NEW RECORDS AND NEW SYNONYM OF ASTRAGALUS SECTIONS AMMODENDRON AND CAPRINI (FABACEAE) FROM IRAN

Y. Nasseh & M. R. Joharchi

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Three species, i.e. Astragalus zurmatensis Podlech & Zarre, A. similissimus Podlech & Zarre and A. urgunensis Podlech (sect. Ammodendron) and also A. kopetdaghi Boriss. var. kopetdaghi (sect. Caprini) are reported for the first time for the flora of Iran and compared with their closest relatives. The later variety is characterized by lack of hairs on the vegetative organs. Moreover, type specimens of A. semiglabricarpus Maassoumi and A. hekmat-safaviae F. Ghahremani were revised and compared. Since there are no differences between them, A. semiglabricarpus is considered as a synonym of the latter. A new locality for the rare species A. ahmed-adlii Bornm. & Gauba is also reported from Yazd province. Illustrations and distribution map for the taxa are presented.

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Key words. Astragalus, sect. Ammodendron, sect. Caprini, Fabaceae, new records, Khorassan.

INTRODUCTION

The Middle Asia in Irano-Turanian region is the main center of diversity of Astragalus sect. Ammodendron and the species of this section are mainly distributed in Asia, Caucasus and North Africa (Komarov 1965, Maassoumi 1998). This section comprises 37 species in Flora Iranica area and 22 species in Iran, 14 of which are Iranian endemics (Podlech et al. 2010). Sect. Caprini is one of the largest sections of Astragalus with 280 species. This section has 171 and 115 species in Flora Iranica area and in Iran, respectively (Podlech 1999). 37 species of this section are known from Khorassan provinces (Nasseh & Joharchi 2009). In the framework of preparing a taxonomic revision on Astragalus sect. Ammodendron in Khorassan provinces, specimens in Herbarium of Ferdowsi University of Mashhad (FUMH) were revised and three species including Astragalus zurmatensis Podlech &
Fig. 1. Distribution map of the new records of *Astragalus* for Iranian flora.

Table 1. Diagnostic characters of *Astragalus urgunensis* and *A. akhundzadahensis*.

<table>
<thead>
<tr>
<th>Characters</th>
<th>Species</th>
<th>Leaflet shape and size (mm)</th>
<th>Peduncle length (cm)</th>
<th>Calyx length (mm)</th>
<th>Legume shape and length (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><em>A. urgunensis</em></td>
<td>linear, 1 pair; 5-18 × 1-2</td>
<td>up to 18</td>
<td>3.5-4</td>
<td>ovoid; ±5</td>
</tr>
<tr>
<td></td>
<td><em>A. akhundzadahensis</em></td>
<td>narrowly elliptic, 1-2 pair(s); 5-10(-13) × 1.5-3</td>
<td>5-10</td>
<td>±6</td>
<td>long elliptic; 7</td>
</tr>
</tbody>
</table>

Table 2. Diagnostic characters of *Astragalus zurmatensis* and *A. urgunensis*.

<table>
<thead>
<tr>
<th>Characters</th>
<th>Species</th>
<th>Leaflet size (mm)</th>
<th>Peduncle length (cm)</th>
<th>Bracts length (mm)</th>
<th>Calyx length (mm)</th>
<th>Standard length (mm)</th>
<th>Legume length and indumentum (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><em>A. zurmatensis</em></td>
<td>15-30 × 2-3</td>
<td>7-15</td>
<td>1-1.5</td>
<td>5</td>
<td>12</td>
<td>8-9 only with long hairs</td>
</tr>
<tr>
<td></td>
<td><em>A. urgunensis</em></td>
<td>5-18 × 1-2</td>
<td>up to 7</td>
<td>0.5</td>
<td>3.5-4</td>
<td>6-7</td>
<td>5 with long and short hairs</td>
</tr>
</tbody>
</table>

Table 3. Diagnostic characters *Astragalus similissimus* and *A. squarrosus*.

