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ТАКСОНОМИЧЕСКИЕ ОБЗОРЫ И НОВЫЕ ТАКСОНЫ

TAXONOMIC REVIEW OF *PYRUS* (ROSACEAE) SECTION *ARGYROMALON* IN ARMENIA

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The article presents the results of a taxonomic study of the genus *Pyrus* L. (Rosaceae) section *Argyromalon* Fed. in Armenia, comprising 12 species. A checklist and a key for identification of the species, data on their altitudinal and geographic distribution, habitats, terms of flowering and fruiting, synonyms, type citations, as well as critical notes on some taxa are given. A rich diversity of endemic species, varieties and interspecific hybrid forms has been recorded. The lectotype of *P. theodorovii* Mulk. is designated.

Keywords: Pyrus, section *Argyromalon*, taxonomy, flora of Armenia
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The genus *Pyrus* L.was established by Linnaeus (1753). It belongs to subtribe Pyrinae (formerly subfamily Maloideae) (Potter et al., 2007). The range of the genus *Pyrus* occupies the territories from the Atlas Mountains in Northern Africa and South of France throughout the Eurasian continent, including the Japanese seashore, and from the Baltic in the north to India in the south (Fedorov, 1954; Browicz, 1993). According to paleontological evidences, *Pyrus* probably originated in Tertiary in mountainous regions of China (Rubtsov, 1944). The main centers of *Pyrus* diversity are in East Asia, Mediterranean, South-West Asia and Caucasus (Fedorov, 1954; Browicz, 1993; Zohary, Hopf, 2000). The number of the genus *Pyrus* species differs from 20–40 (Browicz, 1993) to 80 (Phipps et al., 1990).

The Caucasus is an important center of diversity of the genus *Pyrus* (Fedorov, 1954; Gladkova, 1990a; Korotkova et al., 2018). Floristic links between the Caucasian and other areas of speciation in the genus *Pyrus*, along with the autochthonous development trend, contributed to the emergence of a rich species diversity of pears in the Caucasus. The first study of the genus *Pyrus* in the Caucasus was held by Y.S. Medvedev (1919), who distinguished four species in the region, viz. *Pyrus communis* L., *P. syriaca* Boiss., *P. elaeagnifolia* Pall. ("*P. elaeagrifolia*"), and *P. salicifolia* Pall. Subsequently, during the last century from 1924 up to 1990, in the Caucasus 27 new *Pyrus* species were described, with 18 of themfrom Armenia only. The territory of the Republic of Armenia (RA) is an area of high diversity and local endemism of the genus *Pyrus*, where about 32–34 pear species were recorded (Akopian, 2007, 2010a). Wild pears speciation processes in Armenia are conditioned by the species spatial isolation due to fragmentation of the relief, climate and vegetation types differentiation and xerophytization, by the escape of folk varieties back to wild. Speciation processes in the pear forests of Armenia are continuing nowadays (Mulkidzhanyan, 1969a). The taxonomy of the genus *Pyrus* poses difficulties for researchers, because of remarkable polymorphism, variability and hybridization of its species, and leads to a diversity of views on the ranks of the pear various taxa. According to K. Browicz (1993), the most complicated area in terms of the taxonomy of *Pyrus*, is located in Armenia, which provides dwelling to about a half of the species worldwide.

The genus *Pyrus* is subdivided into four sections: *Pashia* Koehne, *Pyrus* (*Achras* Koehne emend. Fed.), *Xeropyrenia* Fed., and *Argyromalon* Fed. (Koehne, 1890; Fedorov, 1954). The section *Argyromalon* was described by An.A. Fedorov (1954) and initially included 9 species: *P. complexa* Rubtzov, *P. raddeana* Woronow, *P. taochia* Woronow, *P. elaeagnifolia*, *P. georgica* Kuth., *P. takhtadzhianii* Fed., *P. sachokiana* Kuth., *P. salicifolia*, and *P. medvedevii* Rubtzov. Earlier, in the "Flora URSS" (Maleev, 1939) the species *P. elaeagnifolia*, *P. salicifolia*, *P. takhtadzhianii*, *P. taochia* were included in the series *Ponticae* Maleev, and *P. raddeana* in the series *Syriacae* Maleev. A.A. Grossheim (1952) classified the Caucasian pears into two sections, *Achras* and *Xeropyrenia*. Subsequently, new endemic species were described from Armenia, among them those included in the section *Argyromalon*, such as *P. theodorovii* Mulk. (Mulkidzhanyan, 1965), *P. hajastana* Mulk. (Mulkidzhanyan, 1969b), *P. chosrovica* Gladkova, *P. gergerana* Gladkova, *P. megrica* Gladko-

