Société botanique d'Occitanie

Carnets botaniques

ISSN 2727-6287 – Article No. 3 – May 2020
DOI : https://doi.org/10.34971/pfbn-jw93

Rediscovery of *Astragalus calvertii* Podlech & M. Ekici (sect. *Malacothrix* Bunge), a species from eastern Turkey

Pierre Coulot (1) & Philippe Rabaute (2)

(1) 9 avenue des Cévennes, Vérargues, F-34400 Entre-Vignes
p.coulot@orange.fr

(2) 60 rue du Salet, F-34570 Vailhauquès
prabaute@orange.fr

Abstract

Astragalus calvertii Podlech & M. Ekici is a milkvetch belonging to the very compact section *Malacothrix*. It was described in 2008 from a single specimen collected in the 1850s by two British botanists in northeastern Turkey. The species had not been collected again anywhere until our observation in June 2007 in Erzurum Province. We can confirm both the presence of this plant in eastern Turkey and the characters that distinguish it from the related species *A. mollis* M. Bieb. and, especially, *A. macrouroides* Hub.-Morath.

Résumé

Astragalus calvertii Podlech & M. Ekici est un astragale de la très compacte section *Malacothrix*, décrit en 2008 à partir de l'observation d'un unique échantillon récolté dans les années 1850 par deux botanistes britanniques dans le nord-est de la Turquie. Cette espèce n'avait jamais été récoltée nulle part depuis, jusqu'à notre observation de juin 2007 dans la province d'Erzurum. Nous pouvons confirmer d'une part la présence de cette plante en Turquie orientale et d'autre part ses critères de discrimination avec les espèces voisines *A. mollis* M. Bieb. et surtout *A. macrouroides* Hub.-Morath.

During our trip to northeastern Turkey in June 2007, we collected a milkvetch of section *Malacothrix* Bunge at Kop Dagi Geçidi, in the municipality of Pırnakaban, west of Erzurum, which we were unable to identify with certainty. Fortunately, having collected several specimens enabled us to resume our identification work several years later and to conclude that this population corresponded to *Astragalus calvertii*, described in 2008, the year after our collection, by Dieter Podlech (Munich) and Murat Ekici (Ankara) from a single specimen collected shortly before 1867 by two British explorers, with no precise locality. This observation allows us to provide additional information on this species.

1. Discovery of the plant and initial identification

During our trip to northeastern Turkey in June 2007 (Coulot *et al.*, 2008), we collected a milkvetch of section *Malacothrix* west of Erzurum, in the province of the same name, which we tentatively identified as *A. macrourus* Fisch. & Mey. The plant grew in grasslands along the margins of oak woodland, at an elevation of 1994 metres, south of Kop Dagi Geçidi beside road 915 (or E97), which links Aşkale and Bayburt (UTM 37S 0631570/4428853) (figure 1). The milkvetch was rather scarce and occurred with magnificent clumps of *Paeonia mascula* (L.) Miller subsp. *arietina* (Anders.) Cullen & Heywood and *Astragalus densifolius* Lam., of section *Dasyphyllium*.



Figure 1. Location of *Astragalus calvertii*.

Our initial identification was based on Davis's *Flora of Turkey* (Chamberlain *et al.*, 1970), in which section *Malacothrix* comprises only ten species. We shall return to this point. Thus, the plant, with pale yellow flowers and clearly sessile ovaries (our specimens bear no fruit), was identified as *A. macrourus* Fisch. & Mey., a species described from Azerbaijan that the British author reported from the regions of Van, Erzincan, Siirt, Bitlis and Antalya. Davis also states that the plant occurs in three different forms, which he calls "groups a, b and c", according to leaflet indumentum and calyx-tooth length. Under this key, our specimens, with more or less appressed hairs on the leaflets and 5 mm calyx teeth, corresponded to "group b", which had already been recorded at Erzincan. The treatment of the species as three groups, highly unusual in this flora, suggested that it was a species aggregate.

It is therefore under this name that our Pırnakaban milkvetch appears on page 224 of our 2008 account of the trip (*loc. cit.*).

Carnets botaniques

2. Advances in the knowledge of section ***Malacothrix*** Bunge

Section *Malacothrix* was described by the first monographer of the milkvetches, the Lithuanian botanist Alexander von Bunge, who in 1868 published the monumental *Astragali species gerontogeae*, an exceptionally substantial work in which he treated 964 species of the genus and described a great many of them. He described no fewer than 105 sections, distributed among eight subgenera. Section *Malacothrix* belongs to subgenus *Hypoglottis*. It is characterised by perennial, caulescent, non-spiny species with basifixed hairs, calyces that do not become inflated after anthesis, sessile flowers, and inflorescences that typically elongate in fruit. It occurs almost exclusively from Turkey eastwards, although a few species occur farther west, such as *A. turolensis* Pau in Spain and *A. maireanus* Greuter & Burdet and *A. exsul* Maire in Morocco.

