

KAZIMIERZ BROWICZ

Distribution of woody *Rosaceae* in W. Asia VII

Genus *Amelanchier* Med.

The genus *Amelanchier* has not been so far monographically studied in its entirety, however attempts in this direction have been made several times. Schneider (1906a) in the first volume of his comprehensive dendrology has characterized several species of *Amelanchier* and has split them into two sections: *Euamelanchier* Schneid. and *Nagelia* (Lindl.) Schneid. In this latter section he has included only two species occurring in Texas, Mexico and Guatemala. In 1945 these were recognized as a separate genus *Malacomeles* G. N. Jones.

Further systematic studies concerned primarily the North American species. Wiegand (1912) has reviewed those occurring in the eastern part of North America and Nielsen (1939) the species of Minnesota. Finally Jones (1946) has published a monograph of the American representatives of the genus *Amelanchier* and has included in it detailed point maps of the distribution of the individual taxa. They are very closely related to each other and frequently difficult to differentiate. For this reason older students of American flora believed that in that continent there exists only one species or perhaps a few species characterized by considerable variability. According to Jones (*l.c.*) in North America there are 18 species and one hybrid of *Amelanchier*. They occur primarily in the eastern and western parts of the USA (fig. 1). In the north they reach Alaska and Labrador (*A. alnifolia* Nutt. and *A. bartramiana* (Tausch.) Roem.) and in the south as far as California, Mexico, Alabama and Florida (*A. utahensis* Koehne and *A. arborea* (Michx. f.) Fern.). In the Old World only four species are known, the distribution of which is as follows (fig. 2).

1. *A. ovalis* Med. — Europe, North Africa (Morocco, Algeria), West Asia, and the Caucasus. This species is represented by two subspecies: subsp. *ovalis* and subsp. *integrifolia* (Boiss. et Hoh.) Bornm.

2. *A. parviflora* Boiss. — southwestern Turkey. Two varieties are recognized in this species: var. *parviflora* and var. *dentata* Browicz.

3. *A. cretica* (Willd.) DC. — southeastern Greece and Crete.



Fig. 1. The range of distribution of the genus *Amelanchier* in North America

4. *A. asiatica* (Sieb. et Zucc.) Endl. — with two varieties: var. *asiatica* — Japan: Hondo, Shikohu, Kiusiu, Tsusima and southern Korea: Qualperat island (Nakai, 1916); var. *sinica* Schneid. — Central China: N. Schensi, W. Hupeh, E. Szechuan (Schneider, 1906b; Wilson, 1913).

Thus the genus *Amelanchier* has now 22 species. Rehder (1940) and Hutchinson (1964) mention a somewhat larger number, namely 25, however this is probably the result of a somewhat different interpretation of some of the taxa.

Of the Eurasiatic species a detailed point*map of distribution has been prepared only for *A. asiatica* var. *asiatica* (Hara, Kanai, 1959). The ranges of the remaining three species have been drawn by Meusel, Jäger, Weinert (1965) however not according to a uniform system (point maps and line maps) and on maps of very small size which particularly in the case of West Asia does not permit an accurate evaluation of the distribution specificity.

Having access to rich herbarium collections from the region of West

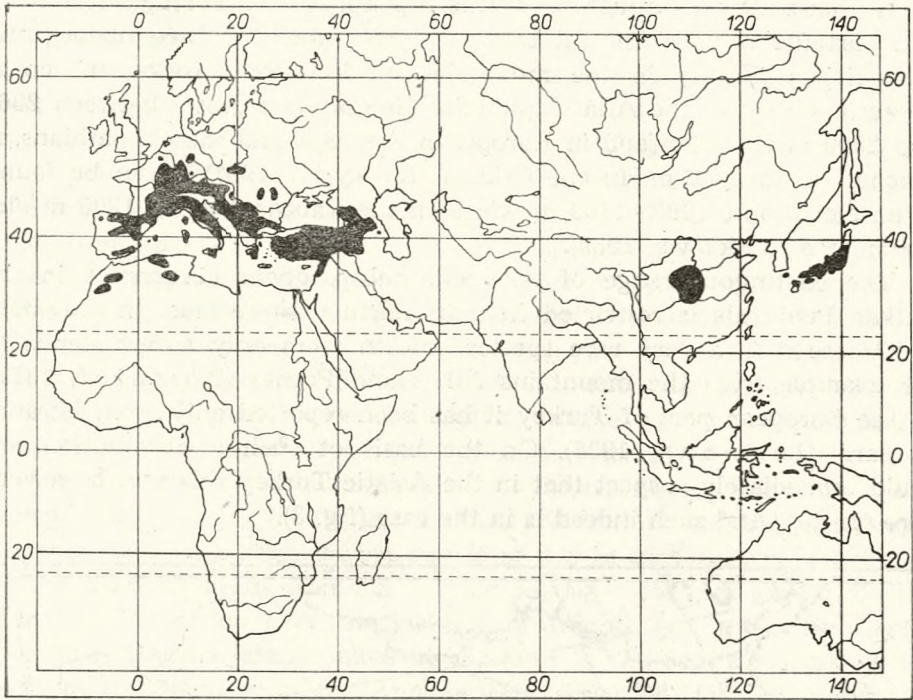


Fig. 2. The range of distribution of the genus *Amelanchier* in Eurasia

Asia and on the basis of the information available in the literature I was able to prepare point maps for these three species. I take this opportunity also to discuss *A. cretica* a species which though it does not occur in West Asia it appears to be closely related to the Turkish *A. parviflora*. The systematic position of *A. cretica* is however still unclear and the species requires further studies.

1. *A. OVALIS* MED.

A. SUBSP. OVALIS

Bornmüller, Feddes Repert. (Beihft.) 89, 1: 234 (1940); Rechinger, Ark. v. Bot., 5, 1: 192 (1960); Mouterde, Fl. Liban, Syrie (conspectus) (1965); Webb, Proceed. Roy. Irish Ac. 65 sect. B, 1: 37 (1966); Mouterde, Nouv. Fl. Liban, Syrie, 2: 206 (1970).

Syn.: *A. vulgaris* Moench, Tchihatcheff, Asie Mineure 3: 129 (1860); Boissier, Fl. Or. 2: 667 (1872); Samuelsson, Sven. Bot. Tidskr. 29, 3: 337 (1935); Thiebaut, Fl. Liban, Syr. 2: 104 (1940); Mouterde, Publ. techn. scient. école Franc. Ingen., Beyrouth No. 13: 27 (1947).

A. rotundifolia Dum.-Courset, Schneider, Ill. Handb. Laubholz. 1: 731 (1906); Schischkin, Contr. Fl. Arm. Turc.: 470 (1929); Hermann, Feddes Repert. (Beihft.) 87: 17 (1936).

