

PLANTS OF ARASBARAN PROTECTED AREA, NW. IRAN (PART II)

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The second part of a paper dealing with the plants of Arasbaran Protected Area is presented. It covers the rest of the Dicotyledones from *Leguminosae* up to the end in alphabetical order and all of the Monocotyledones. The first part was including introduction, notes on the vegetation, phytogeographical evidences and list of species including *Pteridophyta*, *Gymnospermae* and the Dicotyledones to *Labiatae* in alphabetical order. In this part number of species is added to 785. *Onobrychis transcaucasica* and *Alchemilla pseudo-cartalinica* are added to the list of new plant records, therefore number of new plant records to Iran reaches to 55 in all. References for the two parts are mentioned at the end of the paper.

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گیاهان منطقه حفاظت شده ارسباران، شمال غربی ایران (قسمت دوم)

از: مصطفی اسدی

بخش دوم مقاله‌ای که در خصوص گیاهان منطقه حفاظت شده ارسباران است، ارائه می‌گردد. این بخش شامل بقیهٔ دولپه‌ای‌ها از خانواده *Leguminosae* تا پایان و تمام تک‌لپه‌ای‌ها است. در این قسمت تعداد گونه‌های موجود در منطقه به ۷۸۵ افزایش می‌یابد. گونه‌های *Onobrychis transcaucasica* و *Alchemilla pseudo-cartalinica* نیز به جمع گزارشات جدید اضافه و با این ترتیب جمعاً ۵۵ گونه براساس جمع‌آوری‌های تحت مطالعه مذکور برای اولین بار از ایران گزارش می‌شود. مراجع متعلق به دو بخش از مقاله مذکور نیز در پایان این مقاله ذکر می‌شود.

INTRODUCTION

This is the second part of a paper dealing with floristic studies in Arasbaran Protected Area. The first part was published in previous number of Iranian Journal of Botany (cf. Assadi 1987).

DICOTYLEDONES (cont.)

Leguminosae

Anthyllis vulneraria L. — Doghroon and Kalan mountains, 2300 — 2500 m, A. & S. 24092; Savabi & Raofi s.n.

Astragalus angustiflorus C. Koch — Between Vaighan and Veinagh, ca. 1000 — 1400 m, A. & M. 20418, A. & V. 24703; Between Tolua - Ali and Veinagh, 1000 — 1200 m, A. & V. 24636a.

Seen in *Quercus* forests. Distribution in Caucasia, E. Turkey and NW. Iran.

Astragalus aureus Willd. — Doghroon mountain, 2500 — 2800 m, A. & S. 23975, R. & A. 20995, A. & S. 23949, A. & S. 23883.

Astragalus bungeanus Boiss. — Between Tolua — Ali and Veinagh, 900 m, A. & V. 24601, W. of Makidi, ca. 2000 m, R. & A. 20233; between Vaighan and Veinagh, ca. 1000 m, A. & M. 20426; between Veinagh and Ghaghalou, 1000 m, A. &

M. 20509.

A variable species which rarely have been recorded from NW. Iran. Above specimens were compared with the type and they are matched. It has been written in the literature that the colour of flower is violet, but living material of above mentioned numbers had rosy - red flower which changed to violet in pressing. Distributed in Caucasia and NW. Iran. *Astragalus declinatus* Willd. — Doghroon mountain, 2800 m, dry meadow, R. & A. 21902, A. & S. 23920.

Distributed in Caucasia, E. Turkey and NW. & N. Iran.

Astragalus aff. *dolichophyllus* Pall. Between Kharil and Makidi, 1900 m, A. & V. 24967; western part of Makidi, 2300 m, A. & M. 20244.

The specimens might well be a new species. It differs from *A. dolichophyllus* in leaf, calyx and standard lamina characters. It however differs from the other close species *A. humilis* mainly in the indumentum.

Astragalus fabaceus M.B. — Between Tolua - Ali and Veinagh, 1000 — 1200 m, A. & V. 24636; between Vaighan and Veinagh, ca. 1000 m, A. & M. 20437.

Similar to *A. angustiflorus*, but leaves ovate - orbicular (not ovate - elliptic). Distributed in Caucasia, E. Turkey and NW. Iran.



Fig. 1. *Astragalus finitimus* (x 0.6).

Astragalus finitimus Bge. — Savabi s.n.
Astragalus glycyphyllos L. subsp. *glycyphylloides* (DC.) Matthews. — Between Saigram - Dagh and Kaleibar, 2000 m, in forest, A. & S. 24358; Doghroon and Kalan mountains, 2300 — 2500 m, A. & S. 24090, R. & A. 21974; Savabi & Raofi s.n.

Calyx with black or white hairs; leaflets up to 6 cm; legumes erect or pendulous. Considering differential characters used by Chamberlain and Matthews (1970 p. 97) in Flora of Turkey to distinguish *A. fraxinifolius* DC. from *A. glycyphyllos*, these characters are comprising both species and therefore not significant to keep them as distinct species. Euro - Siberian element, extends from E. Europe to Caucasia and N. Iran.
Astragalus hamosus L. — Ghaghalou, 650 m, A. & V. 24560.

Astragalus aff. *laguriformis* Freyn. — Doghroon mountain, 2500 — 2800 m, A. & S. 23998, A. & S. 23999 (white-flowered form); between Doghroon and Saigram - Dagh mountains, 2300 — 2500 m, A. & S. 24177; W. of Makidi, A. & M. 20216, Doghroon mountain, 2400 — 2700 m, A. & S. 24323; A. & S. 23882, Savabi 150; Doghroon mountain, 2300 m, R. & A. 20988.

Flower colour is usually purple but white form also occur in the area.

The specimens differ from *A. laguriformis* in having styles hairy only at the extreme base (not basal 2/3 hairy), from *A. porphyrodon* Townsend by longer calyx ca. 16 mm (not 11 — 13 mm) and different bract shape, and also from *A. lagurus* Willd. by having globose inflorescence (not cylindric), shorter peduncles and etc.

Astragalus lagurus Willd. — Doghroon mountain, 2500 — 2800 m, A. & S. 24051, R. & A. 20993, A. & S. 23974, A. & S. 23921; between Hejrandust and Makidi, 1400 — 1750 m, A. & M. 20195; between Doghroon and Saigram - Dagh mountain, 2500 — 2700, A. & S. 24184.

Above specimens somewhat diverge from the description of *A. lagurus* in having bracts barely shorter than the calyx (not equal or longer), this falls the specimens to the description of *A. persicus* (DC.) Fisch. & Mey. but as the flower colour of *A. persicus* has been said to be purple (not yellow) and as Townsend (1974 p. 372) keeps it as a synonym of *A. lagurus*, I conservatively use the older name *A. lagurus*.

Astragalus macrourus Fisch. & C.A. Mey. Mountains S. of Kharil, 2000 — 2500 m, A. & M. 20257; between Kharil and Makidi, on meadows, A. & V. 24894a.
Astragalus maximus Willd var. *maximus* — Doghroon mountain, 2500 — 2800 m,



Fig. 2. *Astragalus aff. laguriformis* (nat. size).

A. & S. 24013; R. & A. 21939.

New to Iran. A tall plant up to 1 m high, growing on meadows, the size of inflorescence varies from 4–12 cm which is somewhat longer than what has previously been mentioned (up to 9 cm). It is distributed in Caucasia, E. Turkey and NW. Iran.

Astragalus microcephalus Willd. — Between Vaighan and Kharil, ca. 1500 m, A. & V. 24798; between Tolua - Ali and Veinagh, 800 m, A. & V. 24590. *Astragalus robustus* Bge. — Between Veinagh and Vaighan, 1000–1400 m, A. & V. 24711, A. & M. 20428.

Distributed in NW. Iran and Caucasia. *Astragalus rostratus* C.A. Mey. — Between Kharil and Makidi ca. 2000 m, on meadows, A. & V. 24986, A. & V. 24894.; W. of Makidi 20223; Doghroon mountain, 2500–2800 m A. & S. 24000.

It has only been recorded from Iran in general distribution of Flora of the USSR. Some specimens were compared with the photograph of the type and they are well matched. Growing above the forest on alpine meadows. Flower colour varies from greenish - yellow to greenish - violet. Distributed in Caucasia (Talysh) and NW. Iran.

Colutea cilicica Boiss. & Ball. — Between Makidi and Kaleibar, ca. 1400 m, R. & A.

22115, A. & M. 20185; between Makidi and Veinagh, 1000–1700 m, W. & A. 17041; below Veinagh, 500–900 m, W. & A. 17086; between Vaighan and Veingagh, ca. 1000 m, A. & M. 20434; between Tolua - Ali and Veinagh, 1000–1200 m, A. & V. 24637; mountains E. of Vaighan, 1300–1600 m, A. & M. 20296.

A frequent component of scrub forests.

Coronilla scorpioides (L.) Koch — Between Veinagh and Ghaghalou, 500–800 m, A. & M. 20552.

Coronilla varia L. — Doghroon mountain, 2200–2500 m, R. & A. 21934, A. & S. 24116, between Vaighan and Veinagh, ca. 1000 m, A. & M. 20433, A. & V. 24727.

Hippocrepis unisiliquosa L. — Near Veinagh, 500–800 m, A. & M. 20547; Tolua - Ali, 650 m, A. & V. 24948.

Lathyrus cyaneus (Stev.) C. Koch — Doghroon and Kalan mountains, 2300 m, A. & S. 24135a, R. & A. 21928, A. & S. 23902, A. & S. 24099; between Kaleibar and Hejrandust, A. & M. 20103; Savabi 146; between Kaleibar and Makidi, 1300–1700 m, W. & A. 16996; Saigram - Dagh mountain, 2300 m, A. & S. 24266a.

Lathyrus laxiflorus (Desf.) O. Kuntze subsp. *laxiflorus* — Between Veinagh and Vaighan, 1000–1400 m, in *Quercus*

forest, A. & V. 24741; East of Vaighan, 1200 — 1500 m, A. & M. 20309.

Distributed from S. Europe eastwards to Caucasia and N. & NW. Iran.

Lathyrus pratensis L. — Doghroon mountain, 2200 — 2400 m, R. & A. 21926; Savabi & Raofi s.n.

A widespread Euro - Siberian element distributed from Europe eastwards to N. Iran and extends to Himalayas.

Lathyrus roseus Stev. — Mountains E. of Vaighan, 1300 — 1600 m, A. & M. 20297.

Lathyrus rotundifolius Willd. subsp. *miniatus* (M.B. ex Stev.) Davis — Between Vaighan and Kharil, ca. 1500 m, A. & V. 24804; between Makidi and Veinagh, 1000 — 1700 m, W. & A. 17011, Savabi & Raofi 210; between Hejrandust and Makidi, 1400 — 1750 m, A. & M. 20179; between Saigram - Dagh and Kaleibar, 2000 m, A. & S. 24375; between Tolua - Ali and Veinagh, 1200 m, A. & V. 24600.

Lotus corniculatus L. subsp. *corniculatus* var. *corniculatus* — Saigram - Dagh mountain, ca. 1300 m, A. & S. 24221; Doghroon mountain, 2500 — 2800 m, A. & S. 23986, A. & S. 23898; E. of Vaighan, 1200 — 1500 m, A. & M. 20305; Savabi & Raofi s.n.; between Hejrandust and Makidi, 1400 — 1750 m, A. & M. 20191. var. *hirsutus* W. D.J. Koch — Doghroon mountain, 2500 — 2800 m, R. & A.

21900.

Lotus michauxianus Ser. var. *glabratus* Chrtkova-Zertova — Below Veinagh, 500 — 900 m, W. & A. 17112; between Tolua - Ali and Veinagh, 1100 m, A. & V. 24609.

Medicago minima (L.) Bartalini — Ghaghalu, 650 m, A. & V. 24549; between Veinagh and Ghaghalou, 500 — 800 m, A. & M. 20550; between Vaighan and Kharil, ca. 1500 m, A. & V. 24809. *Medicago orbicularis* (L.) Bart. — Tolua - Ali, 650 m, A. & V. 24937; mountains S. of Vaighan, 1200 — 1500 m, A. & M. 20387.

Medicago sativa L. — NW. of Veinagh, 1300 — 1400 m, A. & V. 24678.

Melilotus officinalis (L.) Pall. — Mountains E. of Vaighan, 1300 m, A. & M. 20283; NW. of Veinagh, 1300 — 1400 m, A. & V. 24655.

Onobrychis bungei Boiss. — Saigram - Dagh mountain, ca. 1300 m, A. & S. 24246, 2600 m, Savabi s.n.

Distributed in N., NW. & W. Iran and Caucasia.

Onobrychis cornuta (L.) Desv. subsp. *cornuta* — Doghroon mountain, 2500 — 2800 m, R. & A. 21877, A. & S. 23957; between Kharil and Makidi, ca. 2000 m, A. & V. 24903; Between Vaighan and Kharil, ca. 1500 m, A. & V. 24832; between Hejrandust and Makidi, 1400 — 1750 m, A. & M. 20183.

Onobrychis mischauxii DC. — Tolua - Ali, 650 m, A. & V. 24945, NW. of Veinagh, 1300—1400 m, A. & V. 24656; between Veinagh and Ghaghalou, 1000 m, A. & M. 20504; between Hejrandust and Makidi, 1400—1750 m, A. & M. 20126. *Onobrychis transcaucasica* Grossh. — NW. of Veinagh, 1300—1400 m, in forest, A. & V. 24673; between Veinagh and Ghaghalou, ca. 1000 m, A. & M. 20519.

In Flora Iranica (cf. Rechinger 1984 p. 412) only mentioned from Talish and therefore new to Iran. Distributed in Caucasia, NE. Turkey and NW. Iran. This species is apparently closely related to *O. altissima* Grossh., but it is said that differs from it in having fruits with clearly dentate crest (not entire or subentire).

Pisum sativum L. subsp. *elatius* (M.B.) Ascherson & Graebner — Mountains S. of Vaighan, 1200—1500 m, A. & M. 20344; Tolua - Ali, 650 m, A. & V. 24910.

The second specimen fits better to the var. *pumilio* Meikle of the subspecies. *Securigera securidaca* (L.) Degen & Dorf. — Tolua - Ali, 650 m, A. & V. 24942; between Tolua - Ali and Veinagh, 900 m, A. & V. 24598; Tolua - Ali, 650 m, A. & V. 24927.

Trifolium aff. *alexandrium* L. — Between Veinagh and Ghaghalou, ca. 1000 m, A. & M. 20506.

This specimen differs from the typical *T. alexandrium* in having spreading hairs on all parts (not appressed).

Trifolium ambiguum M. B. — Doghroon mountain, 2500 m, A. & S. 23931; 2300 m, Savabi & Raofi 150.

Trifolium angustifolium L. — Between Veinagh and Ghaghalou, 1000 m, A. & M. 20535.

Trifolium arvense L. — Between Veinagh and Ghaghalou, ca. 1000 m, A. & M. 20512; between Saigram - Dagh and Kaleibar, 2000 m, A. & S. 24397; W. of Makidi, 1700 m, R. & A. 22049.

Trifolium aureum Poll. — Between Saigram - Dagh and Kaleibar, 2000 m, A. & S. 24380.

Trifolium campestre Schreb. — Mountains S. of Vaighan, 1200—1500 m, A. & M. 20346; Savabi & Raofi 35

Trifolium canescens Willd. — Doghroon and Kalan mountains, 2300—2500 m, A. & S. 24112, A. & S. 23904.

Grasslands at top area.

Trifolium hirtum All. — 30 km N. of Kaleibar, 2000 m, A. & V. 24515.

Trifolium pratense L. — Doghroon mountain, 2500—2800 m, R. & A. 21909.

Trifolium scabrum L. — Between Veinagh and Ghaghalou, 500—800 m, A. & M. 20541.

Trigonella calliceras Fisch. — Between

Kaleibar and Hejrandust, 1350—1700 m, A. & M. 20091; between Hejrandust and Makidi, 1400—1750 m, A. & M. 20135.

Trigonella monspeliaca L. — Between Veinagh and Ghaghalou, 500—800 m, A. & M. 20554.

Vicia narbonensis L. — Between Kaleibar and Hejrandust, 1350—1700 m, A. & M. 20115; NW. of Veinagh, 1300—1400m, A. & V. 24670.

Vicia pannonica Crantz — Between Kaleibar and Hejrandust, 1350—1700 m, A. & M. 20047; between Veinagh and Ghaghalou, ca. 1000 m, A. & M. 20492.

Vicia truncatula Fischer ex M.B. — Between Saigram - Dagh and Kaleibar, 2000 m, A. & S. 24370; mountains S. of Vaighan, 1200—1500 m, A. & M. 20380; NW. of Veinagh, 1300—1400 m, A. & V. 24658.

Differs from the preceding species in having glabrous corolla. Moreover specimen no. A. & V. 24658 diverges from the description of the species by having broader leaflets up to 12 mm. *Vicia variabilis* Freyn & Sint. — Between Tolua - Ali and Veinagh, 1100 m, A. & V. 24599; between Hejrandust and Makidi, 1400—1750 m, A. & M. 20188.

Vicia variegata Willd. — Doghroon mountain, 2500 m, A. & S. 23907, R. & A. 21995; between Vaighan and Kharil,

ca. 1500 m, A. & V. 24774, Savabi 152; between Veinagh and Vaighan, 1000—1400 m, A. & V. 24753.

