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Distribution of woody *Rosaceae* in W. Asia XVI
Cerasus mahaleb (*L.*) Miller*

Almost since its first description *Cerasus mahaleb* has caused difficulties to taxonomists trying to classify it into an appropriate genus and until this day full agreement on the subject is lacking. Linne (Spec. Plant. 474, 1753) includeed the species in genus *Prunus*, however already 15 years later Miller (Gard. Dict. ed. 8, 1768) transferred it to a new genus created by him, *Cerasus*, as *C. mahaleb* (L.) Mill. Then Borkhausen (Roemer, Arch. Bot. 1, 2, 1797) towards end of XVIII c. classified it into a third genus — *Padus*, keeping the specific name „*mahaleb*" (*Padus mahaleb* (L.) Borkh). These three names have been used later quite concurrently and so almost until now, though it has to be admitted that the two former names, *Prunus mahaleb* and *Cerasus mahaleb* have been used more frequently than *Padus mahaleb*. This latter name in recent years has been brought back into usage by Sokolov (1954), Fisjun (1961) and Zaprjagaeva (1964).

In 1819 Clairville (Manuel d'Herborisation) considered *C. mahaleb* in a still another genus — *Druparia*, as *D. mahaleb*. This new genus however was not recognized by anyone and forgotten. A few years ago Vassilczenko (1973) comparing morphological and ecological characters of the genus *Padus* and *Cerasus* with the species discussed here came to the conclusion that it deserves to be considered as a monotypic genus *Padellus* Vass. This name was later used by Zaprjagaeva (1975), but it was criticized by Pachomova (1976). Vassilczenko's proposition is to some extent justifiable in that this cherry occupies a particularily isolated position in the intrageneric split up of the genus *Prunus* (*s. l.*), or of the genus *Cerasus*. Thus De Candolle (Prodomus 2, 1825) divided the genus *Cerasus* in to two sections, Cerasophora and Lauro-Cerasus and within the latter section he has included *C. mahaleb* in a special subgroup Padi veri, together with *C. pensylvanica* and *C. padus*. Ledebour (1844 - 1846) in his division of the genus *Pru-*

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nus included the species into section *Padus*. Boissier (1872) took the same approch. Koehne (1893) included this cherry with genus *Prunus*, subgenus *Cerasus* into a separate section *Mahaleb*, together with the American species *Prunus pensylvanica*, and several years later when giving a full split up of the genus *Prunus* (Koehne, 1912) he has lowered the rank of this section to a subsection *Mahaleb* Koehne and divided it into two series 1. ser. *Eumahaleb* Koehne with one species *Prunus mahaleb* and 2. ser. *Paramahaleb* Koehne with three North American species: *Prunus emarginata* Walp., *P. mollis* Walp. and *P. pensylvanica* L. Pojarkova (1941) took the same approch when discussed the genus *Cerasus* for the Flora of the USSR. Section *Mahaleb* she has divided into two monotypic series: 1. *Maximowiczianae* Pojark. with the East Asiatic species *Cerasus maximowiczii* (Rupr.) Kom. and 2 ser. *Mahaleb* Pojark. with *C. mahaleb*.

The variability of *C. mahaleb* is still little known. In cultivation several cultivars are known and a list of them is given among others by Schneider (1906) and Krüssmann (1962), however they do not have any practical value now. A more detailed analysis of the variability of *C. mahaleb* was made by Pénzes (1958), and particularily by Terpó (1968). This latter author, using primarily Hungarian material divided *C. mahaleb* into 4 subspecies and he has recognized within it 13 varieties and 4 forms. Differences between various subspecies depend primarily on the pubescence of shoots. According to Terpó subsp. *mahaleb* is characterized by distinctly puberulent shoots, and it is said to be common throughout western Europe, while subsp. *simonkaii* (Pénzes) Terpó with completely glabrous shoots occurs in Central and southeastern Europe. The third subspecies — subs. *cupaniana* (Guss.) Terpó which has also glabrous shoots but small leaves, is characterized by small heights and occurs in southern Europe. The fourth subspecies — subsp. *baldaccii* (Pénzes) Terpó is reported only from Greece (Epiros) and is characterized by large fruits, its taxonomic rank, however, is uncertain.