<table>
<thead>
<tr>
<th>Characters</th>
<th>Species</th>
<th>Stipule length (mm)</th>
<th>Raceme</th>
<th>Petiole length (mm)</th>
<th>Calyx indumentum</th>
<th>Legume indumentum</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><em>A. similissimus</em></td>
<td>4-6</td>
<td>more or less liberate</td>
<td>1-1.5</td>
<td>only covered with sub-appressed hairs</td>
<td>long hairs without tubercle on the base</td>
</tr>
<tr>
<td></td>
<td><em>A. squarrosus</em></td>
<td>1.5-3</td>
<td>firstly dense, then lax</td>
<td>0.5</td>
<td>covered with ascending and sub-appressed hairs</td>
<td>long hairs with tubercle on the base</td>
</tr>
</tbody>
</table>
A. urgunensis, described from E Afghanistan, is newly reported for the flora of Iran. This species is similar to A. akhundzadahensis Podlech & Zarre but there is some differences between them (table 1).

Razavi Khorasan: Between Gonabad and Torbate Heydariyeh, Lout-e Emrani, 867 m, Memariani & Zangooei 37467 (FUMH), ibid. 37468 (FUMH).
This species was described from E Afghanistan, Paktia province, is similar to A. urgunensis but differs from it in some morphological characters presented in table 2. Here, we report this species as a new record for the flora of Iran.

South Khorasan: Between Nehbandan and Tabasein, Panbe-Nasouz (Asbestos) mine, 900 m, Faghihnia & Zangooei 19815 (FUMH).
This species, hitherto known from south-central parts of Afghanistan, is close to A. squarrosus Bunge but differs in some morphological characters shown in table 3. The above-cited specimen is the first record of the type variety of the species, with glabrous vegetative organs, for the Iranian flora.

New synonym
A. hekmat-safaviae is another species of sect. Ammodendron described from NE Iran in mountains between Mashhad and Torbate Heydariyeh (Ghahremani-nejad 2005) but has been neglected in Flora Iranica (Podlech et al. 2010). Its type specimen was carefully examined and compared with the type specimen of A. semiglabricarpus and also more specimens from locus classicus (Maassoumi 2005) and surrounding areas. Since there is no reasonable difference between these taxa, A. semiglabricarpus is considered as a synonym of A. hekmat-safaviae based on priority rule.

Specimens seen: Razavi Khorassan: 64 km on the road of Mashhad towards Torbate Heydariyeh, Baz-e Hour, 1650 m, Hojat & Zangooei 28706 (Typus, FUMH); Torbate Heydariyeh, Bezgh village, N slope of Bezgh Mt. opposite to Bezgh village, 2000-2500 m, Amirabadi & Paryab 4800 (TARI) [type of A. semiglabricarpus]; N Kashmar, 50 km on the road towards Neyshabour, 1600 m, Faghihnia & Zangooei 18456 (FUMH); N Kashmar, Chalpo, 1870-1900m, Memariani & Zangooei 38940 (FUMH); ibid., 38941 (FUMH).

New record to Yazd province
Astragalus ahmed-adlli Bor. & Gauba, known only from some locations around Karaj in Alborz province, is reported for the first time from Tabas, Yazd province. This species is endemic to Iran and has only limited distribution in C. Iran.


2. Sect. Caprini
Astragalus kopetdaghi Boriss var. kopetdaghi. Figs. 1 & 6.
North Khorasan: SW Bojnord, Salook Protected Area, 2500-2580 m, Memariani & Arjmandi 43947 (FUMH).
A. kopetdaghi is an endemic species to Kopetdag Mountains with two recorded varieties in Flora Iranica: A. kopetdaghi var. orientikopetdaghensis V.V. Nikitin from Iran and Turkmenistan, and var. kopetdaghi only from Turkmenistan, near the Iranian borders. This is the first record of the type variety of the species, with glabrous vegetative organs, for the Iranian flora.

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REFERENCES
Fig. 2. *Astragalus urgunensis*. –Joharchi 43021 (FUMH).
Fig. 3. *Astragalus zurmatensis*. – Memariani & Zangooei 37467 (FUMH).
Fig. 4. *Astragalus similissimus*. –Faghihnia & Zangoeei 19819 (FUMH).
Fig. 5. *Astragalus hekmat-safaviae*. –Memariani & Zangooei 38940 (FUMH).
Fig. 6. *Astragalus kopetdaghi* var. *kopetdaghi*. – Memariani & Arjmandi 43947 (FUMH).