As in all sections of *Astragalus*, speciation is extensive in this section, and numerous microendemic taxa have been described over the past twenty years through the work of teams specialising in the genus in Germany, under the leadership of Dieter Podlech, and, more recently, in Turkey and Iran. The section now comprises more than 120 species, a substantial proportion of which have been described since the 1990s (Maassoumi, 1990, 1991, 1993; Maassoumi *et al.*, 2003; Maassoumi *et al.*, 2013; Ranjbar, 2007; Ranjbar *et al.*, 2015; Ilçim *et al.*, 2016; Zarre, 2005).

In Turkey, the section currently comprises thirty species, whereas only ten had been described from the country when Davis published his *Flora of Turkey* in 1970. Podlech and Zarre's monograph (2013) provides a new, updated key to the section, which allowed us to revisit our identification and conclude that our milkvetch was in fact *A. calvertii* Podlech & M. Ekici.

3. ***A. calvertii*****, a species known from a single specimen**

A. calvertii was described in 2008 by Dieter Podlech and Murat Ekici in a paper in which they described fourteen new species of *Astragalus*. In the herbarium of the Royal Botanic Garden Edinburgh (E), the authors isolated a single specimen, numbered E00570098 and labelled "*A. mollis* Bieb." following an identification by Chamberlain and Matthews, the authors of the 1968 treatment of the genus *Astragalus* in *Flora of Turkey* (figure 2).

This specimen was collected by two British botanists, Calvert and Zohrab. Henry Hunter Calvert was the British consul at Erzurum from 1851 to 1857 and collected plants during that period with his colleague James Zohrab, who was also a member of the consular staff. Together they collected 1350 specimens, most of which were sent to the Edinburgh herbarium. The authors named *A. calvertii* in honour of Calvert; von Bunge had already named a milkvetch after Zohrab in 1868, *A. zohrabi* Bunge of section *Hymenostegis*.

The original sheet label reads "*Armenia. Coll. Messrs. H.H. Calvert and J. Zohrab. Received may 1867*". The term *Armenia* must be understood in its historical sense, rather than in terms of the present administrative borders of the Armenian state. The plant was therefore very probably collected between 1851 and 1857 in the Erzurum region of Western Armenia, where the two botanists were based, and was then donated to the Edinburgh herbarium well after their return to Great Britain.

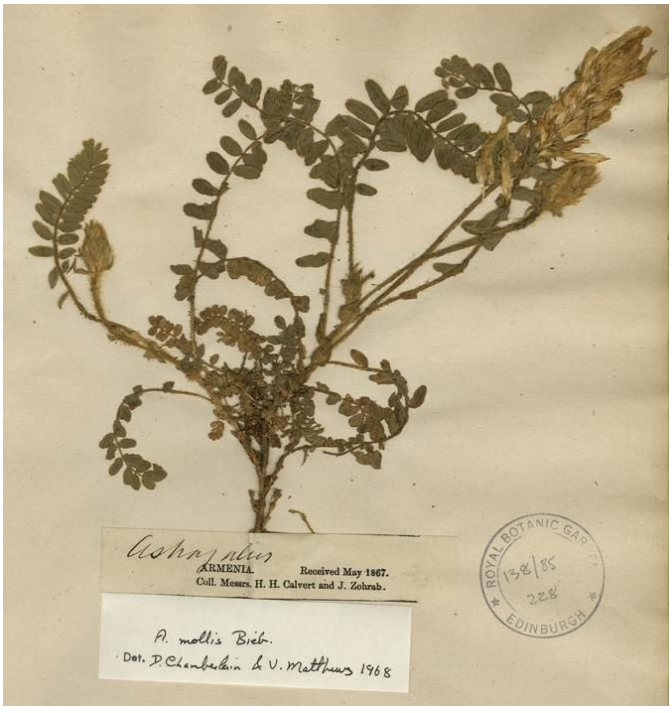


Figure 2. Holotype of *A. calvertii* (in E).

Podlech and Ekici observed that this specimen could not be assigned to *A. mollis*, because its flowering peduncles bear spreading hairs (appressed in *A. mollis*) and its corollas have a standard broadened in the middle (unlike *A. mollis*). The first of these two characters is clearly visible in figure 2.

In addition to the Latin protologue comparing it with *A. mollis*, the plant is described in great detail, except for the fruit (*Legume unknown*), as the specimen bears none. The only information concerning the fruit is that the ovary is sessile, as can be seen by dissecting the developed corollas. It should also be noted that the authors describe the plant as subacaulescent, an important character in a section containing many distinctly caulescent species.

Likewise, the well-preserved specimen shows that the petals are pale yellow. This too is a very important character, because many milkvetches of section *Malacothrix* have predominantly or exclusively anthocyanin-coloured flowers.

4. The Pırnakaban population is *A. calvertii*

Comparison of our Pırnakaban specimens with the holotype of *A. calvertii* confirms that the population found in 2007 belongs to this species. If the slightly different appearance of the inflorescences is regarded as merely reflecting a difference in maturity between our specimens and the Calvert and Zohrab plant, the latter notably having an inflorescence that has begun to elongate (a typical feature of section *Malacothrix*), the plant's other characters distinguish it from related species.