It occurs almost throughout southern Europe, from Portugal to Greece and partially also in Central Europe (as far north as Luxembourg and Slovakia), primarily in the mountains on limestone rocks. In north western Africa, in the Atlas Mountains (Morocco) it grows between 2000 and 2800 m elevation and in Europe, in the Alps and the Carpathians, it reaches up to 2000 m. In the Crimea (K o s y c h, 1967) it can be found at an elevation of 600 - 1100 m while on the Caucasus up to 1900 m elevation (P o j a r k o v a, 1939).

The continuous range of *A. ovalis* subsp. *ovalis* occurrence in the Balkan Peninsula is restricted from its north western side. In the south of Greece it is a very rare species, known from only a few stands as for example from the mountains Athos and Parnes (B o i s s i e r, 1872). In the European part of Turkey it has been reported only from Istranca Dağları (H e r m a n n, 1936). On the basis of such a distribution one could immediately suspect that in the Asiatic Turkey this will be a very rare species. And such indeed is in the case (fig. 3).

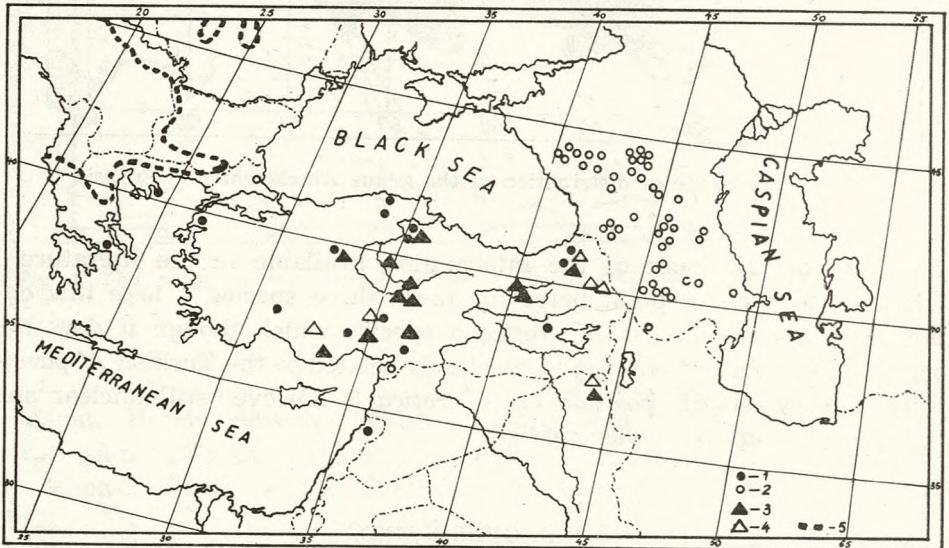


Fig. 3. Distribution of *Amelanchier ovalis* in W. Asia: subsp. *ovalis* (1 — herbarium specimens, 2 — literature), subsp. *integrifolia* (3 — herbarium specimens, 4 — literature), 5 — range of distribution in Europe

In West Asia subsp. *ovalis* grows only in Turkey and in the Lebanon on very few scattered stands. In the Lebanon it was discovered only in 1933 by S a m u e l s s o n (1935) on two adjacent localities situated in the northern part of the country: in Becharre Gorge and in the Cedar region near Ehden at an elevation of about 1600 m. These two stands are distinctly isolated from the nearest southern stands of Turkey in the Amanos Mts.

The first definite information about the occurrence of this subspecies in Turkey comes from the first half of the XIX century. It was found by Aucher-Eloy (*in sched.*) unfortunately we do not know from which part of the country, since on the herbarium label the place of collection is not mentioned. The first published information dates from a much later period and comes from the paper of Tchihatcheff (1860) in which he mentions the herbarium specimen of Kotschy collected in 1853 from the Cilician Taurus. From that time the number of stands rose only slightly to no more than a dozen or so. In spite of that, for a long time doubts persisted as to whether the typical subspecies of *A. ovalis* actually occurs in Turkey (Schneider, 1906a). This opinion was probably formed on the basis of Bornmüller's herbarium specimens collected in the years 1889 and 1890 from the vicinity of Amasia and representing both subspecies but in transitory forms.

We lack information about the conditions under which *A. ovalis* subsp. *ovalis* occurs in Turkey and only about its vertical distribution there is some data. The lowest stands at 400 m elevation have been reported from northern Anatolia — Paphlagonia, near Amasia by Bornmüller (1940) and from the vicinity of Ankara by Davis (*in sched.*). The most elevated stands have been found in the southern and eastern parts of the country, in the Amanos Mts. (Haradjian, *in sched.*), in the Cilician Taurus (Kotschy, *in sched.*) and in the Ziyaret (Abbas, *in sched.*) at an elevation of about 2000 m.

As regards the occurrence in the Crimea a detailed point map of distribution has been prepared recently by Kosych (1967) and for the Caucasus and shores of the Black Sea in the USSR by Grossheim (1952).

Localities

Herbarium specimens:

Turkey. Reg. silvat., Asia Minor, c.fl., Aucher-Eloy 4480 (G. LE.); M. Ida: in marmor, prope Kareikos, 3. 7. 1883, Sintenis 662 (E.K.S.); Paphlagonia. Wilajet Kastambuli, Tossia: Giaurdagh 17. 5. 1892 c.fl., Sintenis 3971 (BM. G. JE.K.S.WU.); Paphlagonia, Wilajet Kastambuli, Kure-Nahas: pr. Ekitschai, 3. 5. 1892 c.fl., Sintenis 3723 (LE.); Amassia, Galatia, c.fl. et juv. fr., Manissadjian 805 (K.L.E.S.); Amasya c.fl., Manissadjian 882b (K.S.); Samsun: Lâdik, Akdağ, from Dere Basalan Koş, 1400 m, 19. 5. 1965 c.fl., Roberson 995 (E.); Vil. Ankara — Beynan wood, 400 m, 5. 7. 1947 c.fr., Davis 13041 (E.); Prov. Isparta: Dedegöl Dag at Oruz Gasyayla, 1700 m, 1. 8. 1949 c.fr., Davis 15936 (E. K.); Alpes „Bulgar Dagħ”. Ad margines Cedretorum alpinas in rupestribus vallis Agatsch Kisse, 6300, 27. 8. 1853, Kotschy 337 (G.K.LE. WU.); Nigde. In the Ala Daglari, on Demirkasyk, 28. 8. 1965, Findlay 126 (E.); Prov. Kars. Distr. Olty. Inter p. Bardus et Promežutočny, 26. 6. 1911, Sosnovsky (TBI.); Ziyaret tepe, 2000 m, Ismail Abbas (E.); Amanus, mont de Döldül, 1500 - 2000 m, 7. 1911 c.fr., Haradjian (G.K.W.). Burdur: Salda See, S. Ufer, offenes Pinetum, 1170 m, 26. 5. 1962, c.fl., Sorger 62 - 36 - 1 (Herb. Sorger, Linz); Kuru Tepe,

Steppenhügel, 1300 m, 14. VI. 1966, Sorger 66 - 44 - 28a (Herb. Sorger, Linz).

