Zeitschrift: Candollea : journal international de botanique systématique = international journal of systematic botany

Herausgeber: Conservatoire et Jardin botaniques de la Ville de Genève

Band: 38 (1983)

Heft: 1

Artikel: Studies on the flora of Jordan : 11. On the flora of Wadi Araba (Araba Valley)

Autor: Al-Eisawi, Dawud

DOI: https://doi.org/10.5169/seals-879870

Studies on the flora of Jordan. 11. On the flora of Wadi Araba (Araba Valley)

DAWUD AL-EISAWI

RÉSUMÉ

AL-EISAWI, D. (1983). Etude sur la flore de Jordanie. 11. La flore de Wadi Araba (Araba Valley). *Candollea* 38: 365-385. En anglais, résumé français.

290 espèces de végétaux vasculaires ont été repérées au cours de cette étude dans la région de Wadi Araba. Ce nombre est fondé sur les récoltes abondantes effectuées depuis 1978 dans diverses localités. Wadi Araba constitue l'habitat principal des éléments tropicaux de la végétation de Jordanie. L'endroit est caractérisé par un été sec et chaud et une pluviosité réduite. C'est donc un désert dépourvu d'agriculture sauf dans les rares endroits où de l'eau ruisselle dans certaines vallées. La plupart des rudérales de ce site sont comprises dans cette étude. De brèves notes phytogéographiques sont ajoutées.

ABSTRACT

AL-EISAWI, D. (1983). Studies on the flora of Jordan. 11. On the flora of Wadi Araba (Araba Valley). *Candollea* 38: 365-385. In English, French abstract.

290 species of vascular plants were recorded during this study from the area of Wadi Araba. This number of species is based on the extensive collections which were made from different localities since 1978. Wadi Araba represents the major habitat of the tropical vegetation elements in Jordan. It is characterised by a dry, hot summer and a scarce rainfall, therefore it is classified as a desert with no agriculture except for very limited places where water is running in some of the valleys. However most of the weeds which occur within the studied area are included in this study. Brief geobotanical notes are indicated.

BOULOS (1977), BOULOS & LAHHAM (1977) and BOULOS & AL-EISAWI (1977), have studied the flora of certain areas in Jordan and enumerated the species which occur in these places with additional notes on their ecology. The present study is a continuation of such work on a new geographical

CODEN: CNDLAR
ISSN: 0373-2967
38(1) 365 (1983)

part which extends from Al-Lisan at the southern end of the Dead Sea in the north, down to the Gulf of Aqaba in the south and from the borders with Palestine in the west to the bases of the mountains in the east (Fig. 1).

Before 1978 there were no specimens collected and deposited in the Herbarium of the University of Jordan from the area between Ghor As-Safi and Aqaba, which spans about 180 km. That was mainly due to the difficulty of reaching that area. But since the establishment of the new road in 1978 which connected Ghor As-Safi with Aqaba, extensive collections were made mainly by myself, sometimes accompanied with Mr. R. Jarrar.

The studied area is about 180 km long and lies between the longitudes 35°W.-35°30′ E. and the latitudes 31°20′ N.-29°20′ S.

Wadi Araba is a part of the Reft Valley in Jordan, hence the elevations vary from about 200 m or more bellow the sea level up to 100 m or more above the sea level. The temperature varies from 0°C at night in winter up to over 40°C during sommer days. But the mean maximum temperature during the summer is 39°C while the mean minimum temperature in winter is 11°C. The annual rain fall ranges from 0-50 mm or rarely more. According to ZOHARY (1962), three major soil types are present in Wadi Araba and these are: *a)* saline soils, *b)* sandy soils with some places of sand dunes, *c)* hammada especially in the elevated areas. Usually the soils in the eastern side of the wadi are mixed with granite gravels. The ratio of the gravels will increase as we move towards the mountains, which are mainly of granite.

