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Notes on the narrow endemic of Armenia, *Pyrus browiczii* Mulk. (Rosaceae)

J. A. Akopian*, A. G. Ghukasyan, M. E. Oganessian

Institute of Botany after A. L. Takhtajyan NAS RA, Acharyan str. 1, Yerevan 0040, Armenia. E-mail: akopian_janna@inbox.ru

* Corresponding author

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Summary. *Pyrus browiczii* Mulk. is a narrow endemic of the Vayots Dzor province of Armenia. It is the only pear species from the East Asian *Pyrus* section *Pashia* native to Armenian flora. Since the description by Ya. I. Mulkidzhanyan in 1969 so far *P. browiczii* was known by the type and single specimens in fruits. During the present study, *P. browiczii* was collected and observed in nature in flowering and fruiting phases. Article contains data on species taxonomy, ecology and particulars of habitat, complete description of the species, it is illustrated by original photos.

Заметки об узколокальном эндемике Армении – *Pyrus browiczii* Mulk. (Rosaceae)

Ж. А. Акопян, А. Г. Гукасян, М. Э. Оганесян

Институт ботаники имени А. Л. Тахтаджяна НАН РА, ул. Ачаряна 1, г. Ереван-0040, Армения

Ключевые слова: описание, систематика, флора Армении, *Pyrus* секция *Pashia*, *Pyrus browiczii*.

Аннотация. *Pyrus browiczii* Mulk. является узколокальным эндемиком области Вайоц Дзор Армении. Это единственный вид груши из восточноазиатской секции *Pashia*, встречающийся во флоре Армении. После описания в 1969 г. Я. И. Мулкиджаняном до настоящего времени, *P. browiczii* был известен по типу и единичным сборам в плодах. В результате настоящего исследования были собраны новые образцы *P. browiczii* и проведены наблюдения в природе в фазе цветения и плодоношения. Статья содержит данные по таксономии, экологии и особенностях местообитания, дополненное описание вида, иллюстрирована оригинальными фотографиями.

Introduction

Armenia is a center of high diversity, polymorphism and narrow endemism in the genus *Pyrus* L. (Mulkidzhanyan, 1969b; Browicz, 1993). About 32–34 species of four sections, *Pashia* Koehne, *Pyrus*, *Xeropyrenia* Fed., *Argyromalon* Fed., are recognized in the Armenian flora, of which 18 species are endemics for Armenia and Southern Transcaucasia (Akopian, 2007, 2010a).

Pyrus browiczii Mulk. was first described by Ya. I. Mulkidzhanyan (1969a) from the Yeghegis River gorge – a remarkable habitat with concentration

of numerous pear species, located in the Vayots Dzor province of Armenia (Darelegis floristic region). According to the Herbarium collections (ERE), 16 species of the genus *Pyrus* grow there: *P. browiczii* (*Pashia*), *P. caucasica* Fed., *P. demetrii* Kuth., *P. sosnovskyi* Fed. (*Pyrus*), *P. complexa* Rubtzov, *P. daralaghezii* Mulk., *P. elata* Rubtzov, *P. pseudosyriaca* Gladkova, *P. syriaca* Boiss. (*Xeropyrenia*), *P. georgica* Kuth., *P. gergerana* Gladkova, *P. hajastana* Mulk., *P. medvedevii* Rubtzov, *P. oxyprion* Woronow, *P. salicifolia* Pall., *P. takhtadzhianii* Fed. (*Argyromalon*). All the groups of *Pyrus* species are represented in this

location, reflecting the main trends of formation and speciation processes in the genus: from the ancient acute-serrate or aristate-dentate, glabrous, broad-leaved mesophilic forms to xerophytic forms of pears with narrow, small, densely pubescent leaves. The ancestors of the mesophilic species were components of the ancient tertiary forest flora, the refugia of which were preserved in East Asia. In Transcaucasia, according to V. N. Gladkova (1990), they are represented by such species as *P. pyrifolia* (Burm. f.) Nakai, *P. browiczii* Mulk., *P. caucasica* Fed., *P. hyrcana* Fed., *P. zangezura* Maleev.

Pyrus browiczii is the only pear species from the East Asian *Pyrus* section *Pashia* that grows in Armenia. It should be noted that the section *Pashia* is represented in the Caucasian flora rarely by single taxa: by the local variety *P. pyrifolia* (Burm. f.) Nakai var. *talyschensis* Gladkova in the Talysh flora (Gladkova, 1988) and by *P. pyrifolia* (Burm. f.) Nakai var. *culta* (Makino) Nakai in the garden culture of Transcaucasia (Fedorov, 1954).

