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Second contribution to the grass flora of Iraq

J. CHRTEK and E. HADAČ

RÉSUMÉ

Les auteurs publient des données sur la distribution et, dans quelques cas, sur l'écologie de 61 espèces de Graminées de l'Iraq. Trois espèces (*Avena byzantina* C. Koch, *Poa nevskii* Rozhev. et *P. silvicola* Guss.) sont nouvelles pour ce pays, une espèce (*Poa kurdistanica*) et une sous-espèce (*Deschampsia caespitosa* subsp. *brachyphylla*) sont nouvelles pour la science. Plusieurs collections sont nouvelles pour leur district. Des cartes par points représentent la distribution en Iraq de 13 espèces.

SUMMARY

The authors present records and, in some instances, ecological data for 61 grass species from Iraq. Three of them (*Avena byzantina* C. Koch, *Poa nevskii* Rozhev. and *P. silvicola* Guss.) are new for the country, one species (*Poa kurdistanica*) and one subspecies (*Deschampsia caespitosa* subsp. *brachyphylla*) are new to science. Several collections are new for their district. Dot maps show the Iraqi distribution of 13 species.

ZUSAMMENFASSUNG

Die Verfasser veröffentlichen Verbreitungs- und in einigen Fällen ökologische Angaben für 61 Grasarten aus Irak. Drei dieser Arten (*Avena byzantina* C. Koch, *Poa nevskii* Rozhev. und *P. silvicola* Guss.) sind neu für dieses Land, eine Art (*Poa kurdistanica*) und eine Unterart neu für die Wissenschaft. Mehrere Angaben sind neu für den betreffenden Distrikt. Punktkarten veranschaulichen die Verbreitung von 13 Arten in Irak.

In a former contribution (Chrtek & Hadač 1969) the report was given on the first part of Hadač's grass collections from Iraq. Here we deal with the rest of the grasses of this collection, about 61 species in all. The total number of grass species, is thus 132, if we include the two new species which were published in Chrtek & Hadač (1969a) and Hadač & Chrtek (1969).

Some of plants (wild cereals) were examined some years ago by Dr. F. Kühn, College of Agriculture, Brno, but his notes were not published. We are including them here with the permission of Dr. Kühn, making only some changes in nomenclature to make the comparison with Bor (1968) easier.

Further information may be found in Chrtek & Hadač (1969).

LIST OF SPECIES

***Aegilops columnaris* Zhuk.**

MSU: Kopi Qaradagh, Waziara, 29.5.1961, *Hadač* 6305.

This species is said to be very rare in Iraq (cf. Bor 1968); it is known from the Sinjar and Kirkuk provinces, but without a precise locality. New for the Sulaimaniya district.

***Aegilops crassa* Boiss.**

MSU: between Chamchamal and Qaranjir, 30.5.1961, *Hadač* 5259.

DWD: table mountain 61 km E of Rutba, 27.4.1961, *Hadač* 4426; at the road 79 km E of Rutba, 27.4.1961, *Hadač* 4492.

A very variable species, especially in the length of the awns. A clear distinction between the varieties (var. *crassa* and var. *macranthera* Boiss.) is difficult, as there are several transitional forms between the extreme types. For further taxonomic work chromosome numbers would be needed, as different cytotypes exist (cf. Chennaveeraiah 1960).

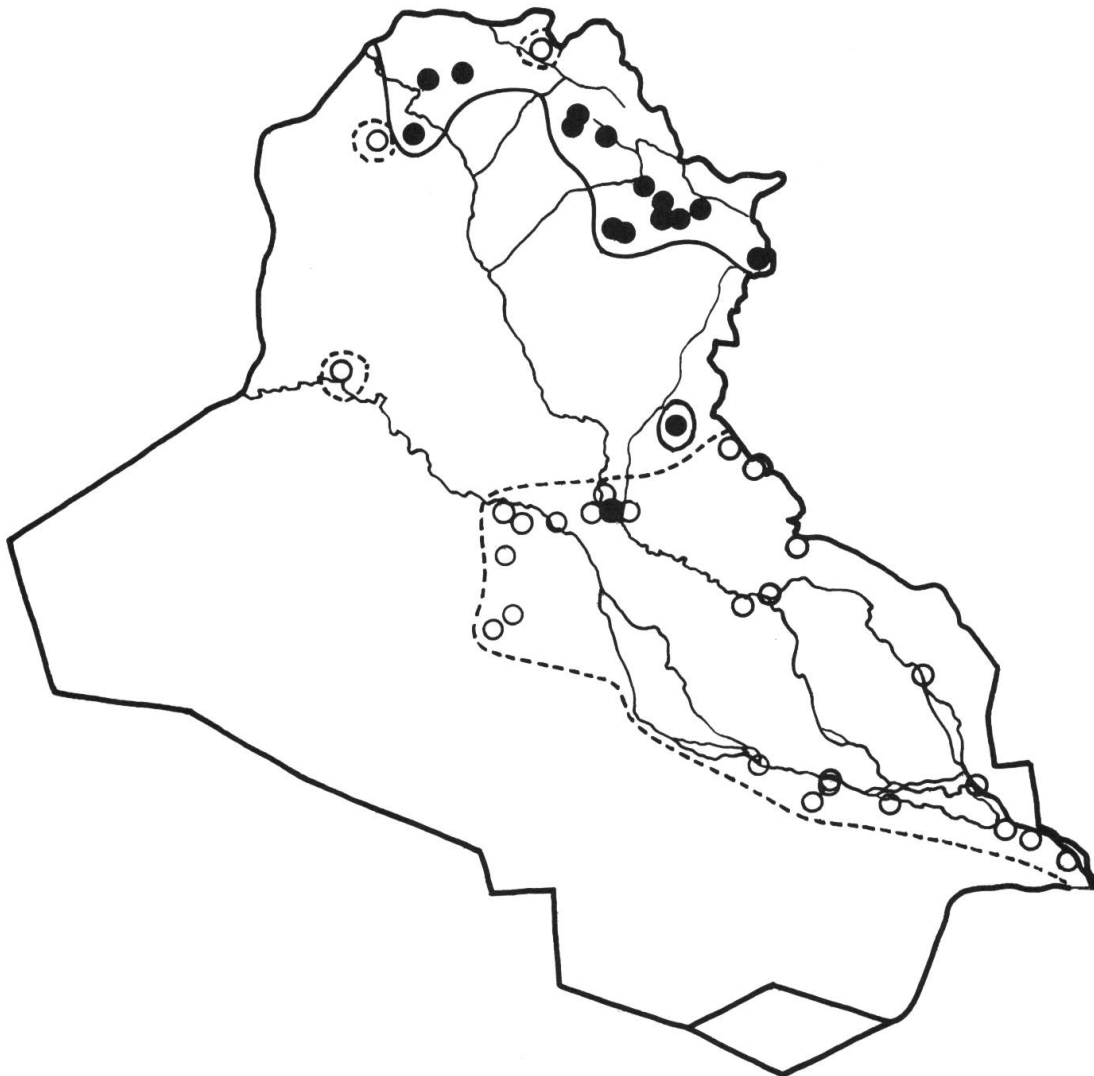
***Aegilops kotschyi* Boiss.**

FKI: Kirkuk, 10.4.1960, *Hadač* 1277; Adheim, 23.3.1961, *Hadač* 3926.

DSD: in the desert near Rahba, 2.4.1961, *Hadač* 3985; Sha' ib Hisb near Rahba, 13.4.1961, *Hadač* 4071.