Lebanon: Prope pagum Ehden in decliv. occid. versus cedretum vallis Ou-wadi Djehennam, solo calcareo, in rupestribus, ca. 1600 m, 16. 6. 1933 c. juv. fr., Samuelsson 6118 (S.)*.

Literature:

Turkey: Tschilingos (Hermann, 1936); Amasia, ad rupes supra urbem, 400 - 500 m, 10. 5. 1889 c.fr., Bornmüller 304 (Bornmüller, 1940); Distr. Erzerum, in fruticibus ad ripam Sonamer-su, procul a pag. Chorum (Schischkin, 1929); Près de Beilan, à Attik, dans l'Amanus (Mouterde, 1947).

Lebanon: Becherre Gorge, 5000 (Samuelsson, 1935); Entre Bcharré et les Cèdres (Mouterde, 1970).

B. SUBSP. INTEGRIFOLIA (BOISS. ET HOH.) BORNM.

Bornmüller, Feddes Repert. 50 : 143 (1941).

Syn.: *A. integrifolia* Boiss. et Hoh. ex Boiss., Diagn. Pl. Or. Nov. Ser. 1, 3 : 8 (1843); Tchihatcheff, Asie Mineure 3 : 129 (1860); Schneider, Ill. Handb. Laubholz. 1 : 733 (1906); Andrasovszky, Addit. fl. Galaticam et Lyaconicam: 54 (1914); Nábělek, Publ. Fac. Sc. Masaryk, Brno (Iter Turc. Persic.) 35 : 109 (1923); Zohary, Dep. Agr. Techn. Bull. (Fl. Iraq) 31 : 78 (1950); Grossheim, Fl. Kavkaza 5 : 38 (1952); Rawi, Dep. Agr. Iraq Techn. Bull. 14 : 81 (1964); Meikle in Fl. Iraq 2 : 113 (1964); Schönbeck-Temsey in Rechinger Fl. Iranica 66 : 49 (1969).

A. vulgaris Moench var. *integrifolia* (Boiss. et Hoh.) Boiss., Fl. Or. 2 : 667 (1872).

A. ovalis Med. var. *integrifolia* (Boiss. et Hoh.) Bornm., Feddes Repert. (Beihft.) 89, 1 : 234 (1940).

This subspecies has been described originally as an independent taxon on the basis of a herbarium specimen collected by Kotschy in 1841 in Iraq on Mt. Gara, that is at the southernmost locality. Thirty years later Boissier (1872) when comparing the herbarium specimens available at the time of „*A. integrifolia*” from Iraq and from Turkey with the specimens of *A. ovalis* reduced the rank of the former to a variety. Schneider (1906a) also had doubts as to whether „*A. integrifolia*” should not be treated in the same way, however he has preserved the status of a species for it. Bornmüller (1940) has studied the issue more closely since on the basis of a review he made of his own collections as well as those of Sintenis from northern Anatolia he had difficulties in differentiating between *A. ovalis* and *A. integrifolia*.

The two species were supposed to differ in the following characters:

a) leaves in *A. ovalis* have serrate margins and are woolly tomentose below, this indumentum disappearing readily so that during fruiting time the leaves are glabrous; in *A. integrifolia* leaves have entire margins and the indumentum persists frequently even to fruiting time (fig. 4).

b) inflorescences in *A. integrifolia* are said to be poor consisting of no more than 6 flowers while in *A. ovalis* flowers are more numerous.

* This specimen may be distinguished as a new variety: var. *libanotica* Browicz, var. nov. — *Folia ovato-oblonga, acuminata, margine argute serrata* (fig. 9).



Phot. I. Kuberacka

Fig. 4. A herbarium specimen of *Amelanchier ovalis* subsp. *integrifolia* from Turkey (Royal Botanic Garden, Edinburgh)

After comparing a larger number of herbarium specimens of these „two species” it can be seen that the above mentioned characters are very variable and that in *A. integrifolia* one can sometimes find leaves slightly serrate at the tip (Bornmüller, *in sched.* no. 1025b; Davis, Hedge 30956) and glabrous or almost glabrous during fruit ripening. Also the number of flowers can be greater than 6 as for example in the herbarium specimen from Yozgat (Curtis, 187). The geographical distribution of *A. ovalis* and *A. integrifolia* and existence of the above mentioned intermediate forms indicates clearly that we are dealing here with two subspecies and not with species (Bornmüller, 1941).

The opinion of Boissier and Bornmüller has not been accepted however and for example Meikle (1964) and Schömbeck-Temsey (1969) maintain the specific rank for *A. integrifolia*. It is however important to note that these authors have been working on herbarium specimens from northern Iraq, that is from the southernmost extremity of the range. These are not only few but also morphologically more uniform than the Turkish specimens. The rank of a variety for *A. integrifolia* has recently been maintained only by Krüssmann (1960).

A. ovalis subsp. *integrifolia* occurs only in central and eastern Turkey, and in a few stands in north Iraq in the Amadiya district. Grossheim (1952) believed that it may be possible to find it also in the Caucasus, this however has not materialized so far. According to a map prepared by Meusel, Jäger and Weinert (1965) this subspecies extends with its range also into northwestern Iran, however Schömbeck-Temsey (1969) does not mention any stands from that region. As distinct from the typical subspecies of *A. ovalis*, the subsp. *integrifolia* generally occurs in more elevated localities and it seems that it nowhere descends below 1000 m elevation, while the most elevated stands of it can be found at an altitude of 2500 m (Bornmüller, 1941).