Terpó's system is the first attempt to indicate geographic limits of distribution of the intraspecific units of *C. mahaleb*, it seems, however, that it requires a further detailed analysis on a more rich material originating not only from Europe but also from North West Africa and southwestern Asia. It appears now that even in Tadzhikistan and western Iran there occur individuals with glabrous as well as some with distinctly puberulent ones.

According to Terpó the most variable subspecies is subsp. *simonkaii* represented by 7 varieties. It is not unlikely, however, judging by the illustrations published by Terpó that at least a part of these varieties represent only difficult to identify segregants of *C. mahaleb* hybrids with other species, particularily *C. fruticosa* and *C. avium*, or that they are forms selected out in cultivation. Terpó underlines that *C. mahaleb* occurs in Hungary very frequently in old parks and neglected orchards.

From the other varieties, described within *C. mahaleb* one shoud mention two. K o e h n e (1911) has described from Lebanon and odd variety characterized by the presence of stomata not only on the dorsal but also on the ventral side of the leaf blade. He has called it var. *hartmannii* Koehne; this variety got completely forgotten. In Turkey a variety was found in high mountains — var. *alpina* Browicz (B r o w i c z, 1972) with small leaves and small fruits. It still requires, however, a detailed comparison with subsp. *cupaniana* (Guss.) Terpó — possibly these two taxa are identical with each other. It needs to be stressed that this latter subspecies has been described first by G u s s o n e in 1842 as an independent species — *Prunus cupaniana* Guss. from the mountain forest on Sicilly.

C. mahaleb is a species commonly planted throughot Europe in parks and in various plantations and also used in pomology as a stock for noble varieties of sweet and sour cherris. In many places it became completely naturalized. It is very resisten to draught.

In plant communities *C. mahaleb* is never the dominant plant but occurs as a rule scattered as single individuals or small groups, usually in exposed places, well insolated, on stony, primarily southern slopes of hills and mountains, also on rocks, in xerothermic thickets, in steppe-forests and in sparse oak or oak-hornbeam forests as for example in the Crimea (K o s y c h, 1967). It occurs most commonly in the valley of mountain rivers and streams. It is a light demanding thermophilous species having few requirements concerning the soil — it grows both on a limestone substratum and on igneous and metamorphic rocks. Frequently it is only a tall erect densly branched shrub or small tree about 6 - 8 m tall. Occasionally it attains greater dimentions, up 10 or even 12 meters. Z a p r j a g a e v a (1964) reports that in Middle Asia, in the upper runs of river Jach-Su a magnificent individual of this cherry was found measuring 15 m in height and having a stem diameter of 110 cm at ground level and 75 cm at breast height. These are probably the maximal dimentions for the species.

C. mahaleb is characterized by a very diversified vertical distribution. The most elevated stands in Europe are to be found in Switzerland, in canton Graubünden — at 1700 m (H e g i, 1921 - 1923). In Crimea (K o s y c h, 1967) this cherry occurs almost from the sea shore to an elevation of 1000 m. In Anatolia it has been found at elevations between 300 and 2100 m B r o w i c z, 1972) and in the mountains of southern Kurdistan in Iraq between 1300 - 1800 m (M e i k l e, 1966). In that country, in the isolated and dry mountain massif Jebel Sinjar *C. mahaleb* grows to an elevation of 1500 m (Z o h a r y, 1973). In Middle Asia (S o k o l o v, 1954) in the mountains of southwestern Tyan-Shan and the Pamir-Alai Mts. it attaines 1900 m, however, as Z a k i r o v (1961) reports in the upper run of river Artucz O. F e d t s c h e n k o had found this cherry even at an elevation of 2800 m.