DWD: the desert 35 km E of Nukhaib, 15.4.1961, *Hadač* 4225

LCA: S. Jezira, 75 km NNE of Baghdad, 15.4.1960, *Hadač* 1624.



Map 1. – ● *Aegilops ligustica*; ○ *Aeluropus lagopoides*.
Aegilops ligustica ranges from Syria and Palestine to Turkey and Iran. In Iraq it is found in the oak and steppe zones with a mean annual rainfall of more than 300 mm. *Aeluropus lagopoides* extends from Central Asia to North Africa, on saline soils, in an area with a mean annual rainfall of less than 300 mm.

***Aegilops ligustica* (Savigny) Cosson**

MSU: Azmir dagh near Sulaimaniya, 26.5.1960, *Hadač* 1869; Tasluja, 28.5.1960, *Hadač* 1977, 1982; in fields between Tasluja and Sarchinar, 25.5.1961, *Hadač* 4766; between Khormal and Halabja, in steppe vegetation, 27.5.1961, *Hadač* 5083.

***Aegilops speltoides* Tausch**

MRO: between Rowanduz and Mazna, 18.6.1961, *Hadač* 5796.

MSU: steppe between Derbendi khan and Sulaimanyia, 24.5.1961, *Hadač* 4678.

***Aegilops triaristata* Willd.**

MRO: at Mergazor, 1070 m alt., 23.6.1961, *Hadač* 6218.

It seems difficult to draw a clear line between *Ae. triaristata* and *Ae. ovata* L.; it would perhaps be better to include this taxon into *Ae. ovata* as a subspecies.

***Aegilops triuncialis* L.**

MSU: between Chamchamal and Qaranjir, 30.6.1961, *Hadač* 5258; Dar Mazala between Sulaimaniya and Qaradagh, 28.5.1961, *Hadač* 5113; between Derbendi khan and Sulaimaniya, 24.5.1961, *Hadač* 4694.

FKI: Kirkuk, 10.4.1960, *Hadač* 1277.

Very variable in the length of the awns and in hairiness.

***Aeluropus lagopoides* (L.) Trin. ex Thwaites**

MRO: near the well Kani Mâm Shirin, 22.6.1961, *Hadač* 6037.

DLJ: wadi SE of Rawa, 11.2.1960, *Hadač* 441.

DWD: between Romadi and Habbaniya, 1.10.1960, *Hadač* 2730; Shithatha, 26.2.1961, *Hadač* 3216.

LCA: banks of the Tigris near its confluence with the Diyala, 15.1.1960, *Hadač* 154; Baghdad, college of Education, 29.11.1959, *Hadač* 79; Imam Ibrahim, 26.4.1960, *Hadač* 1655; in the hasswa desert near Falluja, 13.5.1960, *Hadač* 1805.

LSM: Amara, 8 km SE from the town, 3.3.1961, *Hadač* 3255.

LBA: 20 km N of Fao, 6.2.1960, *Hadač* 211.

***Aeluropus littoralis* (Gouan) Parl.**

DWD: Shithatha, 26.2.1961, *Hadač* 3217.

***Avena barbata* Pott ex Link¹**

MSU: slope of a limestone hill above Khormal (Avroman mts.), 27.5.1961, *Hadač 5030*.

FPF: Jebel Hamrin, northern slope on the road Baquba-Khanaquin, growing mainly with *Hordeum spontaneum*, 29.4.1960, *Hadač 1727*.

First record for MSU.

***Avena byzantina* C. Koch¹**

FKI: as a weed in a rice field 10 km N of Jalaula, growing with *Ammannia verticillata*, *Chlorocyperus iria*, *Echinochloa crus-galli*, *Sphenoclea zeylanica*, 25.10.1960, *Hadač 2982*.

First record for Iraq.

***Avena eriantha* Durieu¹**

FNI: Ba'shiqa, growing with *Atractylis cancellata*, *Catapodium rigidum*, *Clypeola jonthlaspi*, *Iberis odorata*, *Lagoecia cuminoides*, *Thlaspi perfoliatum*, *Valerianella coronata*, *V. truncata*, etc. on a limestone rock steppe, 12.4.1960, *Hadač 1563*.

***Avena fatua* L. subsp. *fatua*¹**

DWD: at the road side, 73 km E of Rutba, 27.4.1961, *Hadač 4479*.

LCA: on an island in the Tigris, Baghdad, 10.5.1960, *Hadač 1790*.

***Avena ludoviciana* Durieu¹**

MSU: Tasluja, 28.5.1960, *Hadač 1947*.

FKI: Adheim, 23.3.1961, *Hadač 3941*.

FPF: Jebel Hamrin on the road Baquba-Khanaquin, with *Hordeum spontaneum*, 29.4.1960, *Hadač 1727*.

DGA: Balad at the road side, 5.5.1961, *Hadač 4546*; fields SW of Samarra, 5.5.1961, *Hadač 4538*.

Mainly as a weed in fields.

¹ The species of the genus *Avena* were identified by Dr. F. Kühn

***Avena sterilis* L.¹**

MSU: Dokkan dam, 570 m alt., on a slope with *Adonis dentata*, *Carduus pycnocephalus*, *Clypeola jonthlaspi*, *Coronilla scorpioides*, *Crupina crupinastrum*, *Echinaria capitata*, *Hymenocarpos circinnatus*, *Ranunculus asiaticus*, *Scandix pecten-veneris*, *Sherardia arvensis*, *Thlaspi perfoliatum*, etc., 9.4.1960, *Hadač* 1212.

***Avena ventricosa* Balansa ex Coss. subsp. *ventricosa*¹**

DWD: in the semidesert 35 km E of Nukhaib, with *Aegilops kotschyi*, *Alyssum linifolium*, *Hippocrepis bicontorta*, *Valerianella arenicola*, *V. dufresnia*, etc., 15.4.1961, *Hadač* 4226.

***Bromus danthoniae* Trin.**

MRO: northern slope of Potine, 2400 m alt., 20.6.1961, *Hadač* 6160; oak wood below Kani Mâm Shirin, 22.6.1961, *Hadač* 6027; between Derbend and Haji Omran, 13.6.1960, *Hadač* 2527.

MSU: Azmir dagh above Sulaimaniya, 26.5.1960, *Hadač* 1828.

FNI: Ba'shiqa, 12.4.1960, *Hadač* 1562.

FPF: Jebel Hamrin between Baquba and Khanaquin, 29.4.1960, *Hadač* 1723.

LCA: Imam Ibrahim, 26.4.1960, *Hadač* 1667; Latifyia, 18.3.1960, *Hadač* 890.

Mainly as var. *lanuginosus* Rozhev. with hairy spikelets. Very variable in hairiness as well in the number of flowers per spikelet (sometimes up to 27) and in the length of awns. *Hadač* 6160 (MRO, Potine) is an altitudinal record for this species in Iraq.

***Bromus scoparius* L.**

MRO: Haji Omran, 13.6.1960, *Hadač* 2591.