Localities

Herbarium specimens:

Turkey: 40 km SE of Ankara. Baynam forest. Metamorphic soil, 1200 m, 16. 6. 1965 c.juv.,fr., Zohary, Plitman 1661-27 (HUJ.); Pontus Galaticus, in rup. m. Sanadagh, 1600 m, 17. 7. 1890, Bornmüller 1025b (JE.); Pontus Galaticus: in monte Ak-dagh, 1000 m (Amasia), 23. 5. 1890 c.fr., Bornmüller 2857 (BM.JE.K.LE.); Gegen Tokat, 1835 c.fr., Wiedeman (LE); Prov. Yozgat: Yozgat, 6. 1960 c.fl., Curtis 187 (E.); Yozgat, Akdag madeni, 1650 m, 21. 8. 1951 c.fr., A. Atakan 14 (E.); Erdschias-Dagh, zwischen Felsen des Pelikartyny oberhalb Gerene, ca. 2200-2400 m, 6. 1902 c.fl., Zederbauer (WU.); Kayseri-Pinarbaşı, Melikagazi Ormani, 1700 m, 27. 8. 1965, Eliçin 3856 (E.); Burujik, Asia Gedigi, Cilician Taurus, 4500', limestone slopes with *Pinus halepensis*, 7. 6. 1934 c.fr., Balls 1316 (E.K.); Défilé des Portes Ciliciennes, 23. 9. 1855 c.fr., Balansa (G.K.); Berytdagh, 8. 8. 1965 c.fr., Haussknecht (JE.); Prov. Erzerum: gorge between Tercan and Selepur, 1400 m, 11. 7. 1957 c.fr., Davis, Hedge 30956 (E.K.); N. Anatolia, ascent from Firat valley to Pülümür, cut oak forest, 1250 m, 30. 7. 1962 c.fr., M. et D. Zohary 151/9 (HUJ.); Erzurum: 5 km N. of Tortum Göl, 1000 m. Stony slopes near little lake, 31. 7. 1966 c.fr., Davis 47645 (E.).

Iraq: Ad parietes saxorum septentrionem versus sitos pr. cacumen m. Gara Kurdist., 27. 7. 1841, Kotschy 331 (G.JE. — TYPUS); Ghara, 1700 m, 26. 6. 1947 c.fr., Rawi 9267 (K.).

Literature:

Turkey: In monte Karadagh supra pagum Dinek, 1800 m, No. 384a (Andrasovszky, 1914); In monte Karadja-Dagh supra pagum Salyr, 1600 m, No. 384 (Andrasovszky, 1914); Ala Dag, bei 2100 m, 7. 9. 1938 c.fr. No. 534 (Bornmüller, 1941); In der Schlucht beim Emli-Boasi, 2500 m, 31. 8. 1938, No. 483 (Bornmüller, 1941);

Prov. Olty; Reg. Kagizman — Kjul-ogly; Inter Dagirman et Zorabchan (Grossheim, 1952).

Iraq: Distr. Berwari: traiectus inter pagos Araden ei Ain Nune (Amadia — Hašitha) ad fontem alt. ca. 1450, 15. 4. 1910, No. 1814 (Nábělek, 1923).

2. *A. PARVIFLORA* BOISS.

A. VAR *PARVIFLORA*

Boissier, Diagn. Pl. Or. Nov. Ser. 1, 3:9 (1843); Tchihatcheff, Asie Mineure 3:129 (1860); Boissier, Fl. Or. 2:668 (1872); Schneider, Ill. Handb. Laubholz. 1:733 (1906); Bornmüller, Mit. Thür. Bot. Ver. N. F., 24:51 (1908); Andrasovszky, Addit. fl. Galaticam et Lyaconicam :54 (1914); Schwarz, Feddes Repert. 36:91 (1934); Huber-Morath, Candollea 10:216 (1943-46).

Syn.: *A. pisidica* Boiss. et Heldr. in Boiss., Diagn. Pl. Or. Nov. Ser. 1, 10:2 (1849).

A. parviflora Boiss. var. *pisidica* (Boiss. et Heldr.) Boiss., Fl. Or. 2:668 (1872); Schneider, Ill. Handb. Laubholz. 1:733 (1906).

This is an endemic plant for Turkey (fig. 5) so far known from only

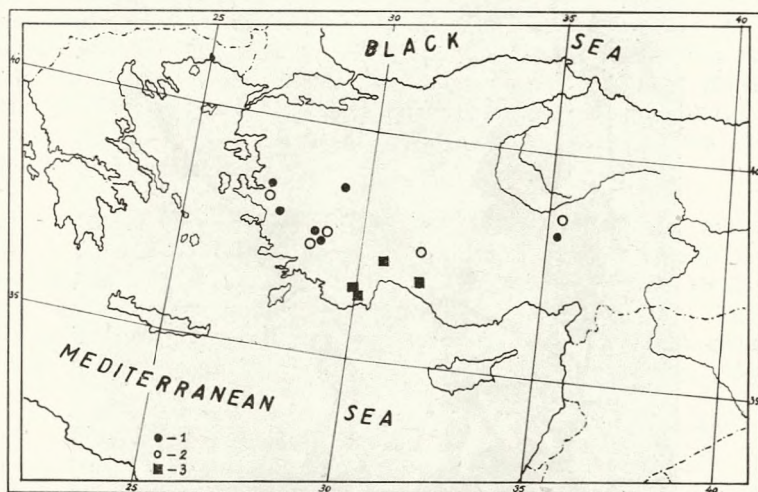


Fig. 5. Distribution of *Amelanchier parviflora*: var. *parviflora* (1 — herbarium specimens, 2 — literature), var. *dentata* (3 — herbarium specimens)

a dozen or so localities in the south-western part of the country where it occurs only between 500 and 1700 m elevation. Detailed data about the plant communities in which this species participates can only be found in the work by Schwarz (1935-1936). He reports that on one of the lowest localities in which this species can be found growing, at an elevation of 500 to 600 m *A. parviflora* grows in thickets of shrubs on rocky, fragile substratum with a pH of 7.2 to 7.4, together with such species as *Quercus coccifera*, *Q. infectoria*, *Q. cerris*, *Arbutus andrachne*,

Phillyrea media, *Pistacia terebinthus*, *Pyrus amygdaliformis*, *Cercis siliquastrum*, *Prunus spinosa*, *Crataegus orientalis*, *Sorbus torminalis* var. *brachyloba* and *S. umbellata* var. *flabellifolia*, *Lonicera etrusca*, *Cistus salviaefolius*, *C. laurifolius* and *C. villosus*, *Genista anatolica*, that is with the representatives of the Mediterranean macchia. At higher elevations it occurs in thickets of *Berberis cretica* together with *Pinus nigra*, *Juniperus excelsa*, *Thymus sipyleus* and *Daphne oleoides*, while on Mt. Nifdag, at an elevation of 1300 m it occurs in the understory of *Pinus nigra* forests (fig. 6).