Lemnaceae

Lemna minor L. — Makidi, 1400m, R. & A. 22055.

Linaceae

Linum austriacum L. — NW. of Veinagh, 1300—1400 m, A. & V. 24653; between Vaighan and Veinagh, ca. 1000 m, A. & M. 20473.

Linum corymbulosum Reichenb. — Between Vaighan and Veinagh, ca. 1000 m, A. & M. 20472.

Linum mucronatum Betrol subsp. *armenum* (Bordz.) Davis — Between Veinagh and Vaighan, 1000—1400 m, A. & V. 24742, A. & M. 20442.

Linum nervosum Waldst. — Doghroon mountain, 2400—2700 m, A. & S. 24316.

Linum nodiflorum L. — Between Vaighan and Veinagh, ca. 1000 m, A. & M. 20468.

Linum tenuifolium L. — Between Veinagh and Vaighan, 1000—1400 m, A. & V. 24716, A. & M. 20451.

Previous record of this species from Iran had been based only on one collection.

Lythraceae

Lythrum salicaria L. — Makidi, 1400 m, R. & A. 22061.

Malvaceae

Alcea lineariloba I. Riedl — Savabi & Raofi s.n.

Endemic in NW. Iran.

Althea hirsuta L. — Between Veinagh and Ghaghalou, ca. 1000 m, A. & M. 20544; Ghaghalou, 650 m, A. & V. 24564; S. of Vaighan, 1200 — 1500 m, A. & M. 20386; between Hejrاندust and Makidi, 1400 — 1750 m, A. & M. 20145.

Lavatera thuringiaca L. — SE. of Makidi, 1600 m, R. & A. 22106.

Malva neglecta Wallr. — Between Doghroon and Saigram - Dagh mountains, 2500 — 2700 m, A. & S. 24214; between Veinagh and Ghaghalou, ca. 1000 m, A. & M. 20516; between Tolua - Ali and Veinagh, 1000 — 1200 m, A. & V. 24649.

Malva sylvestris L. — Mountains E. of Vaighan, 1300 — 1600 m, A. & M. 20293.

Moraceae

Ficus carica L. — Between Tolua - Ali and Veinagh, 1000 m, A. & V. 24592; between Vaighan and Veinagh, ca. 1000 m, A. & M. 20448.

Scattered in lower altitudes.

Oleaceae

Fraxinus excelsior L. subsp. *coriarifolia* (Scheele) E. Murray — NW. of Veinagh, 1300 — 1400 m, A. & V. 24682; between Makidi and Kaleibar, ca. 1400 m, R. & A. 22116, E. Vaighan, 1200 — 1500 m, A. & M. 20302.

Jasminum fruticans L. — Mountains E. of Vaighan, 1200 — 1500 m, A. & M. 20335, Savabi 44; between Tolua - Ali and Veinagh, 1000 — 1200 m, A. & V. 24625; Tolua - Ali, 650 m, A. & V. 24934; between Vaighan and Kharil, ca. 1500 m, A. & V. 24819.

Mediterranean element distributing from S. Europe and NW. Africa to Caucasia and N. Iran.

Ligustrum vulgare L. — Between Makidi and Kaleibar, ca. 1400 m, R. & A. 22118, A. & M. 20158; Savabi & Raofi 262; NW. of Veinagh, 1300 — 1400 m, A. & V. 24671.

Euro - Siberian element distributing from C. & S. Europe eastwards to Caucasia and N. Iran.

Onagraceae

Epilobium hirsutum L. — Makidi, 1400 m, R. & A. 22063; Savabi & Raofi. *Epilobium minutiflorum* Hausskn. — Makidi, 1400 m, R. & A. 22068; between Veinagh and Vaighan, ca. 1000

m, A. & M. 20412.

Epilobium montanum L. — Doghroon mountain, 2500 — 2800 m, R. & A. 21912.

Epilobium parviflorum Schreb. — Makidi, 1400 m, R. & A. 22064.

Epilobium tetragonum L. — Doghroon mountain, 2500 — 2800 m, R. & A. 21914.

Orobanchaceae

Anopolon coccineum (M.B.) H. Riedl & Schiman - Czeika — Between Makidi and Kaleibar, ca. 1700 m, A. & V. 24999; A. & M. 20168; between Kharil and Makidi, ca. 2000 m, A. & V. 24901; between Vaighan and Kharil, ca. 1500 m, A. & V. 24852.

Orobanche aegyptiaca Pers. — Between Veinagh and Vaighan, 1000 — 1400 m, A. & V. 24693; between Vaighan and Kharil, ca. 1500 m, A. & V. 24853; between Kaleibar and Hejrandust 1350 — 1700 m, A. & M. 20121; E. of Vaighan, 1200 — 1500 m, A. & M. 20333; Doghroon mountain, 2500 — 2800 m, A. & S. 24053, A. & S. 23991; between Doghroon and Saigran - Dagh mountains, 2500 — 2700 m, A. & S. 24179.

Orobanche elatior Sutton — Between Veinagh and Vaighan, 1000 — 1400 m,

A. & V. 24746; between Kharil and Makidi, ca. 2000 m, A. & V. 24883; Doghroon mountain, 2500 — 2800 m, A. & S. 24062, A. & S. 23987, R. & A. 21925; between Hejrandust and Makidi, 1400 — 1750 m, A. & M. 20169; between Veinagh and Vaighan, 1000 — 1400 m, A. & V. 24751, A. & V. 24730; between Vaighan and Kharil, ca. 1500 m, A. & V. 24778; between Doghroon and Saigran - Dagh mountains, 2300 — 2500 m, A. & S. 24160.

Papaveraceae

Glaucium corniculatum (L.) Rudolph subsp. *corniculatum* — Between Veinagh and Vaighan, 1000 — 1400 m, A. & V. 24743, NW. of Veinagh, 1300 — 1400 m, A. & V. 24660.

Hypocoum pendulum L. — Between Veinagh and Vaighan, ca. 1000 m, A. & M. 20477.

Papaver bipinnatum C. A. Mey. — Ghaghalou, 650 m, A. & V. 24535, W. & A. 17118.

A new to Iran, mentioning in Flora Iranica (cf. Cullen 1966 p. 20) to be endemic in Talish.

Papaver commutatum Fisch. & C. A. Mey. — Near Ghaghalou, 350 m, W. & A. 17117; between Veinagh and Vaighan, 1000 — 1400 m, A. & V. 24725; between

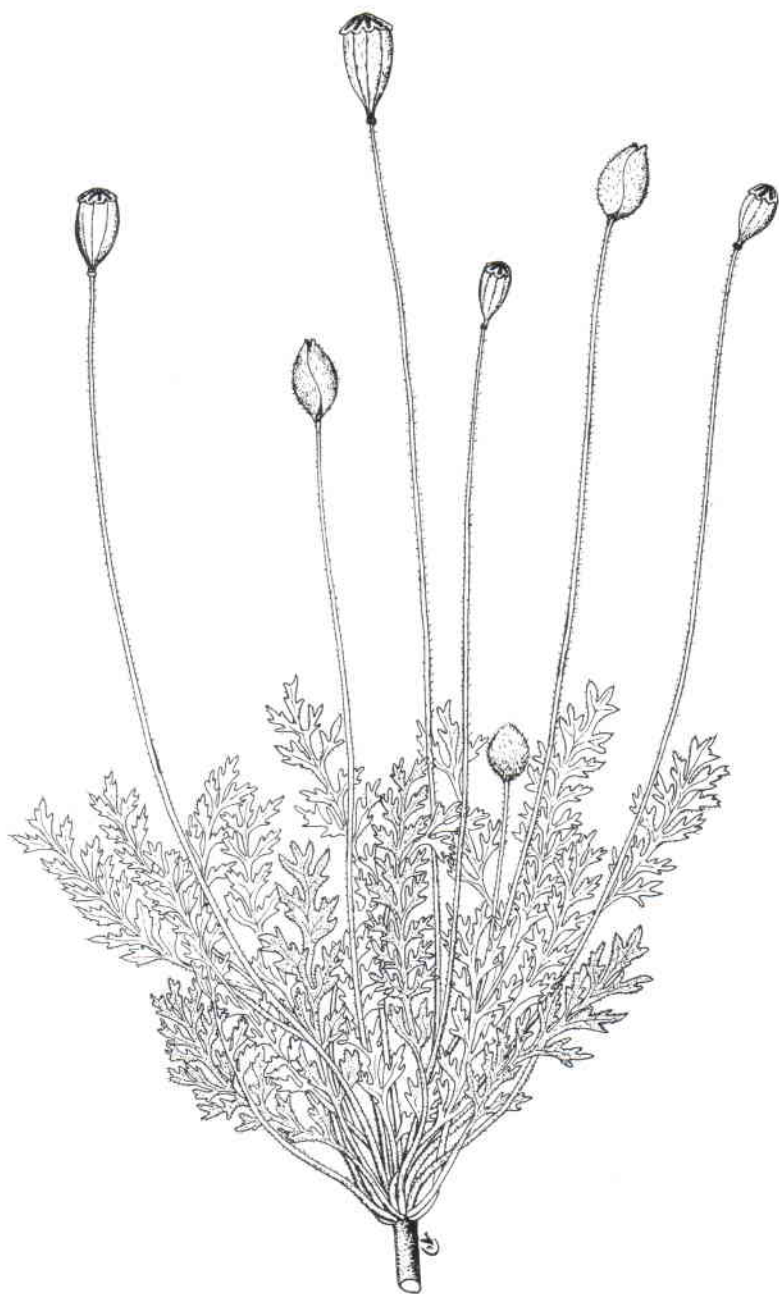


Fig. 3. *Papaver bipinnatum* (x 0.6).

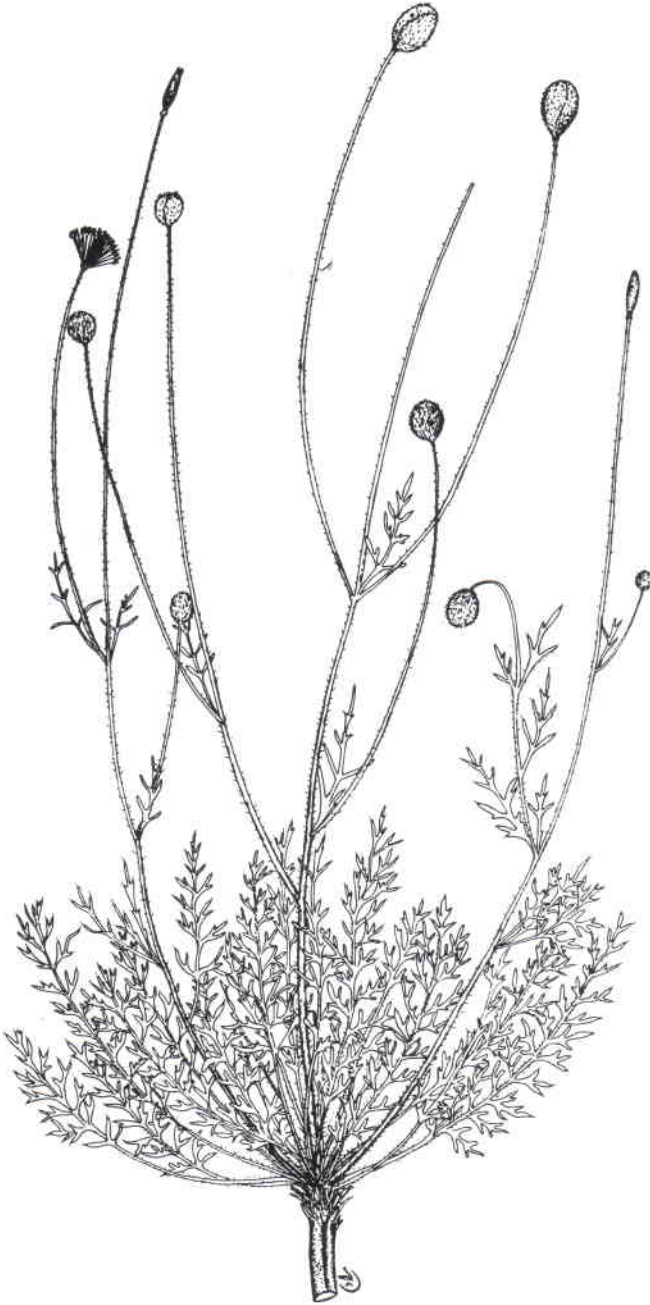


Fig. 4. *Papaver curviscapum* (x 0.6).

Makidi and Kaleibar, ca. 1700 m, A. & V. 25019, A. & M. 20039; between Saigram -Dagh and Kaleibar, 2000 m, A. & S. 24342; between Tolua - Ali and Veinagh, 1300 m, A. & V. 24650.

Papaver curviscapum Nab. — Saigram -Dagh mountain, ca. 2300 m, Grassland, A. & S. 24245.

New to Iran. This species was described from SE. Turkey and so far has been known from a restricted area including the type locality and N. Iraq.

Papaver dubium L. — 30 km N. of Kaleibar, 2000 m, A. & V. 24526.

Papaver fugax Poiret — Doghroon mountain, 2300 — 2800 m, grassland area, A. & S. 23958, A. & S. 24091, Savabi & Raofi 68.

Papaver macrostemum Boiss. & Huet — NW. of Veinagh, 1300 — 1400 m, A. & V. 24663.

Papaver orientale L. — Saigram -Dagh mountain, 2300 m, A. & S. 24274; Doghroon mountain, 2500 m, grassland, A. & S. 23872, A. & S. 24315; between Kharil and Makidi, ca. 2000 m, A. & V. 24867.

Distributed in Caucasia, NE. Turkey and NW. Iran.

Papaver persicum Lindl. — Doghroon mountain, 2500 — 2800 m, A. & S. 23993; Savabi and Raofi 163.

Papaver pseudo-orientale Fedde --

Doghroon mountain, 2500 m, A. & S. 23872; R. & A. 21861, Savabi & Raofi s.n.

Plantaginaceae

Plantago indica L.—Between Veinagh and Ghaghalou, 500 — 800 m, A. & M. 20555; Ghaghalou, 650 m, A. & V. 24548.

Plantago lanceolata L. — Doghroon mountain, 2500 m, A. & S. 23950; R. & A. 21423, A. & S. 24060; between Saigram -Dagh and Kaleibar, 2000 m, A. & S. 24390; between Kharil and Makidi, ca. 2000 m, A. & V. 24880, A. & V. 24991; between Kaleibar and Makidi, 1350 — 1700 m, A. & M. 20068.

Plantago major L.—Doghroon mountain, 2500 — 2800 m, R. & A. 21898; Savabi 241.

Plumbaginaceae

Acantholimon hohenackeri (Jaub. & Spach) Boiss. — Doghroon mountain, 2500 — 2800 m, A. & S. 23977; R. & A. 21907.

Distribution of this species extends from Caucasia eastwards on the Albroz ranges to the mountains N. of Semnan and southwards on the Zagras ranges to Kurdistan.

Polygalaceae

Polygala anatolica Boiss. & Heldr. Between Kaleibar and Hejrاندust, 1350 – 1700 m, A. & M. 20015; between Kaleibar and Makidi, 1300 – 1700 m, W. & A. 16966; Doghroon and Kalan mountains, on meadows, 2300 – 2500 m, A. & S. 24070, A. & S. 23971, A. & S. 24137; W. of Makidi, ca. 1700 m, A. & M. 20224; between Kharil and Makidi 1800 m, A. & V. 24984; between Vaighan and Kharil, ca. 1500 m, A. & V. 24874; between Tolua - Ali and Veinagh, A. & V. 24638.

Chrtek and Krisa (1977 p. 8) in Flora Iranica have recorded the specimen W. & A. 16966 under the species *P. platyptera* Bornm. & Gauba, based on the examination of a duplicate specimen in hb. W. My specimen which is original is not definitely that species and therefore NW. Iran should be omitted from the distribution of *P. platyptera*. Distribution of the two species in N. Iran is in different altitudes, *P. platyptera* below 1000 m and *P. anatolia* above 1000 m.

Polygonaceae

Atraphaxis spinosa L. -- Between Veinagh and Ghaghalou, ca. 1000 m, A. & M. 20527.

Polygonum alpestre C.A. Mey. -- Between Hejrاندust and Makidi, 1400 – 1750 m, A. & M. 20138; Doghroon mountain, 2300 m, R. & A. 20998, A. & S. 23954. *Polygonum alpinum* All. -- Saigram - Dagh mountain, 2300 m, A. & S. 24282; Doghroon mountain, 2400 – 2700 m. A. & S. 24308.

This species was not included by Rechinger and Schiman - Czeika (1968) in Flora Iranica. It occurs in the area on meadows above the forest. Euro - Siberian element distributing from Europe eastwards to NW. Iran.

Polygonum convolvulus L. -- Between Doghroon and Saigram - Dagh mountains, 2500 – 2700 m, A. & S. 24182.

Polygonum mite Schrenk. -- Makidi, 1400 m, in a wet place, R. & A. 22069. *Polygonum paronychioides* C.A. Mey. ex Hohenacker -- Between Tolua - Ali and Veinagh, 900 m, A. & V. 24589.

Rumex acetosa L. -- Doghroon mountain, 2500 m, A. & S. 23925.