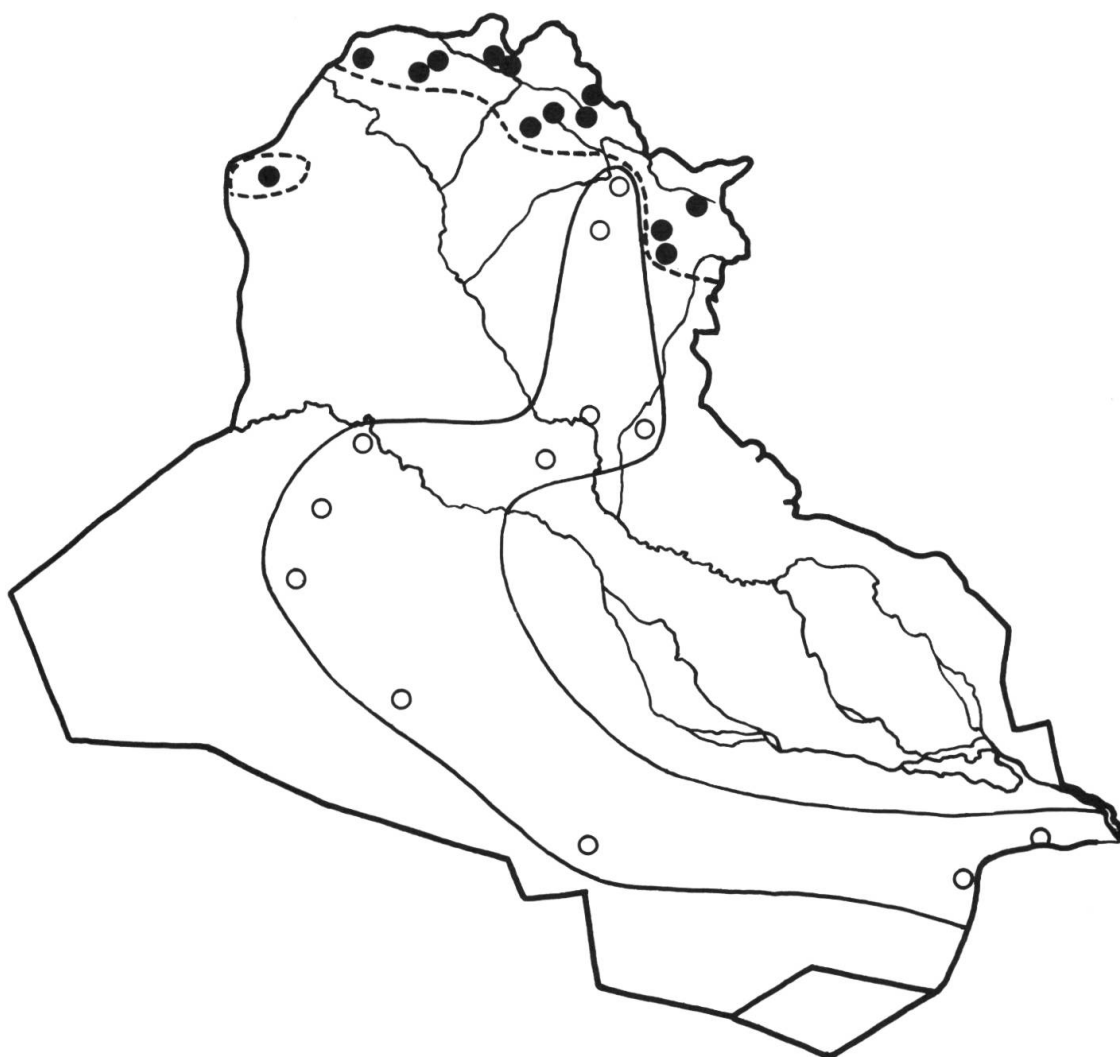
FKI: Adheim near Injana, 23.3.1961, *Hadač* 3940.

MSU: Girdabor, 24.5.1961, *Hadač* 4752.

FNI: Ninive, 12.4.1960, *Hadač* 1458.

The first two numbers belong to var. *scoparius*, the remainder to var. *villighumis* Maire et Weiller.

¹ The species of the genus *Avena* were identified by Dr. F. Kühn.

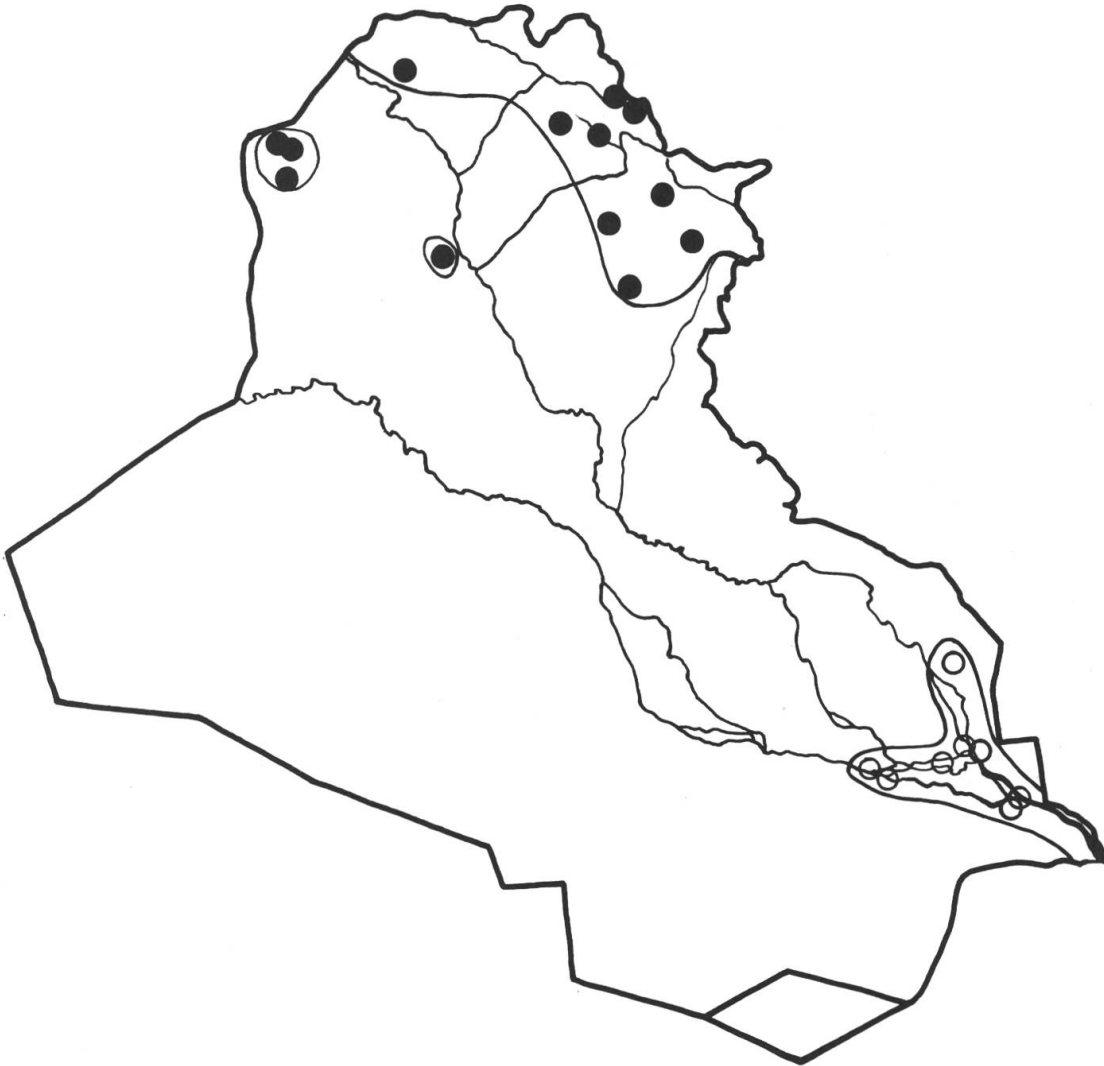


Map 2. — ● *Bromus tomentellus*; ○ *Bromus sericeus*.

