicitatis* (male)? floribus laxe spicatis, leguminibus ovatis apiculatis. Gmelin. in MS ... Maxima copia crescit in campis arenosis Australioribus, secundum Irtin fluvium, tam a parte Barabensi, quam in latere Kirgisico; praeterea, mihi et amicis qui Sibiriam plantarum gratia Instrarunt, nulibi visus. In hortis botanicis Moscuae ac Petropoli e semine facie crevit, sed evadit properior et spicis laxioribus, quam spontanei, primoque statim anno floret.”

Note: *Astragalus floribundus* was described by Pallas (1800–1803) and transferred by de Candolle (1825) to the genus *Oxytropis*. The name, *Oxytropis floribunda*, is accepted in *Flora of USSR* (Fedchenko and Vassilchenko, 1948), other publications (Baitenov, 1961; Leins and Merxmüller, 1968; Filimonova, 1983; Vassilchenko, 1987; Polozhij, 1994; Yakovlev *et al.* 1996; Antonyuk, 2000; Nikiforova, 2005; Malyshev, 2008a), and online taxonomic databases (GBIF, 2022+; POWO, 2022+).

There is a herbarium specimen stored at BM (BM000958871) and one of the fragments mounted on this sheet was used for the illustration in “*Species Astragalorum*” (Pallas, 1800–1803, Tab. 37). This specimen corresponds to the protologue, is in good condition and belongs to the original material. Based on the illustration and provenance that were included by Pallas in the protologue, the specimen BM000958871 is not the only element of the original material and, thus, should be designated as the lectotype. There are a few old specimens stored at LE01193203!–LE01193206! which also could belong to the original material.

***Oxytropis* sect. *Mesogaea* Bunge**

Astragalus deflexus Pall., Acta Acad. Sci. Imp. Petrop. 2: 268, t. 15. 1779 ≡ *Oxytropis deflexa* (Pall.) DC., Astragalogia: 96. 1802 ≡ *Astragalus retroflexus* Pall., Sp. Astragal.: 33, t. 27. 1800, nom. illeg. superfl. ≡ *Spiesia deflexa* (Pall.) Kuntze, Revis. Gen. Pl. 1: 206. 1891.

Type: Russia, Eastern Siberia, Zabaikalsky Krai, “ad nivalia juga Dauria ... in excelsis montibus circa Balyra rivum aliosque Ononem influentibus [Siberia], *S. P. Pallas s. n.*” (BM000799438! – lectotype, designated by Welsh (1991: 387), as holotype, correctable to lectotype).

Protologue citation: “*Astragalus deflexus*. Tab. XV. ... Harum iam complures Gmelinus Flora fua Sibirica notas reddidit; plures autem describendae supersunt, e quibus hic unam , ad nivalia

juga Davuriae lectam., praemitto reliquis alio tempore describendis, jam defloruerat, et semina ex parta perfecerat, quum sera aestate in excelsis montibus circa: Balyra rivum, aliosque Ononem influentes, collecta fuit. Petropoli et Moscucae in hortis solo udo sata semina plantas produxerunt et propagarunt spontaneae omnibus proportionibus simillimas”

Note: *Astragalus deflexus* was described by Pallas (1779). Later he changed the name for this taxon to *Astragalus retroflexus* and put the name, *A. deflexus*, into synonymy with *A. retroflexus* which was a superfluous illegitimate name. De Candolle (1802) transferred the name, *A. deflexus*, to the genus *Oxytropis*. The name, *Oxytropis deflexa*, is accepted in *Flora of USSR* (Shishkin, 1948), other publications (Borissova, 1954; Popov, 1957; Polozhij, 1960; Baitenov, 1961; Hultén, 1968; Leins and Merxmüller, 1968; Mikhaleva and Perfilieva, 1974; Welsh, 1974; Peshkova, 1979; Yurtsev, 1986; Pavlova, 1988; Pavlova, 1989; Polozhij, 1994; Grubov, 1998; Utemova *et al.*, 1999; Lebedev, 2002; Ulziykhutag, 2003; Polozhij *et al.*, 2003; Nikiforova, 2005; Zarubin *et al.*, 2005; Shaulo, 2006; Polozhij and Shaulo, 2007; Malyshev, 2008a; Galanin and Belikovich, 2015) and online taxonomic databases (GBIF, 2022+; POWO, 2022+).