So far, *P. browiczii* has been known only from type specimens, collected by J. I. Mulkidzhanyan et al. in 1968 and the later single samples in fruit stage, stored in the Herbarium (ERE) of the Department of Plant Taxonomy and Geography of the Institute of Botany NAS RA.

During expeditions in May and October of 2019 in Vayots Dzor province, *P. browiczii* was discovered in the area of “locus classicus”, where new herbarium specimens were collected from. *P. browiczii* was described (Mulkidzhanyan, 1969a) by specimens, collected in the plant fruiting period, and the diagnosis of the species did not involve the features of inflorescences and flowers (“flowers unknown”). After the study of the existing herbarium material in ERE and comparing it with new collections of *P. browiczii*, as well as due to observations made in nature during the flowering and fruiting phase of the species, we found it necessary to supplement its description (Fig. 1).



Fig. 1. View on *Pyrus browiczii* tree in the natural habitat.

Material and methods

The study was based on *P. browiczii* ERE Herbarium material and on the new materials collected from species area in the Vayots Dzor

province of Armenia during expeditions in 23 V 2019 and 11 X 2019. Materials represent both flowering and fruiting phases. Morphological characteristics of *P. browiczii* specimens were studied using Stereo Microscope MBC-9. Photos of the plant and their

details were done with digital camera NIKON D3400.

Results

Taxonomy and Description

Pyrus L.

Section *Pashia* Koehne 1893, Deutsch. Dendrol: 244; emend. Terpó 1960, Ann. Acad. Horti–Viticult. 22, 6, 2: 30–32.

Calyx deciduous in fruits. Leaves ovate or orbicular, serrate or crenate, rarely entire, abruptly angustate into long, thin petioles; pubescence absent or sparse. Fruits covered with white or brownish lenticels or without them.

Type: *Pyrus pashia* Hamilt.

***P. browiczii* Mulk.** 1969, Dokl. Akademii Nauk ArmSSR, 1969, 48, 4: 233.

Described from Armenia: “Armenia. Daralagez, systema fl. Elegis, inter pagos Kavuschuk et Gulliduz, 1700 m s. m. 12 VII 1968, Ja. I. Mulkidzhajan, K. K. Browicz, T. N. Popova, B. G. Arevschatjan legunt” (Fig. 2).

Distribution. Darelegis floristic region of Armenia. Gorge of the river Yeghegis, in the vicinity of villages Hermon (Kavuschuk) and Vardaovit (Gulliduz). Seldom. Narrow endemic of the Vayots Dzor province of Armenia (Fig. 3).

Ecology and Habitat. In the middle mountain belt, 1700–1950 m a. s. l., at the edges of broad-leaved forests and fields, on the open hills, meadows; mostly solitary. The habitat of *P. browiczii* occurrence is rich in other woody fruit plants, e. g. *Rosa corymbifera* Borkh., *R. spinosissima* L., *Malus orientalis* Uglitzk., *Sorbus aucuparia* L., *Crataegus* sp., × *Pyrus hyrcana* Fed., *P. pseudosyriaca* Gladkova, *P. syriaca* Boiss., *P. fedorovii* Kuth., *P. takhtadzhianii* Fed. and some others.

Flowering observed in April – May, **fruiting** in September – October.

Protection Category. Critically endangered species, included in the Red Book of Plants of RA (Akopian, 2010b). The area of occupancy is less than 10 km². The limiting factors are restricted extent of occurrence and area of occupancy as well as anthropogenic factors influence. The population is represented by single individuals far apart from each other. Seed productivity is low, vegetative weak propagation is noted. There are currently no measures to protect the species in the habitat. Within the present study, some seedlings of *P. browiczii* were

transplanted from nature into the living collection “Flora and Vegetation of Armenia” of the Yerevan Botanical Garden NAS RA for conservation *ex situ*.