Bromus tomentellus is found from Palestine and Syria to Turkey, NW Iran and the Caucasus. Its southern limit goes through the Iraqi Kurdistan where it grows in an area with an annual rainfall of more than 600-700 mm. *Bromus sericeus* is an Irano-Turanian element ranging, from Iraq and Iran to Central Asia. In Iraq, it grows in a zone with a annual rainfall of 70-600 mm, outside the area of saline alluvial soils.

***Bromus sericeus* Drobov**

- MSU: Dokkan dam, 570 m alt., 9.4.1960, *Hadač* 1205.
 FPF: Jebel Hamrin, 6.3.1961, *Hadač* 3298.
 DSD: Khidr al Mai, 8.3.1961, *Hadač* 3392.
 DWD: K 3, 10.2.1960, *Hadač* 297.
 LCA: Jezira, 75 km NW from Baghdad, 15.4.1960, *Hadač* 1618.



Map 3. — ● *Catabrosa aquatica*; ○ *Diplachne fusca*.

Catabrosa aquatica is circumpolar; its main distribution in Iraq lies in the zone of annual rainfall of 500 mm or more, with exception of a locality near Hadhar. *Diplachne fusca*, in turn, is palaeotropic; in Iraq it is found only in the south-eastern marshes, with 25°C mean annual temperature, and mean temperatures of the coldest and hottest months of 10°C and 32°C respectively.

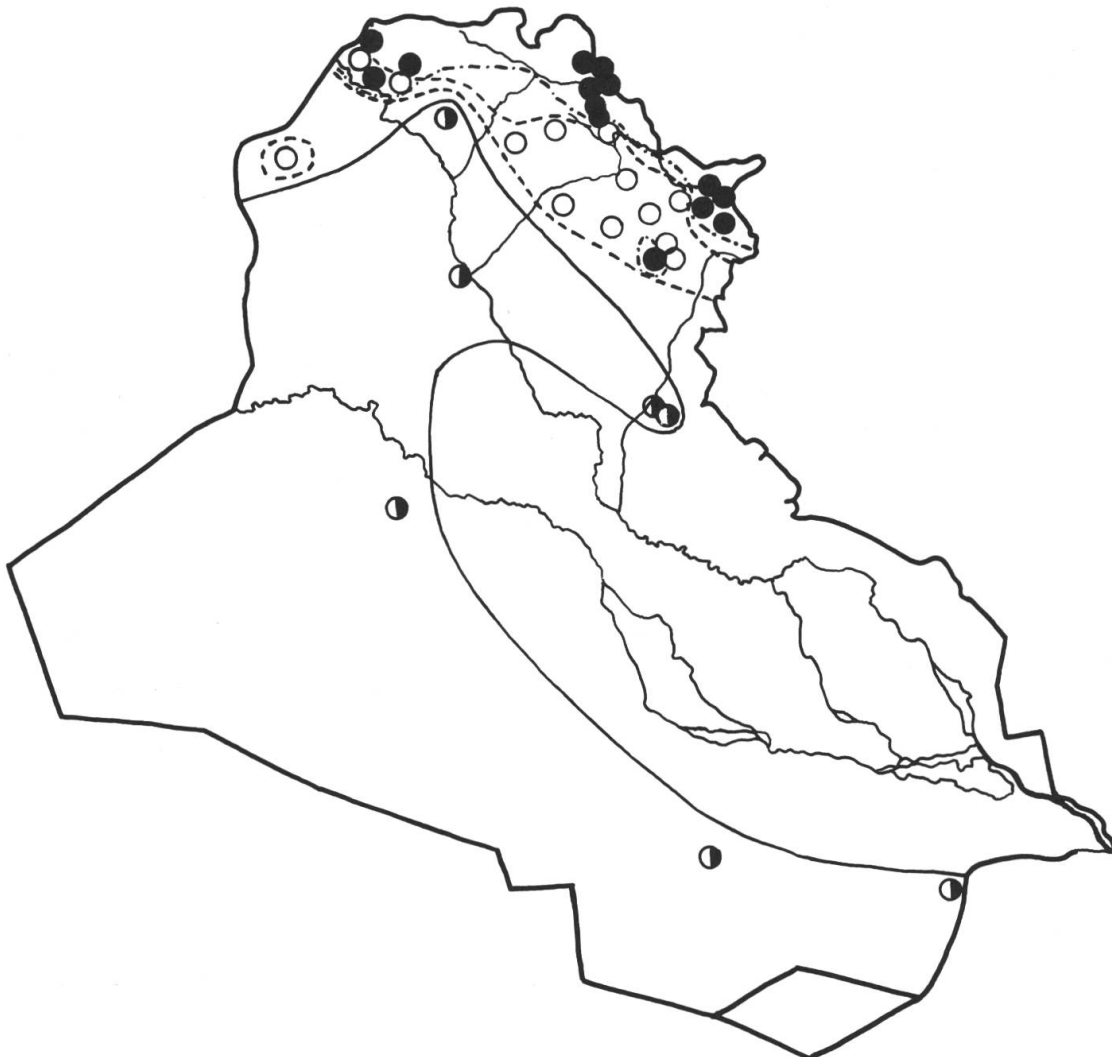
***Bromus tomentellus* Boiss.**

MRO: northern slope of Potine, 2400 m alt., 20.6.1961, *Hadač* 6160; limestone slopes above Zeita, 19.6.1961, *Hadač* 5946.

MSU: Kopi Qaradagh, Waziara, 29.5.1961, *Hadač* 6302.

***Catabrosa aquatica* (L.) Pal. Beauv.**

MSU: Girbador, 24.5.1961, *Hadač* 4741.



Map 4. – ● *Dactylis glomerata* subsp. *hispanica*; ○ *Bromus fasciculatus*; ◐ *Echinaria capitata*. *Dactylis glomerata* subsp. *hispanica* ranges from the Mediterranean region to Iran and Central Asia. In Iraq, it is found only in the Kurdish mountains, in a region with an annual rainfall of more than 800-1000 mm. *Bromus fasciculatus* extends from the Mediterranean region to Iran. In Iraq, it inhabits the area of less than 300(-400) mm mean annual rainfall, outside the area of saline alluvial soils. *Echinaria capitata* has a similar general area. In Iraq, it occurs in a relatively narrow zone where the mean annual rainfall is of 500-800 mm mean.

***Dactylis glomerata* L. subsp. *hispanica* (Roth) Nyman**

MRO: between Naprdan and Sheikhan, 5.6.1961, *Hadač* 5344; Sarcal, 2200 m alt., 4.6.1961, *Hadač* 2126.

MSU: Nalparaiz, 25.5.1961, *Hadač* 4801; Kopi Qaradagh, Waziara, 29.5.1961, *Hadač* 6270.

Hadač 2126 (MRO, Sarcal) is an altitudinal record for this species in Iraq.

***Deschampsia caespitosa* (L.) Pal. Beauv. subsp. *brachyphylla* Chrtek & Hadač, subsp. nova**

MRO: in valle Hassar-i-Sakran, 7.6.1961, *Hadač 5700* (typus, in herb. PR); Sarcal, 2200 m alt., 12.6.1960, *Hadač 2403*.

Plantae caespitosae, culmis 50-90 cm altis, foliis basalibus brevissimis, laminis 3-6 cm longis et c. 2 mm latis, rigidis, pungentibus; paniculis contractis, 10-18 cm longis et 2.5-4 cm latis, spiculis 5-6 mm longis brunneis.