The name was typified by Welsh (1991), who designated a specimen by Pallas from Eastern Siberia, stored at BM (BM000958898!) as the holotype. This specimen is in good condition and should be corrected to the lectotype according to Article 9.10 of the ICN (Turland *et al.*, 2018) as this specimen is not the only element of the original material. In addition to the specimen from the “Belaja reka” [River Belaya], Pallas also refers to cultivated plants in St. Petersburg and Moscow: «Petropoli et Moscucae in hortis solo udo sata semina plantas produxerunt et propagarunt spontaneae omnibus proportionibus simillimas». There is no doubt that a drawing was made for *Species Astragalorum* from the specimen BM000958898. Authentic Pallas’s specimens were not found at LE.

***Oxytropis* sect. *Polyadena* Bunge**

Phaca microphylla Pall., Reise Russ. Reich. 3: 744. 1776 ≡ *Oxytropis microphylla* (Pall.) DC. Astragalogia: 83. 1802 ≡ *Astragalus polyphyllus* Willd., Sp. Pl. ed. 4., 3: 1300. 1802 ≡ *Spiesia microphylla* (Pall.) Kuntze, Revis. Gen. Pl. 1: 207. 1891.

Type: Russia, Eastern Siberia, Irkutsk Region, “*Phaca olchonensis* sp. nova. In planit. glareosis ins. Olchon. *Junio* 1772, [fl.], Georgi ms. Herb. Pallas” (BM000958899! – lectotype, **designated here**).

Protologue citation: “*Phaca? microphylla*. Tab. X. fig. 1. ... Provenit in insulis arenosis Selengae et Baikalis.”

Note: *Phaca microphylla* was described by Pallas (1776) and later transferred by de Candolle (1802) to the genus *Oxytropis*. The name, *Oxytropis microphylla*, is accepted in Flora of USSR (Shishkin, 1948), other publications (Borissova, 1954; Popov, 1957; Peshkova, 1979; Kitagawa, 1979; Polozhij, 1994; Yakovlev *et al.* 1996; Grubov, 1998; Polozhij *et al.*, 2003; Kosovich, 2001; Nikiforova, 2005; Zarubin *et al.*, 2005; Ulziykhutag, 2003; Galanin and Belikovich, 2015) and online taxonomic databases (GBIF, 2022+; POWO, 2022+).

The specimen, collected by Johann Gottlieb Georgi on Olkhon Island in the Baikal Sea, from Pallas’s herbarium at BM (BM000958899) corresponds to the protologue, is in good condition and belongs to the original material. Based on the illustration and provenance that were included by Pallas in the protologue, the specimen BM000958899 is not the only element of the original material and, thus, should be designated as the lectotype. No Pallas’s specimens of this taxon were found at LE.

Phaca muricata Pall., Reise Russ. Reich. 3: 746. 1776 ≡ *Oxytropis muricata* (Pall.) DC., Astragalologia: 86. 1802 ≡ *Spiesia muricata* (Pall.) Kuntze, Revis. Gen. Pl. 1: 207. 1891.

Type: Russia, Eastern Siberia, “*Phaca muricata* Pallas III. n. 764 t. A. a f. 1 *Astragalus muricatus* Itin. vol. III Astragaloides Ammanni affinis. In arenosis ad Jeniseam et Baikalem [Ex Herb. Pallas N 925.13]” (LINN-HL925-13! – lectotype, **designated here**).

Protologue citation: “*Phaca? muricata*. Tab. Aa. fig. 1. B ... Copiosissima planta in montanis campis inter Yjussum et Jeniseam; etiam circa Baikalem observata. Floret initio Junii, semina Augusto perfici.”

