

A NEW SPECIES AND A NEW RECORD OF POACEAE FAMILY FROM IRAN

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The tribes *Milieae* and *Phalarideae* of the family *Poaceae* were studied to prepare Flora of Iran. Several living collections and herbarium specimens were examined. Among the plants studied, a new species belonged to *Milieae* was named and described as *Milium atropatanum*. In addition, from the tribe *Phalarideae*, *Phalaris aquatica* is recorded as a new report to the flora of Iran. The two species are illustrated and their taxonomic characters, differences with their relatives are given.

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Key words. *Milium*, *Phalaris*, new species, new record, *Poaceae*, Flora, Iran.

معرفی گونه جدید *Milium atropatanum* و اولین گزارش گونه *Phalaris aquatica* از ایران

حسین معروفی، عضو هیئت علمی مرکز تحقیقات کشاورزی و منابع طبیعی استان کردستان.

گونه *Milium atropatanum* به عنوان گونه جدید بر اساس نمونه‌هایی که از کوه دوغرون واقع در ارسباران و دامنه‌های غربی و جنوبی کوه سبلان جمع آوری شده شرح داده می‌شود. این گونه با گونه‌های *M. schmidtianum* و *M. transcaucasicum* قرابت و نزدیکی دارد ولی با گونه *M. schmidtianum* به لحاظ اندازه گیاه، ابعاد (پهنک برگ، گل آذین، سنبلچه) و همچنین مژه دار بودن زبانک تفاوت دارد. نمونه‌هایی از جنس *Milium* با شماره‌های ۱۲۱، ۱۲۲ و ۱۳۵ توسط Harrington از کوه سبلان جمع آوری و در فلور ایرانیکا به نام *M. schmidtianum* نامگذاری شده است. مطالعه نمونه‌های جمع آوری شده از ارسباران و کوه سبلان تفاوت‌های اساسی با گونه *M. schmidtianum* داشته و احتمال می‌رود اشتباه در شناسایی نمونه‌های فوق‌الذکر صورت گرفته و نمونه‌های مذکور متعلق به گونه *M. atropatanum* باشند. گونه جدید همچنین با گونه *M. transcaucasicum* که از نخجوان در ارمنستان و قفقاز گزارش شده در صفاتی همچون صاف و بدون کرک بودن گیاه، ابعاد پهنک برگ، انشعابات گل آذین، اندازه و مژه دار بودن زبانک و رنگ سنبلچه‌ها تفاوت دارد. گونه *Phalaris aquatica* به عنوان گزارش جدید از ایران ذکر می‌شود و تفاوت آن با نزدیکترین خویشاوند (*P. arundinacea*) شرح داده می‌شود.

INTRODUCTION

The family of *Poaceae* consists about 27 tribes in Iran. Two of the tribes including *Milieae* and *Phalarideae* have been subject to taxonomic studies for the preparation of Flora of Iran. The genus *Milium* in Iran revised. As the results of this study, *M. schmidtianum* is not known from flora of Iran, a new species increased, and the presence of three other species are confirmed. *Phalaris aquatica* as a new record added to flora of Iran. In this paper tribe *Milieae* redescribed, identification keys to genera and species are given, *Milium atropatanum* is described and compared with its relatives. *Phalaris aquatica* introduced for flora of Iran.

MATERIAL AND METHODS

The herbarium specimens of TARI herbarium and the herbarium of Research Center of Agricultural and Natural Resources of Kurdistan, Sanandaj were totally studied. In some cases other herbaria of Iran were visited. Several excursions were made to different parts of Iran and living materials were examined in the field. Flora Iranica (Bor 1970), Flora of Turkey (Davis 1985), Grasses of the Soviet Union (Tzvelev 1967) were used as the main references. Descriptions and range of characters were directly measured on Herbarium specimens.

RESAULTS AND DISCUSSIONS

Description of Tribe *Milieae* Endl.

Annual or perennial grasses. Leaf blades linear to linear-lanceolate with festucoid anatomy, silica bodies few or none, if present, roundish; 2 celled – hairs absent. Ligule membranous. Inflorescence an effuse or contracted panicle. Spiklets all hermaphrodites, dorsally compressed, with 1 floret. Rachilla disarticulating above glumes. Glumes herbaceous or membranous, 3-nerved, equal or longer than lemma, persistent, the lower wrapped the upper. Lemma smooth and glossy, obscurely 5 nerved, chartaceous, becoming strongly indurated in the fruit, or hyalines covered with clavate hairs. Palea of the same structure, also becoming indurated, 2 nerved. Ludicules 2, acute, entire. Stamens 3. Ovary glabrous. Styles 2. Stigmas plumose. Grain with linear to oblong hilum; embryo 1/4 to 1/5 the length of the grain.