The vegetation accordingly can be subdivided into the following groups:

1. Saline vegetation mainly dominated by *Arthrocnemum, Sueada, Juncus* and *Nitraria*. Such vegetation is present in Ghor As-Safi, Ghor Faifa and in the southern end of Wadi Araba, about 40 km N. of Aqaba.
2. Tropical vegetation dominated by *Calotropis, Acacia, Ziziphus, Maerua, Balanites, Salvadora, Calligonum* and *Ocradenus*. This type is highly affected by man either through the grazing of goats and camels or direct by cutting of trees for fire. If this vegetation is protected it will reach the climax within about 10 years. This vegetation is present in Ghor Faifa and Wadi Khnaizera.
3. Sand dune fixatives dominated by *Haloxylon persicum* associated with *Retama* and *Calligonum*. The shrubs of *Haloxylon* in some localities are about 3-4 m high and about 5 m in diameter. With such sizes this vegetation has reached its climax. The best locality of such vegetation is about 60-70 km N. of Aqaba along the road to Gharandal.
4. Hammada soils vegetation usually dominated by bushes and low shrubs. The leading elements are *Anabasis syriaca, Traganum nudatum, Halocnemum strobilaceum,* and *Zygophyllum dumosum*. This type is present in most of the elevated rocky grounds in the wadi.

5. The vegetation associated with granite or granite mixed soils is dominated by *Acacia* which occurs mostly on firm hard soils. This leading element will be associated with other bushes or low shrubs like *Anabasis* and *Hammada*. The best habitat of such a vegetation type is the eastern side of the wadi especially 30-35 km N. of Aqaba to the entrance of the city.

There are few valleys with running water collected from the rain which fall on the high mountains of Jebal Ash-Shara in the southern part of Jordan. Usually along such valleys lots of herbs are growing, some of which occur as a result of seeds washed from the mountains during the rainy period.

The identified specimens in this manuscript are listed alphabetically according to their families, genera and species. POST & DINSMORE (1932-1933), ZOHARY (1966, 1972), TÄCKHOLM (1974) and FEINBRUN-DOTHAN (1978) were the main sources of identification.

Generic names which are followed by "sp." are due to the specimens being insufficient for full identification. Specific names which are interrupted by "cf." are doubtfully identified. Otherwise the identification is based on full specimens with flowers and fruits. All the specimens are deposited at the Herbarium, University of Jordan, Faculty of science, Amman, Jordan.

The localities of the collections are listed according to the specimens numerical order as follows:

2254-2276 Ghor As-Safi, tomato field, near the Ministry of agriculture station, 8 Feb. 1978, *D. Al-Eisawi.*

2277-2325 Ghor As-Safi, Um Al-Hashiem, 8 Feb. 1978, *D. Al-Eisawi.*

2326-2347 Wadi Araba, 80 km S. Ghor As-Safi, along the road to Aqaba, 8 Feb. 1978, *D. Al-Eisawi.*

2348-2356 Wadi Araba, 55 km S. Ghor As-Safi, along the road to Aqaba, 8 Feb. 1979, *D. Al-Eisawi.*

2357-2372 Ghor As-Safi along a water canal, beside a cultivated field, 9 Feb. 1978, *D. Al-Eisawi.*

2373-2377 Wadi Araba, 35 km S. Ghor As-Safi, along the road to Aqaba, 9 Feb. 1978, *D. Al-Eisawi.*

2378-2400 Wadi Araba, 50 km S. Ghor As-Safi, 5-8 km E. of the main road to Aqaba, along the way to Ammareen and Saidieen Farms, 9 Feb. 1978, *D. Al-Eisawi.*

2401-2413 Wadi Araba, 50 km S. Ghor As-Safi, 13 km E. of the main road to Aqaba, near Ammareen and Saidieen Farms, 9 Feb. 1978, *D. Al-Eisawi.*

2414-2440 Wadi Araba, 50 km S. Ghor As-Safi, 20 km E. of the main road to Aqaba, Wadi Faidan, 9 Feb. 1978, *D. Al-Eisawi.*