va (Gladkova, 1990a). The species *P. oxyprion* Woronow and *P. fedorovii* Kuth. were transferred by V.N. Gladkova (1990a) from the sect. *Xeropyrenia* (Fedorov, 1954) to the sect. *Argyromalon*, and all Caucasian species of this section were grouped into three aggregates: *P. salicifolia* Pall. aggr. (*P. salicifolia*, *P. medvedevii*, *P. theodorovii*, *P. hajastana*, *P. oxyprion*, *P. fedorovii*), *P. georgica* Kuth. aggr. (*P. georgica*, *P. chosrovica*, *P. megrica*, *P. sachokiana*), and *P. takhtadzhianii* Fed. aggr. (*P. takhtadzhianii*, *P. gergerana*). A.S. Tuz (1972) reduced the rank of *Argyromalon* to subsection (subsect. *Argyromalon* (Fed.) Tuz), where he included only four species with relatively wide ranges, namely *P. elaeagnifolia*, *P. salicifolia*, *P. spinosa* Forssk. (=*P. amygdaliformis* Vill.), and *P. nivalis* Jacq. In his opinion, other species of this section described from the Caucasus, mainly those with local distribution, need further clarification of their taxonomic ranks.

The diagnosis of the sect. *Argyromalon* ("silvery" pears) is based on the morphological characteristics of leaves (shape of leaf blade, margin, kind and degree of pubescence), as well as on the peculiarities of inflorescence and fruit pubescence, persistence of sepals in fruit (Fedorov, 1954, 1958; Schönbeck-Temesy, 1969; Tuz, 1972). The section includes xeromorphic species of Mediterranean origin, widespread in the Western Asia and Southern Europe. Pears of the sect. *Argyromalon* are characterized by a rich species and intraspecific diversity, significant polymorphism, intense morphogenetic processes and hybridization. The section includes a number of locally distributed microspecies, most of which presumably have a hybrid origin. Hybridization taking place in natural populations in the zone of introgression causes a significant increase in phenotypic diversity. Some characters in hybrid forms of pears vary over a fairly wide range. As a result, a complex taxonomic picture is formed that needs to be clarified.

The main species and intraspecific diversity of pears of the sect. *Argyromalon* within Armenia is observed in arid woodlands of the Yerevan, Darelegis and Meghri floristic regions. In Armenia, wild pears of the sect. *Argyromalon* grow in the lower and middle mountain belts together with the species of *Amygdalus*, *Crataegus*, *Juniperus*, *Pistacia*, *Prunus*, *Quercus*, *Rosa*, *Sorbus* in broad-leaved forests, arid woodlands, on dry mountain slopes in shrub thickets, river gorges, near villages and roads.

We distinguish the following *Pyrus* species in the section *Argyromalon*, occurring in Armenia: *P. chosrovica* Gladkova, *P. complexa* Rubtzov, *P. georgica* Kuth., *P. gergerana* Gladkova, *P. hajastana* Mulk., *P. medvedevii* Rubtzov, *P. megrica* Gladkova, *P. raddeana* Woronow, *P. salicifolia* Pall., *P. takhtadzhianii* Fed., *P. taochia*, *P. theodorovii* Mulk. Some species included in the section *Argyromalon*, such as *P. gergerana*, *P. hajastana*, *P. raddeana*, have some characters intermediate with the section *Xeropyrenia* (leaf blade-shape, petiole length, peculiarities of the leaf edge, character and density of pubescence or its absence).

As a result of our study of the genus *Pyrus* section *Argyromalon* in Armenia, a check-list and determination key to the species of the section were prepared, data on their altitudinal and geographical distribution and habitat, timing of flowering and fruiting, endemism, synonyms and citations of types, as well as critical notes on some taxa are given.

MATERIAL AND METHODS

The research is based on the herbarium materials of *Pyrus* collected on the territory of Armenia and field observations at both flowering (Fl.) and fruiting (Fr.) stages. The observations were done on the base of wild pears living collection (Akopian, 2010b) in the Yerevan Botanical Garden NAS RA as well. The collections of *Pyrus* stored in the Herbarium (ERE) of the Institute of Botany after A. Takhtajan NAS RA, including type and authentic specimens, and some images of type specimens received from the Herbaria B, G, LE, TBI, WIR were examined. Morphological features of *Pyrus* species and their variability were evaluated. Observations on phaenology were carried out according to I.N. Beideman (1974). Data from relevant literature on *Pyrus* taxonomy were used. The floristic regions of Armenia are given in accordance with the scheme of A.L. Takhtajan (1954) (fig. 1). Morphology of *Pyrus* specimens was studied using Stereo Microscope MBC-9. Plants and their details were photographed with digital camera SONY DSC-W150.

RESULTS

Pyrus L. 1753, Sp. Pl. 1: 479.

Sect. ***Argyromalon*** Fed. 1954, Trees & Shrubs USSR 3: 408. – Series *Ponticae* (Decne.) Maleev, 1939, Flora URSS 9: 345, p. p.