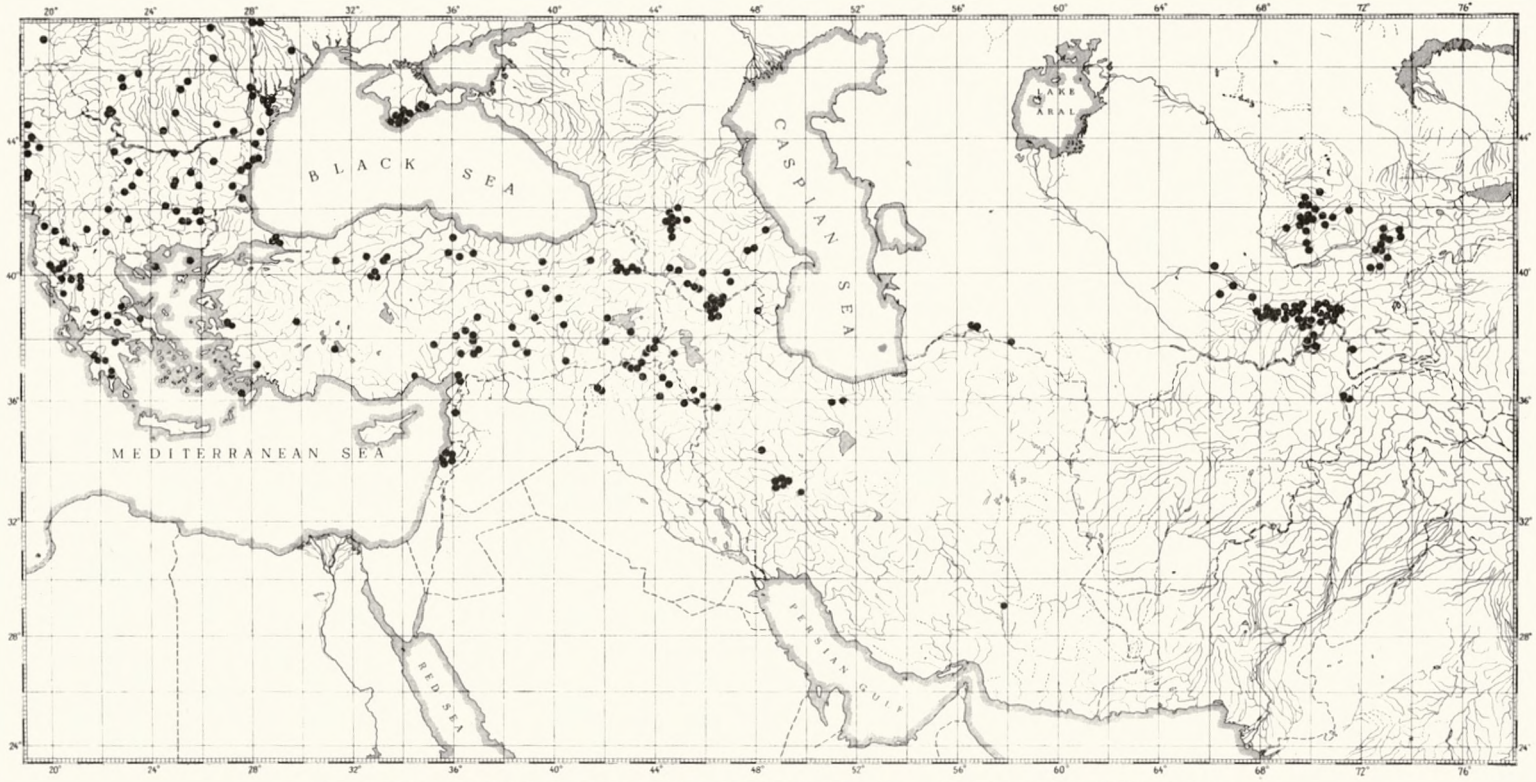

Fig. 1. The distribution of *Cerasus mahaleb* (L.) Mill. — eastern part of the range

In southern Kazakhstan (Fisjun, 1961) it appears much lower down, only to 500 - 800 m.