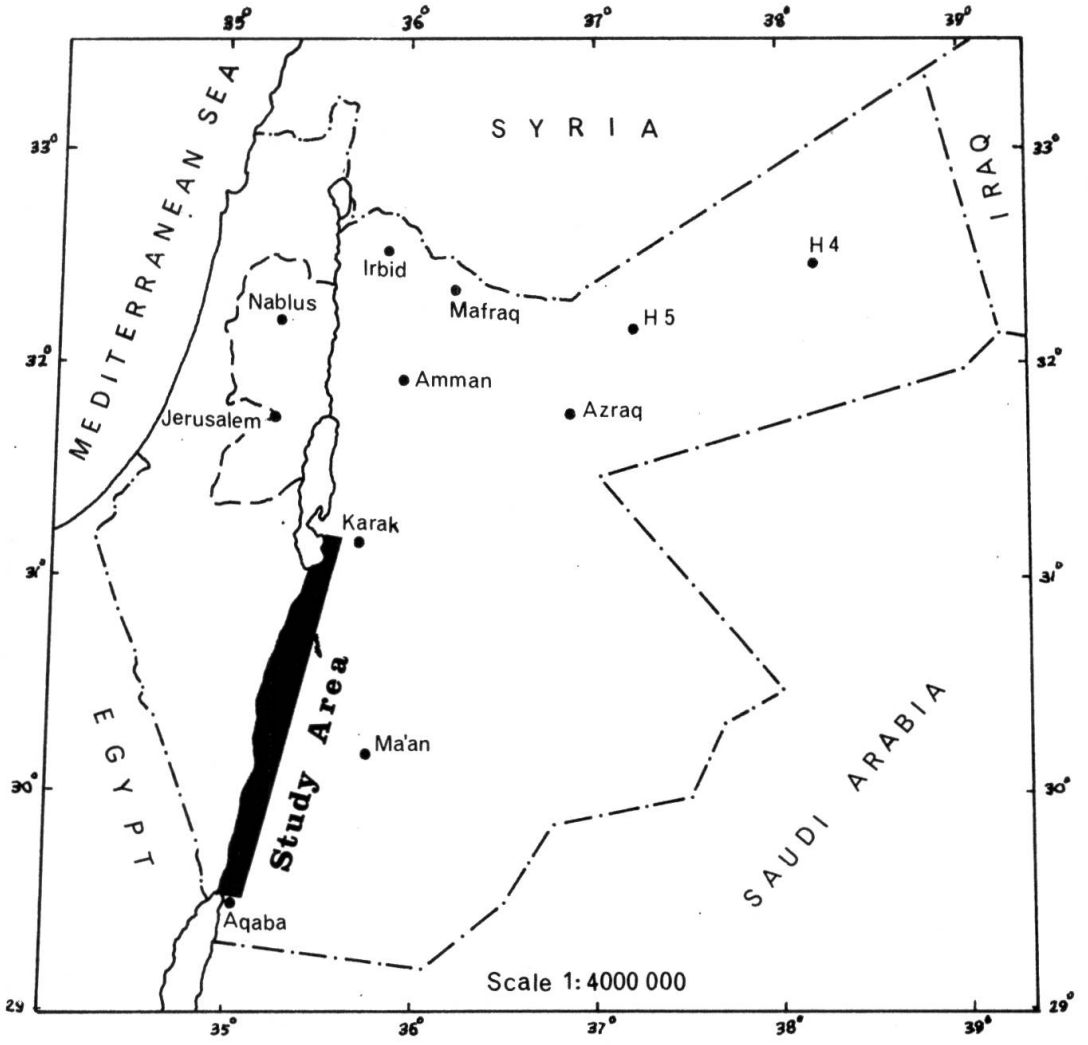

Fig. 1. – Map of Jordan showing Wadi Araba.

2441-2478 Wadi Araba, 50 km S. Ghor As-Safi, Wadi Faidan, about 25 km E. of the main road, up to the foot of the mountain, 9 Feb. 1978, *D. Al-Eisawi.*

4179-4200 Ghor As-Safi, 11 May 1978, *D. Al-Eisawi & R. Jarrar.*

4201-4241 Wadi Araba, 50 km S. Ghor As-Safi, along the road to Aqaba, 11 May 1978, *D. Al-Eisawi & R. Jarrar.*

4242-4257 Wadi Araba, 50 km S. Ghor As-Safi, 20 km E. of the main road to Aqaba, Wadi Faidan, 11 May 1978, *D. Al-Eisawi & R. Jarrar.*

4258-4275 Wadi Araba, Gharandal, stony hills, about 80 km, N. Aqaba along the road to Ghor As-Safi, 12 May 1978, *D. Al-Eisawi & R. Jarrar.*