Leaves linear, lanceolate, obovate-lanceolate, oblong-ovate or elliptical, more or less gradually or, sometimes, suddenly passing into a petiole. Leaf blades much longer than broad. Pubescence dense, silvery-grey or white-woolly, consisting of tomentose, woolly or silky hairs. Leaves always more or less pubescent on both sides or above. Stamens 14–20. Styles 4, rarely 3 or 5, ovary 4-, less often 5-loculed. Usually medium-sized trees or tall shrubs.

Type: *P. salicifolia* Pall.

P. salicifolia Pall. 1776, Reise 3: 734.

Described from East Ciscaucasia. Holotypus: "Inter Terec et Human flut., ...circa colles Dubigi" LE (?); specimen authenticum: "Лоховая груша на песчаной степи против Червленого [Oleaster pear on the sandy steppe against Chervlennaya]", LE 00013470 photo!

Fig. 1. Map of the floristic regions (1–12) of Armenia.
Рис. 1. Карта флористических районов (1–12) Армении.

Disrtibution in Armenia: Ijev., Apar., Sevan., Gegh., Yerev., Dar., Zang., Meghri. Upland-xerophilic vegetation, arid woodlands, 600–2200 m a.s.l. Fl. IV–V. Fr. VIII–IX.

General distribution: Caucasus, North-West Iran, North-East Anatolia.

P. salicifolia is a highly polymorphic species. Characteristic of typical *P. salicifolia* are oblong-lanceolate leaves, with a leaf blade up to 7 times longer than broad, with the greatest breadth in the middle, usually entire, with a dense, appressed, silvery-white or greyish, silky or arachnoid pubescence on both sides, indistinct or very short petioles (0.3) 0.5–1 cm long; fruit stalk usually short, about 1 cm long. Based on the variability of morphological characters, some varieties of *P. salicifolia* have been described, of which the following are known in Armenia: var. *angustifolia* (Diapulis) Kuth. (=*P. argyrophylla* Diapulis) (Kuthatheladze, 1947) with long, almost linear leaves (Darelegis floristic region, Herher river gorge) ; var. *latifolia* Alexeenko (? ined.) (found in Yerevan floristic region) ; var. *petiolaris* Mulk. ex Akopian (Akopian, 2014) with petioles up to 3 cm long (Yerevan, Darelegis, Meghri floristic regions); var. *serrulata* Browicz (Browicz, 1972) with leaves distinguished by a weaker, obliterating pubescence from above, a shiny surface and serrated edge (Meghri floristic region). In the Yerevan, Darelegis, and Meghri floristic regions, some hybrid forms of *P. salicifolia* are also recorded. A hybrid *P. oxyprion* × *P. salicifolia* was found by Ya.I. Mulkidjanian (ERE 21094, 90003, 89710, 172185, 90019, 80911, 165879), it differs from its parent species *P. salicifolia* by shiny, greenish leaves, almost devoid of pubescence, and from *P. oxyprion* – by entire leaves. In the Darelegis floristic region, there are noticed hybrid specimens of *P. pseudosyriaca* Gladkova × *P. salicifolia* (ERE 55887, 103098) with grey leaf pubescence, which differ from *P. pseudosyriaca* characterized by glabrous leaves.

P. medvedevii Rubtzov, 1941, Bot. Mater. Gerb. Bot. Inst. Komarova Akad. Nauk SSSR 9: 77.

Described from Nakhichevan. Syntypi: “Hab. Atropatania Sovetica australis, Nakhiczevan: in decliviis montium Darrydagh prope pagum Gjamal-Eddin. A. Schelkovnikov et E. Kara-Muzza, 11 VI 1929 legunt”, LE 01010169 photo!; “Armenia, atque in montibus Daralagez, inter pagos Aisasi et Kalaser, 2000–2100 m alt., in agris. G. Rubtzov, 1 IX 1936. N 13”, WIR-4841 photo!

Distribution in Armenia: Apar., Gegh., Yerev., Dar., Zang., Meghry. In arid woodlands, 1400–2200 m a.s.l. Fl. IV–V. Fr. XIII–X.

General distribution: Caucasus (Armenia, Nakhichevan), northwestern Iran (Zamani et al., 2012).