There is no record of *Deschampsia* in Bor (1968), although our collection of *Deschampsia caespitosa* form Helgurd was mentioned by Hadač & Agnew (1963) when describing the communities "Mentho-Juncetum inflexi" and "Primulo-Blysmetum compressi" (2200-2250 m alt.). The whole population of this taxon is fairly homogeneous; typical are the very short and stiff basal leaves and the contracted panicles. Contracted panicles occur also in mountain races of *Deschampsia caespitosa* in Central Europe, but there the basal leaves are much longer and not so stiff (cf. Chrtek & Jirásek 1965).

Subsp. *brachyphylla* differs likewise from the Asiatic taxa of this group by its short leaves and contracted panicles; it is certainly different from the plant described by Bieberstein from the main ridge of the Caucasus as *Aira brevifolia* (= *Deschampsia biebersteiniana* Roemer & Schultes; cf. Cvelev 1961) and also from the species described from Central Asia as *D. pamirica* Rozhev., *D. koelerioides* Regel, etc.

***Diplachne fusca* (L.) Pal. Beauv.**

LBA: Gurna, below the bridge, 3.12.1960, *Hadač 3053*; Basra-Maqil, left bank of Shatt el Arab, 4.12.1960, *Hadač 3079*.

One of the tropical elements in the flora of Iraq.

***Echinaria capitata* (L.) Desf.**

MRO: Shaqlawa, 11.4.1960, *Hadač 1439*.

MSU: Dokkan dam, 570 m alt., 9.4.1960, *Hadač 1197*; Azmir dagh, 26.5.1960, *Hadač 1889*; Dar Mazala between Sulaimaniya and Qaradagh, 28.5.1961, *Hadač 5095*; Tachiya, 930 m alt., 9.4.1960, *Hadač 1144*.

***Echinochloa colonum* (L.) Link**

MSU: Derbedi khan, at the Diyala, 28.5.1960, *Hadač 1942*. Seems to be new for MSU.

LCA: Baghdad, College of Education, 29.11.1959, *Hadač 80*; left bank of the Tigris in Baghdad at the Embassy and YMCA, 24.11.1959, *Hadač 38, 62*; left bank of the Tigris at its confluence with the Diyala, 24.12.1959, *Hadač 128*.

Echinochloa crus-galli (L.) Pal. Beauv.

FKI: in an inundated rice field 10 km N of Jalaula, 25.10.1960, *Hadač 2976*.
LCA: Baghdad, at the Tigris near YMCA, 4.10.1960, *Hadač 2739*; right bank of the Euphrates below Falluja, 7.10.1960, *Hadač 2754*.
LBA: Basra-Maqil, at the Shatt el Arab, in *Cyperus* communities, 4.12.1960, *Hadač 3067*.

Enneapogon persicus Boiss.

FPF: steppe near Koma Sank, 10.5.1961, *Hadač 4600*; steppe between Makutu and Neftkhana, 10.5.1961, *Hadač 4628*.

Festuca arundinacea Schreber

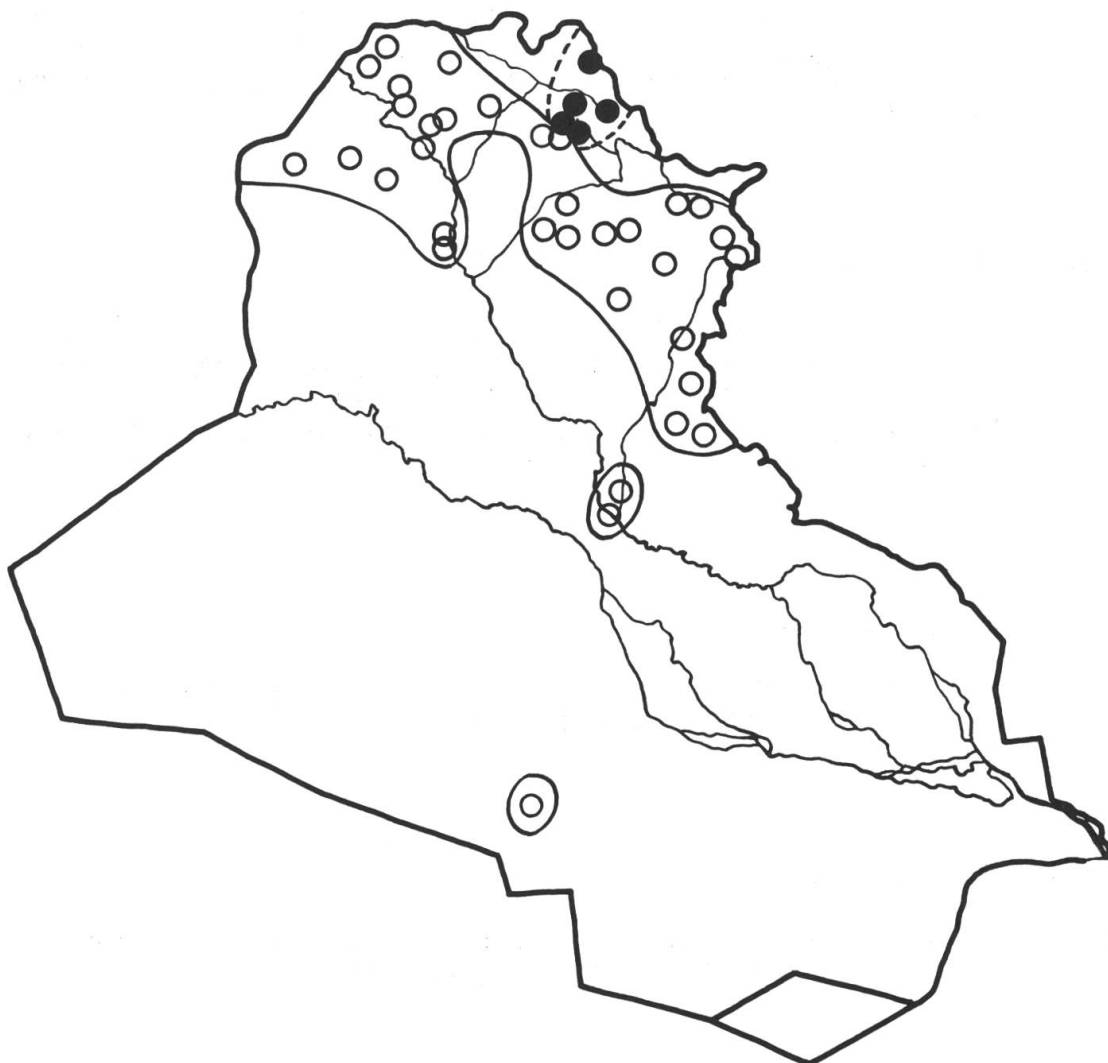
MRO: on the road between Derbend and Haji Omran, 13.6.1960, *Hadač 2551*; in the valley Hassar-i-Sakran, 7.6.1961, *Hadač 5701*.

Glyceria plicata Fries

MRO: on the road between Derbend and Haji Omran, 13.6.1960, *Hadač 2572*.

Heteranthelium piliferum (Banks & Sol.) Hochst.

MSU: Azmir dagh above Sulaimaniya, 26.5.1960, *Hadač 1871*; Kopi Qaradagh, Waziara, 29.5.1961, *Hadač 6306*.
FNI: Ba'shiqa, 12.4.1960, *Hadač 1561*.
FKI: Kirkuk, 10.4.1960, *Hadač 1276*.
FPF: Jebel Hamrin between Baquba and Khanaquin, northern slope, 4.3.1960, *Hadač 590*.