A few years after this taxon was described, Boissier and Heldreich (Boissier, 1849) have recognized one other species within the



Phot. K. Jakusz

Fig. 6. A herbarium specimen of *Amelanchier parviflora* var. *parviflora* (Royal Botanic Garden, Edinburgh)

genus from Davros Mts. in Turkey, namely *A. pisidica* Boiss. et Heldr. It was supposed to differ from *A. parviflora* in having smaller flowers and shorter sepals. However Boissier (1872) himself has included it later as a variety into *A. parviflora*. On the basis of herbarium specimens available to me I believe that the differences are too small in order to be able to speak about a separate taxon, particularly since the type specimen of *A. pisidica* has been collected in the early stage of flower development, when the individual elements have not been fully developed yet.

Localities

Herbarium specimens:

Turkey: Mont Sypilus, c.fl., Aucher Eloy 1421 (G. K.); Lydia: in monte Sypilo (supra Manissa) in regione subalpina, 900 - 1200 m, 10. 6. 1906 c.fl., Bornmüller 9461 (BM.E.G.JE.K.LE.S.); Partie superieur du Mont Sypile, au-dessus de Magnésie, 6. 1854 c.fl., Balansa 396 (BM.G.JE.K.LE.); Vil. Mughla (Lygia). Baba dagh above Iethiya 4500', on Cedar forest growing with *Juniperus excelsa*, 30. 7. 1947, Davis 13689 (E.K.); Bouglas-Dagh (Phyrgie) vers 1100 m, 13. 6. 1857 c.fl., Balansa 1170 (G.); Kalkklipper Bubadagh 900 m, on Denisli, 30. 5. 1935 c.fl., Wall 28 (S.), Cadmus supra Denizly, 6. 1842 c.fl., Boissier (G. LE); Mons Davros dagh, Pisidia, 6. 1845 c.fl., Heldreich (BM.E.G.K.LE.); Aslandagh, Cappadociae, c.fl. 1859, Kotschy (JE.); Caria, 1843 c.fl., Pinard (BM.G.LE.); Asia Minor, 1842, c.fl., Boissier (E.G.); Antalya; S Avlan Göli, Rand eines Juniperus exc. Waldes, 1200 m, 29. 5. 1963 c.fl., Sorger 63 - 36 - 37 (Herb. Sorger, Linz).

Literature:

Turkey: Nifdag, in regione superiore ca. 1100 - 1500 m, No. 813 (Schwarz, 1934); Carien; Çukur Köy-Tavas, Steppe bei Sarova, 8 km von Tavas, 1150 m, 4. 6. 1938, Reese, Huber 5764 (Huber-Morath, 1943 - 1946); Montes Argaeus (Boissier, 1872); In regione alpina Mesogis supra Tralles (Boissier, 1843 - 1859; 1872; Tchihatcheff, 1860; Bornmüller, 1908); Supra Colossam (Boissier, 1843 - 1859; Tchihatcheff, 1860); In valle Baschara-Su prope oppidum Konia, No. 372 (Andrasovszky, 1914).

B. VAR. DENTATA BROWICZ

Browicz in Davis Fl. of Turkey (1969 — manuscript).

This variety differs from the typical one in that the leaf tips are dentate. So far this variety has been found on only four localities at an elevation of 900 to 1700 m (fig. 5).

Localities

Herbarium specimens:

Turkey: Prov. Antalya, Distr. Gebiz (Pisidia) alt. 1700 m, Bozburun dağ near Tasli yayla, 26. 7. 1949, Davis 15598 (E.K. — TYPUS); Vil. Antalya, Kargi chai (N. of Alanya) nr. Tashatan, 900 m, in Abietum, 25. 8. 1947, Davis 14476 (E.K.); Antalya, east of Avlan Golu, about 20 km SSE of Elmali, ca. 1400 m, in Juniper

forest at lower edge cedar forest, 8. 7. 1964 c.fl., Jackson 5109 (E.); Antalya: Rocky hillside at the highest point on the road from Elmali to Finike, 17. 6. 1966 c.juv. fr., Alava, Bocquet 5240 (E).

3. *A. CRETICA* (WILLD.) DC.

De Candolle, Prodr. 2 : 632 (1825); Raulin, Descr. physique ile Crete: 449 (1869); Halacsy, Consp. Fl. Graec. 1 : 542 (1901); Schneider, Ill. Handb. Laubholz. 1 : 733 (1906); Halácsy, Consp. Fl. Graec. suppl. 2 : 37 (1912); Gandoger, Fl. Cret.: 34 (1916); Hayek, Prodr. Fl. Balc. 1 : 746 (1926); Rechinger, Fl. Aegaea: 307 (1943); Diapulis, Synops. Fl. Graec. B : 102 (1948).

Syn.: *Pyrus cretica* Willdenow, Linn. Sp. Plant. 2 : 1015 (1799); Sibthorp, Smith, Fl. Graec. Prodr. 1 : 345 (1806); Sprengel, Syst. Vegetab. 2 : 510 (1825).

Crataegus rotundifolia Lam. var. *β*, Lamarck, Encycl. Meth. Botan. 1 : 84 (1783); Poiret, Encycl. Meth. Botan. Suppl. 1 : 292 (1810).

Aronia cretica (Willd.) Pers., Synops. Pl. 2 : 40 (1806).

Crataegus cretica (Willd.) Desfontaines, Choix de Plantes: 79 (1808); Desfontaines, Ann. Mus. Hist. Nat. Paris 12 : 53 (1808).

Amelanchier vulgaris Moench var. *cretica* Boiss., Fl. Or. 2 : 667 (1872); Bean, Trees Shrubs Brit. Isl. 1 : 215 (1950).

Amelanchier ovalis Med. subsp. *cretica* (Willd.) Maire et Petitmengin, Etudes d. Plant. Vasc. récolt. en Grèce (1906), Quatr. Fasc., Nancy: 80 (1908).

Amelanchier ovalis Med. var. *cretica* (Willd.) Fiori, Nuov. fl. anal. Ital. 1 : 789 (1924); Franco, Fl. Europ. 2 : 71 (1968).

This is a problematic and critical species, the relation of which with other Eurasiatic members of the genus has not been sufficiently elucidated. The species has been described by Willdenow in 1799 as *Pyrus cretica*, however it was already known much earlier. The first and as it appears certain reference to this plant can be found in the work of Prosper Alpini from the year 1656 entitled „*De Plantis Exoticis Libri Duo*”. On the third page, in the chapter „*De Ceraso Idea*” the author gives a description of this species and on the second page a relatively accurate drawing of it. As can be judged from this description „*Cerasus Idea*” has rounded leaves, whitish, dentate along the margins. Alpini believed that this could be a species identical to „*Agriomelta*” which has been reported from Crete by P. Belloni already in the XVI century. In the period before Linnaeus *A. cretica* has been also known to Tournefort (1700) who has described it under the new name „*Mespilus Cretica, folio circinato et quasi cordiformi*”.