4276-4291 Wadi Araba, 40 km N. Aqaba, along the road to Ghor As-Safi, near salt marshes, 12 May 1978, *D. Al-Eisawi & R. Jarrar.*

4733-4773 Al-Hadetha, at the eastern side of the southern end of the Dead Sea, near Ghor Al-Maraa, 14 March 1979, *D. Al-Eisawi & R. Jarrar.*

4932-4933 Ghor As-Safi, halophytic vegetation, 15 March 1979, *D. Al-Eisawi & R. Jarrar.*

4934-4969 Wadi Araba, midway between Ghor As-Safi, and Ghor Faifa, 15 March 1979, *D. Al-Eisawi & R. Jarrar.*

4970-4985 Ghor Ath-Thira, 20 km. E. Ghor As-Safi along the road to Karak, 15 March 1979, *D. Al-Eisawi & R. Jarrar.*

4986-5044 Wadi Araba, 50 km S. Ghor As-Safi, Wadi Faidan, 10-20 km E. the main road to Aqaba, 15 March 1979, *D. Al-Eisawi & R. Jarrar.*

5045-5077 Wadi Araba, 80 km N. Aqaba, along the road to Ghor As-Safi, 15 March 1979, *D. Al-Eisawi & R. Jarrar.*

5078-6084 Wadi Araba, 40 km N. Aqaba, along the road to Ghor As-Safi, near salt marshes, 15 March 1979, *D. Al-Eisawi.*

5565 Ghor As-Safi, 28 March 1979, *D. Al-Eisawi & S. Oran.*

5566-5567 Ghor Faifa, 10 km S. Ghor As-Safi, 2 April 1979, *D. Al-Eisawi.*

5915-5924 Wadi Araba, Ghor Faifa, 10 km S. Ghor As-Safi, along the road to Aqaba, 8 Feb. 1981, *D. Al-Eisawi.*

8925-8993 Wadi Araba, Khnaizera, near the Jordan Valley Authority Station & Wadi Dahal (near water canal) 8 Feb. 1981, *D. Al-Eisawi.*

Acanthaceae

Blepharis ciliaris (L.) B. L. Burtt – *2286, 4257*

Aizoaceae

Aizoon canariense L. – *2302, 4184, 4284, 4959, 4991, 8942*

Aizoon hispanica L. – *4771, 4989*

Mesembryanthemum forsskalii Hochst. ex Boiss. – *4245*

Mesembryanthemum nodiflorum L. – *2423, 4760, 5036*

Amaranthaceae

Aerva japanica (Burm. fil.) Sprengel; syn.: *A. persica* (Burm. fil.) Merrill – *8971*

Amaryllidaceae

Pancratium sickenbergeri Ascherson & Schweinf. – *5040, 8954*

Apocynaceae

Nerium oleander L. – *4243, 8992*

Aricaceae (Palmae)

Phoenix dactylifera L. – *4277, 5078*

Asclepiadaceae

Calotropis procera (Ait.) Ait. fil. – *2360, 4937, 8973*

Pergularia tomentosa L. – *4259*

Balanitaceae

Balanites aegyptiaca (L.) Del. – *8924*

Boraginaceae

Anchusa aegyptiaca (L.) DC. – *2258, 4213, 4758*

Arnebia deucumbens (Vent.) Coss. & Kral. – *2415, 5060A*

Arnebia hispidissima (Lehm.) DC. – *2297*

Arnebia tinctoria Forssk.; syn.: *A. tetrastigma* Forssk. – *5060B*

Arnebia sp. (seedling) – *2383*

Gastrocotyle hispida (Forssk.) C. B. Clarke – *2305, 2428, 8953*

Heliotropium arbainese Fresen – *2424, 4770*

Heliotropium bacciferum Forssk. – *2316, 4212, 8915*

Lappula spinocarpos (Forssk.) Ascherson – *2417*

Capparaceae

Capparis cartilaginea Decne – *8979*

Capparis spinosa L. – *4258*

Cleome africana Botsch.; syn.: *C. arabica* L. – *2315, 2364, 2391, 4181, 4248*

Cleome trinervia Fresen – *5000*

Maerua crassifolia Forssk. – *5567, 8928*

Caryophyllaceae

Gymnocarpus decandrum Forssk. – *2338, 5027, 5071, 8975*

Herniaria hemistemon J. Gay – *2435*

Herniaria hirsuta L. – *2470, 4982, 5021*

Paronychia arabica (L.) DC. – *2307, 2454*

Paronychia sinaica Fresen – *4224*

Polycarpea repens (Forssk.) Ascherson & Schweinf. – *2308, 2332, 4253, 4273, 5040, 8951*