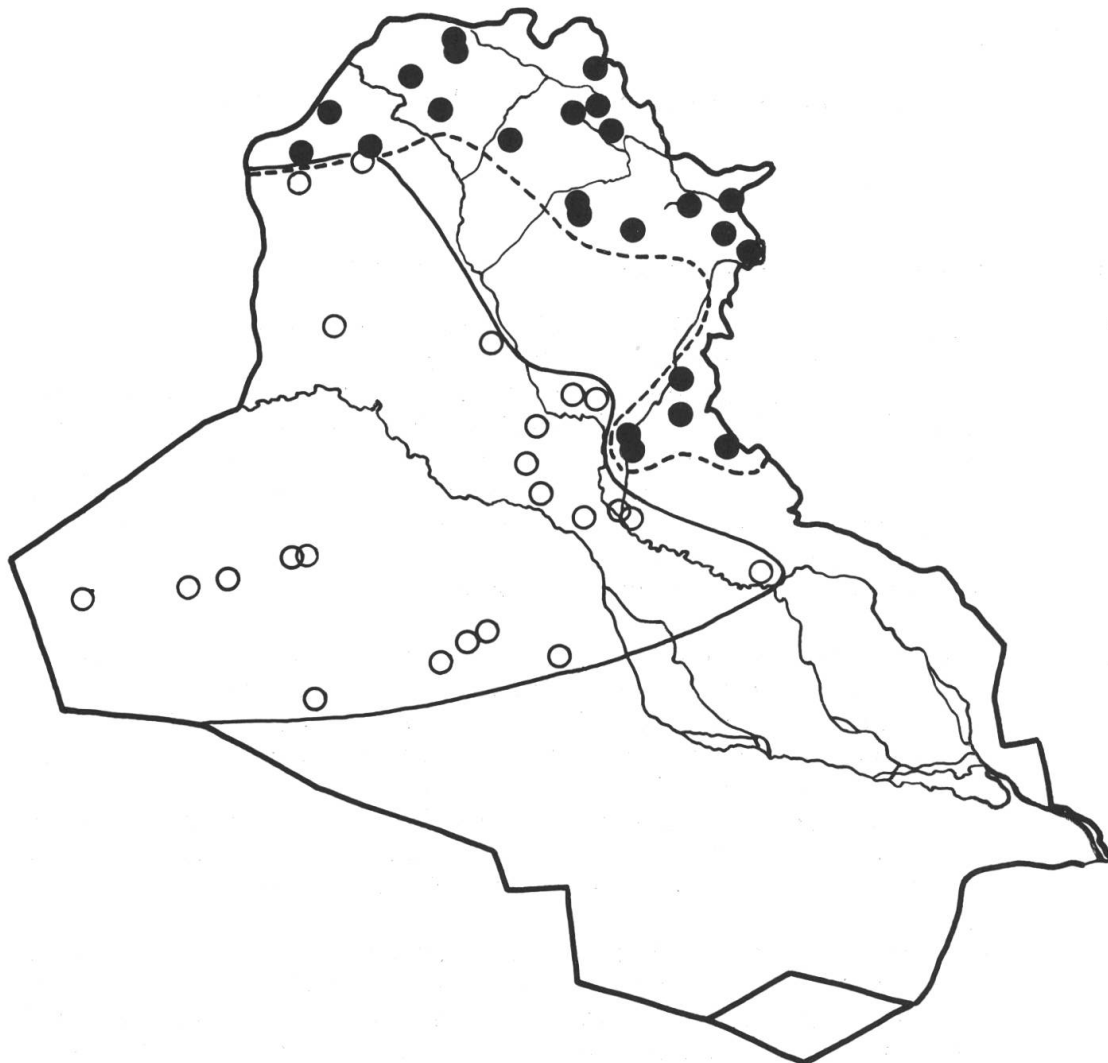
Map 5. — ● *Poa pratensis* s. l.; ○ *Heteranthelium piliferum*.

Poa pratensis is an Euroasiatic-North African element. In Iraq, it is restricted to the mountains of Kurdistan with a mean annual rainfall of 900 mm and more. *Heteranthelium piliferum* ranges from Turkey, Lebanon and Palestine to Central Asia, Afghanistan and Pakistan. In Iraq it occurs in the oak zone, in the *Cousinia*- and *Poa sinaica*-steppe. Most of its localities are situated in the area of 300-900 mm of mean annual rainfall, with exception of isolated localities in the neighbourhood of Baghdad and Shabicha, perhaps on irrigated soil.

Hordeum bulbosum L.

MSU: Azmir dagh above Sulaimaniya, 26.5.1960, *Hadač* 1849.

FPF: in a fallow field near Mandali, 10.5.1961, *Hadač* 4573.



Map 6. – ● *Hordeum bulbosum* L.; ○ *Eremopyrum bonaepartis* var. *bonaepartis*.
Hordeum bulbosum ranges from the Mediterranean region to Central Asia and tropical Africa, and occurs in secondary steppe, in the oak and *Cousinia*-steppe regions with more than 300 mm of mean annual rainfall. *Eremopyrum bonaepartis* (cf. Chrtek & Hadač 1969) extends from Palestine and Turkey to Central Asia, Afghanistan and NW India. In Iraq it occurs in the subdesert and in the *Poa sinaica*-steppe with about 75-300 mm of mean annual rainfall, on sierozem and alluvial soils.

Hordeum glaucum Steudel

- FKI: Adheim near Injana, 23.3.1961, *Hadač* 3942.
 DSD: Busaiya, 8.3.1961, *Hadač* 3452; Khidr al Mai, 8.3.1961, *Hadač* 3378.
 DWD: Khan Baghdadi, 9.2.1960, *Hadač* 253; at the road Kerbela-Najaf, 5 km S of Kerbela, 18.3.1960, *Hadač* 944, 1062; K 3, 10.2.1960, *Hadač* 271.
 LCA: Hasswa desert near Falluja, 20.11.1959, *Hadač* 16; Baghdad, on an island in the Tigris near Karrada, 30.1.1960, *Hadač* 186.

Hordeum leporinum Link

MRO: oak wood below Kani Mâm Shirin, 22.6.1961, *Hadač* 6036.

Hordeum spontaneum C. Koch emend. Bacht. var. **spontaneum**¹

MSU: Tasluja, together with *Triticum dicoccoides* var. *nachitschevanicum* (see under this name), 28.5.1960, *Hadač* 1997; Avroman mts., limestone slope above Khormal, secondary steppe with *Avena barbata*, *Cachrys prangoides*, *Catapodium rigidum*, etc. 27.5.1961, *Hadač* 5042; Nalparaiz, secondary steppe with *Achillea micrantha*, *Alyssum parviflorum*, *Bifora testiculata*, *Chaerophyllum macropodium*, *Dactylis glomerata* subsp. *hispanica*, *Fibigia clypeolata*, *Iris aucheri*, *Smyrniium cordatum*, *Zozimia absinthiifolia*, 25.5.1961, *Hadač* 4815, 4852.

MRO: near Naprdan, with *Dactylis glomerata* subsp. *hispanica*, etc. 5.6.1961, *Hadač* 5293.

FKI: Kirkuk, secondary steppe on limestone, with *Adonis dentata*, *Anisosciadium orientale*, *Bromus danthoniae*, *Centaurea bruguereana*, *Hirschfeldia incana*, *Plantago coronopus*, *Teucrium polium*, 10.4.1960, *Hadač* 1268. Adheim near Injana, steppe vegetation invading a field abandoned several years ago; together with *Aizoon hispanicum*, *Anisosciadium orientale*, *Avena ludoviciana*, *Brassica tournefortii*, *Eruçaria cakiloidea*, *Hippocrepis bicontorta*, *Hordeum glaucum*, *Ixiolirion pallasii*, *Pteranthus dichotomus*, *Ranunculus asiaticus*, *Rumex cyprius*, *Scorzonera papposa*, 23.3.1961, *Hadač* 3944.