A few years after Willdenow *A. cretica* was studied in greater detail by Desfontaines (1808). Besides a short Latin diagnosis „*Crataegus foliis circinatis, argute dentatis, apice truncatis; floribus racemosis, petalis ellipticis; germine tomentoso*” he has prepared also a longer description in the French language. According to Desfontaines his „*Crataegus cretica*” is a short shrub reaching no more than 60 - 90 cm in height, with leaves 18 - 20 mm long, almost round, with

a truncate or incised apex, distinctly dentate along the margins, on the lower side initially wooly, white pubescent, later glabrous, and with petals up to 12 mm long. A round form of the leaves is not the rule in „*Crataegus cretica*” since Desfontaines had in his herbarium collections a variety with oblong leaves. Similarly as Alpini, Desfontaines has supplemented his description of the species with a quite good illustration — plate 60.

The authors mentioned above as well as Persoon (1806), Poiret (1810) and later de Candolle (1825) and some others report *A. cretica* exclusively from Crete and this only from the Ida Mts. Further stands have been reported from Crete only by Sibthorp and Smith (1806) — „*In Cretae montibus Sphacioticis*” and by Raulin (1869) — „Zone monteuses supérieure Omalos des montagnes Sphakia; Psiloriti”.

Pokorný (1864) was the first to write about the occurrence of this species beyond Crete, on the Balkan Peninsula. *A. cretica* was supposed to have been growing in Dalmatia, in the Velebit mountains. This information is probably a mistake since Pokorný reports that the leaves are „... *tomento ferrugineo floccoso tecta*”, and such a pigmentation of the indumentum occurs typically in *A. ovalis*. Then Boissier (1872) on the basis of a herbarium specimen collected by Orphanides (no. 222) mentions a stand from Peloponnisos, from the Chelmos Mts. This specimen differs distinctly from the herbarium material collected in Crete since it has a persistent, white, dense indumentum tightly appressed to the lower leaf surface. This was pointed out by Halácsy (1901) who divided *A. cretica* into two varieties. The first one, var. *typica* has white wooly tomentose leaves becoming glabrous later and var. *chelmea* with a persistent leaf indumentum. The typical variety has been recognized by Halácsy on the basis of the following herbarium specimens.

1. Heldreich, Herb, norm. 707
2. Plantes de Crète. Amalos, rochers 24. 5. 1884 c.fl., Reverchon 243
3. In monte Parnasso prope Carcaria, 5000' (rare), 28. 6. - 10. 7. 1854, Orphanides 421
4. In rupestribus „Katavothri” Omalò distr. Khaniotika, 1893 c.fr., Baldacci 66

Thus Halácsy included with the typical variety herbarium specimens both from Crete and from Greece. I have seen all these specimens, some even in several sheets, and after a detailed analysis I came to the conclusion that only two of them do in fact correspond to *A. cretica* (Reverchon 243 and Baldacci 66). The specimens from Greece (Heldreich 707 — herbarium in Geneve and Orphanides 421 — herbarium of the Naturhistorisches Museum in Vienna) belong without doubt to *A. ovalis*. It can also be pointed out that Boissier (1872) has similarly diagnosed the specimen of Heldreich 707. The speci-

men of *Orphanides* 421, has leaves 3.5 cm long, glabrescent already at the time of flowering with slightly toothed margins as well as early glabrescent inflorescence axes and glabrescent calyces.

The new var. *chelmea*, Halácsy has recognized on the basis of the herbarium specimen mentioned above found „In regione montes *Chelmos prope Stygem (rara)*, 17 - 29. 7. 1851 c.fl. et juv. fr., *Orphanides* 222". It is characterized by (Herbaria: E. K. W. WU.) round or even broadly ovate or obovate leaves up to 2.5 cm long (usually up to 2 cm). Further significant features are compact inflorescences up to 2.5 cm long, and strongly marked rib-like veins on the dorsal leaf surface.

On the basis of the specimens mentioned above Halácsy has prepared a diagnosis of *A. cretica*, which represents in fact a sort of conglomerate of the characters of *A. ovalis*, *A. cretica* var. *cretica* and var. *chelmea*.

In later years Halácsy (1912) mentions a one further specimen of the typical variety of *A. cretica* from Greece that has been collected by Maire: „*Achaia: prope Sudena in mt. Chelmos*". According to Maire and Petitmengin (1908) this specimen had mature leaves glabrous and lustrous on the dorsal side. On this basis it can therefore be said that it was not var. *chelmea*, however one cannot be sure that it was var. *cretica*. It is true that besides Pokorný (1864) and Hayek (1927) it has also been several times reported by other botanists from various parts of the Balkan Peninsula, yet sufficiently reliable evidence for this is lacking. Hayek (*l.c.*) mentions it from Bosna, Hercegovina, Dalmatia, Macedonia, Greece and Crete, while var. *chelmea* from Greece only. On the other hand Rechingner (1943) who does not recognize the existence of two varieties of *A. cretica* mentions only the herbarium specimens from Crete, while Fiori (1923 - 1925) writes about its occurrence in Sicily and reports that it is characterized there by leaves with a persistent indumentum. Could it therefore be also var. *chelmea*? Unfortunately I cannot answer this question because I have not seen any herbarium specimens of the plant from Sicily.

It is striking that almost all descriptions of *A. cretica* are based on the shape, dentation and pubescence of the leaves while very little information is available about flowers and inflorescences. This is associated with the shortage of herbarium materials for this species, and the ones that are available are usually only vegetative or with fruits. The only specimen collected from Crete while in flower that I have seen (Reverchon 243) is characterized by a dense white pubescence on pedicels and sepals and its petals are about twice as long as the sepals. The flowering specimens from Greece have an even more dense indumentum and compact inflorescences, while the petals are only up to 6 - 7 mm long.