Rumex obtusifolius L. subsp. *subalpinus* (Schur) Celak -- W. of Makidi, 1700 m, in forest, R. & A. 22038.

Rumex patientia L. -- Doghroon mountain, 2500 – 2800 m, A. & S. 24015, R. & A. 21910; Saigram - Dagh mountain, ca. 2300 m, A. & S. 24249.

Occuring in high meadows.

Rumex pulcher L. -- Muntains S. of

Vaighan, 1200—1500 m, A. & M. 20388.
Rumex scutatus L. — Doghroon mountain,
 2200—2400 m, R. & A. 21946.

Rumex tuberosus L. — NW. of Veinagh,
 1300—1400 m, A. & V. 24668; Tolua -
 Ali, 650 m, A. & V. 24936; between
 Hejrandust and Makidi, 1400—1750 m,
 A. & M. 20176.

Primulaceae

Anagallis arvensis L. — Mountains S. of
 Vaighan, 1200—1500 m, A. & M. 20383;
 Ghaghalou, 650 m, A. & V. 24527.
Androsace armeniaca Duby — Mountains
 S. of Kharil, 2000—2500 m, A. & M.
 20264; W. of Makidi, ca. 2300 m, on
 meadows, A. & M. 20250.

This species was recently indicated
 by Assadi (1983 p. 2) as to occur in Iran.

Androsace maxima L. — Between
 Kaleibar and Hejrandust, 1350—1700
 m, A. & M. 20043.

Androsace villosa L. s.l. — Between
 Kharil and Makidi, 2000 m, A. & V.
 24966; Doghroon mountain, 2500—
 2800 m, A. & S. 24019; W. of Makidi,
 2000—2500 m, A. & M. 20235.

Growing usually on outcrops in
 meadows.

Primula auriculata Lam. — W. of Makidi,

ca. 2000 m, brooklet - side, A. & M.
 20221; between Kharil and Makidi,
 1900 m, A. & V. 24965.

Primula macrocalyx Bge. — Between
 Vaighan and Kharil, ca. 1500 m, A. & V.
 24770; between Veinagh and Vaighan,
 1000—1400 m, A. & V. 24713; W. of
 Makidi, ca. 2100 m, A. & M. 20246.

Punicaceae

Punica granatum L. — Between Vaighan
 and Veinagh, ca. 1000 m, A. & M. 20465;
 between Veinagh and Ghaghalou, 500—
 800 m, A. & M. 20536.

Scattered trees in lower altitudes at
 scrub forests.

Ranunculaceae

Aconitum pubiceps (Rupr.) Trautv. —
 Doghroon mountain, 2500 m, grassland,
 A. & S. 23945; R. & A. 20961; Saigram
 - Dagh mountain, 2300 m, A. & S.
 24269.

This species was recently reported
 by Assadi (1983 p. 2) as a new to Iran.

Adonis aestivalis L. — Between Veinagh
 and Vaighan, 1000—1400 m, A. & V.
 24738; NW. of Veinagh, 1300—1400 m,
 A. & V. 24664; Ghaghalou, 650 m, A. &
 V. 24534.

Adonis wolgensis Stev. — Mountains S.

of Kharil, 2000 — 2500 m, A. & M. 20265.

This species was recently reported by Assadi & Wendelbo (1977 p. 98) from NW. Iran. It is growing on high-mountain grasslands in the area.

Anemone albana Stev. — Mountains S. of Kharil, 2000 — 2500 m, A. & M. 20263; Doghroon and Kalan mountains, 2300 — 2500 m, A. & S. 24108.

This species was indicated by Assadi (1983 p. 2) as to occur in Iran.

Consolida orinetalis (Gay) Schröd. — Between Vaighan and Veinagh, ca. 1000 m, A. & M. 20486; between Doghroon and Makidi; 1600 m, R. & A. 22030; between Veinagh and Ghaghalou, 500 — 800 m, A. & M. 20553.

Consolida regalis S.F. Gray subsp. *divaricata* (Ledeb.) Munz. — Between Veinagh and Ghaghalou, ca. 1000 m, A. & M. 20531.

Delphinium szowitsianum Boiss. — Saigram -Dagh mountain, ca. 1300 m, A. & S. 24233; Doghroon mountain, 2300 m, dry meadows, R. & A. 20968.

Distributed in Caucasia, E. Turkey and NW. Iran.

Delphinium tuberosum Auch. ex Boiss. (Syn.: *D. cyphoplectrum* Boiss.) — Between Veinagh and Ghaghalou, ca. 1000 m, A. & M. 20529, A. & M. 20530; Ghaghalou, 650 m, A. & V. 24552;

Tolua - Ali, 650 m, A. & V. 24919; between Vaighan and Veinagh, 1000 m, A. & M. 20487.

A common plant in the area growing in fields as well as on rocky slopes at an altitude ca. 1000 m. Two forms grow usually side by side, one with the glabrous inflorescence (including pedicels and sepals) and the other with hairy inflorescence. This character has sometimes been used to distinguish different subspecies or even distinct species (cf. *D. nachiczevanicum* Tzvel), but it seems, only formal rank is the appropriate taxon.

Nigella nigellastrum (L.) Willk. — Between Veinagh and Ghaghalou, 500 — 800 m, A. & M. 20546.

Ranunculus arvensis L. — Between Kaleibar and Hejrandust, 1350 — 1700 m, A. & M. 20026.

Ranunculus caucasicus M. B. — W. of Makidi, ca. 2400 m, A. & M. 20212; 2400 m, Savabi & Raofi 246; Doghroon mountain, 2500 — 2800 m, A. & S. 24033, R. & A. 21948, A. & S. 23932, A. & S. 23891; between Kharil and Makidi, 2700 m, A. & V. 24891; Saigram -Dagh mountain, 2300 m, A. & S. 24228.

Distributed in Caucasia, NE. Turkey and NW. Iran.

Ranunculus constantinopolitanus (DC.)

D'Urv.—Between Kaleibar and Hejrandust, 1350 — 1700 m, A. & M. 20064; W. of Makidi, ca. 2400 m, A. & M. 20211b. *Ranunculus grandiflorus* L. (Syn.: *R. sabalanicus* Mobayen & Maleki, syn. nov.) — Mountains S. of Kharil, 2000 — 2500 m, A. & M. 20267; A. & M. 20266; between Kharil and Makidi, 1900 m, A. & V. 24989; W. of Makidi, 2500 m, A. & M. 20245.

The name is used for the first time for flora of Iran. The specimens compared with the authentically named Turkish materials and the type of *R. sabalanicus* Mobayen & Maleki (described from NW. Iran), they are all well matched. Moreover further investigations are needed to clear taxonomic position of *R. kotschyi*, a relative which was described from S. Iran, but later mentioned from E. Turkey and Caucasus (cf. Davis 1965 p. 168).

Ranunculus meyerianus Rupr. — Doghroon mountain, 2300 m, meadow, R. & A. 20974; between Saigram - Dagh and Kaleibar, 2000 m, A. & S. 24361; between Vaighan and Veinagh 1000–1400 m, A. & M. 20403; A. & V. 24752.

This species has sometimes been mentioned as a synonym of *R. polyanthemos* L., however it differs from that species in having petioles and stems densely covered by long spreading hairs.

Distributed from Europe through Caucasus to N. Iran.

Rununculus oreophilus M.B. — W. of Makidi, ca. 2400 m, A. & M. 20211c.

Euro - Siberian element only mentioned by Davis (1965 p. 158) from NW. Iran.

Thalictrum minus L. — Doghroon and Kalan mountains, 2200 — 2400 m, A. & S. 24151, R. & A. 21978, A. & S. 24096, R. & A. 21940; between Makidi and Kaleibar, ca. 1700 m, A. & V. 24994; Between Veinagh and Vaighan, 1000 m, A. & M. 20459.

Resedaceae

Reseda lutea L. subsp. *lutea* — Between Vaighan and Kharil, ca. 1500 m, A. & V. 24816; Tolua - Ali, 650 m, A. & V. 24926; between Veinagh and Ghaghalou, 1000 m, A. & M. 20497; between Hejrandust and Makidi, 1400 — 1750 m, A. & M. 20165.

Rhamnaceae

Paliurus spina - christi Miller — Between Makidi and Kaleibar, ca. 1400 m, R. & A. 22121; mountain S. of Vaighan, 1200 — 1500 m, A. & M. 20372; Tolua - Ali, 650 m, A. & V. 24952.

Rhamnus cathartica L. var. *caucasica*

Kusn. — Between Vaighan and Kharil, ca. 1500 m, A. & V. 24814; Hejrandust, 1400—1750 m, A. & M. 20148; between Makidi and Kaleibar, ca. 1400 m, R. & A. 22119, W. & A. 16980; SE. of Makidi, 1600 m, R. & A. 22108; between Saigram - Dagh and Kaleibar, 2000 m, A. & S. 24384.

Rhamnus pallasii Fisch. & C. A. Mey. subsp. *pallasii* — Between Makidi and Kaleibar, 1400—1750 m, A. & M. 20159; R. & A. 22122; between Vaighan and Veinagh, 1000 m, A. & M. 20439; S. of Vaighan, 1200—1500 m, A. & M. 20355; between Makidi and Veinagh, 1000—1700 m, W. & A. 17023; Tolua - Ali, 650 m; A. & V. 24916; between Vaighan and Kharil, ca. 1500 m, A. & V. 24845; between Tolua - Ali and Veinagh, 900 m, A. & V. 24579.

Rosaceae

Agrimonia eupatoria L. — SE. of Makidi, 1600 m, forest margin, R. & A. 22084.

Alchemilla erythropoda Juz. — Doghroon mountain, 2300—2800 m, high - grown grasslands, A. & S. 24001, R. & A. 20964, A. & S. 23930, A. & S. 24109; Savabi & Raofi 170; between Kharil and Makidi, 1500—2000 m, A. & V. 24972; Saigram - Dagh mountain, 2300 m, A. & S. 24248; mountains E. of Vaighan,

1700—2000 m, A. & M. 20274; between Kaleibar and Hejrandust, 1350—1700 m, A. & M. 20117a.

Euro -Siberian element distributed from C. Europe to N. Iran.

Alchemilla persica Roth. — between Vaighan and Kharil, ca. 1500 m, A. & V. 24856,

Alchemilla pseudo - cartalinica Juz. — Doghroon and Kalan mountains, 2300—2500 m, A. & S. 24120 (det. M. Khatamsaz),

No record was given by Fröhner l.c. p. 134 from Iran.

Alchemilla sericata Rehb. — Between Kaleibar and Hejrandust, 1350—1700 m, A. & M. 20117 b; Saigram - Dagh mountain, 2400—2700 m, high - grown meadow, A. & S. 24306, A. & S. 24277.

No record was given by Fröhner (1969 p. 145) in Flora Iranica. Euxinian (?) element distributed in Caucasia, N. Turkey and NW. Iran.

Alchemilla sp. — Doghroon mountain, 2500 m, A. & S. 23926.

Amygdalus fenzliana (Fritsch) Lipsky — Between Tolua-Ali and Veinagh, ca. 1000 m, A. & V. 24585; Between Makidi and Veinagh, ca. 1000—1700 m, W. & A. 17043; below Veinagh, 500—900 m, W. & A. 17085; between Vaighan and Veinagh, ca. 1000 m, A. & M. 20454; between Veinagh and Ghaghalou, ca.

1000 m, A. & M. 20501.

Shrubs or trees up to ca. 5 m high growing in scrub forests. Euxinian element distributed in Caucasia, NE. Turkey and N.W. Iran.

Cerasus avium (L.) Moench — Between Makidi and Kaleibar, ca. 1700 m, A. & V. 25008, A. & M. 20152; mountains S. of Vaighan, 1200 — 1500 m, A. & M. 20345, forests W. of Makidi, 1700 m, R. & A. 22039; 1200 m, Savabi & Raofi 261.

Cerasus incana (Pall.) Spach — Between Veinagh and Vaighan, 1000 — 1400 m, A. & V. 24723, A. & M. 20458; Savabi & Raofi 8.

Growing in scrub *Quercus* forest.

Cerasus mahaleb (L.) Miller — Forest NW. of Doghroon mountain, 2100 m, R. & A. 21982; between Tolua - Ali and Veinagh, 1000 — 1200 m, A. & V. 24647; mountains S. of Vaighan, 1200 — 1500 m, A. & M. 20360; between Makidi and Veinagh, 1000 — 1700 m, W. & A. 17033.

Growing in mixed forests.

Cerasus microcarpa (C.A. Mey.) Boiss. — Between Vaighan and Veinagh ca. 1000 m, A. & M. 20441; Tolua - Ali, 650 m, A. & V. 24947.

Cotoneaster integerrimus Medik. — Doghroon mountain, 2300 — 2800 m, R. & A. 21901; R. & A. 21993; between

Doghroon and Saigram -Dagh mountains, 2500 — 2700 m, A. & S. 24199, A. & S. 24168.

It was recently recorded from Iran by Khatamsaz (1985 p. 56). It is found in the area on outcrops within the high-grown meadows. Distributed from Europe to NW. Iran.

Cotoneaster melanocarpus (Bge.) Fischer — Saigram -Dagh, 2300 m, A. & S. 24293; between Veinagh and Vaighan, 1000 — 1400 m, A & V. 24726; forest W. of Makidi, 1800 m, R. & A. 22035; Doghroon and Kalan mountains, 2300 m, A. & S. 24142.

This species was recently recorded as a new to Iran (Khatamsaz 1985 p. 56).

Cotoneaster nummularius Fisch. & C. A. Mey. — Between Makidi and Kaleibar, ca. 1700 m, scrub forest, A. & V. 25028; between Vaighan and Kharil, ca. 1500 m, A. & V. 24840; SE. of Makid, 1600 m, R. & A. 22080; between Veinagh and Ghaghalu, 1000 m, A. & M. 20522; between Kaleibar and Makidi, 1300 — 1700 m, W. & A. 16989, A. & M. 20160.

It is found in the area in scrub forest.

Crataegus meyeri A. Pojark. — SE. of Makidi, 1500 m, open forest, 1500 m, R. & A. 22099; between Makidi and Kaleibar, 1400 — 1750 m, A. & M. 20147, A. & M. 20127, A. & V. 25018; NW. of Veinagh, 1300 — 1400 m, A. &

V. 24661.

Crataegus orientalis Pall. ex M. B. ---
Between Vaighan and Kharil, ca. 1500 m,
A. & V. 24844.

This species was recorded by H. Riedl (1969 p. 55) only from Talysh. The closest locality to above mentioned gathering as is indicated by A.A. Grosheim (1952 p. 418, Kart 41) is in Caucasia, very close to the Persian border. Parsa's record of this species (1984 p. 551) from Bandar - Gaz in NE. Iran is outside of the distribution range of the species and therefore uncertain.

Cydonia oblonga Miller — Between Kharil and Makidi, ca. 2000 m, A. & V. 24884.

Filipendula ulmaria (L.) Maxim. — Doghroon mountain, 2200 — 2400 m, highgrown meadow at a brook, R. & A. 21924.

Filipendula vulgaris Moench — Mountains E. of Vaighan, 1200 — 1500 m, A. & M. 20337; Doghroon and Kalan mountains, 2300 — 2500 m, A. & S. 24076, R. & A. 22007; Saigram - Dagh mountains, ca. 2300 m, A. & S. 24256; between Tolua - Ali and Veinagh, 1000 m, A. & V. 24588; N. of Veinagh, 1300 — 1400 m, A. & V. 24669; between Hejrاندust and Makidi, 1400 — 1750 m, A. & M. 20187.

Fragaria vesca L. — Between Saigram - Dagh mountains and Kaleibar, 2000 m, A. & S. 24368; W. of Makidi, 1700 m, R.

& A. 22051; between Kharil and Makidi, 1800 m, A. & V. 24975; E. of Vaighan, 2000 m, A. & M. 20308.

Fragaria viridis Duchesne subsp. *campestris* (Steven) Pawl. — Between Veinagh and Vaighan, 1000 — 1400 m, A. & V. 24701; between Makidi and Kaleibar, ca. 1700 m, A. & V. 25029; between Kaleibar and Makidi, 1300 — 1700 m, W. & A. 17003.

Neither the typical nor this subspecies have previously been recorded from Iran.

Geum rivale L. — Doghroon mountain, 2500 — 2800 m, A. & S. 24037, A. & S. 23927; between Kharil and Makidi, A. & V. 24898.

Geum urbanum L. — NW. of Veinagh, 1300 — 1400 m, A. & V. 24689; between Makidi and Kaleibar, ca. 1700 m, A. & V. 25025; mountains E. of Vaighan, 1800 m, A. & M. 20276; between Vaighan and Veinagh, ca. 1000 m, A. & M. 20404; Saigram - Dagh mountain, ca. 2300 m, A. & S. 24253.

Malus orientalis Vgl. — Forest NW. of Doghroon mountain, 2100 m, R. & A. 21964a, R. & A. 21965; between Saigram - Dagh and Kaleibar, 2000 m, A. & S. 24356.