New species

***Milium atropatanum* Maroofi, sp. nov.** (Fig 1).

Diagnosis. Affinis ab *Milium schmidtianum* C. Koch sed planta 35-65 cm. longa (nec 80-150 cm. longa); foliorum laminae 4-14 cm. longae, 1.5-5 mm. latae (nec 6-30 cm. longae, 5-15 mm. latae); panicula 3-7 (-10.5)×0.5-1.4 cm. (nec 10-23×1-8 cm.); rami paniculae 0.7-2.5 cm. longi (nec 2-7.5 cm longi); spiculae 3-3.6 mm. longae (nec 3.5-4 mm. longae); ligula ciliata, 2.5-4.5 mm. longa (nec ciliata et 4-5 mm. longa).

Affinis ab *Milium transcaucasicum* Tzvel sed differt planta laevis, glabriuscula (nec internodiis scabris); foliorum laminae 4-14 cm. longae, 1.5-5 mm. latae (nec 6.5-9.5 cm. longae, 2.5-5 mm. latae), rami paniculae 0.7-2.5 mm. longi (nec 2-3.4 mm. longi), ligula ciliata, 2.5-4.5 mm. longa (nec ciliata et 1.3-1.6 mm. longa); spiculae viridi-purpurei vel atro-purpurei (nec roseo-violacei).

Typus. Azerbaijan: Protected Area of Arasbaran, western slopes of Doghroon mountain, meadows, 2550 m. 12.06.2008, Maroofi & Karegar 8481 (holotypus Kurdistan herbarium; isotypus TARI).

Other specimens studied. Azerbaijan: Kalibar, Arasbaran area, Doghroon mountain, meadows, 2450-2570 m. 28.07.2009, Maroofi & Karegar 9522; Ardabil, Sabalan mountain, Abgarm Shahbill, altitude and collected date unknown, Khaled Moghaddam 5023, (image seen), (SBUH); Azerbaijan: Meshgin Shahr, country pasture, stony place with big rocks, 3665-3685 m. 30. 06. 1987, Olfat & Fathi 1345 (Tabriz herbarium and TARI (377)).

Perennial with fairly short creeping rhizome. Culms 35-65 cm. long, 1.5-2.2 mm. in diam., solitary, erect or geniculately-ascending, smooth, glabrous, (2-) 3-5 noded. Leaf sheaths glabrous; ligule 2.5-4.5 mm., toothed, ciliate, membranous; blades 4-14 cm. long, 1.4-5 mm. wide, linear, acuminate, scabrid at the margin and on both surfaces, specially on veins. Panicle rather contracted, 3-7 rarely up to 10.5 cm. ×0.5-1.4 cm., lobed and interrupted; branches 1-5 (-8), 0.7-2.2 cm. long, scabrid. Spiklets 3-3.6 mm. long, solitary, pedicellate; pedicel 0.5-3.5 mm. long, rough. Glumes similar, somewhat keeled or not, ovate, or ovate-oblong, 3 mm. long, 1 mm. wide, 3-veined, green with purple tinge, or bright to dark purple, scabrid; lemma ovate, 3 mm. long, dorsally compressed, indurate, shiny, without keels, 5-veined, subacute to obtuse; palea equaling of lemma, 2-veined, without keels, subacute to acute; anthers 3, 2-2.5 mm. long.

Bor (1970) in Flora Iranica reported *M. schmidtianum* from Sabalan mountain based on the specimens Harrington 121, 122 and 135. He described the spikelet color as greenish purple or purple. This color is observed in the new species as well that is occurring in Sabalan mountain and Arasbaran area. Due to the affinities of new species with *M. schmidtianum*, it may be that the Harrington specimens are in reality *M. atropatanum*.

Identification key to the species of *Milium* in Iran

1. Annual 2
 - Perennial 3
2. Panicles rather contracted, 6-10 cm. long and up to 5 cm. broad with ascending branches. Pedicels 0.5-4 cm. long

4. *M. vernal* M. B.

- Panicles effuse, 8-22 cm. long and 1-12 cm. broad, with widely spreading branches. Pedicels mostly longer than 5 and up to 22 mm, rarely 2 mm. long

2. *M. pedicellare* (Bornm.) Roshev. ex Melderis in Rech. f.

3- Plants with thick and strong stems. Stems 60-180 cm. tall. Leaf blades 6-30 cm. long and 5-15 mm. broad. Panicles 10-22 cm. long and 1-8 cm. broad; branches 2-7.5 cm. long. Spiklets green to yellowish

1. *M. effusum* L.