Note: *Phaca muricata* was described by Pallas (1776) and later transferred by de Candolle (1802) to the genus *Oxytropis*. The name, *Oxytropis muricata*, is accepted in *Flora of USSR* (Shishkin, 1948), other publications (Krylov, 1933; Borissova, 1954; Popov, 1957; Polozhij, 1960; Popov and Busik, 1966; Peshkova, 1979; Lomonosova, 1989; Pavlova, 1989; Polozhij, 1994; Starchenko *et al.*, 1995, 2000; Yakovlev *et al.* 1996; Grubov, 1998; Shaulo, 1999; Polozhij *et al.*, 2003; Ulziykhutag, 2003; Nikiforova, 2005; Zarubin *et al.*, 2005; Tupitzyna, 2005; Pavlova, 2006; Shaulo, 2006; Polozhij and Shaulo, 2007; Galanin and Belikovich, 2015; Gal’kin and Shmakov, 2016; An’kova, 2018; Starchenko and Darman, 2019) and online taxonomic databases (GBIF, 2022+; POWO, 2022+).

A specimen from Siberia at LINN (LINN-HL925-13) corresponds to the protologue, is in good condition and belongs to the original material. Based on the illustration and provenance

that were included by Pallas in the protologue, the specimen LINN-HL925-13 is not the only element of the original material and, thus, should be designated as the lectotype. Pallas's specimens of this taxon have not yet been found at LE. There are specimens collected by Simon Shangin and Mordovkin («Mardofkin, Herb. Fischer», «N 88 Herb. Fischer» and «*[Oxytropis] muricata* Altaica. *Schangin* (Mardofkin ...) Herb. Fischer», «*Astragalus muricata Phaca oxyphylla* An *Ph. muricata* Pall. *Schangin*») that are stored at LE (Krestovskaya and Byalt, 1998), that were probably collected much later than the taxon was published and thus do not belong to the original material.

Oxytropis* sect. *Xerobia* subsect. *Xerobia

Astragalus ampullatus Pall., Reise Russ. Reich. 3: 750. 1776 ≡ ***Oxytropis ampullata*** (Pall.) Pers., Syn. Pl. [C.H.Persoon] 2(2): 333. 1807 ≡ *Spiesia ampullata* (Pall.) Kuntze, Revis. Gen. Pl. 1: 206. 1891.

Type: Russia, Siberia, Krasnoyarsk Region, “*Astragalus ampullatus* Pall. Itin. III. Flores grate purpurei, area albida venosa, s.d., fl., Herb. Pallas” (BM000958891! – lectotype, **designated here**). Syntype: Russia, Siberia, Krasnoyarsk Region, “ad fluv. Jenisei. s.d., s.n., P.S. Pallas, fl.” (M0185425!).

Protologue citation: “*Astragalus ampullatus*. Tab. Cc. fig. 4. 5. ... In rupestribus ad Jeniseam et circa Baikalem passim provenit, tota ferme aestate florens, semina persiciens autumnus”.

Note: *Astragalus ampullatus* was described by Pallas (1776) and transferred by Persoon (1807) to the genus *Oxytropis*. The name, *Oxytropis ampullata*, is accepted in *Flora of USSR* (Fedchenko and Vassilchenko, 1948), other publications (Popov, 1957; Polozhij, 1960; Baitenov, 1961; Filimonova, 1983; Polozhij, 1994; Yakovlev *et al.* 1996; Polozhij *et al.*, 2003; Ulziykhutag, 2003; Nikiforova, 2005; Tupitzyna, 2005; Polozhij and Shauro, 2007; Galanin and Belikovich, 2015) and online taxonomic databases (GBIF, 2022+; POWO, 2022+).

A specimen by Pallas from Eastern Siberia, stored at BM (BM000958891) and represented by flowering and fruiting plants, corresponds to the protologue, is in good condition and belongs to the original material. Based on the illustration and provenance that were included by Pallas in the protologue, the specimen BM000958891 is not the only element of the original material and, thus, should be designated as the lectotype. The other specimen by Pallas, collected at the River Yenisey and located at M is a syntype. At LE, specimens by Pallas were not yet found.