P. medvedevii is usually characterized by entire leaves, wavy, oblanceolate, 9–11 × 3–4 cm, more narrowed at the base than toward the top, asymmetrical, green and glabrous above, white-pubescent beneath, petioles 2.5–3 cm long. Some hybrid forms have been found in the Yerevan and Gegham floristic regions, differing from the typical *P. medvedevii*by greyish leaves on both sides with silvery tomentose pubescence: "*P. medvedevii* Rubtzov × *P. chosrovica* Gladkova. Хосровскийзаповедник. 12 VI 1981. Собр. М. Григорян. Опр. Ж. Акопян [Khosrov Reserve, 12 VI 1981. Leg. M. Grigoryan. Det. J.A. Akopian]" (ERE 185479–185481) ; "*P.medvedevii* Rubtzov × *P. theodorovii* Mulk. АрмССР, Арташатский район, окр. Гелайсор, с.-в. склон, грушевники, 1500–1600 м над ур. м. 8 IX 1966. Собр. В. Манакян, Я. Мулкиджанян. Опр. Ж.А. Акопян [ArmSSR, Artashat region, in the vicinity of the village Gelaisor, north-east slope, 1500–1600 m a.s.l. 8 IX 1966. Leg. V. Manakyan, Ya. Mulkidzhanyan. Det. J.A. Akopian]" (ERE 84129, 84131) ; "*P. medvedevii* Rubtzov × *P. theodorovii* Mulk. АрмССР, отрог Гегамского хребта, близ Гегарта, южный щебнистый склон, справа от шоссе, образует заросль. 8 IX 1966. Собр. В. Манакян, Я. Мулкиджанян. Опр. Ж.А. Акопян [ArmSSR, spur of the Gegham Range, near Geghart, southern rubbly slope, to the right of the highway, forms a thicket. 8 IX 1966. Leg. V. Manakyan, Ya. Mulkidzhanyan. Det. J.A. Akopian]" (ERE 84125, 84126).

P. theodorovii Mulk. 1965, Dokl. Akad. Nauk Armyanskoi SSR 410, 4: 249.

Described from Armenia: "Armenia. Distr. Vedi. Inter pp. Ketuz et Gelajsor, altitud. 1500–1600 m a.s.l. 14 VII 1964. Leg. J. Mulkijanian". Lectotypus (Akopian, hic designatus): "Армянская ССР, Вединский район, сел. Кетуз × сел. Гелайсор, ближе к сел. Гелайсор, за водораздельным хребтом, горная степь. "Грушовники", сев. склон, 1600 м над ур. м. 14 VII 1964. Собр. и опр. Я. Мулкиджанян [Armenian SSR, Vedi district, villages Ketuz × Gelaisor, closer to the village Gelaisor, behind the watershed ridge, mountain steppe. Pear grove, northern slope, 1600 m a.s.l. 14 VII 1964. Leg. & Det. Ya. Mulkidzhanyan]", ERE 79745 (barcode ERE0000868) ! (fig. 2) ; isolectotypi ERE 79747–79749!; syntypi ERE 144657! 144652!

Disrtibution in Armenia: Gegh., Yerev. Arid woodlands, 1500–1800 m a.s.l. Fl. IV–V. Fr. VII–IX. Endemic of Armenia. Included in the Red Book of Armenia as an endangered species (Akopian, 2010c).

A very peculiar pear, well distinct in mainly spatulate leaves and thick silvery-tomentose pubescence. In the Yerevan floristic region, there was found a variety *P. theodorovii* Mulk. var. *latifolia* Mulk. ex Akopian et Zamani (Akopian, 2014), differing from the type one in larger and broader (7–8 × 2.5–3.5 cm) leaves tapering at the top.

It should be noted that on the territory of the Khosrov Reserve of RA and in the pear grove near the village Gelaisor (Vedi district of RA, 1500–1600 m a.s.l.), from where *P. theodorovii* was described (Mulkidzhanyan, 1965), various hybrid combinations of this species with other species of the section *Argyromalon*, such as *P. medvedevii*, *P. chosrovica*, *P. takhtadzhianii* are found. Thus, the hybrid specimen *P. takhtadzhianii* × *P. theodorovii* (ERE 146616) is distinct in heterophyllia characteristic of *P. takhtadzhianii*, in combination with grey colour and greyish pubescence of the upper and lower leaf surfaces characteristic of *P. theodorovii*.

P. hajastana Mulk. 1969, Dokl. Akad. Nauk Armyanskoi SSR 48, 4: 234.

Described from Armenia. Holotypus: "Armenia, Daralagez, distr. Eghegnadzor, systema fl. Elegis (Alajaz), ripa sinistra fl. Kara-Kajprope Gylliduz, 11 VII 1968. Ja.I. Mulkidzhanjan, K.K. Browicz, T.N. Popova, B.G. Arevschatjan legunt", ERE 144648-1 (barcode ERE0000853)!

Disrtibution in Armenia: Dar. In broad-leaved forests, on dry slopes, 1700–2200 m a.s.l. Fl. IV–V. Fr. IX–X. Endemic of Armenia.

According to Ya.I. Mulkidzhanyan (1969a), allied species of *P. hajastana* are *P. oxyprion* and *P. salicifolia*. From *P. oxyprion* it differs by dense pubescence of leaves both above and beneath. It differs from *P. salicifolia* by characteristic serrated leaves, longer petioles, reddening fruits, longer fruit stalk 2.5–3 cm, instead of 0.5–1.5 cm. *P. hajastana* combines characters of the sections *Xeropyrenia* and *Argyromalon*.