Mespilus germanica L. — Between Makidi and Veinagh, 1000 — 1700 m, W. & A. 17039; between Hejrاندust and

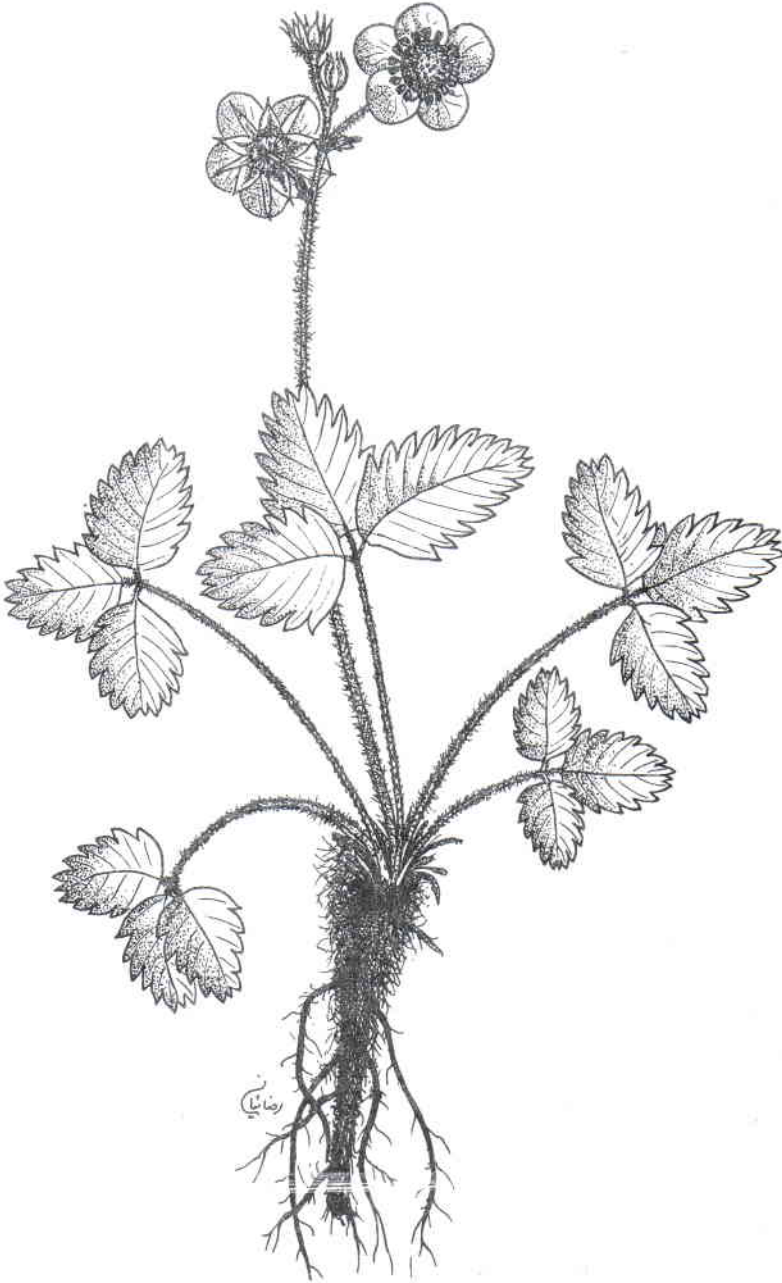


Fig. 5. *Fragaria vesca* (nat. size).

- Makidi, 1400 — 1750 m, A. & M. 20161; between Tolua - Ali and Veinagh, 900 m, A. & V. 24627; between Saigram - Dagh and Kaleibar, 2000 m, A. & S. 24357; between Vaighan and Kharil, ca. 1500 m, A. & V. 24818.
- Potentilla canescens* Besser — Between Hejrandust and Makidi, 1400 — 1750 m, A. & M. 20171; mountains S. of Vaighan, 1200 — 1500 m, A. & M. 20356; Doghroon mountain, 2300 m, R. & A. 20965, A. & S. 24045, A. & S. 23898; between Kharil and Makidi, 1900 m, A. & V. 24959; Saigram - Dagh mountain, 2300 m, A. & S. 24267b; between Veinagh and Vaighan, 1000 — 1400 m, A. & V. 24739; between Kaleibar and Hejrandust, 1350 — 1700 m, A. & M. 20094.
- Potentilla reptans* L. — Doghroon mountain, 2200 — 2400 m, R. & A. 21916.
- Prunus spinosa* L. — Mountains S. of Vaighan, 1200 — 1500 m, A. & M. 20362; between Kaleibar and Makidi, 1400 — 1750 m, A. & M. 20137; SE. of Makidi, 1000 m, R. & A. 22082, R. & A. 23095; Saigram - Dagh mountain, 2300 m, A. & S. 24291; between Saigram - Dagh mountain and Kaleibar, 2000 m, A. & S. 24371; A. & S. 24360, between Vaighan and Kharil, ca. 1500 m, A. & V. 24799; between Makidi and Veinagh, 1000 — 1700 m, W. & A. 17016; forest NW. of Doghroon mountain, 2100 m, R. & A. 21964.
- Pyrus hyrcana* Fedor — Mountains S. of Vaighan, 1200 — 1500 m, A. & M. 20366.
- There is, but only one previous record for this species in Iran, Gilan province. Endemic in Talish and NW. Iran.
- Pyrus salicifolia* Pall. — Between Vaighan and Veinagh, ca. 1000 m, A. & M. 20463; between Tolua - Ali and Veinagh, 1200 m, A. & V. 24620; between Makidi and Veinagh, 1000 — 1700 m, W. & A. 17045.
- Leaves in the specimen W. & A. 17045 are much broader than the usual up to 3 cm. Distributed in Caucasia and NW. Iran.
- Pyrus syriaca* Boiss. — SE. of Makidi, 1600 m, R. & A. 22098; forest NW. of Doghroon mountain, 2100 m, R. & A. 21967; between Hejrandust and Makidi, 1400 — 1750 m, A. & M. 20180; between Vaighan and Kharil, 2000 m, A. & V. 24780.
- Pyrus* sp. — Between Vaighan and Kharil, ca. 1500 m, A. & V. 24813.
- A non flowering or fruiting specimen. Leaves \pm glabrous, ovate to ovate - elliptic, subentire to minutely dentate at margin and acute to acuminate - plicate at the apex.
- Rosa canina* L. — Between saigram - Dagh and Kaleibar, 2000 m, A. & V. 24367a,

between Vaighan and Veinagh, ca. 1000 m, A. & M. 20429; between Tolua - Ali and Veinagh, 1000 - 1200 m, A. & V. 24641; Tolua-Ali, 650 m, A. & V. 24566; between Veinagh and Ghaghalou, ca. 1000 m, A. & M. 20503; mountains S. of Vaighan, 1200 - 1500 m, A. & M. 20378.

Rosa iberica Stev. in M. B. — Between Veinagh and Vaighan, 1000 - 1400 m, A. & V. 24691; Doghroon mountain, 2200 - 2400 m, R. & A. 21931; between Makidi and Kaleibar, ca. 1700 m, A. & V. 25016; between Vaighan and Kharil, ca. 1500 m, A. & V. 24837; between Tolua - Ali and Veinagh, 1000 m, A. & V. 24622; Doghroon and Kalan mountains, 2300 - 2500 m, A. & S. 24095; forests W. of Makidi, 1700 m, R. & A. 22037, A. & V. 24367b.

Rosa pimpinellifolia L. — Between Hejrandust and Makidi, 1400 - 1750 m, A. & V. 20154; forest W. of Makidi, 1600 - 1800 m, R. & A. 22042; Doghroon mountain, 2500 m, A. & S. 23905; between Makidi and Veinagh, 1000 - 1700 m, W. & A. 17027.

Rubus caesius L. — Between Doghroon mountain and Makidi, 2000 m, R. & A. 22031.

Rubus discolor Weihe & Nees — Between Waighan and Kharil, ca. 1500 m, A. & V. 24797, mountains S. of Vaighan, 1200 -

1500 m, A. & M. 20350.

Rubus persicus Boiss. — 1200 m, Savabi & Raofi 25.

Rubus raddeanus Focke — Between Saigram - Dagh and Kaleibar, 2000 m, A. & S. 24381.

Rubus saxatilis L. — W. slope of Doghroon mountain, 2300 m, meadow, R. & A. 22005.

This species was recently recorded as a new to Iran (Assadi 1983 p.6). *Sanguisorba minor* Scop. subsp. *muricata* (Spach) Briq. — Between Saigram - Dagh mountain and Kaleibar, 2000 m, A. & S. 24395; between Doghroon and Saigram - Dagh mountains, 2500 - 2700 m, A. & S. 24187; Doghroon mountain, 2500 - 2800 m, A. & S. 24002, R. & A. 22009; between Kaleibar and Hejrandust, 1350 - 1700 m, A. & M. 20041; Tolua - Ali A. & V. 24925.

Sibbaldia parviflora Willd. var. *parviflora* — Doghroon mountain, 2500 - 2800 m, dry meadow, R. & A. 21885, A. & S. 23876.

Distributed from E. Europe through Turkey, Caucasia, and N. Iran to Himalayas.

Sorbus boissieri C.K. Schneider — Saigram - Dagh mountain, 2300 m, A. & S. 24265; Doghroon and Kalan mountains, 2300 m, A. & S. 24146, R. & A. 21977; SE. of Makidi, 1700 m, in

dense forest near a brook, R. & A. 22105.

A tree ca. 5 m high growing in mixed *Quercus macranthera* forest.

Sorbus graeca (Spach) Loddiges ex Schaver — SE. of Makidi, 1700 m, R. & A. 22111; W. of Makidi, 1700 m, R. & A. 22040; between Makidi and Veinagh, 1000 — 1700 m, W. & A. 17065.

Shrub or small tree ca. 3 m high growing in mixed forests.

Sorbus torminalis (L.) Crantz — Mountains S. of Vaighan, 1200 — 1500 m, A. & M. 20351; between Vaighan and Veinagh, ca. 1000 m, A. & M. 20402; between Vaighan and Kharil, ca. 1500 m, A. & V. 24830.

This species is found in mixed *Quercus iberica* forest.

Spirea crenata L. — Between Kaleibar and Makidi, 1300 — 1700 m, W. & A. 16993, W. & A. 16991.

Spirea hypericifolia L. — Between Vaighan and Veinagh, ca. 1000 m, A. & M. 20445; between Makidi and Kaleibar, ca. 1400 m, R. & A. 22120, A. & V. 24995; between Tolua - Ali and Veinagh, 900 m, A. & V. 24580.

This species was not included by Schönbeck - Temesy (1969) in *Flora Iranica*.

Rubiaceae

Asperula arvensis L. — East of Vaighan,

1200 — 1500 m, A. & M. 20326; between Doghroon and Saigram - Dagh mountains, 2500 — 2700 m, A. & S. 24193; Savabi & Raofi 143.

Asperula glomerata (M.B.) Griseb. — Doghroon mountain, A. & S. 24039, A. & S. 23970; between Vaighan and Veinagh, ca. 1000 m, A. & M. 20427.

Asperula molluginoides (M.B.) Rechb. — Saigram - Dagh mountain, 2300 m, A. & S. 24284, A. & S. 24290; Doghroon and Kalan mountains, 2300 — 2500 m, A. & S. 24131, A. & S. 24156; forest NW. of Doghroon mountain, 2100 m, R. & A. 21971, Savabi & Raofi s.n.

This species in the distribution of the species in P.H. Davis Flora of Turkey has been mentioned from NW. Iran. Distributed in Caucasia, NW. Iran and E. Turkey. In the area it is found in *Quercus macranthera* forest or highgrown meadows.

Callipeltis cucullaria (L.) Steven — Ghaghalou, 650 m, A. & V. 24536; Tolua - Ali, 650 m, A. & V. 24946; between Tolua - Ali and Veinagh, 800 m, A. & V. 24619; below Veinagh, 500 — 900 m, W. & A. 17114; between Kaleibar and Hejrandust, 1350 — 1700 m, A. & M. 20099.

Crucianella gilanica Trin s.l. — Doghroon mountain, 2200 — 2400 m, R. & A. 21944; mountains E. of Vaighan, 1300 m,



Fig. 6. *Asperula molluginoides* (x 0.63).

20285; Saigram - Dagh mountain, ca. 2300 m, A. & S. 24242.

This species was supposed by Ehrendorfer (1982 p. 727) as a group separable into 8 vicarious subspecies. Above mentioned specimens apparently fall into the subsp. *transcaucasica* (Ehrend.) T. N. Popov & Takht, ex Takht. & Feb.

Cruciata articulata (L.) Ehrend. — East of Vaighan, 1200 — 1500 m, A. & M. 20317; between Vaighan and Kharil, ca. 1500 m, A. & V. 24854.

Cruciata laevipes Opiz — Doghroon and Kalan mountains, 2300 — 2500 m, A. & S. 24094; between Veinagh and Vaighan, 1000 — 1400 m, A. & V. 24756.

Widespread Euro - Siberian element.

Cruciata taurica (Pallas ex Willd.) Ehrend. Between Kharil and Makidi, ca. 2000 m, A. & V. 24906; Doghroon mountain, 2500 — 2800 m, A. & S. 24059, R. & A. 21873; between Kharil and Makidi, 1800 m, A. & V. 24976; between Kaleibar and Hejrandust, 1350 — 1700 m, A. & M. 20105; forests W. of Makidi, 1700 m, R. & A. 22044.

It is found in forests and at high-grown meadows.

Galium atropatanum Grossh. — Doghroon mountain, 2200 — 2400 m, R. & A. 21942; between Tolua - Ali and Veinagh, 1000 m, A. & V. 24586.

This species is distinguished from its close relative *G. verum* by densely hairy mericarps. Not previously recorded from Iran.

Galium consanguineum Boiss. — Doghroon mountain, 2500 — 2800 m, R. & A. 21874.

This species is distinguished from *G. verum* by having completely glabrous stems and broader leaves.

Galium odoratum L. — Between Hejrandust and Makidi, 1400 — 1750 m, A. & M. 20186; between Kharil and Makidi, ca. 2000 m, A. & V. 24889.

Galium subvelutinum (DC.) C. Koch subsp. *hyrcanicum* (C. A. Mey) Ehrend. — Saigram - Dagh mountain, 2400 — 2700 m, A. & S. 24331; Doghroon mountain, 2500 — 2800 m, A. & S. 24052, R. & A. 21903, A. & S. 23960.

Galium tenuissimum M.B. subsp. *tenuissimum* — Between Veinagh and Ghaghalou, ca. 1000 m, A. & M. 20489; between Saigram - Dagh mountain and Kaleibar, 1500 — 2000 m, A. & S. 24351.

This subspecies was only mentioned by Ehrendorfer & Schönbeck - Temesy 1982 p. 838 in distribution of the subspecies from Iran.

Galium tricornutum Dandy — Mountains E. of Vaighan, 1300 — 1600 m, A. & M. 20286.

Galium verticillatum Danth. — Between

Kaleibar and Hejrandust, 1350 – 1700 m, A. & M. 20081.

Galium verum L. — Tolua - Ali, 650 m, A. & V. 24917; Doghroon mountain, 2500 m, A. & S. 25875; E. of Vaighan, 1200 – 1500 m, A. & M. 20330.

Rutaceae

Dictamnus albus L. — Between Vaighan and Kharil, ca. 1500 m, A. & V. 24795; between Tolua - Ali and Veinagh, 900 m, scrub forest, A. & V. 24567; 1000 m, Savabi & Raofi 66; between Vaighan and Veinagh, ca. 1000 m, A. & M. 20483; between Hejrandust and Makidi, 1400 – 1750m, A. & M. 20122; between Makidi and Veinagh, 1000 – 1700 m, W. & A. 17056.

This species is found at shady places in scrub forests, new gatherings Clarify that it is more common in hyrcanian forests than previously thought (cf. Assadi & Wendelbo 1977 p. 102).

Salicaceae

Salix aegyptiaca L. — Between Kaleibar and Makidi, 1300 – 1700 m, W. & A. 16961; A. & M. 20131; Savabi & Raofi 240; between Kharil and Makidi, ca. 2000 m, A. & V. 24899; between Vaighan and Kharil, ca. 1500 m, A. & V.

24822; SE. of Makidi, R. & A. 22076. *Salix excelsa* S.G. Gmelin — SE. of Makidi, 1600 m, forest along a stream, R. & A. 22079.

Santalaceae

Thesium arvense Horvatovsky — Between Veinagh and Vaighan, 1000 – 1400 m, A. & V. 24702; mountains S. of Vaighan, 1200 – 1500 m, A. & M. 20381.

Saxifragaceae

Saxifraga cymbalaria L. — SE. of Makidi, 1700 m, R. & A. 22092.

Saxifraga cartilaginea Willd. ex Sternb. — Saigram - Dagh mountain, 2700 m, crevices of rocks, 2700 m, A. & S. 24295; between Doghroon and Saigram - Dagh mountains, 2500 – 2700 m, A. & S. 24190; Doghroon mountain, 2500 – 2800 m, A. & S. 23988.

This species is usually found in crevices of outcrop rocks within the high - grown meadows.

Saxifraga sibirica L. — Between Makidi and Veinagh, 1000 – 1700 m, W. & A. 17029.

Scrophulariaceae

Digitalis nervosa Steud. & Hochst. ex

Benth. — SE. of Makidi, 1600 m, forest margin, R. & A. 22102; between Saigram - Dagh mountain and Kaleibar, 2000 m, A. & S. 24359; Savabi & Raofi 251.

Euxino - Hyrcanian (?) element which is distributed in Caucasia and N. Iran.