There are two specimens stored at LE that were collected by Pyotr Ivanovich Shangin (1745–1816), a mining engineer and naturalist who lived in Barnaul and travelled extensively

in the Altay Mountains and who was in regular correspondence with Pallas. From 1785 Shangin participated in a major expedition in western Altay. He produced maps, for the first time, of the Altay Mountain ridges and sources of the Rivers Tscharysh and Katun, described the fauna and flora, and collected multiple herbarium specimens. Shangin also discovered 145 deposits of jasper and agate. In 1793 Pallas translated into German and published Shangin's notes but without the maps. Two years later (August 31st 1795) Shangin was elected as a Corresponding Member of the Academy of Sciences of St. Petersburg. Pyotr Shangin together with his younger brother Simon, founded the first Botanical Garden in Siberia (Modzalevsky, 1908).

The status of the two specimens at LE is not clear as P. Shangin did not visit Eastern Siberia and is not mentioned in the protologue as a collector. Perhaps, the collector could have been one of the numerous representatives of Shangin's family (Burshtein, 2003) who actively travelled throughout Siberia.

Specimen originale?: Russia, Siberia, “112 *Astragalus* n.s. *Ox. ampullata* Pers. (Bge.), s.l. s.d., fl., [misit] Prescott. Reliquiis Schanginianis. Herb. Fischer.”

Astragalus caespitosus Pall., Sp. Astragal.: 70, tab. 57. 1800 ≡ *Oxytropis caespitosa* (Pall.) Pers., Syn. Pl., 2(2): 333. 1807 ≡ *Spiesia caespitosa* (Pall.) Kuntze, Revis. Gen. Pl. 1: 206. 1891.

Type: Russia, Western Siberia, “*Astragalus* / *Astragalus vesicarius. sine loco*, s.d., [fl.], Schangin. Herb. Fischer” (LE01051506! – lectotype, **designated here**). Syntype: Russia, Siberia, “*Astragalus ampullatus* Pall. it. III. app.n.122. tab. CC fig. 5 fl. dilute purpur. vigeat tota fere aestate. Hab. in rupestribus Sibiriae. [legit et misit] 1778, [fl.], *Dn. Prof. Pallas*” (LE01051475!).

Protologue citation: “*Astragalus caespitosus*. Tab. LVII. ... *Astragalus vesicarius* Pall. itiner, III. append. p. 751. 123. ... Haec planta primo vere in glareosis et rupestribus Davuriae frequens floret, vix dum explicates et adhuc scapo brevioribus foliis, quae dein scapo longiora excrescunt. Sub finem Maji jam deflorescit, Jnioque legumina maturat, quae tunc integra defluunt. – Datur et in superiore regione Jeniseae fl. et ad Obum legit Diligentiss. Schangin.”

Note: *Astragalus caespitosus* was described by Pallas (1800–1803) and transferred by de Candolle (1825) to the genus *Oxytropis*. The name, *Oxytropis caespitosa*, is accepted in *Flora of USSR* (Fedchenko and Vassilchenko, 1948), other publications (Borissova, 1954; Popov, 1955, 1957; Peshkova, 1979; Pavlova, 1989, 2006; Polozhij, 1994; Starchenko *et al.*, 1995, 2000; Polozhij *et al.*, 2003; Ulziykhutag, 2003; Nikiforova, 2005; Zarubin *et al.*, 2005; Galanin and Belikovich, 2015) and online taxonomic databases (GBIF, 2022+; POWO, 2022+).

A specimen of Pallas's herbarium which was collected by P. Shangin from West Siberia and is stored at LE (LE01051506) corresponds to the protologue, is in good condition and belongs to the original material. Based on the illustration and provenance that were included by Pallas in the protologue, the specimen LE (LE01051506) is not the only element of the original material and, thus, should be designated as the lectotype. At BM there is another specimen from Pallas's herbarium, which was received from I. Siviers ("Ex plantis Sieversianis. s.d., Herb. Pallas" [BM000958892]). The status of this specimen is not clear as, in the protologue, only P. Shangin is mentioned as collector.