On the basis of the facts presented above I feel entitled to claim with

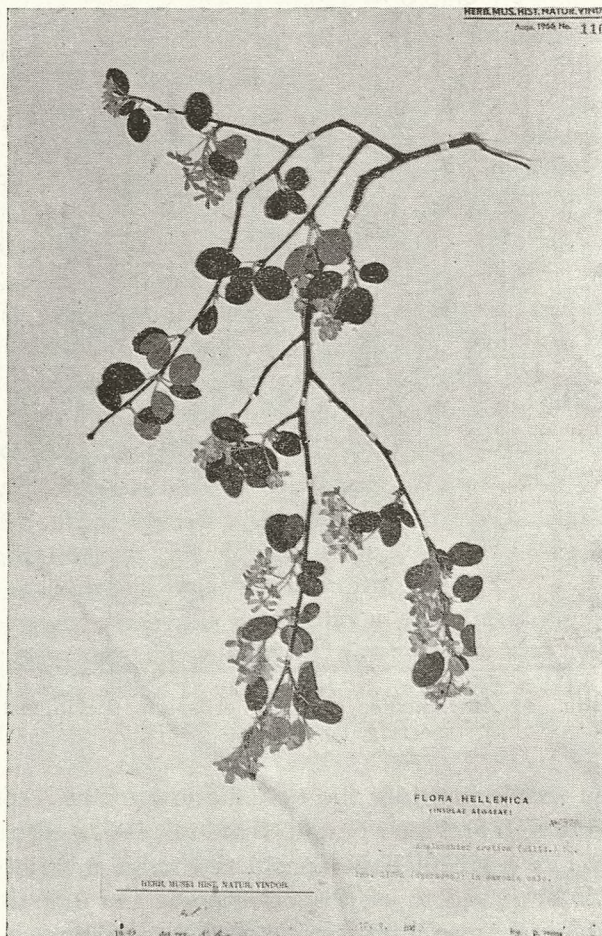
a big degree of probability that *A. cretica* var. *cretica* is restricted only to Crete (fig. 7) and that it does not occur in the Balkans while *A. cretica* var. *chelmea* grows in southern Greece and on one stand in Crete (Greuter no. 4862, *in sched.*).



Fig. 7. Distribution of *Amelanchier cretica* (herbarium specimens): 1. var. *cretica*, 2. var. *chelmea*

Finally one should consider the systematic rank of *A. cretica*. Already Lamarck (1783), Sibthorp and Smith (1806), Desfontaines (1808) and Poiret (1810) have considered it as a variety of *A. ovalis*. Its rank was later raised to a subspecies by Maire and Petitmen- gin (1908). Recently also J. Franco (1968) is inclined to consider these plants from Crete and Greece as variety of *A. ovalis*, however he makes the reservation that it „... may deserve higher status”. A some-

what different approach has been taken by Schneider (1906a), who sees in *A. cretica* a good species related not so much to *A. ovalis* as to *A. parviflora* from Asia Minor. This view became forgotten though it deserves to be considered. On comparison of *A. parviflora* specimens with those of *A. cretica* var. *chelmea* already at a glance a considerable similarity between them is obvious so that one might be inclined to believe that they belong to the same species. This similarity concerns primarily such characters as leaf shape and size, the persistence of the pubescence on leaf blade and the rib-like veins on the dorsal leaf surface. To these one should add the length of the inflorescences, their dense, white indumentum and the length of the petals which are twice as long as the sepals, while in *A. ovalis* they are 3-4 times as long. It may therefore be that var. *chelmea* deserves to be recognized as a separate spe-



Phot. K. Jakusz

Fig. 8. A herbarium specimen of *Amelanchier cretica* var. *chelmea* from the island of Giura (Naturhistorisches Museum, Vienna)

cies related to *A. parviflora*. It differs from the latter in having somewhat larger leaves with dentate margins. The leaves of *A. parviflora* are entire or only with just a few teeth near the leaf apex. Should further observations, particularly on live material, confirm this opinion then the



Phot. I. Kuberacka

Fig. 9. A herbarium specimen of *Amelanchier ovalis* subsp. *ovalis* var. *libanotica* (Holotypus — Naturhistoriska Riksmuseum, Stockholm)

new species should be given the name — *A. chelmea* (Halácsy) Browicz, *nomen propositum* (fig. 8).

As regards *A. cretica* var. *cretica*, its leaf shape and pubescence resembles very much *A. ovalis*, and it is possible as was suggested earlier that it should be included into this species by giving it a lower systematic rank. It is not unlikely that var. *cretica* represents a local, selected

form of *A. ovalis* or that it is a hybrid with var. *chelmea*, which as is evidenced by Greuter's specimen (no. 4862) occurs also on Crete. Thus in the case of this taxon also further studies are needed.

Below I maintain the old division into two varieties and give a list of the herbarium specimens I have seen. I do not mention here the literature quotations, since in such a complex situation they can be completely misleading.

A. VAR. CRETICA

Localities

Crete: In rupestribus ad „Katavothro” Omalò distr. Khaniotika, 10. 7. 1896 c.fr., Baldacci 66 (W.WU.); Montagne de Drakona, rare, 30. 6. 1883 c.juv.fr., Reverchon (W.); Amalos, rochers, 24. 5. 1884 c.fl., Reverchon 243 (E.K.W.); In rupestribus defilé H. Roumeli et Samaria, distr. Sphakia, 13. 7. 1899 c.fr., Baldacci 314 (WU.); In rupestribus m. Psiloriti (Ida), 10. 6. 1899 c.juv.fr., Baldacci 119 (WU.).

B. VAR. CHELMEA HALÁCSY

Consp. Fl. Graec. 1 : 542 (1901); Schneider, Ill. Handb. Laubholzk. 1 : 733 (1906); Hayek, Prodr. Fl. Peníns. Balc. 1 : 746 (1926); Bornmüller, Feddes Repert. 25 : 272 (1928); Diapulis, Synops. Fl. Graec. B : 102 (1948); Phitos, Phytion (Florula Sporadum) 12, 1 - 4 : 122 (1967) *pro cretica*

Localities

Crete: Sphakia: d. der Quelle Dzarani am W. Abfall des Berges Dzaranokefala, 1850 m, Tripolista. — Kalk, 4. 7. 1962, Greuter 4862 (W.).

Greece: In regione montes Chelmos prope Stygem (rara), 5000, 17 - 29. 7. 1851, c.fl., et juv.fr., Orphanides 222 (E.K.W.WU. — TYPUS); Flora Taygetus Alagonia prope Splithara, 20. 8. 1898, Tunta 302 (W.); Flora Attica: in regione abietina montes Parnethis, 1100 m, 29. 6. 1912 c. juv. fr., Tunta 166 (W.); Peloponesus: Achaia, in montis „Chelmos” (Aroania) regione alpina, in faucibus fluvii Stygis, 1600 - 1700 m, 25. 6. 1926, Bornmüller 625 (K.); Achia, Styx-Schlucht ober Solos (1600 m) am Abhange auf d. Wege nach Solos, 25. 6. 1926 c. fr., Mattfeld 1991 (K.); Ins. Giura (Sporades), in saxosis septentriones versus, 9. 5. 1962 c.fl., Phitos 515 (W.); Ins. Giura, in saxosis calc., 17. 5. 1965 c.fl., Phitos 2478 (W.).

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KAZIMIERZ BROWICZ

Rodzaj *Amelanchier* Med.