Pteranthus dichotomus Forssk. – *2356B, 4767, 4997*

Robbairea delileana Milne-Redhead – *2312, 2449, 4189, 4227, 8936*

Sclerocephalus arabicus Boiss. – *2356A, 2446, 8935, 8976*

Silene damascena Boiss. & Gaill. – *4979*

Silene villosa Forssk. – *4953, 4996A, 8919*

Silene sp. – *2370*

Spergula fallax (Lowe) Krause – *2451*

Spergularia diandra (Guss.) Heldr. & Start. – *4999*

Chenopodiaceae

Anabasis articulata (Forssk.) Moq. – *2343, 2399, 2407, 2466, 4218, 4263, 5023, 5057, 8980*

Arthrocnemum macrostachyum (Moric.) Moris & Delponte – *2325*

Atriplex dimorphostegia Kar. & Kir. – *2427, 5006, 8918*

Atriplex halimus L. – *2402, 4240, 5029*

Atriplex rosea L. – *2467*

Bassia eriophora (Schrader) Ascherson – *5019*

Bassia muricata (L.) Ascherson – *2353, 2424, 4207, 4244, 5062, 8920, 8966, 4966*

Beta vulgaris L. – *4759*

Chenolea arabica Boiss. – *4281*

Chenopodium album L. – *4193, 4791A*

Chenopodium murale L. – *2260, 2425, 4751B*

Halocnemum strobilaceum (Pall.) M. B. – *2344, 2404, 5031*

Haloxylon persicum Bunge – *2345, 2354, 2400, 2476, 4269, 4291, 4942, 5030, 5064, 8917*

Hammada salicornica (Moq.) Iljin – *2343, 2355, 2398, 2408, 2466, 5023, 5057, 5081*

Hammada scoparia (Pomel) Iljin – *2321, 2478, 4286*

Salsola baryosma (Roem. & Schult.) Dandy – *5069, 4267, 4268*

Salsola jordanicola Eig – *4186*

Salsola vermiculata L. – *5072*

Suaeda aegyptiaca (Hasselq.) Zohary – *2275, 4200, 4283, 4761, 4932*

Suaeda palaestina Eig & Zohary – *4194*

Traganum nudatum Delile – *2419, 8928*

Cistaceae

Helianthemum lipii (L.) Dum.-Courset – *2317, 2445, 4188, 4215, 4255, 8930*

Compositae

Aaronsohnia faktorovskyi Warburg & Eig – *5010*

Ambrosia maritima L. – *4756*

Anthemis melampodina Delile; syn.: *A. deserti* Boiss. – *4960, 4763*

Anthemis cf. **nabataea** Eig – *2384*

Anthemis sp. (young plants) – *2465, 4233*

Anvillea garcinii (Burm. fil.) DC. – *2264*

Asteriscus graveolens (Forssk.) Less. – *4274, 4210, 4254, 4256*

Asteriscus pygmaeus (DC.) Coss. & Dur. – *4234*

Calendula arvensis L. – *2295, 4223, 4766, 5045*

Carlina hispanica Lam. – *4275*

Carthamus glaucus M. Bieb. – *4753*

Centaurea aegyptiaca L. – *4214, 4246*

Centaurea hyalolepis Boiss.; syn.: *C. calcitrapella* Burm. & Dinsm. – *4192*

Centaurea cf. **postii** Boiss. – *2380*

Centaurea sp. – *2306*

Cichorium pumilum Jacq. – *4196, 4734*

Conyza bonariensis (L.) Cronquist – *4748*

Crepis radicata Forssk. – *4983*

Crepis cf. **aculeata** (DC.) Boiss. – *5008*

Filago desertorum Pomel – *2432, 5034*

Gymnarrhena micrantha Desf. – *8947*

Ifloga spicata (Forssk.) Schultz. Bip. – *2288, 2382, 2453, 4228, 4950*

Koelpinia linearis Pall. – *4972*

Launaea angustifolia (Desf.) O. Kuntze – *8967*

Launaea mucronata (Forssk.) Maschler – *2416, 8977*

Launaea nudicaulis (L.) Hook. fil. – *2304, 2330, 2412, 4205, 4764, 4993, 5047, 8969*