P. georgica Kuth. 1939, Zametki Sist. Geogr. Rast. (Tbilisi) 8: 13.

Described from Georgia. Holotypus: "Georgia. Borshomi, p. p. Likani, 5 X 1937, 11 V 1938. Sch. Kuthatheladze", TBI1025832 photo!

Distribution in Armenia: Ijev., Yerev., Megri. In broad-leaved forests, on dry slopes, 1200–2500 m a.s.l. Fl. IV–V, Fr. VIII–IX.

General distribution: Caucasus (Daghestan, Transcaucasia).

P. chosrovica Gladkova, 1990, Novosti Sist. Vyssh. Rast. 27: 70.

Described from Armenia. Holotypus: "Armenia, distr. Vedi, reservatum Khosrov, 1900 m s. m. ad marginem sylvae mixta e frondosae, 1 X 1965. T.I. Zaikonnikova", LE 01010156 photo!; specimen authenticum: ERE 144626 (barcode ERE0001326)!

Distribution in Armenia: Gegh. (Khosrov forest state reserve). In deciduous forests, along river gorges, 1800–1900 m a.s.l. Fl. IV–V. Fr. VII–IX. Endemic of Armenia.

P. megrica Gladkova, 1990, Novosti Sist. Vyssh. Rast. 27: 72.

Described from Armenia. Holotypus: "Armenia, distr. Meghri, inter pagos Dshindara et Mulk, in ar-

Fig. 2. Lectotype of *Pyrus theodorovii* Mulk.
Рис. 2. Лектотип *Pyrus theodorovii* Mulk.

vensibus ad viarum margines, 12 VII 1958. Ya.I. Mulkidzhanian", LE 01010171 photo!

Disrtibution in Armenia: Dar., Meghri. On the edges of deciduous forests, road edges, 1800–2200 m a.s.l. Fl. IV–V. Fr. VI–IX. Endemic of Armenia.

P. takhtadzhianii Fed. 1937, Trudy Armyansk. Fil. Akad. Nauk SSSR, ser. biol. 2: 208.

Described from Armenia. Holotypus: "Habitat ad margines silvarum frondosarum in district Vedi prope pagum Khosrov, Armeniae australis, ubi 13 IX 1936 ab amiciss. Armen Takhtadzhian lecta" LE 01010179 photo!; isotypi: ERE 27242 (barcode ERE0000875)!, ERE 29439 (barcode ERE0000876)!

Disrtibution in Armenia: Ijev., Apar., Gegh., Yerev., Dar., Zang., Megri. Broad-leaved forests, arid woodlands. Fl. IV–V. Fr. VIII–IX.

General distribution: Caucasus (Central and Southern Transcaucasia), Iran (Zamani et al., 2012).

Large pear-shaped fruits and broad obovate leaves 4–5 (7) × (2) 3–4 cm with cuneate base are typical of *P. takhtadzhianii*. According to V.N. Gladkova (1989), specimens with similar features are only known from the Darelegis, Zangezur ridges and areas adjacent to them. In yet other regions of Transcaucasia, variation in leaf shape is observed from ovate to elliptical.

In the Darelegis floristic region, in addition to the typical specimens, there also occurs a variety with larger and wider (up to 9 × 4 cm), tapering, pointed leaves: *P. takhtadzhianii* Fed. var. *macrophylla* Mulk. ex Akopian (holotypus ERE 149147, barcode ERE0000898) (Akopian, 2014).

An.A. Fedorov (1937, 1958) suggested that *P. takhtadzhianii* is a relict of an ancient fruit culture, the assumption confirmed by V.N. Gladkova (1989), who noted that *P. takhtadzhianii* was a morphologically intermediate species between *P. elaeagnifolia* and *P. communis*. According to our observations, the trees

of *P. takhtadzhianii* growing in the Vayots Dzor region of RA (Noravank gorge) have large, pear-shaped, juicy fruits used by local people.