Streszczenie

Rodzaj *Amelanchier* liczy obecnie 22 gatunki, z których aż 18 występuje w Północnej Ameryce, a tylko 4 w Eurazji, mianowicie: *A. ovalis* Med. — Europa, północna Afryka, Azja zachodnia, Kaukaz; *A. parviflora* Boiss. — południowo-zachodnia Turcja; *A. cretica* (Willd.) DC. — południowo-wschodnia Grecja, Kreta; *A. asiatica* (Sieb. et Zucc.) Endl. — Japonia, Południowa Korea, środkowe Chiny. Autor na podstawie zbiorów zielnikowych i literatury zajął się szczegółowo zasięgiem *A. ovalis* i *A. parviflora* w zachodniej Azji oraz krytycznym omówieniem *A. cretica*, którego pozycja systematyczna jest niejasna i wymaga dalszych studiów.

A. ovalis reprezentowany jest przez dwa podgatunki. Pierwszy z nich — subsp. *ovalis* występuje w Turcji na nielicznych, rozproszonych stanowiskach między 400 - 2000 m n.p.m., a w północnym Libanie na wysokości 1600 m. Drugi podgatunek —

subsp. *integrifolia* (Boiss. et Hoh.) Bornm., który uważany jest często za samodzielny gatunek znaleziony był tylko w środkowej i wschodniej Turcji oraz w północnym Iraku. W porównaniu z poprzednim zajmuje na ogół wyżej położone tereny i sięga aż po 2500 m; stanowiska poniżej 1000 m n.p.m. nie są znane.

A. parviflora jest endemitem tureckim. Rośnie między 500 - 1700 m n.p.m. Jego dwie odmiany różnią się między sobą formą brzegu blaszki liściowej: var. *parviflora* ma liście całobrzegie, a var. *dentata* Browicz opatrzone na szczycie kilkoma ząbkami.

A. cretica opisany w 1799 r. przez Willdenowa znany był już w XVII (Alpini, 1656), a być może nawet w XVI wieku. Początkowo podawano go tylko z Krety, z góry Ida, a następnie również z południowej Grecji, skąd Halácsy (1901) opisał nową odmianę — var. *chelmea* Halácsy. Odmiana ta różni się od var. *cretica* owłosieniem spodniej strony liści (trwale i przylegające). Odmiana typowa posiada owłosienie ścierające się z biegiem czasu. Autor po przeanalizowaniu dostępnych okazów zielnikowych, zarówno z Krety, jak i z południowej Grecji, dochodzi do wniosku, że var. *chelmea* wykazuje znaczne podobieństwo do *A. parviflora*. Te dwa taksony charakteryzują się bowiem podobnie małymi liśćmi, ich trwałym owłosieniem, żeberkowatymi, wystającymi po spodniej stronie blaszki nerwami oraz krótkimi płatkami. Zasadnicza różnica to ząbkowany brzeg liścia u var. *chelmea*. Nie jest wykluczone, że odmianę tę należałoby wydzielić w osobny gatunek, dla którego autor proponuje nazwę — *A. chelmea* (Halácsy) Browicz. Jednakże w tej chwili jest jeszcze za wcześnie na tego rodzaju wydzielenie, gdyż brak jest w pełni reprezentatywnych zbiorów zielnikowych (zwłaszcza w kwiatach). *A. cretica* var. *cretica* stoi bliżej *A. ovalis* i przez niektórych autorów właśnie do tego gatunku był włączany w randze odmiany lub podgatunku. Zarówno w przypadku jednej, jak i drugiej odmiany potrzebne są szczegółowe obserwacje przeprowadzone na żywych egzemplarzach na naturalnych stanowiskach.

КАЗИМЕЖ БРОВИЧ

Под *Amelanchier* Med.

Резюме

Род *Amelanchier* в настоящее время насчитывает 22 вида, из которых 18 распространены в Северной Америке и только четыре в Евразии, а именно: *A. ovalis* Med. — Европа, Северная Африка, Западная Азия, Кавказ; *A. parviflora* Boiss. — юго-западная Турция; *A. cretica* (Willd.) DC. — юго-восточная Греция, Крит; *A. asiatica* (Sieb. et Zucc.) Endl. — Япония, Южная Корея, Центральный Китай. Автор, основываясь на гербарных сборах и литературных данных, детально изучил ареалы *A. ovalis* и *A. parviflora* в Западной Азии и критически обработал *A. cretica*, систематическое положение которой до сих пор неясно и требует дальнейших исследований.

A. ovalis представлена двумя подвидами. Первый из них — subsp. *ovalis* встречается в Турции на немногочисленных изолированных местонахождениях между 400 - 2000 м над ур. м. и в северном Ливане на высоте 1600 м. Второй подвид — subsp. *integrifolia* (Boiss. et Hoh.) Bornm., часто принимаемый за особый вид, найден только в центральной и восточной Турции и в северном Ираке. По сравнению с первым он занимает более высокие ярусы и доходит до 2500 м; местонахождения ниже 1000 м неизвестны.

A. parviflora является турецким эндемом. Она растёт между 500 - 1700 м над ур. м. Её две разновидности различаются между собой формой края листа: у *var. parviflora* лист цельный, у *var. dentata* Browicz — на конце имеется несколько зубчиков.

A. cretica был описан Вилльденовом в 1799 г., но знали её ещё в XVII (Alpini, 1656), а быть может, и в XVI веке. Сначала её указывали только для Крита (гора Ида), на потом и для южной Греции, откуда (Halácsy, 1901) была описана новая разновидность — *var. chelmea* Halácsy. Она отличается от *var. cretica* опушением нижней стороны листа — волоски здесь постоянные и прилегающие. У типичной разновидности опушение с течением времени стирается.

Автор, проанализировав весь доступный материал (как с Крита, так и с южной Греции), пришёл к выводу, что *var. chelmea* очень сходен с *A. parviflora*. Оба эти таксона в одинаковой степени характеризуются небольшими листьями с постоянным опушением, рифлеными нервами, выступающими на нижней стороне листовой пластинки, и короткими лепестками. Существенное различие составляет зубчатый край листа у *var. chelmea*. Не исключено, что эту разновидность надо будет выделить в особый вид, который предлагается назвать *A. chelmea* (Halácsy) Browicz. Однако для этого сейчас ещё не наступило время, так как отсутствуют в достаточной степени репрезентативные гербарные образцы (особенно с цветками). *A. cretica var. cretica* стоит ближе к *A. ovalis* и некоторые авторы относят её именно к последнему виду в ранге разновидности или подвида. Оба таксона нуждаются в тщательном изучении, осуществлённом на живых экземплярах и в естественных местонахождениях.