Oxytropis sect. *Xerobia* subsect. *Ampullata* Vass.

Astragalus leptophyllus Pall., Reise Russ. Reich. 3: 749. 1776 ≡ *Oxytropis leptophylla* (Pall.) DC., Astragalogia: 77. 1802 ≡ *Spiesia leptophylla* (Pall.) Kuntze, Revis. Gen. Pl. 1: 206. 1891.

Type: Russia, Eastern Siberia, Buryatia, "Astragalus leptophyllus Pall. itin. III. s. l., s.d. fl., fr., Herb. Pallas» (BM000958890! – lectotype, **designated here**). Syntypes: Russia, Eastern Siberia, Buryatia, «Davuria, s.d., fl., Pallas» (M0185403!); "Russia, Eastern Siberia, "Astragalus species Legumen inflata subglobosa, glabra. Pallas", "An specimen authenticum Astragali leptophyllae Pall.? III.1981, V. Grubov Notae criticae" (LE!).

Protologue citation: "Astragalus leptophyllus. Tab. X. fig. 3. B. An Astragalus pedunculis radicatis, foliolis linearibus pluribus, glaberrimis. Gmel. Flor. Sibir. p. 53. n. 68. tab. 24. B? ... In campis apricis et subsalsis inter Ononem et Argunum; copiose floret. sub finem Maii; semina aestate praebuit."

Note: *Astragalus leptophyllus* was described by Pallas (1776) and later transferred by de Candolle to the genus *Oxytropis* (1825). The name, *Oxytropis leptophylla*, was accepted in *Flora of USSR* (Fedchenko and Vassilchenko, 1948), other publications (Borissova, 1954; Popov, 1957; Peshkova, 1979; Kitagawa, 1979; Polozhij, 1994; Yakovlev *et al.* 1996; Grubov, 1998; Utemova *et al.*, 1999; Shaulo *et al.*, 2001; Lebedev, 2002; Polozhij *et al.*, 2003; Ulziykhutag, 2003; Nikiforova, 2005; Shaulo, 2006; Polozhij and Shaulo, 2007; Galanin and Belikovich, 2015) and online taxonomic databases (GBIF, 2022+; POWO, 2022+).

A specimen in BM (BM000958890) from Siberia corresponds to the protologue, is in good condition and belongs to the original material. Based on the illustration and provenance that were included by Pallas in the protologue, the specimen BM000958890 is not the only element of the original material and, thus, should be designated as the lectotype. We found at LE a specimen from Pallas's collection without a location and a specimen of this taxon from Pallas's collection from Dahuria at M, which are syntypes.

Oxytropis sect. *Xerobia* subsect. *Stuppa* Vass.

Astragalus setosus Pall., Sp. Astragal.: 55, t. 44. 1800 ≡ *Oxytropis setosa* (Pall.) DC., Astragalogia: 71. 1802 ≡ *Spiesia setosa* (Pall.) Kuntze, Revis. Gen. Pl. 1: 207. 1891.

Type: Russia, Western Siberia, Altay, “*Hedysarum* ? Planta alpina, ad Catunjam frequens. s.d., [fl.], s. coll. Herb. Pallas”, “*Astragalus setosus*. delin. Herb. Pallas” (BM000958886! – lectotype, **designated here**). Syntypes: Russia, Western Siberia, Altay, “*Astragalus setosus* Pall. = *Oxytropis setosa* (Pall.) DC. ex typo Altai (Schangin) – ut videtur Katunja?” (LE01056238!); Russia, Western Siberia, Altai, “*Astragalus* HB. Schangin” (LE01056514!).

Protologue citation: “*Astragalus setosus*. Tab. XLIV ... Planta alpina est ad Catunja fl. frequens, referente Amiciss. Schangin, qui cum adscripto *Hedysari* nomine misit.”