The most elevated stands of *C. mahaleb* are known from the mountains of western Iran from where Rechinger (*in sched.*) mentions it from stands between 2300 and 2800 m and Koelz (*in sched.*) from the Bakhtiari mountains, even from elevations of 3600 m. On the other hand in northwestern Pakistan, in the Chitral province it has been found between 1800 and 2100 m (Browicz, 1969).

From among all the representatives of the genus *Cerasus* occurring in southwestern Asia the range of *C. mahaleb* is the most elongated one in the east-west direction. It extends from northwestern Africa (Morocco) and western parts of the Iberian Peninsula (Portugal) throughout southern and Central Europe to Asia Minor, the Caucasus and western Iran. Stands are also known from northern Iran, from the vicinity of Teheran, but possibly these are not natural ones. Then the species appears in Middle Asia, in western and central Kopet Dag Turkmenia (Pachomova, 1976), in Uzbekistan, Tadzhikistan, Kirgizya and southern Kazakhstan — here only in the region of Western Tyan-Shan and in Kara Tau (Fisjun, 1961). According to Pachomova (1976) the range of *C. mahaleb* in that part of Asia covers the two major mountain massifs — Tyan-Shan and Pamir-Alai (ranges: Alayskiy, Turkestanskiy, Zervashanskiy, Gissarskiy, Karataginskiy, Peter the First, Darvazskiy and Chozretishi).

Besides *C. mahaleb* occurs in Pakistan (Browicz, 1969), however, Stewart (1972) believes that in Baluchistan and in Chitral and possibly also elsewhere it is only being cultivated and not wild. Abount the introduction of this species to Baluchistan a much earlier mention has already been made (Brandis, 1874).

Thus the range of *C. mahaleb* extends more or less from 6-7° latitude W to more or less 74° latitude E that is for about 80 degrees. The most northerly stand of this cherry is in southern Belgium (Webb, 1968) while the most southerly stands are to be found in Morocco, in the mountains of the Greater Atlas, in central Lebanon and in the Bakhtiari mountains in the central part of the Iranian massif Zagros. Recently, even further south (29°03′N — 57°56′E) *C. mahaleb* was found by Sojak (*in sched.*) in the Kerman province, it is not impossible, however, that this stand, similarily as the stands in Beluchistan, is not of natural origin.

A map of the general distribution of *C. mahaleb* has been prepared in line form by Sokolov (1954) and by Terpó (1968), they give, however, only a very general impression of the geographic distribution of this species and they are not very accurate. The point map accompaning this paper, covering the Balkans and southwestern Asia has been prepared on the basis of rich available herbarium materials and to a lesser extent on literature. Unfortunately I lack accurate data about the stands in southern Jugoslavia. They have not been given even by Cètković and Ando-

novski (1974) who have reported on *C. mahaleb* for Macedonia. Thus on the point map there is a apparent gap in the range of the species in that region.

For the Caucasus use was made of the point map prepared by Grossheim (1952), for Tadzhikistan that of Zaprjagaeva (1964) and for Crimea that of (Kosych, 1967). In the case of Middle Asia use was made of herbarium materials held in the Herbarium of the Institute of Botany of the USSR Academy of Sciences in Leningrad. The list of stands for Iran, northern Iraq and Pakistan I have given in Flora Iranica" (Browicz, 1969) and for Turkey in „Flora of Turkey" (Browicz, 1972), Similar lists were made for Iraq by Meikle (1966) and for Lebanon by Mouterde (1970). As a result in the following list of *C. mahaleb* stands only those are mentioned which have not been published in the publications referred to above (Fig. 1).