P. takhtadzhianii, as well as *P. georgica*, are classified as allied taxa, which replace the polymorphic *P. elaeagnifolia* in Transcaucasia. *P. elaeagnifolia* was previously cited for the flora of the Caucasus – for dry areas of the Kura valley, Armenia and Karabakh (Medvedev, 1919), but was subsequently excluded as a species not characteristic of this flora (Woronov, 1924–1925). The shape of the leaves of *P. elaeagnifolia* varies greatly and is broadly or oblanceolate, lanceolate, obovate or spatulate, elliptical, ovate. In addition to *P. takhtadzhianii* and *P. georgica*, other species of the *P. elaeagnifolia* group are also common in Armenia, such as *P. chosrovica*, *P. megrica*, *P. theodorovii*. We studied the specimens (ERE) of the listed pear species from the Ijevan, Yerevan, Darelegis, Zangezur, Meghri floristic regions of Armenia, whose morphological features fall within the variation of *P. elaeagnifolia*. Some of the studied specimens are as follows: "АрмССР, Кафанский район, Шикахохский заповедник, с. Н. Анд, юго-западный склон, правый берег р. Анд, 850 м над ур. м. 4 VII 1960. Собр. М. Григорян [ArmSSR, Kafan district, Shikakhokh reserve, vil. N. And, south-western slope, right bank of the river And, 850 m a.s.l. 4 VII 1960. Leg. M. Grigoryan]" (ERE 114616, 165928); "АрмССР, Вединский район, Гарнийский заповедник, правый борт р. Хосров, лесные поляны, юго-восточный осыпной склон. 7 VII 1961. Ya. Mulkidzhanyan [ArmSSR, Vedi district, Garni reserve, right side of the river Khosrov, forest glades, south-eastern scree slope. 7 VII 1961. Ya. Mulkidzhanyan]" (ERE 70127); "Daralaghez, Pashalu. 30 VI 1935. Leg. Takhtadzhian, Fedorov" (ERE 27253) ; "АрмССР, Ноемберянский район, сел. Кохб, в придорожной полосе, 500 м над ур. м. 28 V 1962. Я. Мулкиджанян [ArmSSR, Noemberyan district, village Kokhb, in the roadside, 500 m a.s.l. 28 V 1962. Leg. Ya. Mulkidzhanyan]" (ERE 85263). The shape of the leaves on the studied samples varies from round-spatulate (Vedi district, Khosrov reserve) and round (Tavush, Koghb village; Syunik, Shikakhokh reserve) to lanceolate-elliptical (Syunik, villages Legvaz × Vagravar). The issue of *P. elaeagnifolia* presence in the flora of Armenia requires further research.

P. gergerana Gladkova 1990, Novosti Sist. Vyssh. Rast. 27: 70. – *P. voronovii* Rubtzov var. *angustifolia* Mulk. 1973, Byull. Moskovsk. Obshch. Isp. Prir., Otd. Biol. 78, 2: 146.

Described from Armenia. Holotypus: "Armenia, Daralaghez, 200 m a pago Gerger secundum viam Asisbekov – Gerger, 1600–1800 m a.s.l. 28 VIII 1968. Leg. Ya.I. Mulkijanian, A.A. Grigoryan, P.P. Gambaryan", LE 01010158 photo!; isotypus ERE 93816 (barcode 0000845)!; paratypi: ERE 93820 (barcode 0000846)!; 93826 (barcode 0000848)!

Disrtibution in Armenia: Dar. Broad-leaved, mountain forests, outskirts of villages, 1600–1800 m a.s.l. Fl. IV–V. Fr. VII–IX. Endemic of Armenia. Included in the Red Book of Armenia as an endangered species (Akopian, 2010c).

P. voronovii Rubtzov var. *angustifolia* Mulk. (holotypus ERE 144659!) in its morphology and distribution coincides with *P. gergerana* Gladkova and is treated by us as its synonym (Akopian, 2007).

In the Darelegis floristic region, a variety *P. gergerana* Gladkova var. *macrophylla* Akopian (Akopian, 2014) also occurs, with large (9 × 5 cm), broadly ovate-rhomboid, suddenly pointed at the top leaves with wavy edges.

P. taochia Woronow 1924–1925, Trudy Prikl. Bot. Gen. Sel. 14 (3): 83; id. 1927, Izv. Glavn. Bot. Sada SSSR 26, 6: 609.

Described from Artvin district, NE Anatolia: "Hab. in distr. Artvin inter pp. Ghurdzhan et Khod, ubi a me a 1911 cum fruct. junior. lecta; adsunt quoque in herb. Horti Petropolitani specimina fructifera a cl. Masalsky ibidem lecta et meis simillima" (Woronow, 1927: 607) ; specimen authenticum: LE 01010174 photo!

Distribution in Armenia: Zang. Seldom. "Zangezur ridge, village Vagravar. 5 VII 1990. Leg. I. Gabrielyan. Det. J. Akopian", ERE 172243 (barcode 0007125). It is possible to be found in other southern regions of Armenia, at 1200–1800 m a.s.l., in the remains of broad-leaved forests.

General distribution: North-Eastern Anatolia, along the middle stream of the river Chorokh.

P. taochia is presently regarded as a synonym of *P. elaeagnifolia* subsp. *kotschyana* (Boiss. ex Decne.) Browicz (≡*P. kotschyana* Boiss. ex Decne.) (Browicz, 1972, 1993). Yu. Woronow (1927) when comparing *P. taochia* with *P. kotschyana* treated it as a separate microspecies. He noted some common features such as missing thorns, pubescent buds, wrinkly ringed scars on short shoots, and differences of *P. taochia* – longer and narrower leaves, smaller and shortly pyriform fruits (versus rounded in *P. kotschyana*), more densely pubescent buds. Judging by authentic specimens of *P. taochia* (LE), this species differs in features of the shape and texture of leaves. To clarify its status, further studies on a wider material are required.