Euphrasia pectinata Ten. — Doghroon and Kalan mountains, 2300 — 2500 m, A. & S. 24124, R. & A. 20971.

Euphrasia cf. *petiolaris* Wettst. — Between Doghroon mountain and Makidi, 1800 m, R. & A. 22027.

This species was not included by P.F. Yeo (1981 p. 172) in K.H. Rechinger Flora Iranica.

Linaria grandiflora Desf. — NW. of Veinagh, 1300 — 1400 m, A. & V. 24666.

Distributed from E. Europe to N. Iran.

Linaria kurdica Boiss. & Hohen. — Doghroon mountain, 2500 — 2800 m, A. & S. 23967, A. & S. 23943, R. & A. 20960.

Pedicularis sibthorpii Boiss. — Doghroon mountain, 2500 m, A. & S. 23873; between Vaighan and Kharil, 2000 m, A. & V. 24779, A. & V. 24857; between Makidi and Kaleibar, ca. 1700 m, A. & V. 25010, A. & M. 20048; between Kharil and Makidi, 2700 m, A. & V. 24874, Doghroon mountain, 2500 — 2800 m, A. & S. 23983, A. & S. 23908; W. of Makidi,

ca. 2400 m, A. & M. 20256, A. & M. 20215.

It is found on meadows and in *Quercus macranthera* forest.

Pedicularis wilhelmsiana Fisch. ex M.B. — W. of Makidi, 1500 m, A. & M. 20201; between Kharil and Makidi, 1800 m, A. & V. 24982, A. & V. 24896; Mountains E. of Vaighan, 1700 — 2000 m, A. & M. 20270.

This species is found at wet places in *Quercus macranthera* forest. Euxine element distributed in Caucasia, NE. Turkey and NW. Iran.

Rhinanthus minor Ehrh. — W. of Makidi, 1600 m, A. & M. 20238; E. of Vaighan, 1200 — 1500 m, A. & M. 20310; W. slope of Doghroon mountain, 2300 m, meadow, R. & A. 22010, A. & S. 24150. *Scrophularia amplexicaulis* Benth. — mountains S. of Kharil, 2000 — 2500 m, A. & M. 20262.

Distributed in Caucasia, E. Turkey, N. Iraq and N. & W. Iran.

Scrophularia azerbaijanica Grau — Between Vaighan and Kharil, ca. 1500 m, A. & V. 24848.

Irano - Turanian element distributed in Turkey, Caucasia, N. Iraq and NW. Iran.

Scrophularia oxysepala Boiss. — Between Makidi and Kaleibar, ca. 1700 m, A. & V. 25012; W. of Makidi, 1500 m, A. & M.

20206; between Doghroon and Saigram - Dagh mountains, 2500 - 2700 m, A. & S. 24181; Saigram - Dagh mountain, 2400 - 2700 m, A. & S. 24318.

Endemic in NW. Iran. This species is apparently very close to the Caucasian *S. divaricata* Ledeb.

Scrophularia umbrosa Dumort. — Saigram - Dagh mountain, ca. 1300 m, A. & S. 24299; Doghroon mountain, 2500 - 2800 m, R. & A. 21895.

Scrophularia variegata M. B. subsp. *cinerascens* (Boiss. in Tchihat.) Grau — Between Doghroon and Saigram - Dagh mountains, 2500 - 2700 m, A. & S. 24204, A. & S. 24203; Doghroon mountain, 2500 - 2800 m, A. & S. 23996, R. & A. 20966, A & S. 23942, A. & S. 24007; Saigram - Dagh mountain, 2400 - 2700 m, A. & S. 24309; between Hejrاندust and Makidi, 1400 - 1750 m, A. & M. 20194; between Kharil and Makidi, 1800 m, A. & V. 24955; between Vaighan and Kharil, ca. 1500 m, A. & V. 24791.

Verbascum gossypinum M.B. — Between Veinagh and Vaighan, 1000 - 1400 m, in *Quercus* forest, A. & V. 24736; mountains E. of Vaighan, 1200 - 1500 m, A. & M. 20334; between Vaighan and Kharil, ca. 1500 m, A. & V. 24849.

Distribution, in Caucasia and highlands of N. Iran.

Verbascum nudicaule (Wydł.) Takht. — Between Tolua - Ali and Veinagh, 900 m, A. & V. 24584.

Distribution, in Caucasia, E. Turkey and NW. Iran.

Verbascum orientale (L.) All. — Between Kaleibar and Makidi, 1300 - 1700 m, W. & A. 17008; below Veinagh, 500 - 900 m, W. & A. 17113; between Vaighan and Kharil, ca. 1500 m, A. & V. 24831; mountains E. of Vaighan, 1300 - 1600 m, A. & M. 20291.

Verbascum pyramidatum M.B. — SE. of Makidi, 1600 m, dry meadow, R. & A. 22094; mountain S. of Vaighan, 1200 - 1500 m, A. & M. 20359; between Saigram - Dagh and Kaleibar, 2000 m, A. & S. 24393.

A new for the flora of Iran. This species has not been included by Huber - Morath (1981) in K.H. Rechinger Flora Iranica. It is an Euxine element which is distributed from Crimea through N. Turkey to Caucasia and NW. Iran. *V. pyramidatum* is apparently very similar to *V. oreophilum* C. Koch, but differs from it in having fruiting pedicels shorter than the bracteoles.

Verbascum speciosum Schrad. — Doghroon mountain, 2300 m, R. & A. 21864, A. & S. 23978; Saigram - Dagh mountain, ca. 1300 m, A. & S. 24219.

Verbascum szovitsianum Boiss. var.

szovitsianum — Between Makidi and Veinagh, 1000—1700 m, W. & A. 17054; between Veinagh and Vaighan, 1000—1400 m, A. & V. 24715, A. & M. 20420, A. & M. 20425; between Kaleibar and Hejrandust, 1350—1700 m, A. & M. 20102.

The distribution of this species is in Caucasia, E. Turkey and NW. Iran.

Veronica anagallis-aquatica L. — Doghroon mountain, 2500—2800 m, R. & A. 21890; between Vaighan and Veinagh, ca. 1000 m, A. & M. 20411; between Tolua - Ali and Veinagh, 1100 m, A. & V. 24603; Savabi & Raofi s.n. *Veronica beccabunga* L. — Makidi, 1400 m, R. & A. 22054.

Veronica ceratocarpa C.A. Mey. — Between Kaleibar and Hejrandust, 1350—1700 m, A. & M. 20114.

Veronica gentianoides Vahl. — W. of Makidi, ca. 2400 m, A. & M. 20220;

Doghroon mountain, 2500 m, A. & S. 23886; between Kharil and Makidi, 2000—2700 m, A. & V. 24969; between Kaleibar and Makidi, 1300—1700 m, W. & A. 17000.

The distribution of the species is in Turkey, Caucasia and N. Iran. It is usually found on high-grown meadows.

Veronica multifida L. — Doghroon mountain, 2500—2800 m, A. & S. 24016;

between Kharil and Makidi ca. 2000 m, A. & V. 24872; between Vaighan and Kharil, 2000 m, A. & V. 24777; between Kaleibar and Hejrandust, 1350—1750 m, A. & M. 20029.

This species is found on meadows or higher part of *Quercus macranthera* forest.

Veronica orientalis Mill. — Doghroon mountain, 2500 m, A. & S. 23900, A. & S. 23892, A. & S. 23980; Saigram - Dagh mountain, 2400—2700 m, A. & S. 24310; Savabi and Raofi 135; W. of Makidi, 1500 m, in *Quercus* forest, A. & M. 20210.

This species is found on high-grown meadows. The specimen A. & M. 20210 is intermediate between *V. oreintalis* & *V. multifida*.

Veronica polita Fries — Between Vaighan and Kharil, ca. 1500 m, A. & V. 24851.

Solanaceae

Hyoscyamus niger L. — Between Tolua - Ali and Veinagh, 900 m, A. & V. 24575; between Hejrandust and Makidi, 1400—1750 m, A. & M. 20153.

Solanum nigrum L. — Between Saigram - Dagh and Kaleibar, 2000 m, A. & S. 24399.

Thymelaeaceae

Thymelaea passeriana (L.) Cosson & Germ. — Savabi & Raofi s.n.

Ulmaceae

Celtis caucasica Willd. — Between Makidi and Veinagh, 1000 — 1700 m, W. & A. 17009; between Vaighan and Veinagh, ca. 1000 m, A. & M. 20455; mountains S. of Vaighan, 1200 — 1500 m, A. & M. 20361; between Tolua - Ali and Veinagh, 1000 — 1200 m, A. & V. 24646.

A scattered component of mixed *Quercus iberica* scrub forests.

Ulmus glabra Hudson — ca. 15 km NE. of Kaleibar, ca. 1400 m, R. & A. 22129.

Ulmus minor Miller — Between Tolua - Ali and Veinagh, 900 m, A. & V. 24571; between Vaighan and Kharil, ca. 1500 m, A. & V. 24772; between Saigram - Dagh mountain and Kaleibar, 2000 m, A. & S. 24385; between Veinagh and Ghaghalou, ca. 1000 m, A. & M. 20528; between Makidi and Veinagh, 1000 — 1700 m, W. & A. 17010.

Umbelliferae

Anthriscus cerefolium (L.) Hoffm. — Between Veinagh and Vaighan, 1000 — 1400 m, A. & V. 24734.

Anthriscus nemorosa (M.B.) Spreng. —

Doghroon mountain, 2200 — 2400 m, R. & A. 21933; between Kharil and Makidi, 1800 m, A. & V. 24957; between Kaleibar and Hejrاندust, 1350 — 1700 m, A. & M. 20063; between Makidi and Kaleibar, ca. 1700 m, A. & V. 24993; mountains S. of Vaighan, 1200 — 1500 m, A. & M. 20374; between Vaighan and Kharil, ca. 1500 m, A. & V. 24762; Doghroon mountain, 2500 m, A. & S. 23946.

This species is found at brooklet - sides.

Astrantia maxima Pallas subsp. *maxima* — Doghroon and Kalan mountains, 2300 m, upper part of *Quercus macranthera* forest, A. & S. 24134; Savabi s.n.

Euxino - hyreanian element distributes in Caucasia Turkey and NW. & N. Iran. Noteworthy is that a specimen belong to this species was recently collected from N. Iran (Mazandaran: ca. 20 km S. of Ramsar, between Tanoorekash and Janat - Rudbar (VA3), 2000 — 3000 m, Assadi & Maasoumi 51392). Basal leaves in this specimen are 4 - parted and the bracteoles are green outside and white inside, up to 26 x 12 mm, therefore this specimen in respect of leaves partition and bracteole colour is closer to the subsp. *haradjanii* (Grintz) Rech. f. and in respect of bracteole size is nearer to the

typical subspecies (cf. Hedge & Lamond 1972 p. 290).

Astrodaucus orientalis (L.) Drude — Saigram - Dagh mountain, 2300 m, grassland, A. & S. 24247; between Doghroon and Saigram - Dagh mountains, 2500 — 2700 m, A. & S. 24194; Savabi & Raofi 82; between Tolua - Ali and Veinagh, 1000 m, A. & V. 24611. *Berula erecta* (Huds.) Coville — Makidi, 1400 m, wet place, R. & A. 22065. *Bunium microcarpum* (Boiss.) Freyn subsp. *bourgaei* (Boiss.) Hedge & Lamond. — Saigram - Dagh mountain, 2400 — 2700 m, A. & S. 24305; Doghroon mountain, grassland, 2500 m, A. & S. 23916.

Bupleurum falcatum L. subsp. *cernuum* (Ten.) Arc. — Doghroon mountain, 2300 m, R. & A. 20984.

Bupleurum rotundifolium L. — Between Veinagh and Vaighan, 1000 — 1400 m, A. & V. 24700; A. & M. 20478.

Carum carvi L. — Doghroon mountain, 2100 m, R. & A. 20945.

Caucalis platycarpus L. — Kaleibar to Hejrandust, 1350 — 1700 m, A. & M. 20109; between Doghroon and Saigram - Dagh mountains, 2500 — 2700 m, A. & S. 24200; Doghroon mountain, 2200 — 2400 m, R. & A. 21920; between Makidi and Kaleibar, ca. 1700 m, A. & V. 25005.

Cervaria caucasica (M.B.) M. Pimen. —

SE. of Makidi, 1400 — 1800 m, R. & A. 22087.

Chaerophyllum aureum L. — Forest NW. of Doghroon mountain, 2100 m, R. & A. 21973; Saigram - Dagh mountain, ca. 1300 m, A. & S. 24227.

Cymbocarpum anethoides DC. — Ghaghalou, 650 m, A. & V. 24547.

Eryngium billardieri Delar. — Saigram - Dagh mountain to Kaleibar, 1500 — 2000 m, A. & S. 24350; Doghroon mountain, 2200 m, R. & A. 20941.

Falcaria vulgaris Bernh. — Doghroon mountain, 2200 m, near a spring, R. & A. 20949.

Heracleum pastinacifolium C. Koch. — Doghroon and Kalan mountains, 2300 — 2800 m, A. & S. 24141, A. & S. 24067, A. & S. 24040, A. & S. 24122; Saigram - Dagh mountain, 2400 — 2700 m, A. & S. 24312, A. & S. 24319; A. & S. 24321; between Saigram - Dagh mountain and Kaleibar, 2000 m, A. & S. 24382.

The distribution of the species is in Caucasia, Turkey and NW. Iran. In the area it is found on high - grown grasslands.

Heracleum persicum Desf. — Saigram - Dagh mountain, ca. 2300 m, A. & S. 24234; Doghroon mountain, 2200 — 2400 m, R. & A. 21937; 2400 m, Savabi & Raofi 171.

The distribution is in E. Turkey

and N. Iran.

Hippomarathrum microcarpum (M.B.) Fedtsch. — Doghroon mountain, 2100 m, R. & A. 21955.

Distribution is in Caucasia, Turkey and N. Iran.

Laser trilobum (L.) Borkh. — SE. of Makidi, 1700 m, R. & A. 22089; between Veinagh and Vaighan, 1000 — 1400 m, A. & V. 24760; SE of Makidi, 1400 — 1800 m, R. & A. 22087; mountains S. of Vaighan, 1200 — 1500 m, A. & M. 20373.

Libanotis transcaucasica Schischk. — Between Saigram - Dagh and Kaleibar, 2000 m, A. & S. 24383; Doghroon mountain, 2200 — 2400 m, R. & A. 21932.

Orlaya daucooides (L.) Greuter — Between Vaighan and Kharil, ca. 1500 m, A. & V. 24788.

Pimpinella saxifraga L. — Doghroon mountain, 2500 — 2800 m, R. & A. 21886, A. & S. 23911.

It is found on high - grown meadows.

Pimpinella tragium Vill. subsp. *lithophila* (Schischkin) Tutin — Doghroon mountain, 2300 m, meadow, R. & A. 21857.

The distribution of the subspecies is from S. Europe and NW. Africa to Iran.

Prangos ferulacea (L.) Lindl. — Doghroon mountain, 2200 — 2400 m, R. & A. 21941, A. & S. 24129; between

Kharil and Makidi, ca. 2000 m, A. & V. 24905.

Sanicula europaea L. — Between Saigram - Dagh mountain and Kaleibar, 2000 m, A. & S. 24363; between Makidi and Kaleibar, ca. 1400 m, in *Caprinus betulus* forest, R. & A. 22117.

Scaligeria tripartita (Kalen) Tamamsh. — Forests W. of Makidi, 1800 m, R. & A. 22047.

Euxine element, distribution in Caucasia, N. Turkey and NW. Iran. *Scandix stellata* Banks & Sol. — Between Vaighan and Veinagh, ca. 1000 m, A. & M. 20407.

Seseli peucedanoides (M.B.) Koso - Pol. — Between Saigram - Dagh and Kaleibar, 2000 m, in forest, 2000 m, A. & S. 24366.

Euro - Siberian element distributes from Europe to N.W. Iran.

Torilis leptophylla (L.) Rchb. — Ghaghalou, 650 m, A. & V. 24562.

Trinia leiogona (C.A. Mey.) B. Fedtsch. — Between Tolua - Ali and Veinagh, 1000 — 1200 m, A. & V. 24629; between Kaleibar and Hejrاندust, 1350 — 1700 m, A. & M. 20070; between Veinagh and Ghaghalou, ca. 1000 m, A. & M. 20490; between Kharil and Makidi, 1900 m, A. & V. 24961.