FPF: Jebel Hamrin between Baquba and Khanaquin, in *Cousinia*-steppe, together with *Anisosciadium orientale*, *Avena barbata*, *A. ludoviciana*, *Bromus danthoniae*, *Bupleurum kurdicum*, *Centaurea bruguereana*, *C. stramenticia*, *Ducrosia anethifolia*, *Enneapogon persicus*, *Gundelia tournefortii*, *Heliotropium bacciferum*, *Lygia pubescens*, *Oliveria decumbens*, *Onobrychis crista-galli*, *Pimpinella barbata*, *Scabiosa palaestina*, *Silene linearis*, 29.4.1960, *Hadač* 1728.

Hadač 3944 (FKI, Adheim) belongs to a taxon which has been called "proles" *medium* Orl. "subproles" *occidentali-caucasicum* Orl. All the other specimens have been determined as "proles" *rigidum* Vav. "subproles" *medio-asiaticum* Orl.

Lasiurus hirsutus (Forssk.) Boiss.

LCA: Jezira, 75 km NNW from Baghdad, 15.4.1960, *Hadač* 1588.

¹ Determined by Dr. F. Kühn.

Lolium persicum Boiss. et Hohen.

DWD: Tell Rufha, 80 km NEE of Nukhaib, 15.4.1960, *Hadač* 4274.

LEA: Shahraban, 16.2.1961, *Hadač* 3087.

Lolium rigidum Boiss.

MSU: Tasluja, 28.5.1960, *Hadač* 1998; at the road Sulaimaniya-Penjwin N of Said Saadeq, 27.5.1961, *Hadač* 5006; Sarchinar, 27.5.1960, *Hadač* 1891.

Melica inaequiglumis Boiss.

MRO: Sarcal below Helgurd, 2200 m alt., 5.6.1960, *Hadač* 2198.

Melica persica Kunth

MSU: Nalparaiz, 25.5.1961, *Hadač* 4853.

MRO: limestone slopes above Zeita, 19.6.1961, *Hadač* 5937.

The second specimen is more robust, has bigger spikelets and broader leaves.

Pennisetum orientale L. C. Rich.

MRO: between Rowanduz and Mazna, 18.6.1961, *Hadač* 5791; between Shirwan Mazin and the river, 23.6.1961, *Hadač* 6195.

Phalaris paradoxa L.

LCA: Jassufiya, 10.5.1960, *Hadač* 1782.

Phragmites australis (Cav.) Trin.

MSU: Pira Magrun, wet places on the E slope, 1730 m alt., 23.10.1960, *Hadač* 2877.

DWD: on an island in the Euphrates called Abu Saad, near Haqlaniya, 10.2.1960, *Hadač* 2877.

LCA: Baghdad, on the Tigris, 26.11.1959, *Hadač* 65.

- LSM: in the marsh ("hór") at Mu'ail near M'saida, 2.12.1960, *Hadač* 3031.
 LBA: Basra-Maqil, on the Jezira, 4.12.1960, *Hadač* 3094; 20 km N of Fao, 5.2.1960, *Hadač* 210.

Most of our material belongs to the subsp. *altissimus* (Bentham) Clayton. Conert (1961) calls such plants *Ph. communis* var. *isiacus* (Del.) Cosson differing from other varieties mainly by the colour of spikelets and by a very broad panicle. Clayton (1967) distinguishes two subspecies in *Ph. communis*: subsp. *communis* and subsp. *maximus* (Forssk.) Clayton. Later on Clayton (1968) accepts the name *Ph. australis* with corresponding combinations. Bor (1968) writes only about *Ph. australis* s. l.

Poa annua L.

- MRO: Shirzawa, at the foot of mount Helgurd, 11.6.1960, *Hadač* 2444; Sarcāl, right bank of the brook, irrigated places, 2200 m alt., 5.6.1960, *Hadač* 2282.

Bor (1968) knows *Poa annua* only "in the forest and steppe region and in the subdesert zone of Iraq". Our plants are probably perennial, their anthers are only 0.8-1.2 mm long; it is thus not possible to place them in the neighbourhood of *Poa supina* Schrader (cf. Fröhner 1968). New to MRO and the highest locality in Iraq.

Poa bulbosa L.

- MRO: Sarcāl, 2190-2230 m alt., 5.6.1960, *Hadač* 2142, 2391; northern slope of the hill "2450 m" above Sarcāl, 2250 m alt., 5.6.1960, *Hadač* 2204; oak wood below Kani Mâm Shirin, 22.6.1961, *Hadač* 6038; Shaqlawa, 11.4.1960, *Hadač* 1430, 1431.
 MAM: Zakho, at the ancien bridge, 21.3.1961, *Hadač* 3722.
 MSU: between Benawa Suta and Penjwin, 26.5.1961, *Hadač* 4985.
 FKI: Altun Köprü, 320 m alt., 10.4.1960, *Hadač* 1348.
 DLJ: Hadhar, 23.2.1961, *Hadač* 3146.

Hadač 2204 is the highest record for this species in Iraq.

Poa kurdistanica Chrtek & Hadač, spec. nova

- MRO: Sarcāl, sub monte Helgurd, 2200 m alt., 7.7.1960, *Hadač* 2175 (Typus, in herb. PR).

Planta perennis, caespitosa, glaucescens; culmi 20-30 cm alti, rigidi, conspicue compressi, asperuli, basi distincte bulbosi, ascendentes; laminae foliorum culmi superiorum 2.5-4 cm longae et c. 1 mm latae, in culmi parte media sitorum 5-7 cm longae et 1.5-2 mm latae, glabrae, asperulae; ligulae foliorum superiorum 1-1.5 mm longae, mediorum c. 1 mm longae, glabrae; foliorum vaginae asperae basi brunneo-violaceae; panícula 5-9 cm longa, densa, contracta, rhachi aspera; spiculae plerumque biflorae, 4-5 mm longae, triste glauco-virides; lemmata apice plerumque violaceo-brunnescentia; gluma inferior 2.6-3 mm longa, superior 2.8-3.1 mm longa; lemma 3-3.2 mm longum, distincte carinatum, carina ad tertiam partem vel ad medium pilosa; pili nervi marginalis quartam partem longitudinis lemmatis attingentes, nervus lateralis medius glaber; lemma inter nervis glabrum; palea quam lemma paulo brevior; rhachilla glabra; antherae 1.2-1.5 mm longae. In plantis nostris antherae tantum inveniuntur; an planta dioica ?

P. kurdistanica is a peculiar species in the genus *Poa*. By its combination of some features (i.e. compressed culms which are bulbous at the base, hairiness of the lemmas) it differs from all other species of the genus.

Poa nevskii Rozhev.

MRO: Sarcal, ad pedem montis Helgurd, 2200 m alt., 4.6.1960, *Hadač 2116*;
Sarcal vallis Nowandae, ripa dextra, 2230 m alt., 10.6.1960, *Hadač 2391*.

P. nevskii is a new species for Iraq as well as for the whole Near East. It differs from *P. bulbosa* first of all by the absence of the wool at the base of the lemmas. *P. nevskii* belongs to the sect. *Bulbosae* Rozhev. where, from among the high mountain species of Asia, belong also *P. bactriana* Rozhev., *P. densa* Troitzky, *P. dshilgensis* Rozhev., *P. glabriflora* Rozhev., *P. zaprjagaevii* Ovczn., but these show a different indumentum of the lemmas and mostly also a different habitus. Our material of *P. nevskii* was compared with the authentic material of Rozhevitz from the herbaria of the Academy of Sciences of the USSR in Leningrad (LE).