P. complexa Rubtzov 1941, Bot. Mater. Gerb. Bot. Inst. Komarova Akad. Nauk SSSR 9, 1: 80.

Described from Armenia. Syntypi: "Hab. Armenia Sovetica australis: in regione Megry, prope pag. Tashtun, Mulk, 1950–2000 m alt., in agris aut silvis, n° 15, 15–16 IX 1934, Kordon", WIR-3835, photo!; "Armenia, Meghri district, Mulk village, 1950 m, glade near the forest, tree 10 meters, n 61, Rubtzov, 12–16 V 1937 (fl.)", WIR-3834, photo!; specimen originale: "Armenia, Megry district, in vicinity village Tashtun, 2000 m a.s.l., on the fields, tree 6–7 meters with

spreading crown, nº 49, 12 IX 1936. Rubtsov", WIR-3833, photo!

Distribution in Armenia: Yerev., Dar., Zang., Megri. In broad-leaved forests, on forest edges, near villages and gardens, 1200–2100 m a.s.l. Fl. IV–V. Fr. IX. Included in the Red Book of Armenia as an endangered species (Akopian, 2010c).

General distribution: Caucasus (Eastern Caucasus, Southern Transcaucasia).

The characteristic features of the species are distinctly greyish leaves, bell-shaped, often double flowers with corrugated on the edge petals and dark violet anthers.

P. raddeana Woronow 1924–1925, Trudy Prikl. Bot. Gen. Sel. 14, 3: 8; id. 1927, Izv. Glavn. Bot. Sada SSSR 26, 6: 608. – *P. syriaca* var. *raddeana* Diapulis 1933, Feddes Repert. 34: 38.

Described from Armenia. Lectotypus (Gladkova, 1990c: 73–75): "Lischk, 13 VI 1871. Legit Radde", TGM. Stored at ERE there are specimens collected in the locus classicus: "Meghry district, near the village Lichk, the upper border of the forest. 27 VI 1945. G. Tumanyan, A. Takhtadzyan", ERE 14138! (barcode ERE0000895), ERE 35121! (barcode ERE0000896).

Distribution in Armenia: Zang., Meghri. In broad-leaved oak forests, along the slopes, 1600–1800 m a.s.l. Fl. IV–V. Fr. VII–IX. Included in the Red Book of Armenia as an endangered species (Akopian, 2010c).

General distribution: Southern Transcaucasia.

As can be seen from the above material, on the territory of Armenia the intensive morphogenetic processes in the section *Argyromalon* of the genus *Pyrus* are observed, the section includes a number of local endemics, microspecies, varieties and forms, which in some cases can be of a hybrid nature.

Identification key to the species of Pyrus section Argyromalon in Armenia

1. Leaves lanceolate, elliptical or ovate 2

– Leaves linear, narrowly lanceolate or oblong-elliptical 9

2. Leaves with dense pubescence, usually long persisting on both sides 3

– Leaves glabrous or finely pubescent above, with dense, sometimes spotty, grey or whitish felt pubescence beneath 4

3. Leaves broadly ovate or elliptical, 6.5–8 × 3.5–4 cm, shortly pointed at top, crenate-serrate, thickly felt-pubescent, whitish; petioles felt. Fruits yellowish, flattened-rounded, small, 2–3 cm in diam., pedicle thin, almost equal to fruit. Tree up to 10 m tall, with thorns *P. complexa* Rubtzov

– Leaves obovate, spatulate or elliptical, rounded or shortly broadly cuneate at base, obtuse or shortly pointed, 3—5 (7.0) × 1.2–1.8 cm, entire, densely silvery-felt on both sides; petioles 1.5–2 cm long. Fruits solitary, spherical, 2.5–3.0 cm long, pedicle 1.0 cm long. Tree 5–7 m tall, with small, sparse spines *P. theodorovii* Mulk.

4. Leaf margins usually unequally toothed, serrate or crenate 5

– Leaf margins usually entire 6

5. All leaves of similar shape, regularly crenate-serrate at margin, oblong-elliptical, 6–8 × 2–4 cm, with greatest width in the middle, evenly narrowed to both ends, acute at apex, densely grey-pubescent beneath; petioles pubescent, 3–4 cm long. Fruits small, 2 cm in diam., spherical, pedicle longer than fruit. Small tree about 5 m tall, usually without thorns *P. raddeana* Woronow

– Leaves of various shapes, obovate, ovate, rhombic or narrowly elliptical, 4—5 (7) × (2) 3–4 cm, acute or obtuse, with cuneated base, serrate or finely crenate, sometimes entire, silvery thinly tomentose beneath, glabrous above; petioles shorter than blades. Fruits 4–5 cm long, pear-shaped, juicy, brown, pedicle club-shaped, 4–6 cm long. Tree 5–7 m tall, without thorns *P. takhtadzhianii* Fed.