Turgenia latifolia (L.) Hoffm. — Between Veinagh and Vaighan, 1000 — 1400 m, A. & V. 24719; between Doghroon and

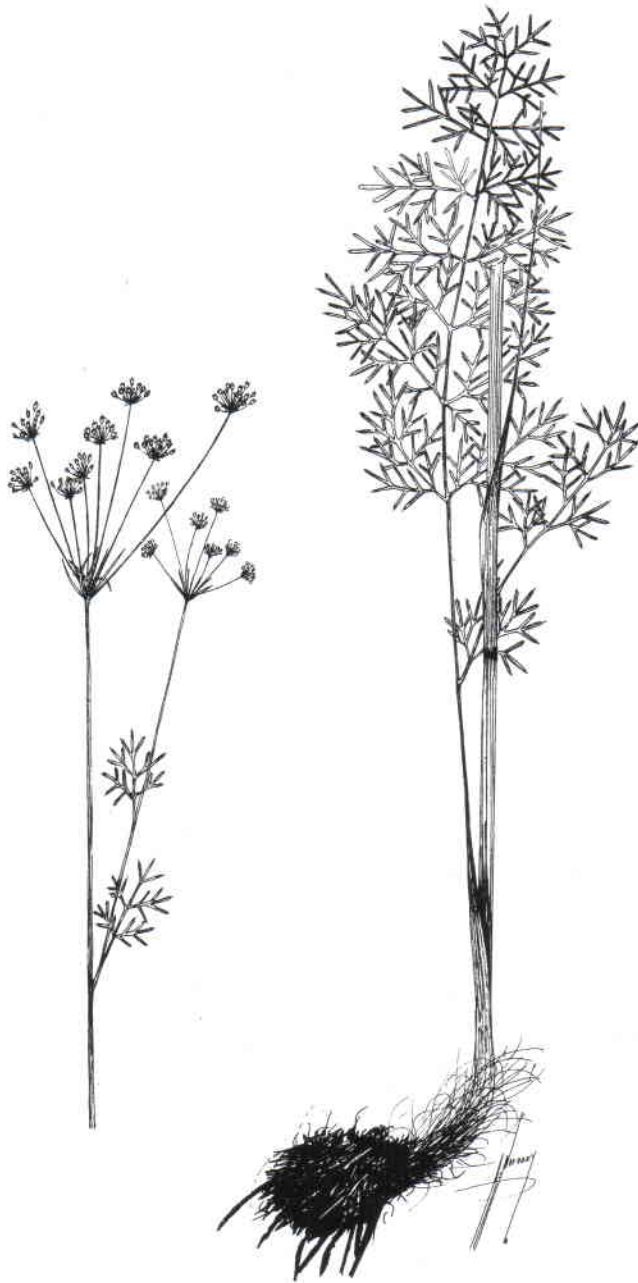


Fig. 7. *Seseli peucedanoides* (x 0.57).

Saigram - Dagh mountain, 2500 — 2700 m, A. & S. 24201.

Zosimia absinthifolia (Vent.) Link. — NW. of Veinagh, 1300 — 1400 m, A. & V. 24729; mountains E. of Vaighan, 1700 — 2000 m, A. & M. 20282; between Makidi and Kaleibar, ca. 1700 m, A. & V. 24996.

Urticaceae

Parietaria judaica L. — Between Vaighan and Veinagh, ca. 1000 m, A. & M. 20460; between Veinagh and Ghaghalou, ca. 1000 m, A. & M. 20498.

Parietaria officinalis L. — Between Vaighan and Veinagh, ca. 1000 m, A. & M. 20415.

Urtica dioica L. subsp. *kurdistanica* Chrtek W. slope of Doghroon mountain, 2000 m, R. & A. 21986.

Valerianaceae

Valeriana alliarifolia Adams — W. slope of Doghroon mountain, 2100 m, R. & A. 2202; Doghroon and Kalan mountain, 2300 — 2500 m, A. & S. 24110; between Vaighan and Kharil, ca. 1500 m, A. & V. 24826.

The specimen of the only older record from Iran, has not been seen by the author of *Flora Iranica* (Rechinger

1969 p. 18). This species is found in *Quercus* forests and at high-land meadows. So far, it has been known from S. Europe through Turkey to NW. Iran and Caucasia.

Valeriana leucophaea DC. — W. of Makidi, 2400 m, meadows, A. & M. 20247.

The distribution of the species is in Caucasia, E. Turkey and NW. Iran (Euxino - Hyrcanian element).

Valeriana phu L. — Doghroon mountain, 2500 m, grassland, A. & S. 23941.

A new for the flora of Iran which is certainly wild in the area.

Valeriana sisymbriifolia Vahl. — Doghroon mountain, 2500 — 2800 m, A. & S. 24020.

Valerianella dactylophylla Boiss. & Hohen. — Between Kaleibar and Hejrاندust, 1350 — 1700 m, A. & M. 20089; between Vaighan and Veinagh, 1000 — 1400 m, A. & V. 24733; between Tolua - Ali and Veinagh, 1000 — 1200 m, A. & V. 24634.

Valerianella lasiocarpa (Stev.) Betcke — Mountains S. of Vaighan, 1200 — 1500 m, A. & M. 20348; between Veinagh and Ghaghalou, ca. 1000 m, A. & M. 20505; between Veinagh and Vaighan. 1000 — 1400 m, A. & V. 24694.

Verbenaceae

Verbena officinalis L. — Between Vaighan

and Veinagh, ca. 1000 m, A. & M. 20419; Makidi, 1400 m, R. & A. 22066.

800 m, A. & M. 20539.

Violaceae

Viola cf. alba Besser — Between Kaleibar and Hejrandust, 1350—1700 m, A. & M. 20074. A poor specimen.

Viola arvensis Murray — East of Vaighan, 1200—1500 m, A. & M. 20311; between Kaleibar and Hejrandust, 1350—1700 m, A. & M. 20034.

Viola odorata L. — Mountains S. of Kharil, 2000—2500 m, A. & M. 20269; Between Kaleibar and Makidi, 1300—1700 m, W. & A. 16981.

Viola rupestris F. W. Schmidt — Between Kaleibar and Makidi, 1300—1700 m, W. & A. 16977.

Vitaceae

Vitis sylvestris Gmelin subsp. *trichophylla* Kolen. — Between Vaighan and Veinagh, ca. 1000 m, scrub forest, A. & M. 20423; between Tolua - Ali and Veinagh, 1000—1200 m, A. & V. 24643.

Zygophyllaceae

Peganum harmala L. var. *harmala* — Ghaghalu, 650 m, A. & V. 24529; between Veinagh and Ghaghalu, 500—

MONOCOTYLEDONES

Cyperaceae

Carex atrata L. subsp. *caucasica* (Steven) Kuh. — Doghroon mountain, 2500—2800 m, A. & S. 23922, A. & S. 23964, A. & S. 24077, R. & A. 21876.

This species is found at high - grown wet meadows.

Carex capillaris L. subsp. *capllaris* — Doghroon mountain, 2200—2400 m, wet meadow, R. & A. 21950.

No previous record of this species from Iran has been seen by the author. It is a widespread European species occurring in Caucasia which is the closest locality to the above mentioned gathering.

Carex diluta M.B. — Doghroon mountain, 2300 m, near a spring, R. & A. 20978.

Carex distans L. — Doghroon mountain, 2200 m, R. & A. 20982; between Hejrandust and Makidi, 1400—1750 m, A. & M. 20240 a.

Carex divisa Hudson — Between Kharil and Makidi, 2000 m, wet meadow, A. & V. 24980.

Carex hirta L. — Between Hejrandust and Makidi, 1400—1750 m, in scrub forest, A. & M, 20240a.

A new for the flora of Iran. The closest locality to this gathering is in

the Caucasia.

Carex hordeistichos Vill. — Doghroon mountain, 2300 m, at a spring, R. & A. 2093.

A new for the flora of Iran. V.I. Krechetovich (1935 p. 384) in Flora of the USSR mentions all regions of the Caucasia in distribution of the species. *Carex leporina* L. — Between Kharil and Makidi, 2000 m, wet meadow, A. & V. 24979.

This species has not previously been recorded for the flora of Iran. The closest record to the Iranian gathering is in the Caucasia (cf. Grossheim 1940 card no. 51).

Carex nigra L. Reichard — W. of Makidi, ca. 1500 m, wet place, A. & M. 20196.

Carex nutans Host. — Doghroon mountain, 2500 — 2800 m, high - grown grassland, A. & S. 24005, A. & S. 24088.

Carex panicea L. — Western part of Makidi, ca. 1500 m, wet place, A. & M. 20197; Doghroon mountain, 2300 m, at a spring, R. & A. 20976, R. & A. 21951.

A new for the flora of Iran. A widespread European species occurring in Caucasia too.

Carex spicata Hudson — East of Vaighan, 1200 — 1500 m, A. & M. 20328, Doghroon mountain, 2500 — 2800 m, highgrown wet meadow, R. & A. 21875: Saigram - Dagh mountain, ca. 1300 m,

A. & S. 24257.

Carex vulpina L. — Doghroon mountain, 2200 — 2400 m, at a brook, R. & A. 21921.

Carex sp. — Between Makidi and Veinagh, 1000 — 1700 m, W. & A. 17040.

Carex sp. — NW. of Veinagh, 1300 — 1400 m, in forest, A. & V. 24665.

Scirpus compressus L. — Western part of Makidi, ca. 1500 m, A. & M. 20198; Doghroon mountain, 2300 m, R. & A. 20972.

Gramineae

Aegilops crassa Boiss. — Between Kaleibar and Hejrandust, 1350 — 1700 m, A. & M. 20020.

Aegilops ovata L. — Mountains S. of Vaighan, 1200 — 1500 m, A. & M. 20371.

Aegilops tauschii Cosson — Between Vaighan and Veinagh, ca. 1000 m, A. & M. 20450.

Aegilops triuncinalis L. — Ghaghalou, 650 m, A. & V. 24540.

Agropyron caninum (L.) P. Beauv. — W. slope of Doghroon mountain, 2000 m, at a brook, R. & A. 21989; forest NW. of Doghroon mountain, 2100 m, mixed forest, R. & A. 21962.

This species was recently recorded as a new for the flora of Iran (Assadi 1983 p. 2).

- Agropyron imbricatum* (M.B.) Roemer & Schultes — Doghroon mountain, 2500 — 2800 m, A. & S. 23994; Saigram - Dagh mountain, 2400 — 2700 m, high - grown grasslands, A. & S. 24326; A. & S. 24337. Doghroon mountain, 2500 — 2800 m, dry rocky peak area, 2500 — 2800 m, R. & A. 21884.
- Agropyron intermedium* (Host) P. Beauv. — Doghroon mountain, 2300 m, R. & A. 21863.
- Agropyron repens* (L.) P. Beauv. — Between Doghroon mountain and Makidi, 2000 m, R. & A. 22019.
- Agropyron trichophorum* (Link) Richter — W. slope of Doghroon mountain, 2100 m, wet highgrown meadow, R. & A. 22000, R. & A. 21938.
- Agrostis gigantea* Roth — Doghroon mountain, 2300 m, A. & S. 24135, R. & A. 20975; between Doghroon mountain and Makidi, 1800 m, at a brook, R. & A. 22026.
- Alopecurus arundinaceus* Poir. var. *arundinaceus* — Doghroon mountain, 2500 — 2800 m, highgrown grassland, A. & S. 24035, R. & A. 21872; Western part of Makidi, ca. 2000 m, wet place, A. & M. 20242; Savabi & Raofi 157.
- Alopecurus aucheri* Boiss. — W. of Makidi, ca. 2000 m, wet meadow near a spring, A. & M. 20232.
- Alopecurus textilis* Boiss. — Doghroon mountain, 2500 — 2800 m, grassland at top area, A. & S. 24058.
- Anthoxanthum odoratum* L. — Doghroon and Kalan mountain, 2300 — 2500 m, grassland at top area, A. & S. 24104.
- This species was not mentioned by Bor (1970 p. 336) from Iran and therefore a new to the flora of Iran.
- It is a widespread species occurring in the Caucasia which is the closest locality to above gathering.
- Arrhenatherum elatius* (L.) P. Beauv. — W. slope of Doghroon mountain, 2000 m, near a brook, R. & A. 21988.
- Avena barbata* Pott ex Link — Between Vaighan and Veinagh, ca. 1000 m, A. & M. 20432.
- Bothriochloa ischaemum* (L.) Keng — Between Veinagh and Ghaghalou, 500 — 800 m, A. & M. 20540; Savabi & Raofi 2; between Vaighan and Veinagh, ca. 1000 m, A. & M. 20447.
- Brachypodium sylvaticum* (Hudson) P. Beauv. — SE. of Makidi, 1600 m, in forest, R. & A. 22085.
- Briza media* L. — E. of Vaighan, 1200 — 1500 m, A. & M. 20327; Doghroon mountain, 2300 — 2500 m, wet meadow, R. & A. 20967, A. & S. 24072; Saigram - Dagh mountain, 2300 m, A. & S. 24292.
- This species is found in forests and meadows.



Fig. 8. *Anthoxanthum odoratum*. Habit (x 0.57). — A. Lower glume (x 10). — B. Upper glume (x 10). — C. Spikelet (x 10). — D. Lemma of sterile floret (x 5). — E. Palea (x 5). — F. Grain (x 5).

Bromus adjaricus Sommier & Leivier — Doghroon mountain, 2300 — 2500 m, highgrown grassland, A. & S. 24115, Savabi. & Raofi 168; between Kaleibar and Hejrandust, 1350 — 1700 m, A. & M. 20050; Doghroon mountain, 2500 — 2800 m, dry meadow, R. & A. 21883, A. & S. 23880.

A new for the flora of Iran and Flora Iranica area. It was supposed by S. A. Nevski and B.V. Sochava (1974 p. 564) in V.L. Komarov Flora of the USSR as an endemic in Caucasia, where the species was originally described from. This species is found in Arasbaran area on alpine meadows. *B. adjaricus* is similar to *B. tomentellus*, but distinguishable by having no or slightly reticulate fibers at the base of culms. N. N. Tsvelev (1976 p. 215) has the name *B. adjaricus* in synonymy list of *Bromopsis variegata* (M.B.) Holub subsp. *villosula* (Steud.). Tzvel.

Bromus briziformis Fisch. & C. A. Mey. — NW. of Veinagh, 1300 — 1400 m, in forest, A. & V. 24688; between Doghroon mountain and Makidi, 1800 m, R. & A. 22018; Saigram - Dagh mountain 2300 m, A. & S. 24294; mountains S. of Vaighan, 1200 — 1500 m, A. & M. 20363; between Kaleibar and Hejrandust, 1350 — 1700 m, A. & M. 20071.

Bromus japonicus Thunb. var. *japonicus*

— Between Veinagh and Ghaghalu, ca. 1000 m, A. & M. 20520.

Bromus ramosus Hudson — Forest NW. of Doghroon mountain, 2100 m, mixed forest, R. & A. 21970; SE. of Makidi, 1400 — 1800 m, R. & A. 22073.

Bromus aff. *ramosus* Hudson — Doghroon mountain, N. slope and top area, 2500 — 2800 m, highgrown meadow, R. & A. 21881.

This specimen differs from the two preceding specimens which were cited under *B. ramosus* by being completely glabrous and having shorter lemma ca. 7 — 8 mm and longer awn on the lemma which is up to 12 mm.

Bromus scoparius L. — Mountains S. of Vaighan, 1200 — 1500 m, A. & M. 20339; between Kaleibar and Hejrandust, 1350 — 1700 m, A. & M. 20018; Saigram - Dagh mountain, 2300 m, A. & S. 24273; between Hejrandust and Makidi, 1400 — 1750 m, A. & M. 20174; between Kaleibar and Hejrandust, 1350 — 1700 m, A. & M. 20106.

Bromus sterilis L. — Saigram - Dagh mountain, ca. 1300 m, on meadows, A. & S. 24259.

Bromus tectorum L. — Between Kaleibar and Hejrandust, 1350 — 1700 m, A. & M. 20053; Ghaghalu, 650 m, A. & V. 24556; between Kaleibar and Hejrandust, 1350 — 1700 m, A. & M. 20019.

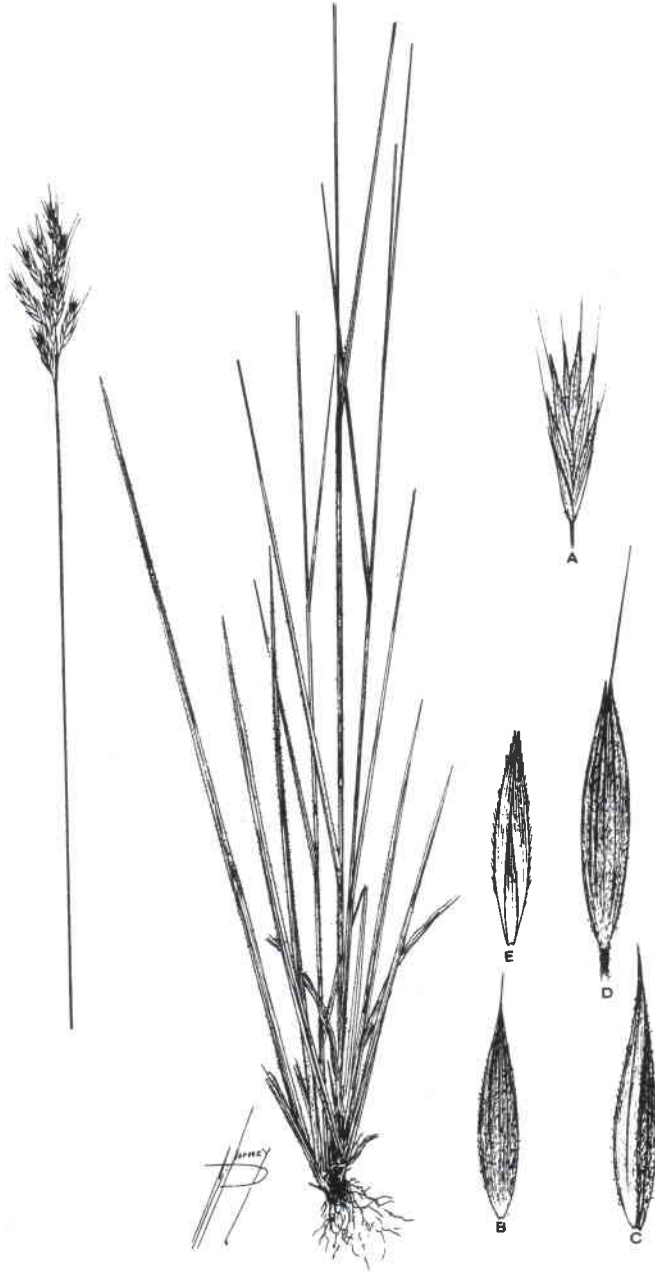


Fig. 9. *Bromus adjaricus*. Habit (x 0.3). — A. Spikelet (x 1.2). — B. Lower glume (x 5.4). —C. Upper glume (x 5.4). D. Lemma (x 5.4). —E. Palea (x 5.4).