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Turkey. Istanbul: between Sariyer and Kilyos, 3.5.1975, Browicz, Zieliński 16 (KOR.); Fener Bagcse, 1862, F. Kubinyi (Terpó, 1968); Kizilcahamam: Bulak yayla. 8. 1960, Wluocak 1109 (E.); ibid., 27.7.1960, Wluocak 1112 (E.); Kizilcahamam — Çakmoklinin ayagi dere, 1536 m, 26.6.1969, Berispek, Örens 8453 (ISTO.); Kizilcahama — Beykayasi, 1265 m, 25.6.1969, Berispek, Örens 8431 (ISTO.); Ankara — Hacikadin deresi. 6.5.1965, Aydin 4832, (ISTO.); Env. of Ankara, near Cubuk Dam, maquis of *Amygdalus orientalis*, 14.7.1963, Orshan 5093 (HUJ.); Galatia: in valle Yaila-Chai (mons Eldiven-Dagh) prope rivulum in pineto ca. 1400 m, 18.7.1925, Czeczott 852 (KRA); Galatia: supra oppidum Arab, in aperto declivi: depasto ad fontem rivuli Ai Deressi, ca. 1400 m, 17.7.1925, Czeczott 292 (KRA.); Prov. Pontus: Amasia, in silvaticis et dumetis regionis calidae, 10.4.1889, Bornmüller 290 (Bornmüller, 1940); Tokat — Niksar, 750 m. 1964, Tolgay Odabasi 2136 (ISTO.); Distr. Erzurum: Araxes superior, in frutices supra pagum Jagen (Schischkin, 1929); Erzurum: Erzurum-Olur, 20.8.1967, Çiçekli, Bilgili 7478 (ISTO.); Mons Sipyle prés de Smyrne, 6. 1854 (LE.); In cacumine montis Takhtali-dagh (Bornmüller, 1908); Manisa — Paşaini deresi, 13.7.1971, Akbuya, Kerpiç 15360 (ISTO.); Moglah, Aucher-Eloy 1488 (G.W.); Isparta. Egridir, Yukarigökdere--Kücükkasnakli Mevki, 1470 m, 22.6.1969, Davis 8761 (ISTO.); Mersinam,? (K.); Sivas: Gök Pinar (S Gürün), felsige Schlucht, 1600 m, 26.6.1971, Sorger 71-49-64 (Herb. Sorger); Zeytun to Beirut Dagh, 4500', non-lime rocks by streamside, 13.5.1934, Balls 1076 (E.K.); In dumetis m. Beryt dagh, 5000', 20.8.1865, Haussknecht (W.); Malatya, 1000 - 2500 m, 5.10.1932, Ajtai-Kovach (W.); Kharput: Koepé, 30.4.1889, Sintenis 159 (W.); Tunceli: Pülümür, 1600 m, igneous slopes, 11.7.1957, Davis, Hedge 30913 (E.K.); About 100 km S of Bayburt, oak forest, 1300 m, 6.7.1963, Orshan, Plitman 6724 (HUJ.); Bitlis: Nemrut-Dagi (Peşmen, 1973); Maraş: Andirin-Aykiraluk mevki, 1000 m, 1953, Kayacik 432 (ISTO.); Amanus, vu selement a Yaheli (Dörtyol) dans les forets de *Carpinus orientalis* sur calcaire, 700 m (Akman, 1973); Amanus, vers Göz Bel (Mouterde, 1947); Maraş; Akherdagh, 30.7.1865, Haussknecht (JE.); In monte Nimrud-Dagh prope vicum Kjachta districtu Mamuret-ül-Asis, locis lapidosis in valle circa Urik, 1200 - 1400 m, 12.7.1910, Handel-Mazzetti 2124 (W.WU.); Gebüsche bei Goldschik, 1200 - - 1500 m (Handel-Mazzetti, 1913); In decliv. mont. c. Terek, 4. 1867, Haussknecht (JE. LE.WU.); In valle fluv. Bochtan, infra urbem S'ert, Districtus Hakkari: in valle torrentis Av Kočanes infra pagum Kočanes et inde usque ad fluv. Zab, 1200 - 1600 m,

6.9.1910, Nábělek 1818 (BAV.) Hakkari: Zap gorge. 15 km from Hakkari to Cukurca, 1200 m, rocky limestone slopes, 12.6.1966, Davis 44794 (E.); Hakkari: Zap gorge, 23 km from Hakkari to Van, 1300 m, S slopes in gorge, 24.6.1966, Davis 45478 (E.).