6. Leaves at the late stage green above, shiny, matt beneath, pubescent 7

– Leaves at the late stage greyish on both sides, pubescent beneath 8

7. Fruits large, up to 3.5 cm long, in clusters, pear-shaped. Leaves lanceolate, 6–7 × 2 (2.5) cm, slightly asymmetrical, narrowly cuneate at base, entire or slightly serrated near apex, glabrous, dark green and shiny above, matt beneath, sometimes with slight uneven pubescence; petioles glabrous, 2–3.5 cm long. Large tree with thorns *P. gergerena* Gladkova

– Fruits small, 1.5–2 cm long, usually solitary, globular-pear-shaped. Leaves elongate-elliptical, (7) 8 × 3 (3.5) cm, acuminate, rounded or broadly cuneate at base, wavy at margin, glabrous, dark green and bright above, tomentose beneath, slightly darkening when dried; petioles tomentose-pubescent, 2–2.5 cm long. Large tree without thorns *P. megrica* Gladkova

8. Leaves with attenuate apex, acuminate, oblong-elliptical or lanceolate, 5–10 × 1.5–3 cm, entire or slightly serrated, wavy, greyish-pubescent on both sides, wooly-tomentose beneath, later almost glabrous above, petioles arachnoid, 1.6–4.5 cm long. Fruits globular-pear-shaped, pedicles 1.5–4 cm long. Tree, rarely shrub 3–9 m tall, with thorns *P. georgica* Kuth.

– Leaves without attenuate apex, acuminate-elliptical, (4) 6–8 × 2–3 cm, entire or slightly crenate, initially finely tomentose on both sides, later with arachnoid or ragged pubescence above; petioles pubescent, 1.5–2.5 cm long. Fruits spherical, large, 3–4 cm in diam., pedicles up to 3 cm long. Tree 5–6 m tall, with thorns *P. chosrovica* Gladkova

9. Leaf blades up to 7 times longer than broad. Petioles indistinct or very short, (0.3) 0.5–1 cm long. Leaves on both sides with dense, appressed, silvery-white or greyish, silky or arachnoid pubescence, linear or narrowly obovate (3) 6–9 × 0.5–1 (2) cm, usually entire, with petioles 0.5–1 (2) cm long. Fruits usually solitary, round or pear-shaped, up to 2 cm in diam., pedicles short, 0.5–1.6 (2) cm long. Tree (2) 5–10 m tall, very prickly *P. salicifolia* Pall.

– Leaf blades (3) 3.5–4.5 times longer than broad. Petioles more distinct, from very short to more or less long (0.8) 1.5–2.5 (3) cm long 10

10. Leaves oblong-elliptical, elongated, 6–9 × 2–2.3 cm, acute, cuneate or rounded at the base, indistinctly finely toothed, with reddish-white densely woolly-tomentose pubescence on both sides; petioles 2–3 times shorter than blades. Fruits cylindrical or pear-form, small, about 1.5 cm in diam., pedicle 2 times longer than fruit. Tree of medium size, without thorns *P. taochia* Woronow

– Leaves oblanceolate or lanceolate, cuneate or attenuate at base 11

11. Leaves entire, wavy, oblanceolate, 9–11 × 3–4 cm, more narrowed toward base than toward top, asymmetrical, green and glabrous above, white pubescent beneath; petioles 2.5–3 cm long. Fruits by (1) 3–4, pear-shaped or cylindrical, 2.5–3 cm in diam., green or yellow, pedicle 2–3 cm long. Sepals in fruit bent backwards. Tree 10–12 m tall, with or without thorns *P. medvedevii* Rubtzov

– Leaves finely serrate, slightly wavy, acutely lanceolate, 5–8 (11) × 2 (2.5) cm, attenuate at base, at both sides with grey tomentose pubescence, less thick above, petioles 1.5–3 (4) cm long. Fruits by 1–3, rounded-pear-shaped, 2–2.5 cm in diam., reddish, pedicle 2–2.5 (3) cm long, getting red. Sepals in fruit bent upwards. Small thorny tree 4–8 tall *P. hajastana* Mulk.

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ТАКСОНОМИЧЕСКИЙ ОБЗОР СЕКЦИИ *ARGYROMALON* РОДА *PYRUS* (ROSACEAE) В АРМЕНИИ

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В статье представлены результаты таксономического исследования секции *Argyromalon* Fed. рода *Pyrus* L. (Rosaceae) в Армении, включающей 12 видов. Приводятся конспект и ключ для определения видов секции, данные об их высотном и географическом распространении, местообитаниях, сроках цветения и плодоношения, синонимы, цитаты типовых образцов, а также критические замечания по некоторым таксонам. Отмечается богатое разнообразие эндемичных видов, разновидностей и межвидовых гибридных форм. Обозначен лектотип *P. theodorovii* Mulk.

Ключевые слова: Pyrus, секция *Argyromalon*, систематика, флора Армении