Leyssera capilifolia (Willd.) Spreng.; syn.: *Asteropterus leyseroides* (Desf.) Rothm. – *2298, 4222*

Matricaria aurea (Loefl.) Schultz. Bip. – *4973*

Phagnalone barbeyanum Aescherson & Schweinf. – *2339*

Pulicaria arabica (L.) Cass. – *4195*

Pulicaria crispa (Forssk.) Oliver – *8978*

Pulicaria incisa (Lam.) DC.; syn.: *P. undulata* (L.) Kostel. – *2323, 2436, 4768, 8961, 8965*

Reichardia tingitana (L.) Roth – *2299, 2386, 4208, 4980, 5013, 8974*

Senecio flavus (Decne.) Schultz. Bip. – *4994*

Senecio glaucus L. subsp. **coronopifolius** (Maire) Alexander – *4962*

Senecio vernalis Waldst. & Kit. – *2464*

Sonchus maritimus L. – *2357*

Sonchus oleraceus L. – *2367, 2421, 4741, 8964*

Tripleurospermum auriculatum (Boiss.) Rech. fil. – *4221*

Cruciferae

Anastatica hierochuntica L. – *2434, 8933*

Cakile maritima Scop. – *2379, 8941*

Carrichtera annua (L.) DC. – *2351, 2392, 2450*

Diplotaxis erucoides (L.) DC. – *4749*

Diplotaxis harra (Forssk.) Boiss. – *2327, 4202, 4948, 5011, 8963*

Eremobium aegyptiacum (Sprengel) Ascherson & Schweinf. – *2326, 2350, 4250, 4272, 5066, 8927*

Erophila verna (L.) Bess. – *2452*

Erucaria pinnata (Viv.) Täckholm & Boulos; syn.: *Reboudia pinnata* (Viv.) O. E. Schulz – *4958*