Iraq. Kurdistan: Gebirge nordöstlich von Erbil, am Kuh-i-Sefin bei Schaklava, 1850 m. 1.5.1893, Bornmüller 1045 (Bornmüller, 1938); Jabal Sindjar (above Balad Sindjar), ca. 1500 m, 27.4.1933, Eig, Zohary 259, 260 (HUJ.); Rashud, 1000 m, rocky slope N side Jabul Sinjar, 29.5.1968, Anders 2130 (W.).

Syria. Alaouite Mts., Jebel Al Chouhh (Nahal, 1962; Zohary, 1973); Jebel Arbain, steppe maquis (Zohary, 1973).

Lebanon. Mt. Liban, Labillardiere (G.); Subalpine Region, bald oberhalb Muneitira, 1600 m, Hartmann 27 (Koehne, 1911).

Iran. Elburs, bei Schahristanek, 1.9.1935 (Bornmüller-Gauba, 1935 - 1936); Karadj (Parsa, 1948); Tal zwischen Kellound Astamal (Karadagh), 6.1847, Buhse 753 (Boissier, Buhse, 1860); Karadagh, in silvis caeduis ad Hasanbeili, 17. 9. 1884, Knapp (WU.); Azerbajian occid.: Chalil Kuh. In faucibus NW Selvana, 1750 - 2000 m, 4.7.1974, Rechinger 48962 (W.); 85 km S Mahabad, SW du col, 1880 - 1830 m, 16.10.1960, Pabot 5515 (G.); Azerbajian occid. In declivibus australibus jugi Gardaneh-ye-Zamziran, S Mahabad versus Sardasht, 1400 m, 8.7.1974. Rechinger 49070 (W.); Between Baneh and Sar Dasht, close to 36°N Lat. near the Iraqi frontier (Zohary, 1973); Prov. Kurdistan. Montes Chehel Chashmeh, 44 km NE Marivan (Dez Shahpur), 2000 m, 7.7.1971, Rechinger 43035 (W.); Luristan: In convallibus borealibus montium Khali Kuh, 50 - 60 km ab Aligudarz meridiem versus, 2300 - 2800 m, 12 - 14.6.1974. Rechinger 47983 (W.); Zagros Central. Vallée de Kamargab, E de Haydeh, zone forestiére, 1800 m, 7. 11. 1959, Pabot 2565 (G.); Au-dessus de la vallée de Sas, Zagros Central. au NE de Sherkhan, E. Sefid Desht, foret de chenes, 5.11.1959, Pabot 2547 (G.); Bakhtiari: Heyran, 13.8.1950, Halimi (Esfandiari. 1967); Prov. Kerman: montes Kuh-e Jebal Bárez in vicinitate vici Deh Bakri, 1700 - 2700 m. in. declivibus montium saxosis, 2. 5. 1973, Sojak 3861, 3866 (PR.).

SUMMARY

The systematic position and geographical distribution of *Cerasus mahaleb* is decribed. On the basis of rich herbarium materials and data from the literature a point map of distribution of this species is presented for the region of southwestern Asia, the Balkan Peninsula, the Caucasus and Crimea. In this region *C. mahaleb* occurs as scattered stands in xerothermic communities on open and insolated sites, in Turkey up to 2100 m, in Iraq up to 1800 m, in Syria and Lebanon up to 1600 m, in Iran up to 3600 m and in Pakistan up to 2100 m. So far it has not been reported from Afghanistan. Generally speaking is a small tree, 6 - 8 m tall, however, occasionally specimens with exceptionally large dimentions can be found as for example in Middle Asia in USSR where an individual measuring 15 m in height and 75 cm in breast height dimater is known to exist.

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Cerasus mahaleb (L.) Miller

Streszczenie

Pozycja systematyczna C. *mahaleb* nie jest jeszcze zupełnie jasna i takson ten zaliczany był do różnych rodzajów — *Prunus* L. (1753), *Cerasus* Mill. (1768), *Padus* Mill. (Borkhausen, 1797), *Druparia* Clairville (1819) oraz *Padellus* Vass. (1973), najczęściej jednak do dwóch pierwszych. W wewnątrzgatunkowym podziale tych rodzajów zajmuje on szczególne, odosobnione miejsce i specjalnie dla niego utworzono monotypową serię *Mahaleb*.