Note: *Astragalus setosus* was described by Pallas (1800–1803) and transferred by de Candolle (1802) to the genus *Oxytropis*. The name, *Oxytropis setosa*, is accepted in *Flora of USSR* (Fedchenko and Vassilchenko, 1948), other publications (Polozhij, 1994; Yakovlev *et al.*, 1996; Grubov, 1998; Sheremetova, 1998; Antonyuk, 2000; Polozhij *et al.*, 2003; Ulziykhutag, 2003; Nikiforova, 2005; Shmakov, 2006; Polozhij and Shauro, 2007) and online taxonomic databases (GBIF, 2022+; POWO, 2022+).

Pallas’s specimen from Southern Altay at BM (BM000958892), corresponds to the protologue, is in good condition and belongs to the original material. Based on the illustration and provenance that were included by Pallas in the protologue, the specimen BM000958892 is not the only element of the original material and, thus, should be designated as the lectotype. There are specimens from collections by Pallas and Shangin at LE (LE01056239! and LE01056240!) that could be syntypes.

Astragalus triphyllus Pall., Sp. Astragal.: 68, tab. 56, f. a. 1800 ≡ *Oxytropis triphylla* (Pall.) DC., Astragalogia: 77. 1802. ≡ *Spiesia triphylla* (Pall.) Kuntze, Revis. Gen. Pl. 1: 207. 1891.

Type: Russia, Eastern Siberia, Irkutsk region, “*Astragalus verticillarii* varietas *triphylla* Pall. itin. III. s.d., fl., Herb. Pallas” (BM000958889! – lectotype, **designated here**).

Protologue citation: “*Astragalus triphyllus*. Tab. LVI. a ... Legit Amiciss. Georgi in arenosis Insulae Olchon, aliarumque Lacus Baicalis insularum, Mense majo, tardius *A. caespitoso* florentem.”

Note: *Astragalus triphyllus* was described by Pallas (1800–1803) and transferred by de Candolle (1802) to the genus *Oxytropis*. The name, *Oxytropis triphylla*, is accepted in *Flora of USSR* (Fedchenko and Vassilchenko, 1948), other publications (Borissova, 1954; Popov, 1957; Popov

and Busik, 1966; Malyshev and Peshkova, 1979: 98; Peshkova, 1979; Peshkova, 1988: 232; Kharitonova, 1988; Polozhij, 1994; Yakovlev *et al.* 1996; Boykov, 1999; Ivanova, 2001; Nikiforova, 2005; Zarubin *et al.*, 2005; Semenova, 2007) and online taxonomic databases (GBIF, 2022+; POWO, 2022+).

The specimen from Pallas's herbarium at BM (BM000958889) corresponds to the protologue, is in good condition and belongs to the original material. Based on the illustration and provenance that were included by Pallas in the protologue, the specimen BM000958889 is not the only element of the original material and, thus, should be designated as the lectotype. No authentic specimens have yet been found at LE.

Acknowledgements

The authors of this paper wish to thank the reviewers and editors of the journal for valuable corrections and suggestions. The article constitutes a contribution toward completion of the state assignment for the V.L. Komarov Botanical Institute of the Russian Academy of Sciences, within the project at BIN RAS, *Vascular plants of Eurasia: taxonomy, floristic research, plant resources, No AAAA-A 19-119031290052-1* and with the financial support of the Russian Foundation for Basic Research, grant No. 14-04-00727 (*RFFI 14-04-00727*), and grant № 20-54-56046 (*RFFI 20-54-56046*). The help of the curators of the herbaria listed in this paper is greatly appreciated.

Authors' contributions

Vyacheslav V. Byalt (VB) together with AS initiated the project, identified authentic specimens and labelled type specimens in LE, analysed material, wrote the manuscript, participated in discussion and revision of the manuscript.

Andrei K. Sytin (AS) together with VB studied authentic specimens and labelled type specimens in LE, analysed material, and participated in discussion of the manuscript and coordinated the project.

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