- The indumentum of the leaf rachis and peduncles consists solely of spreading hairs (figures 3 and 4), distinguishing the plant from *A. macrourus* Hohen. and *A. mollis* M. Bieb.;
- The standard is broadened in the middle (figure 5), distinguishing the plant from *A. sarikamishensis* Podlech and *A. pseudotauricola* (Ponert) Podlech;
- The plant is distinctly caulescent (figure 8) and has pale yellow corollas (figures 6 and 7), distinguishing it from *A. macrouroides* Hub.-Morath (Hubert-Morath, 1982).



Figure 3. *A. calvertii*. Pırnakaban (Erzurum, 2007). Leaf; © Pierre Coulot.

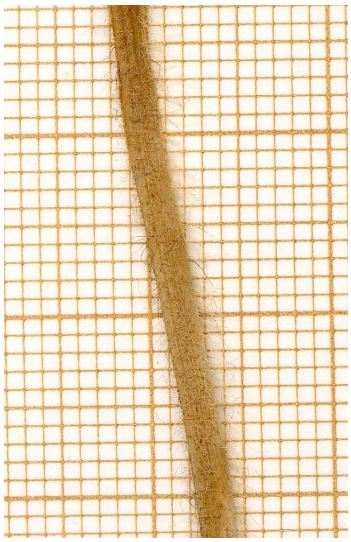


Figure 4. *A. calvertii*. Pırnakaban (Erzurum, 2007). Peduncle; © Pierre Coulot.



Figure 5. *A. calvertii*. Pırnakaban (Erzurum, 2007). Standard; © Pierre Coulot.



Figure 6. *A. calvertii*. Pırnakaban (Erzurum, 2007). Corollas; © Philippe Rabaute.

Carnets botaniques

5. Conclusion

In their revision of Old World milkvetches, Dieter Podlech and Shahin Zarre (2013) conclude their treatment of *Astragalus calvertii* with the statement "*New material could help to confirm this as a good, different species*". We can now confirm that this species is indeed distinct from its relatives and that it was in fact collected by Calvert and Zohrab near Erzurum, where it still grows, at least north of Pırnakaban at Kop Dagi Geçidi, where we collected it in 2007, 150 years later. Unfortunately, our specimens bear no more fruit than the holotype, and the fruits remain unknown to this day.



Figure 7. *A. calvertii*. Pırnakaban (Erzurum, 2007). Habit; © Pierre Coulot.

References

Chamberlain D. & Matthews V., 1970. *Astragalus*. In Davis P.H. *Flora of Turkey and the east Aegean islands*. Edinburgh University press, vol. 3, 628 p.

Coulot P., Rabaute Ph. & Michaud H., 2008. Voyage botanique dans le nord-est de la Turquie. *Bulletin de la société botanique du Centre-Ouest* 39 : 207-242.

Huber-Morath A., 1982. Novitiae Florae Anatolicae XV. *Bauhinia* 7 (3) : 177-183.

Ilçim A. & Behçet L., 2016. *Astragalus topalanense* (Fabaceae), a new species from Turkey. *Turkish journal of botany* 40 : 74-80.

Maassoumi A., 1990. Some new species of *Astragalus* L. section *Malacothrix* in Iran. *Mittelungen der botanischen Staatssammlung München* 29 : 503-508.

Maassoumi A., 1991. Some new species of the genus *Astragalus* sect. *Malacothrix* in Iran. *Iranian journal of botany* 5 : 9-15.

Maassoumi A., 1993. Revision of *Astragalus* L. sect. *Malacothrix* Bunge (Leguminosae) in Iran. *Sendtnera* 1 : 157-240.

Maassoumi A. & Hamzehee B., 2003. A remarkable new species of the genus *Astragalus* with no close relatives from Kermanshah, Iran. *Iranian journal of botany*, 10 : 59-61.

Maassoumi A., Amini Rad M, Bagheri A., Maroofi H., Joharchi M. & Gahremaninejad F., 2013. Five new species of *Astragalus* sect. *Malacothrix* (Fabaceae) from Iran. *Rostaniha*, 14 (1) : 14-21.

Podlech D. & Ekici M., 2008. Some new and interesting *Astragalus* species (Fabaceae) from Turkey. *Feddes Repertorium* 119 (1-2) : 24-36.

Podlech D. & Zarre S., 2013. *A taxonomic revision of the genus Astragalus L. (Leguminosae) in the old world*. Vienna Natural History Museum / Naturhistorisches Museum Wien, vol. 2 : 823-1640.

Ranjbar M. & Mahmoudian B., 2015. An overview on cytogenetics of the genus *Astragalus* subgenus *Hypoglottis* (Fabaceae). *Caryologia* 68 (2) : 109-124.

Ranjbar M., 2007. Taxonomic notes on *Astragalus* sect. *Malacothrix* (Fabaceae) from Iran. *Nordic journal of botany* 24 : 533-538.

Zarre S., 2005. New species of the genus *Astragalus* L. (Fabaceae), mainly from the “Flora Iranica” area. *Feddes Repertorium* 116 (1-2) : 54-79.



Figure 8. *A. calvertii*. Pırnakaban (Erzurum), 5 June 2007;
© Pierre Coulot.