Erucaria boveana Coss. – *5033, 4219*

Farsetia aegyptiaca Turra – *2284, 2336, 5015*

Hirschfeldia incana L. – *4743*

Lobularia arabica (Boiss.) Muschl. – *2447, 5035*

Malcolmia chia (L.) DC. – *2444*

Maresia pygmaea (Delile) O. E. Schulz – *2448*

Matthiola parviflora (Schousb.) R. Br. – *2294, 2463, 4954, 8943*

Nasturtium officinale R. Br. – *4954*

Notoceras bicorne (Sol.) Caruel – *2296, 2441, 4230*

Pseuderucaria clavata (Boiss. & Reuter) O. E. Schulz – *8938*

Savignya parviflora (Delile) Webb – *2328, 2373, 2394, 2414, 4969, 5009, 5046*

Schimpera arabica Hochst. & Steud. – *5037*

Sisymbrium irio L. – *5016, 2262*

Zilla spinosa (L.) Prantl – *4220, 4975, 5055, 8981*

Cucurbitaceae

Citrullus colocynthis (L.) Schrader – *2390, 4183, 4270*

Cucumis prophetarum L. – *2281, 4238, 4765, 5020*

Cyperaceae

Cyperus fuscus L. – *2358*

Cyperus longus L. – *2361*

Cyperus rotundus L. – *2266, 4749*

Fimbristylis ferruginea (L.) Vahl – *4735*

Scirpus holoschoenus L. – *4733*

Dipsacaceae

Pterocepalus brevis Coult. – *4229*

Ephedraceae

4265

Ephedra alte C. A. Meyer – *2407, 4265*

Equisetaceae

Equisetum ramosissimum Desf. – *2371*

Euphorbiaceae

Chrozophora oblongifolia (Delile) A. Juss. & Sprengel – *4236*

Mercurialis annua L. – *2254*

Ricinus communis L. – *4938*

Frankeniaceae

Frankenia pulverulenta L. – *5565*

Fumariaceae

Fumaria densiflora DC. – *2255, 2290*

Geraniaceae

Erodium cicutarium (L.) L'Hér. – *4981*

Erodium deserti (Eig) Eig – *2356C, 2413, 4956*

Erodium glaucophyllum (L.) L'Hér. – *2374, 2437, 8945*

Erodium hirtum Willd. – *5007A*

Erodium laciniatum (Cav.) Willd. – *2474, 5007B*

Monsonia nivea (Decne.) Decne. ex Webb – *2303*

Graminae

Aeluropus littoralis (Gouan) Parl. – *4197, 4290*

Bromus fasciculatus Presl – *4992*

Cutandia dichotoma (Forssk.) Trabut – *5018*

Cynodon dactylon (L.) Pers. – *4969*

Diplachne fusca (L.) P. Beauv. – *2429*

Hordeum glaucum Steudel – *5058*

Imperata cylindrica (L.) P. Beauv. – *2362, 4289*

Lolium rigidum Grandin – *4736*

Panicum turgidum Forssk. – *2322, 2341, 2397, 4179, 5042, 8916*

Pennisetum divisum (Gmel.) Henr. – *4968*

Pennisetum elatum Hochst. ex Steudel – *5049, 8944*

Pennisetum orientale L. C. Richard – *4206*

Pennisetum setaceum (Forssk.) Chiov. – *2274*

Phragmites australis (Cav.) Trin. ex Steudel – *2276, 8968*

Polypogon fugax Nees ex Steudel – *4198*

Polypogon monspeliensis (L.) Desf. – *4744*

Polypogon semiverticillatus (Forssk.) Hyl. – *4740*

Saccharum spontaneum L. var. **aegyptiaccum** (Willd.) Hack. – *8958*

Schismus barbatus (L.) Thell. – *2311, 2468, 4951, 5003*

Stipa capensis Thunb. – *2395, 4231, 4989*

Stipa hohenackeriana Trin. & Rupr. – *4287*

Stipagrostis ciliata (Desf.) De Winter – *2292*

Stipagrostis obtusa (Delile) Nees – *2331, 4217, 5048*

Stipagrostis plumosa (L.) Munro ex T. Anderson – *4182, 8925*

Juncaceae

Juncus acutus L. – *2359, 4199, 4278, 5080*

Juncus rigidus C. A. Meyer – *2401, 8983*

Labiatae

Lavandula pubescens Decne. – *2320*

Mentha longifolia L. – *2368, 2420, 4742*

Salvia aegyptiaca L. – *2337, 4209*

Salvia lanigera Poiret – *2420, 8937*

Leguminosae

Acacia raddiana Savi – *5054, 4260, 4288*

Acacia tortilis (Forssk.) Hayne – *2278, 2411, 2477, 4934, 5026, 5082, 8984*

Alhagi maurorum Medikus – *2272*

Astragalus bombycinus Boiss. – *5073*

Astragalus hauarensis Boiss. – *4949, 5061*

Astragalus hispidulus DC. – *4955, 4995*

Astragalus spinosum (Forssk.) Muschl. – *2346*

Astragalus tribuloides Delile – *2389, 2433*

Astragalus sp. – *2377*

Lathyrus cf. **hierosolymitanus** Boiss. – *4737*

Lotononis platycarpa (Viv.) Pichi-Sermolli – *2300*

Lotus halophilus Boiss. & Sprun. – *5077*

Medicago laciniata (L.) Miller – *2376, 2469*

Medicago laciniata (L.) Miller var. **brachyacantha** Boiss. – *2291, 4946B, 5005*

Medicago laciniata (L.) Miller var. **laciniata** – *4946A*

Medicago truncatula Gaertner – *4944*

Melilotus messanensis (L.) All.; syn.: *Melilotus siculus* (Turra) B. D. Jacks. – *4738*

Ononis natrix L. – *2473, 4226*

Ononis sicula Guss. – *2381*

Retama raetam (Forssk.) Webb; syn.: *Lygos raetam* (Forssk.) Heywood – *2460, 4262, 5038, 5052, 8956*