- Plants fairly thin. Stems 35-65 cm. tall. Leaf blades 4-14 cm. long and 1.4-5 mm broad. Panicles 3-7 cm. and nearly up to 10.5 cm. and 0.5-1.4 cm. broad; branches 0.7-2.2 cm. long. Spiklets mostly purple or purple with green tinges

3. *M. atropatanum* Maroofi

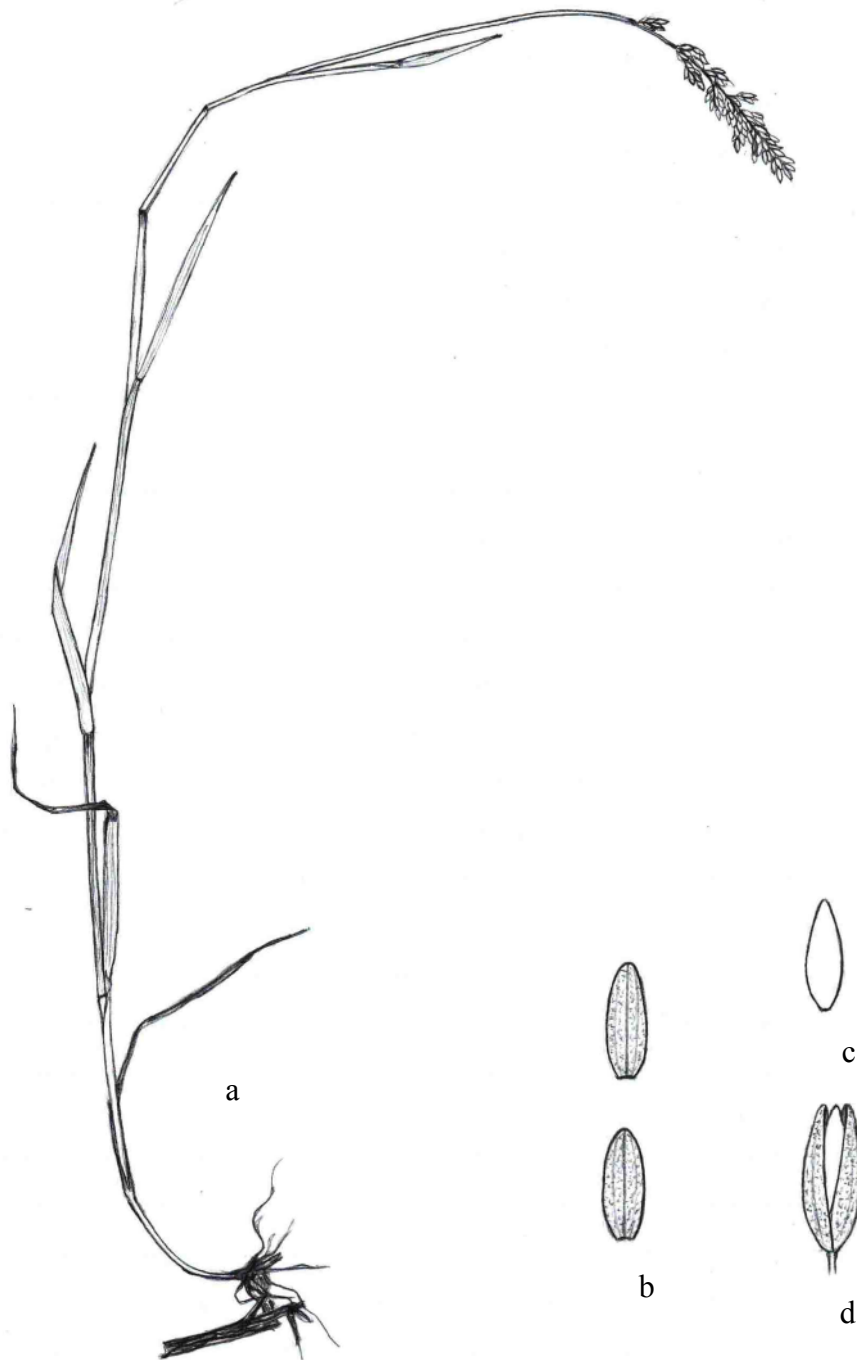


Fig. 1. *Milium atropatanum* a: habit ($\times 0.5$); b: glumes and c: lemma ($\times 5$); d: spiklet ($\times 6$)

New record***Phalaris aquatica* L. (Fig. 2).**

Kurdistan: Sanandaj, Research station of Zaleh, 1450 m., 30. 06. 1994, Maroofi 2859; North of Sanandaj, Saral area, Farhadabad village, 2100 m., 15. 07. 1997, Kaffash & Shokohi 5320; Karaj, 1350 m., 08. 09. 1965, H. Pabot 31009.