Zmiennością C. *mahaleb* zajmował się w 1968 r. Terpó i podzielił go na 4 podgatunki z 13 odmianami i 4 formami. System ten wymaga jednak szczegółowego prześledzenia na bardziej bogatym materiale zielnikowym z całego obszaru zasięgu.

C. *mahaleb* występuje w rozproszeniu i rośnie w zbiorowiskach kserotermicznych, w laso-stepach oraz świetlistych lasach dębowych, na kamienistych zboczach o południowej wystawie, a zwłaszcza w dolinach górskich rzek i potoków. Jest to silny, bujnie rozgałęziony krzew lub małe drzewo o wysokości 6 - 8 m; wyjątkowo tylko osiąga większe rozmiary. W Azji środkowej w ZSRR znaleziony został wspaniały okaz antypki o wysokości 15 m i 75 cm średnicy pnia w pierśnicy.

Na podstawie bogatych zbiorów zielnikowych oraz danych z literatury autor opracował szczegółową, punktową mapę rozmieszczenia C. *mahaleb* w południowo-zachodniej Azji i na Półwyspie Bałkańskim. Zasięg tego gatunku jest silnie wydłużony i rozciąga się przez około 80 stopni geograficznych, od Maroka i Portugalii na za-

chodzie po Kirgizję i Pakistan na wschodzie — brak go zupełnie w Afganistanie. Między północnym Iranem a Turkmenią (góry Koet-dagu) oraz Turkmenią a Uzbekistanem zaznaczają się wyraźnie dwie dysjunkcje. W swym pionowym rozmieszczeniu *C. mahaleb* występuje niemal że od samych brzegów morza, jak to ma na przykład miejsce na Krymie, aż po 3600 m. n.p.m. w zachodnim Iranie, najczęściej jednak nie wyżej jak 2000 m n.p.m.

КАЗИМЕЖ БРОВИЧ

Cerasus mahaleb (L.) Miller

Резюме

Систематическое положение *C. mahaleb* еще не полностью ясно. Этот таксон был причислен к различным видам — *Prunus* L. (1753), *Cerasus* Mill. (1768), *Padus* Mill. (Borkhausen, 1797), *Druparia Clairville* (1819), а также *Padellus* Vass. (1973), однако чаще всего к первым двум. Во внутривидовом делении этих видов она занимает особое, обособленное место и специально для нее была создана монотипная серия *Mahaleb*.

Изменчивостью *C. mahaleb* занимался в 1968 году Терпо, который разделил ее на 4 подвида с 13 разновидностями и четырьмя формами. Однако эта система требует подробного изучения на более богатом гербарном материале со всей территории ареала.

C. mahaleb встречается разбросанно и растет в ксеротермических сообществах, лесостепях и в хорошо освещаемых дубовых лесах, на каменных россыпях по склонам гор с южной стороны и особенно в долинах горных рек и потоков. Это мощный, сильно ветвящийся кустарник или небольшое дерево, высотой в 6-8 м, лишь в исключительных случаях достигает более значительных размеров. На территории СССР в Средней Азии найден прекрасный экземпляр *C mahaleb* высотой 15 метров и с диаметром на высоте груди равным 75 см.

На основании анализа гербарных коллекций, а также литературных данных, автор разработал подробную, точечную карту размещения *C. mahaleb* в юго-западной Азии и на Балканском полуострове. Ареал этого вида значительно растянут на протяжении приблизительно 80 географических градусов от Марокко и Португалии на западе до Киргизии и Пакистана на востоке — ее совсем нет в Афганистане. Между северным Ираном и Туркменией (горы Коет-дагу), а также Туркменией и Узбекистном четко обозначаются две дизъюнкции. В своем вертикальном размещении *C mahaleb* встречается почти от берегов морей, как на пример это имеет место в Крыму, до 3600 м над ур. моря в западном Иране, чаще всего однако но выше чем 2000 м над ур. моря.