Description. Tree up to 15 m tall with trunk 25–40 cm in diameter, crown broadly pyramidal, branches upright directed; bark grayish-brown, almost smooth on young branches and deeply scaly-furrowed on old ones. Spines dark brown, short, 0.8–1.5 cm long. Buds 0.5–0.8 cm, ovate, conical at the top, glabrous, scales broadly ovate, shortly pointed at the top. Leaves 6–8 × 3–5 cm, lustrous green above, paler below, thin, elliptic, at base from obtuse to broadly-cuneate, at apex broadly acute to acute, weakly mucronate, at margin unequal minute crenate-dentate; young leaf blades below along the main vein and petioles sparsely hairy, later glabrous; petioles up to 4 cm long; stipules 1.5–2.5 mm long, narrowly subulate, deciduous. Inflorescence corymb, up to 8 cm broad, usually 10-flowered. Bracts 6–8 mm long, filiform, brownish. Flowers 2.8–3 cm in diameter, pedicels 4–5 cm long. Hypanthium (2.5)2.8 × (1.8)2.3 mm, hairy, sepals 4.5–4.8 mm long, reflexed, triangular acuminate, on both sides densely tomentose. Receptacle 4.2 mm in diameter, saucer-shaped, densely covered by whitish glands. Petals 5, white, from 13(15) × 13 to 12 × 8 mm, orbicular or obovate, shortly clawed at the base, free, in flowering directed apart. Stamens 20–22, in two rows, ones of the outer row longer than inner ones, anthers (0.8)1.0 mm long, dark pink, filaments white, in outer row 5.5–6.3 mm, in inner row 2.5–3.5 mm long. Styles 5, 5.5 mm long, slightly pubescent at base; ovary 5-loculed. Fruit pome, shortly pyriform, (1.5)2–4 cm long, with 5 unequal locules, brown, smooth, without lenticels; fruit pedicels up to 5–6 cm long. Calyx in fruits deciduous, leaving only a scar ring. Seeds (6)8 × (4)6 mm, dark brown, ovate, at apex acute, flat at one side, convex at other side (Fig. 4).

Examined specimens (Armenia, Darelegis floristic region): «Армянская ССР, Даралагез, ущ. Элегис, Кавушуг × Гюллидуз. Ближе к Гюллидузу на краю поля. 1700 м над ур. м. 12 VII 1968. Я. И. Мулкиджанян, К. К. Брович, Т. Н. Попова, Б. Г. Аревшатян. Det. J. I. Mulkijanian» (Holo – ERE 146612, barcode ERE 0000832); «АрмССР. Даралагез, ущ. Элегис, сел. Кавушуг × Гюллидуз. На краю ущелья. 1700 м над ур. м. Южн. скл. 12 VII 1968. Ja. I. Mulkijanian, K. K. Browicz, T. N. Popova, B. Arevschatjan. Det. Ja. I. Mulkijanian» (Iso – ERE 144574, barcode ERE 0000833); «АрмССР, Даралагез, ущ. р. Элегис, сел. Кавушуг х сел. Гюллидуз, слева от шоссе, среди се-



Fig. 2. Holotype of *Pyrus browiczii* Mulk.

нокосного луга. 1700 м над ур. м. 11 VII 1968. Я. И. Мулкиджанян, К. К. Брович, Т. Н. Попова, Б. Г. Аревшатян. Det. Ja. I. Mulkijanian» (Sp. auth., ERE 144575, barcode ERE 0000834); «АрмССР. Даралагез, Гюллидуз. 11 VII 1968. Ja. I. Mulkijanian. Det. Ja. I. Mulkijanian» (Sp. auth., ERE 89837, barcode ERE 0000836); «АрмССР. Даралагез, Гюллидуз. 11 VII 1968. Ja. I. Mulkijanian. Det. Ja. I. Mulkijanian» (Sp. auth., ERE 89676, barcode ERE 0000835); «АрмССР, Даралагез. Ущ. Элегис, Кавушуг-Гюллидуз. 28 VIII 1968. Я. И. Мулкиджанян. Det. Ja. I. Mulkijanian» (Sp. auth., ERE 90001, barcode ERE 0006401); «Армения, обл. Вайоцзор, между с. с. Гермон

(Кавушуг) и Вардаовит (Гюллидуз), 1900–1950 м над ур. м. 39°53'N, 45°28'Е. 31 V 2006. Э. Габриэлян, А. Нерсесян, М. Саркисян. Det. J. Akorian» (ERE 172066, barcode ERE 0006403); «Армения, обл. Вайоцзор, между с. с. Гермон (Кавушуг) и Вардаовит (Гюллидуз), 1900–1950 м над ур. м. 39°53'N, 45°28'Е. 31 V 2006. Э. Габриэлян, А. Нерсесян, М. Саркисян. Det. J. Akorian» (ERE 172067, barcode ERE 0006405); «Армения, Вайоцзорский марз, долина р. Ехегис, между с. с. Гермон и Вардаовит, 1950 м над ур. м. 39°53'05''N, 45°27'49''Е. 23 V 2019. Ж. Акопян, А. Гукасян, М. Оганесян, Ж. Овакимян. Det. J. Akorian» (ERE 196430–196433); «Армения,



Fig. 3. *Pyrus browiczii* Mulk. location in the Vayots Dzor province of Armenia.