Description. Perennial grass with short creeping rhizome, tufted. Culms somewhat geniculate, finally erect, 75-120 cm. tall. Leaf blades up to 35×10 cm. long, linear-acuminate, slightly scabrid, not inflated; ligule 6-8 mm. long, acute. Panicle oblong-cylindrical, not lobed, dense, 2.5-12.5×1-1.5 cm. Spiklets with short pedicel about 0.8-2 mm. green, sometimes with purple tings on wings and beak of glumes. Glumes equal or subequal, acute, winged above the middle; wings not toothed; sterile lemmas hairy, 1 or 2, if 2, unequal, longer one 1-1.3 mm. shorter about 0.5 mm.; fertile lemma 3.6-4 mm long, broad lanceolate, appressed hairy; palea 3.2 mm. long, 2 veined, anther 3.5-4 mm. long.

Phalaris aquatica closely allied to *Phalaris arundinacea* L., but differs from it by three important characters: glumes winged, panicle dense without lobes, and sterile lemmas 1-2, if 2, very unequal in *Phalaris aquatica*, while glumes unwinged, panicle somewhat lax and lobed, sterile lemmas 2, equal or subequal in *Phalaris arundinacea*.

Bor (1970) points out that *P. aquatica* L. is a *nomen confusum* according to Art. 69 of the International Code of Botanical Nomenclature, but as his proposal has never formally made and considered by the Committee on Spermatophyta; *P. aquatica* must therefore be regarded as the correct name for this species (Davis 1985).

Phalaris aquatica with the name of *Ph. tuberosa* L. was reported by Parsa (1950) from Kurdistan, but it may be that this report has been based on Nabelek report from Kurdistan in Turkey.

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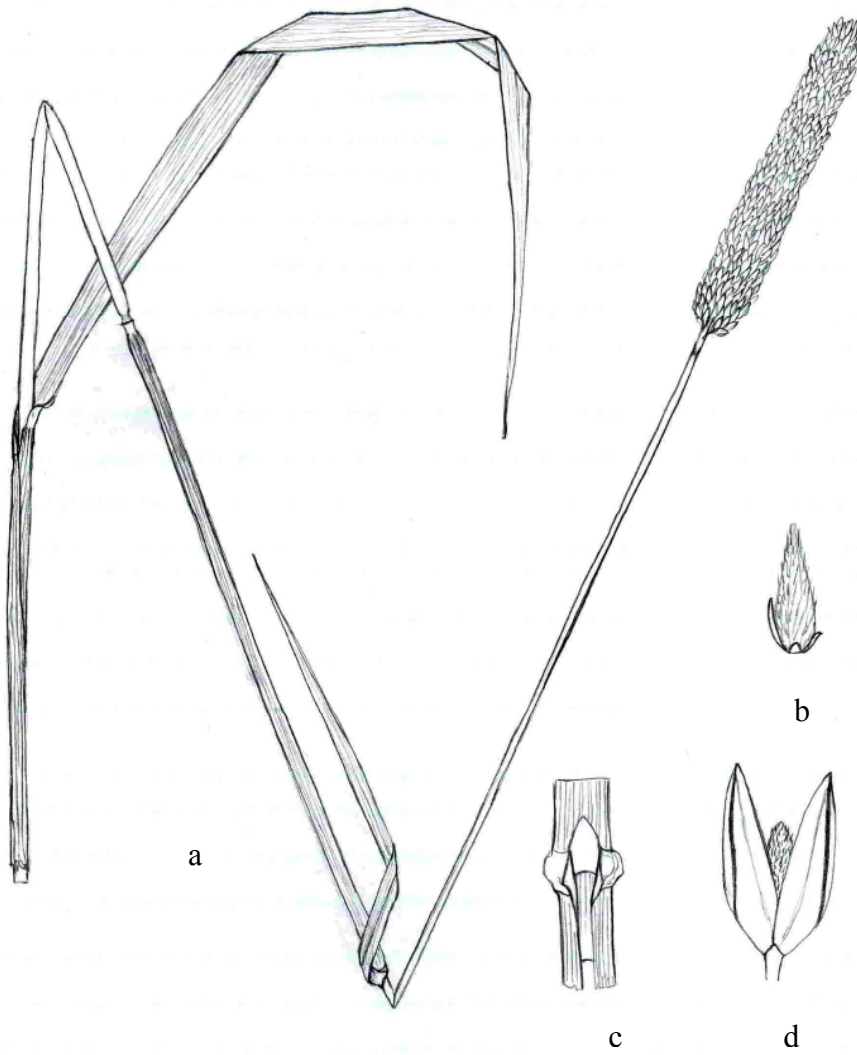


Fig. 2. *Phalaris aquatica* a: habit ($\times 0.5$); b: lemmas ($\times 3$); c: ligule ($\times 1$); d: spikelet ($\times 5$).