Bromus tomentellus Boiss. — Doghroon mountain, 2500 — 2800 m, A. & S. 24055, A. & S. 24026.

Calamagrostis epigejos (L.) Roth — Doghroon mountain, 2300 m, at a spring, R. & A. 20997.

Catabrosa aquatica (L.) P. Beauv. — Western part of Makidi, 1500 m, wet place, A. & M. 20199; between Makidi and Kaleibar, ca. 1700 m, A. & V. 25006; Savabi & Raofi 91.

Catabrosa capusii Franch. — Doghroon mountain, 2200 m, at a spring, R. & A. 20963.

Dactylis glomerata L. subsp. *glomerata* — Doghroon and Kalan mountains, 2300 — 2500 m; A. & S. 24126.

Dactylis glomerata L. subsp. *hispanica* (Roth) Nymam — Doghroon mountain, 2500 — 2800 m, wet meadow, R. & A. 21867; between Hejrandust and Makidi, 1400 — 1750 m, A. & M. 20166.

Distinguishable from the preceding subspecies by having denser panicle. *Dactylis glomerata* L. subsp. *hyrcana* Tzvel. — Between Tolua - Ali and Veinagh, 1000 m, A. & V. 24612. Distinguishable from the two preceding subspecies by having markedly hairy panicle.

Distribution of this subspecies is in Caucasia and N. Iran. (cf. N.N. Tsvelev 1976 p. 516).

Deschampsia caespitosa (L.) P. Beauv. — Doghroon mountain, 2500 — 2800 m, highgrown wet meadow, R. & A. 21908. *Eremopoa persica* (Trin.) Roshev. — Tolua - Ali, 650 m, A. & V. 24935; Savabi 141a

Festuca arundinacea Schreb. — Doghroon mountain, 2300 m, R. & A. 20973.

Festuca ovina L. — Between Vaighan and Veinagh, ca. 1000 m, scrub forest, A. & M. 20413; Saigram - Dagh mountain, 2400 — 2700 m, A. & S. 24334; Savabi 155.

Festuca sulcata (Hack.) Beck. — Saigram - Dagh mountain, ca. 1300 m, A. & S. 24260; Doghroon mountain, 2500 m, A. & S. 23973; between Doghroon and Saigram - Dagh mountain, 2500 — 2700 m, A. & S. 24205.

Gaudinopsis macra (M.B.) Eig. — Between Vaighan and Veinagh, ca. 1000 m, A. & M. 20436.

This species was not recorded by Bor (1970 p. 322) from Iran. The distribution of the species is in southern USSR, Turkey, N. Iraq and E. Mediterranean.

Glyceria arundinacea (M.B.) Kunth — Doghroon mountain, 2200 — 2400 m, at a brook, R. & A. 21927, R. & A. 20956. *Glyceria plicata* Fries — W. of Makidi, ca. 1500 m, A. & M. 20203.

Helictotrichon armeniacum (Schischk.)



Fig. 10. *Gaudinopsis macra*. Habit (x 0.55). — A. Panicle (x 1.1). — B. Spikelet (x 2.5). — C. Upper glume (x 3.8). — D. Lower glume (x 3.8). — E. Lower lemma (x 3.8). — F. Upper lemma (x 3.8). — G. Palea (x 3.8).



Fig. 11. *Helictotrichon armeniacum*. Habit ($\times 0.6$). —A. Lower glume ($\times 2.1$). —B. Upper glume, ($\times 2.1$). — C. Lemma ($\times 2.1$). — D. Palea ($\times 2.1$).

Grossh. — Doghroon mountain, 2500 — 2800 m, dry meadow, R. & A. 21878.

This species was not included by Bor (1970) in *Flora Iranica*. The closest locality to the Iranian gathering is in Caucasia where it is said to occur in all regions (Tsvelev 1970 p. 246). It is also distributed to Turkey where the species was described from.

Hordeum bulbosum L. — NW. of Veinagh, 1300 — 1400 m, in forest, A. & V. 24683; between Tolua - Ali and Veinagh, 1000 — 1200 m, scrub forest, A. & V. 24635.

Hordeum glaucum Steud. — Between Kaleibar and Hejrandust, 1350 — 1700 m, A. & M. 20017.

Hordeum violaceum Boiss. & Buhse — Doghroon mountain, 2500 — 2800 m, A. & S. 24057, R. & A. 21892; between Kharil and Makidi, ca. 2000 m, meadows, A. & V. 24864.

Koeleria cristata (L.) Pers. — Saigram - Dagh mountain, 2300 m, A. & S. 24280, A. & S. 24317, R. & A. 21860; Doghroon mountain, 2500 — 2800 m, A. & S. 23995, A. & S. 24327; between Doghroon and Saigram - Dagh mountains, 2500 — 2700 m, A. & S. 24208; between Kaleibar and Hejrandust, 1350 — 1700 m, A. & M. 20051.

Lolium perenne L. — Doghroon mountain, 2500 — 2800 m, A. & S. 24014; between

Doghroon mountain and Makidi, 2000 m, R. & A. 22016.

Lolium rigidum Goudin. — Mountains S. of Vaighan, 1200 — 1500 m, A. & M. 20340.

Lophochloa phleoides (Vill.) Rechb. — Ghaghalou, 650 m, A. & V. 24555.

Melica ciliata L. var. *ciliata* — Doghroon mountain, dry slope, R. & A. 21930.

Melica jacquemontii Decne ex Jacquem subsp. *hohenackeri* (Boiss.) Bor — Mountains S. of Vaighan, 1200 — 1500 m, A. & M. 20369; between Tolua - Ali and Veinagh, 900 m, on rocks, A. & V. 24587.

Melica picta C. Koch. — W. of Makidi, ca. 1500 m, in *Quercus* forest, A. & M. 20202; forest NW. of Doghroon mountain, 2100 m, R. & A. 21963; between Vaighan and Kharil, ca. 1500 m, A. & V. 24766.

A new for the flora of Iran. This species is distributed from C. Europe to Caucasia and NW. Iran.

Melica uniflora Retz. — SE. of Makidi, 1400 — 1800 m, in dense forest, R. & A. 22072.

The distribution is from Europe through Turkey and Caucasia to N. Iran.

Milium effusum L. — W. slope of Doghroon mountain, 2100 m, wet high-grown meadow, R. & A. 22001.

This species was not recorded by



Fig. 12. *Melica picta*. Habit (x 0.6). — A. Spikelet (x 3.6). — B. Lower glume (x 4.2). — C. Upper glume (x 4.6). — D. Lemma (x 4.2). — E. Palea (x 4.2).

Bor (1970 p. 261) from Iran. It is a widespread European and Asian species growing in forests. The closest locality to the Iranian gathering is in Caucasia. *Pennisetum orientale* L. — Between Vaighan and Veinagh, ca. 1000 m, scrub forest, A. & M. 20470.

Phalaris arundinacea L. — Doghroon mountain, 2500 — 2800 m, highgrown wet meadow, R. & A. 21911.

Phleum paniculatum Hudson var. *ciliatum* (Boiss.) Bor — Ghaghalu, 650 m, A. & V. 24532; Savabi & Raofi.

Phleum paniculatum Hudson var. *paniculatum* — Mountains S. of Vaighan, 1200 — 1500 m, A. & M. 20353.

Phleum phleoides (L.) Karst. — Doghroon and Kalan mountains, 2300 — 2800 m, grassland at top area, A. & S. 24093, A. & S. 24027, R. & A. 21859; Saigram - Dagh mountain, 2400 — 2700 m, A. & S. 24333; Savabi & Raofi 108.

Phleum pratense L. — Forests W. of Makidi 1700 m, R. & A. 22041.

Poa bulbosa L. — Saigram - Dagh mountain, 2400 — 2700 m, A. & S. 24329; between Kharil and Makidi, ca. 2000 m, meadows, A. & V. 24863; Doghroon mountain, 2500 m, A. & S. 23893; between Veinagh and Vaighan, 1000 — 1400 m, A. & V. 24758.

Poa compressa L. — Between Saigram - Dagh and Kaleibar, 2000 m, A. & S.

24389.

This species has not been recorded from Iran and no specimen has been seen by the author of Flora Iranica from the borders of the Flora (cf. Bor 1970 p. 35). It is a widespread European and Asian species, closest locality to the Iranian gathering is in the Caucasia. *Poa nemoralis* L. — W. slope of Doghroon mountain, 2100 m, R. & A. 21997; forest NW. of Doghroon mountain, 2100 m, mixed forest, R. & A. 21987.

Poa pratensis L. — Between Hejrاندjust and Makidi, 1400 — 1750 m, A. & M. 20123; Doghroon mountain, wet meadow, 2500 — 2800 m, R. & A. 21870; between Veinagh and Vaighan, 1000 — 1400 m, A. & V. 24754.

Poa supina Schrad. — W. of Makidi, meadows, ca. 2000 m, A. & M. 20249, A. & M. 20214; Doghroon mountain, 2500 — 2800 m, grassland at top area, A. & S. 23956:

A frequent species in highgrown meadows.

Sclerochloa dura (L.) P. Beauv. — Between Kaleibar and Hejrاندust, 1350 — 1700 m, A. & M. 20073.

Sesleria phleoides Stev. — Doghroon mountain, 2500 — 2800 m, dry slope, A. & S. 21879, A. & S. 23912; between Kharil and Makidi, 1900 m, A. & V. 24988.

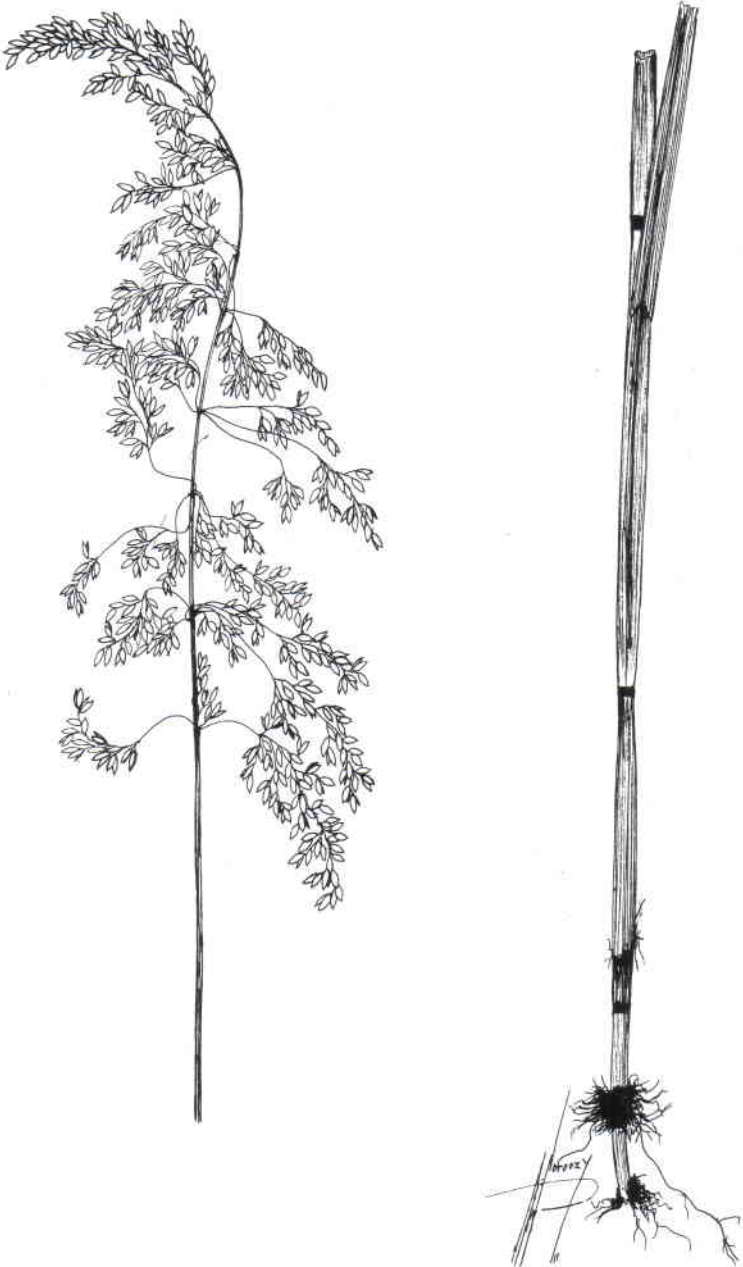


Fig. 13. *Milium effusum* (x 0.65).

Stipa arabica Trin. & Rupr. var. *arabica* — Ghaghalou, 560 m, A. & V. 24544; mountains E. of Vaighan, 1300 m, A. & M. 20284; Tolua - Ali, 650 m, rocky mountains, A. & V. 24933.

Stipa pennata L. subsp. *pennata* — Saigram - Dagh mountain, 2400 — 2700 m, grassland at top area, A. & S. 24320.

Stipa pennata L. subsp. *pulcherrima* (C. Koch) Freitag — Doghroon mountain, 2300 — 2800 m, grassland at top area, R. & A. 21956, A. & S. 24038.

Trisetum flavescens (L.) P. Beauv. subsp. *flavescens* — Doghroon and Kalan mountains, 2300 — 2500 m, A. & S. 24085.

Trisetum flavescens (L.) P. Beauv. subsp. *parvispiculatum* Tzvel. — Saigram - Dagh mountain, ca. 2300 m, A. & S. 24250; Doghroon mountain, 2500 — 2800 m, wet meadow, R. & A. 21868.

Distinguishable from the preceding subspecies by having shorter lemma ca. 4 mm long. This subspecies was not mentioned by Bor (1970 p. 319) in Flora Iranica but the name Iran is within the distribution of the subspecies written by Tsvelev (1976 p. 262).

Trisetum rigidum (M.B.) Roemer & Schultes — Doghroon mountain, 2300 m, dry stony slope, R. & A. 20999.

Iridaceae

Crocus biflorus Miller — W. of Makidi, ca. 2400 m, in a valley beside melting snow, A. & M. 20252.

Gladiolus kotschyanus Boiss. — Savabi, 173.

Gladiolus segetum Ker. - Gawl. — Mountains S. of Vaighan, 1200 — 1500 m, A. & M. 20391; between Tolua - Ali and Veinagh, 1000 — 1200 m, A. & V. 24642; between Makidi and Veinagh, 1000 — 1700 m, W. & A. 17053.

Iris acutiloba C. A. Mey. subsp. *lineolata* (Trautv.) Mathew & Wendelbo — W. of Makidi, ca. 2000 m, A. & M. 20248; between Makidi and Veinagh, 1000 — 1700 m, W. & A. 17021; between Kharil and Makidi, ca. 2000 m, A. & V. 24870.

Iris imbricata Lindl. — Between Kharil and Makidi, ca. 2000 m, meadows, A. & V. 24871; 2100 m, Savabi & Raofi 984.

Juncaceae

Juncus articulatus L. — Doghroon mountain, 2300 m, at a spring, R. & A. 21858; Makidi, 1400 m, R. & A. 22060.

Juncus inflexus L. — Makidi, 1400 m, R. & A. 22058, R. & A. 22059; Savabi 66; Doghroon mountain, 2300 m, R. & A. 20977.