Вайоцзорский марз, ущелье р. Ехегис, между с. с. Гермон и Вардаовит, у поворота с родником, 1954 м над ур. м. 39°53′07,1″N, 45°27′47,7″E.

11 X 2019. Ж. Акопян, А. Гукасян, М. Оганесян. Det. J. Akopian» (ERE 196437–196440).

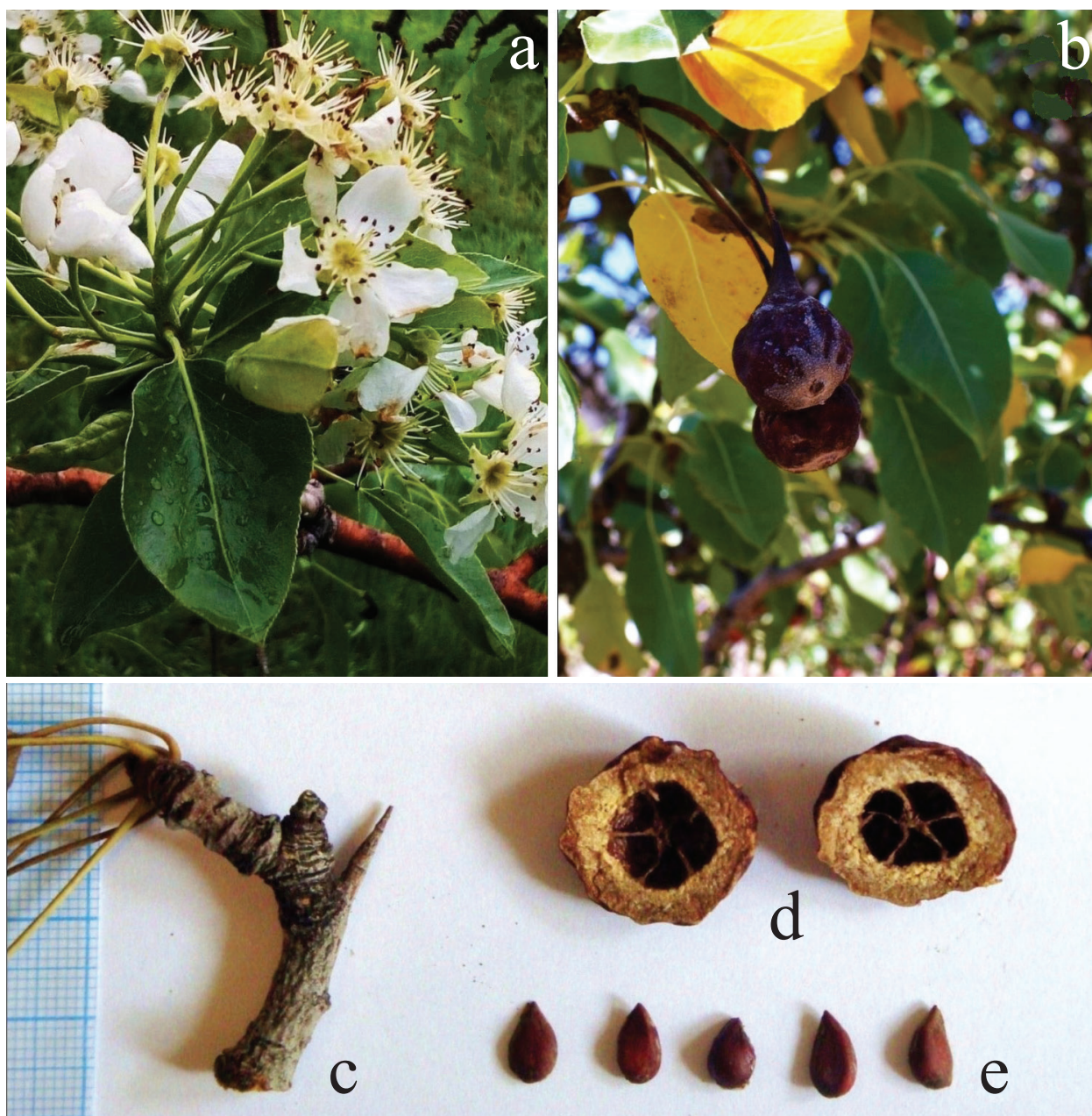


Fig. 4. *Pyrus browiczii* Mulk.: a – inflorescence and flowers; b – fruits; c – spine; d – fruit section; e – seeds.

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