The occurrence of *P. nevskii* in Kurdistan is surprising, as it was hitherto known only from the western part of Pamiro-Alai; it is very probable that it will appear also in the Iranian mountains.

Poa pratensis L. (s. l.)

MRO: Sarcal, 2200 m alt., 7.6.1960, *Hadač 2147, 2350*; Sakri-Sakran, 6.6.1961, *Hadač 5507*.

According to Bor (1968) *P. pratensis* is a rare plant in Iraq, known only from 3 localities, at 650-1600 m alt. *Hadač 2147* and *2350* are thus highest records of this species in Iraq. All belong to the **broad-leaved form**.

***Poa silvicola* Guss.**

MRO: between Derbend and Haji Omran, 13.6.1960, *Hadač* 2573; at the brook side on Sakri-Sakran, 1900 m alt., 6.6.1961, *Hadač* 5604.

This species, reminding on *P. trivialis* by its habitus and length of ligula, is new for Iraq. It is easily recognisable by its moniliform, subterraneous rhizomes. It is known e.g. from Syria (cf. Mouterde 1960).

***Poa sinaica* Boiss.**

FNI: Ba'shiqa, 12.4.1960, *Hadač* 1532.

FKI: Altun Köprü, 320 m alt., 10.4.1960, *Hadač* 1348.

FPF: Jebel Hamrin between Baquba and Khanaquin, NE slope, 4.3.1960, *Hadač* 593.

DLJ: Ashiq, 12.3.1960, *Hadač* 762.

DSD: Busaiya, 8.3.1961, *Hadač* 3463; desert between Najaf and Rahba, 2.4.1961, *Hadač* 3959.

LCA: Jezira, 75 km NNW from Baghdad, 15.4.1960, *Hadač* 1603; Sichar near Falluja, 1.3.1960, *Hadač* 509.

It is sometimes very difficult to distinguish between *P. sinaica* and *P. bulbosa*, especially in the pressed material. The problem was already studied by Feinbrun (1941) and Heyn (1962). The main difficulty is to distinguish between the pseudoviviparous forms of the two species, where some of the diagnostic characters disappear, such as the hairiness at the base of lemmas etc. In such cases the identification is usually impossible.

***Poa trivialis* L.**

MRO: Sarcal, 2200 m alt., 9.6.1960, *Hadač* 2310; Naprdan, 5.6.1961, *Hadač* 5310.

MSU: Girdabor below Pira Magrun, 24.5.1961, *Hadač* 4725; Benawa Suta near Penjwin, 26.5.1961, *Hadač* 4936.

This species is relatively rare in Iraq; Bor (1968) reports it from 700-1500 m alt.; *Hadač* 2310 (MRO, Sarcal) is thus its altitudinal record in Iraq.

***Psathyrostachys fragilis* (Boiss.) Nevski**

MRO: Sarcal, "Rheetum ribis" and "Aethionemetum", 2200 m alt., 4.6.1960, *Hadač* 2074, 2658; Northern slope of Potine, above 2100 m alt., 20.6.1961, *Hadač* 6144.

Secale montanum Guss.

MRO: Sarcāl, 2200 m alt., in a relatively open association (“Aethionemeto-Astragaletum tragacanthae”), with *Acanthus dioscoridis*, *Aethionema grandiflorum*, *Alyssum singarense*, *Carex diluta*, *Coluteocarpus vesicaria*, *Dactylis glomerata* subsp. *hispanica*, *Fibigia clypeata*, *Galium coronatum*, *Hypericum scabrum*, *Veronica orientalis*, *Valerianella dactylophylla*, etc., 10.6.1960, *Hadač* 2392; limestone slopes above Zeita, in a steppe-like vegetation near the upper timberline with *Aethionema grandiflorum*, *Alyssum parviflorum*, *Daphne angustata*, *Gundelia tournefortii*, *Lepidium latifolium*, *Prangos ferulacea*, *Teucrium polium*, *Turgenia latifolia*, *Valerianella dactylophylla*, etc., 19.6.1961, *Hadač* 5917.

Stipa barbata L.¹

MSU: Nalparaiz, 22.5.1961, *Hadač* 4854; at the top of Kopi Qaradagh, 29.5.1961, *Hadač* 5174.

Stipa barbata var. **longiaristata** Martinovský¹

MRO: Shaqlawa, 11.4.1960, *Hadač* 1390.

Stipa hohenackerana Trin. & Rupr.¹

MRO: Sarcāl, ripa rivuli dextra, 2210 m alt., in “Aethionemeto”, 4.6.1960, *Hadač* 2687.

Stipa holosericea Trin.¹

MRO: Sarcāl, ripa rivuli dextra, 2210 m alt., “Aethionemeto”, 4.6.1960, *Hadač* in 2687.

Stipa iraquensis Martinovský¹

DWD: 40 km E of Rutba, 27.4.1961, *Hadač* 4375.

¹ The species of the genus *Stipa* were identified by Prof. Dr. J. Martinovský.

Triticum boeoticum Boiss. subsp. **thaoudar** (Reuter) Schieman¹

MSU: Dar Mazala between Sulaimaniya and Qaradagh, steppe vegetation with *Astragalus superbus*, *Galium coronatum*, *Helianthemum ledifolium*, *Valerianella vesicaria*, etc., 28.5.1961, *Hadač 5103*, (var. *haussknechtii* Flaksb., and a few specimens of var. *balansae* Flaksb.); between Chamchamal and Qaranjir, secondary steppe with *Actinolema eryngioides*, *Artemisia squamata*, *Pimpinella kotschyi*, etc., 30.5.1961 *Hadač 5257*, (var. *haussknechtii* Flaksb.).

Triticum dicoccoides (Koern. ex Ascherson & Graebner) Aaronsohn¹ subsp. **syriopalaesticum** Flaksb. var. **jordanicum** Vav.

MSU: Dar Mazala between Sulaimaniya and Qaradagh, steppe vegetation with *Triticum boeoticum* subsp. *thaoudar*, etc., 28.5.1961, *Hadač 5111*.

Triticum dicoccoides subsp. **armeniacum** (Tum.) Jakubz. var. **nachitschevanicum** Jakubz.

MSU: Tasluja, with *Actinolema eryngioides*, *Adonis dentata*, *Avena ludoviciana*, *Carex diluta*, *Centaurea solstitialis*, *Falcaria orientalis*, *Gundelia tournefortii*, *Pimpinella eriocarpa*, *Turgenia latifolia*, etc., 28.5.1960, *Hadač 2006b*.

Vulpia ciliata Link

FNI: Ba'shiqa, 12.4.1960, *Hadač 1534b*; Ninive, 12.4.1960, *Hadač*.

FKI: Altun Köprü, 10.4.1960, *Hadač 1355*.

Vulpia hirtiglumis Boiss. & Hausskn.

DWD: Tell Rufha, 15.4.1961, *Hadač 4268*.

¹ Determined by Dr. F. Kühn.

Vulpia myuros (L.) C. C. Gmelin

- MRO: inter pagos Sheikhan et Sakri Sakran, 5.6.1961, *Hadač* 5386.
 FNI: Ninive, 12.4.1960, *Hadač* 1456.
 FKI: Kirkuk, 10.4.1960, *Hadač* 1226; Adheim, 23.3.1961, *Hadač* 3946.

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