Luzula multiflora (Retz.) Lej. — Between

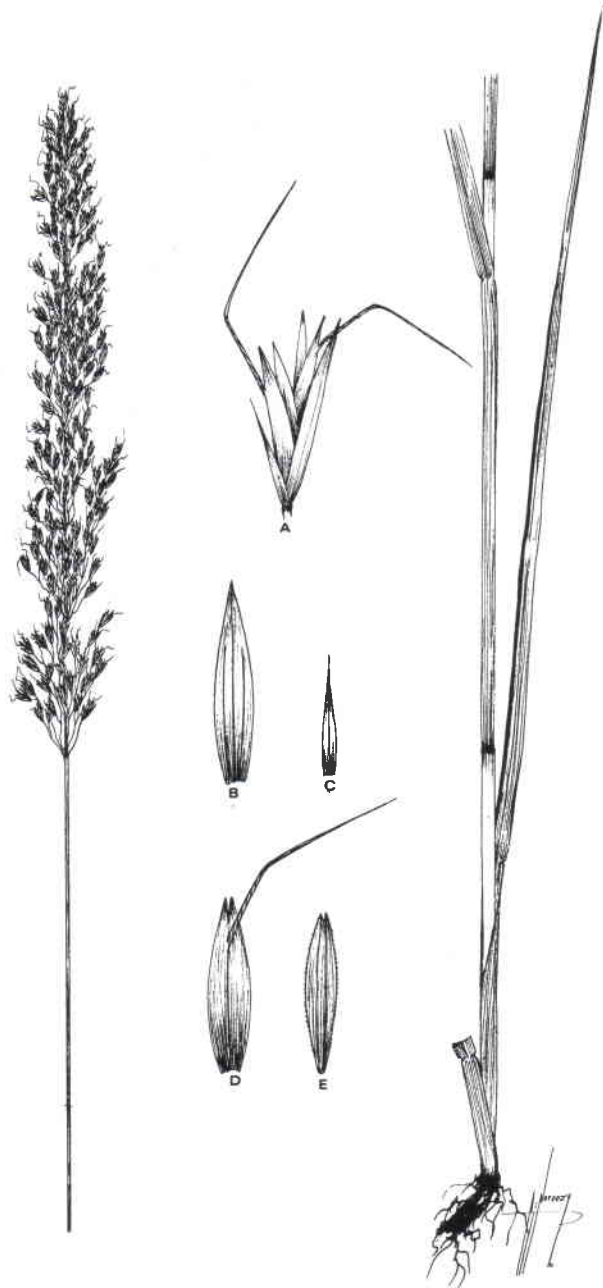


Fig. 14. *Trisetum flavescens* subsp. *flavescens*. Habit (x 0.5). — A. Spikelet (x 3). — B. Upper glume (x 3). — C. Lower glume (x 3). — D. Lemma (x 3). — E. Palea (x 3).

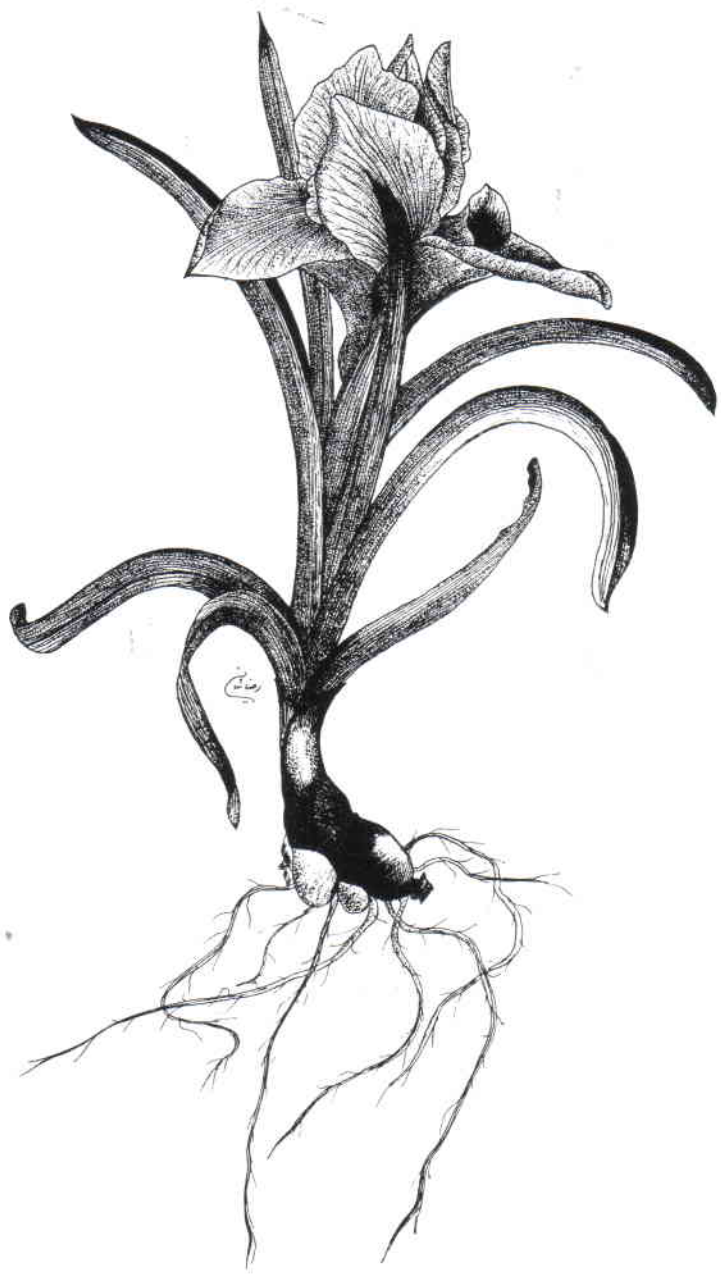


Fig. 15. *Iris acutiloba* subsp. *lineolata* (x 0.74).

Kharil and Makidi, 2000 m, A. & V. 24978; Doghroon mountain, 2500 — 2800 m, R. & A. 21882, A. & S. 24103; mountains E. of Vaighan, 1700 — 2000 m, A. & M. 20281.

Juncaginaceae

Triglochin maritima L. — W. of Makidi, ca. 1500 m, in a wet place, A. & M. 20200.

Liliaceae

Allium akaka Gmelin — W. of Makidi, ca. 2300 m, A. & M. 20228; between Kharil and Makidi, ca. 2000 m, A. & V. 24865.

Distribution in NW. Iran; E. turkey and Caucasia.

Allium atroviolaceum Boiss. — Between Doghroon mountain and Makidi, 2000 m, R. & A. 22023.

Allium paniculatum L. Doghroon mountain, 2300 m, R. & A. 20994.

Allium rotundum L. — Between Vaighan and Veinagh, ca. 1000 m, scrub forest, A. & M. 20484; between Doghroon mountain and Makidi, 2000 — 2800 m, in field, R. & A. 22024. Doghroon mountain, 2200 m, R. & A. 20940, A. & S. 23985; 2100 m, Savabi & Raofi 211; Tolua - Ali, 650 m, rocky slope, A. & V. 24928; between Tolua - Ali and Veinagh, 100 m, A. & V. 24604.

Allium rubellum M.B. — Tolua - Ali, 650 m, A. & V. 24909; Ghaghalou, 650 m, A. & V. 24557; between Vaighan and Kharil, 2000 m, A. & V. 24843; between Vaighan and Veinagh, ca. 1000 m, A. & M. 20462; mountains S. of Vaighan, 1200 — 1500 m, A. & M. 20392; mountains E. of Vaighan, 1300 — 1600 m, A. & M. 20290.

Allium stamineum Boiss. — W. slope of Doghroon mountain, 2000 — 2400 m, R. & A. 21953.

Allium szovitsii Regel — Between Doghroon and Saigram - Dagh mountains, 2500 — 2700 m, highgrown grasslands, A. & S. 24213, A. & S. 24178.

This species was recently recorded from Iran (cf. Assadi 1984 p. 84). A Hyrcano - Euxine (?) element distributing in Caucasia E. Turkey, N. Iraq and NW. & N. Iran.

Asparagus verticillatus L. — Between Vaighan and Veinagh, ca. 1000 m, A. & M. 20466; Ghaghalou, 650 m, A. & V. 24550; between Tolua - Ali and Veinagh, 900 m, A. & V. 24581.

Bellevalia fominii Woron. — W. of Makidi, ca. 2000 m, A. & M. 20230.

This species has recently been known from NW. Iran (cf. Bothmer & Wendelbo 1981). Distribution in Caucasia, E. Turkey and NW. Iran.

Colchicum szovitsii Fisch. & C. A. Mey.

— Between Hejrاندust and Makidi, 1400 — 1750 m, A. & M. 20177.

Gagea bulbifera (Palls) Schultes & Schultes f. — E. of Vaighan, 1200 — 1500 m, beside melting snow, 1200 — 1500 m, A. & M. 20313.

Gagea confusa Terracc. — W. of Makidi, ca. 2000 m, A. & M. 20231; E. of Vaighan, 1200 — 1500 m, A. & M. 20314.

Gagea luteoides Stapf (Syn. *G. joannis* Grossh.) — E. of vaighan, 1200 — 1500 m, A. & M. 20315.

Gagea taurica Steven — E. of Vaighan, 1200 — 1500 m, A. & M. 20316.

Merendera sobolifera C.A. Mey. — W. of Makidi, ca. 2400 m, beside melting snow, A. & M. 20253.

Muscari armeniacum Leichtilin ex Baker (Syn. *M. szovitsianum* Baker) — Between Kharil and Makidi, 2400 — 2700 m, A. & V. 24877, A. & V. 24968; between Kaleibar and Hejrاندust, 1350 — 1700 m, A. & M. 20022; between Kaleibar and Makidi, 1300 — 1700 m, W. & A. 16984.

This species is said to differ from *M. neglectum* by having bright - blue or - violet colour of perianth by Davis and Stuart (1984). These authors however questionably include NW. Iran in the distribution of the species.

Muscari caucasicum Baker — Doghroon mountain, 2500 — 2800 m, A. & S. 23982; Savabi & Raofi 164.

Distribution in Caucasia, E. Anatolia and N. & NW. Iran.

Muscari comosum (L.) Miller — Mountains S. of Vaighan, 1200 — 1500 m, A. & M. 20393.

A Mediterranean element extends to Iran. It is found in the area in mixed *Quercus* and *Paliurus* woodlands.

Muscari neglectum Guss. — W. of Makidi, ca. 2000 m, on meadows, A. & M. 20254.

Muscari tenuiflorum Tauch. — Doghroon mountain, 2500 — 2800 m, A. & S. 23982; between Vaighan and Kharil, ca. 1500 m, A. & V. 24838; between Kaleibar and Hejrاندust, 1350 — 1700 m, A. & M. 20061; between Kaleibar and Makidi, 1300 — 1700 m, W. & A. 16965; between Kharil and Makidi, ca. 2000 m, A. & V. 24866.

Ornithogalum orthophyllum Ten. — Mountains S. of Kharil, 2000 — 2500 m, on meadows, A. & M. 20271; Doghroon mountain, 2500 — 2800 m, A. & S. 24064, A. & S. 23915.

Ornithogalum platyphyllum Boiss. — Between Kharil and Makidi, 1800 — 2000 m, A. & V. 24964, A. & V. 24908; between Makidi and Kaleibar, ca. 1700 m, A. & V. 25022, W. & V. 16964, A. & M. 20023.

Polygonatum orientale Desf. (Syn: *P. polyanthemum* (M.B.) Link) — Between Vaighan and Kharil, ca. 1500 m, A. & V.

24855; SE. of Makidi, 1600 m, R. & A. 22104; between Kaleibar and Hejrandust, 1350 - 1700 m, A. & M. 20104.

Puschkinia scilloides Adams — W. of Makidi, ca. 2000 - 2500 m, A. & M. 20251.

Scilla mischtschenkoana Grossh. — Between Kaleibar and Makidi, 1300 - 1700 m, W. & A. 17006; below Veinagh, 500 - 900 m, W. & A. 17109.

Distribution in Caucasia and NW. Iran. It is found in the area in scrub forests.

Tulipa schrenkii Regel — Between Kharil and Makidi, ca. 2000 m, S. exposed rocky slope, A. & V. 24868, A. & V. 24869 (yellow form); W. of Makidi, ca. 2000 m, A. & M. 20229; between Makidi and Veinagh, 1000 - 1700 m, W. & A. 17028; between Vaighan and Kharil, ca. 1500 m, A. & V. 24785.

A very variable species, flower colour in a population red and sometimes yellow, perianth segments acute or obtuse or rounded. Distribution is from SE. Europe to Caucasia and Central Asia. It seems to be the first time which is recorded from Iran.

Orchidaceae

Anacamptis pyramidalis (L.) L.C.M. Richard — Between Veinagh and

Vaighan, 1000 - 1400 m, in *Quercus* forest, A. & V. 24706; East of Vaighan, 1200 - 1500 m, A. & M. 20318; between Tolua - Ali and Veinagh, 1000 m, A. & V. 24568; 1150 m, S. & R. 83.

Distribution from Europe through Turkey and Caucasia to N. Iran.

Cephalanthera damasonium (Miller) Druce — Between Vaighan and Kharil, ca. 1500 m, in *Quercus* forest, ca. 1500 m, A. & V. 24789; between Veinagh and Vaighan, 1000 - 1400 m, A. & V. 24750; E. of Vaighan, 1200 - 1500 m, A. & M. 20312; mountains S. of Vaighan, 1200 - 1500 m, A. & M. 20398; NW. of Veinagh, 1300 - 1400 m, A. & V. 24687b.

Distribution from Europe to N. Iran. It is found in the area in *Quercus* forest.

Cephalanthera kurdica Bornm. & Kranzl. — Between Veinagh and Vaighan, 1000 - 1400 m, flower pale pink, A. & V. 24708.

Distribution in N. Iraq, Turkey and W. & NW. Iran. It seems this gathering is the eastern most known locality for the species. It is found in the area in *Quercus* forest.

This species is easily distinguishable from the other Iranian species of the genus by spurred labellum. It is said that it is closely related to the Mediterranean

species *C. epipactoides* Fisch. & C.A. Mey. but separable by flower colour.

Cephalanthera longifolia (L.) Fritsch. — NW. of Veinagh, 1300 — 1400 m, in forest, A. & V. 24687a; between Makidi and Veinagh, 1000 — 1700 m, W. & A. 17036.

Cephalanthera rubra (L.) L.C. Rich. — Between Veinagh and Vaighan, 1000 — 1400 m, A. & V. 24699; between Makidi and Veinagh, 1000 — 1700 m, W. & A. 17052; mountains S. of Vaighan, 1200 — 1500 m, A. & M. 20395.

Dactylorhiza romana (Seb.) Soo subsp. *georgica* (Klinge) Soo — Between Kaleibar and Makidi, 1300 — 1700 m, W. & A. 16994; mountains S. of Vaighan, 1200 — 1500 m, A. & M. 20394.

Dactylorhiza umbrosa (Kar. & Kir.) Nevski — Between Khariland Makidi, 1800 m, A. & V. 24962, A. & V. 24963; between Vaighan and Kharil, ca. 1500 m, A. & V. 24862; Doghroon mountain, 2500 m, A. & S. 23924, A. & S. 23989; between Kaleibar and Hejrandust, 1350 — 1700 m, A. & M. 20014, A. & M. 20056; W. of Makidi, 1600 m, A. & M. 20236.

Epipactis helleborine (L.) Crantz — Between Veinagh and Ghaghalou, 500 — 800 m, in forest, A. & M. 20548.

Gymnadenia conopsea (L.) R. br. — Doghroon and Kalan mountains, 2300 m,

highgrown grassland, A. & S. 24069, A. & S. 24097.

A widespread species in the world, Renz,s records in Flora Iranica (1978 p. 55) are based on the two old gatherings in Iran.

Limodorum abortivum (L.) Swartz. — Mountains S. of Vaighan, 1200 — 1500 m, in *Carpinus* forest, A. & M. 20399.

Ophrys apifera Hudson — Mountains S. of Vaighan, 1200 — 1500 m, in forest, A. & M. 20400.

Ophrys scolopax Cav. — Between Vaighan and Kharil, ca. 1500 m, *Quercus* forest, A. & V. 24786.

Orchis mascula L. subsp. *mascula* — Between Hejrandust and Makidi, 1400 — 1750 m, A. & M. 20193; between Kaleibar and Hejrandust, 1350 — 1700 m, wet place, A. & M. 20095; mountains E. of Vaighan, 1300 — 1600 m, A. & M. 20299; between Makidi and Kaleibar, ca. 1700 m, A. & V. 24992; between Vaighan and Kharil, ca. 1500 m, A. & V. 24767; between Kaleibar and Makidi, 1300 — 1700 m, W. & A. 16985.

Orchis simia Lam. — Between Veinagh and Vaighan, 1000 — 1400 m, in *Quercus* forest, A. & V. 24732; between Veinagh and Vaighan, 1000 — 1400 m, A. & V. 24709; between Vaighan and Kharil, ca. 1500 m, A. & V. 24782; between Makidi and Veinagh, 1000 — 1700 m, in forest,

W. & A. 17013.

Orchis stevenii Reichenb. f. — Between Vaighan and Kharil, ca. 1500 m, A. & V. 24790; mountains S. of Vaighan, 1200 — 1500 m, A. & M. 20397; between Kaleibar and Makidi, 1300 — 1700 m, W. & A. 16997.

A Hyrcano - Euxine element which is found in the area in forest.

Platanthera chlorantha (Custer) Reichenb. in Moessler — Mountains S. of Vaighan, 1200 — 1500 m, A. & M. 20396; E. of Vaighan, 1200 — 1500 m, A. & M. 20300; between Makidi and Veinagh, 1000 — 1700 m, W. & A. 17014; between Kaleibar and Hejrاندust, 1350 — 1700 m, A. & M. 20042; E. of Vaighan, 1200 — 1500 m, A. & M. 20319; between Veinagh and Vaighan, 1000 — 1400 m, A. & V. 24749; between Vaighan and Kharil, ca. 1500 m, A. & V. 24749; between Vaighan and Kharil, ca. 1500 m, A. & V. 24846; between Makidi and Kaleibar, ca. 1700 m, A. & V. 25103.

Distribution from Europe to N. Iran.

Steveniella satyrioides (Sprengel) Schlechter — Between Makidi and Veinagh, 1000 — 1700 m, in forest W. & A. 17051.

A Hyrcano - Euxine element from Crime through Caucasia and N. Turkey to N. Iran.

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