Trifolium cf. **argutum** Banks & Sol. – *2271*

Trifolium cf. **spumosum** L. – *2269*

Trigonella stellata Forssk. – *2388, 2458, 4943*

Trigonella sp. – *2369, 2372*

Vicia cf. **esdräelonensis** Warb. & Eig – *2256*

Vicia perigrina L. – *4739, 4971*

Liliaceae

Allium sinaiticum Boiss. – *4996B*

Allium cf. **desertorum** Forssk. – *8946*

Allium sp. – *5074*

Androcymbium palaestinum (Boiss.) Bak. – *2310, 2418, 5039, 8921, 8932, 8993*

Asphodelus fistulosus L. – *2399, 2426, 2456, 4978, 5017*

Asphodelus viscidulus Boiss. – *4961*

Bellivalia desertora Eig & Feinbr. – *8991*

Dipcadi erythraeum Webb & Berth. – *2289, 2329, 2396, 5067, 8922, 8931*

Urginea maritima (L.) Baker – *2472*

Loranthaceae

Loranthus acaciae Zucc. – *5032, 8986*

Malvaceae

Abutilon hirtum (Lam.) Sweet – Seen and photographed.

Alcea striata (DC.) Alef. – *8955*

Malva parviflora L. – *2261, 2461, 4945, 4998B, 5059*

Menispermaceae

Coculus pendulus (J. R. & G. Forst.) Diels. – *2406, 4242, 5041*

Moraceae

Ficus salicifolia Vahl – *4933*. Seen in a farm house in Ghor As-Safi; tree of about 10 m high. It is mostly cultivated.

Moringaceae

Moringa peregrina (Forssk.) Fiori – 8987

Neuradaceae

Neurada procumbens L. – *2309, 4251, 5075, 8934*

Nyctaginaceae

Commicarpus africanus (Lour.) Dandy – *8970*

Orobanchaceae

Cistanche salsa (C. A. Meyer) G. Beck – Species was seen and photographed.

Cistanche tubulosa (Schenk) Wight – Species was seen and photographed.

Orobanche cernua Loefl. – *2259*

Papaveraceae

Papaver polytrichum Boiss. & Kotschy – *4762, 4976*

Plantaginaceae

Plantago albicans L. – *8926*

Plantago ciliata Desf. – *2301, 2440, 4232, 4769*

Plantago coronopus L. – *2385, 2471*

Plantago cylindrica Forssk. – *2349, 2379, 2387, 4249, 4947, 5063*

Plantago natata Lag. – *2442*

Plantago ovata Forssk. – *2293*

Plantago pumila L. – *4963*

Plumbaginaceae

Limonium thouinii (Viv.) O. Kuntze – *4984*

Polygonaceae

Calligonum cumosum L'Hér. – *2340, 4252, 4935, 5053, 5070*

Emex spinosa (L.) Campd. – *2257, 5004, 8950*

Rumex cyprius Murb. – *2457, 4998A, 4970, 8948, 8966*

Rumex pictus Forsk. – *2455*

Primulaceae

Anagalis arvensis L. – *2263*

Ranunculaceae

Adonis dentata Delile – *4977*

Resedaceae

Caylusea hexagyna (Forssk.) Green – *2459, 2438, 4239, 4757, 8960*

Ochradenus baccatus Delile – *2334, 2363, 4264, 4936, 5051, 8940, 8962*

Oligomeris subulata (Delile) Boiss. – *2348, 2439, 4225, 4987*

Reseda arabica Boiss. – *8949*

Reseda boissieri Müller – *4952*

Reseda stenostachya Boiss. – *4237*

Rhamnaceae

Ziziphus spina-christi (L.) Desf. – *2270, 5025, 8988*

Rubiaceae

Crucianella herbacea Forssk. – *2443*

Ruppiaceae

Ruppia maritima L. – *5084*

Rutaceae

Haplophyllum tuberculatum (Forssk.) Ad. Juss. – *4180, 4204, 4261, 8939*

Salvadoraceae

Salvadora persica L. – *2273, 2279, 4940*

Scrophulariaceae

Antirrhinum orontium L. – *2267*

Bacopa monniere (L.) Pennell – *4773*

Kickxia floribunda (Boiss.) V. Täckholm & Boulos – *4201, 4241, 8959*

Kickxia spartioides (Bross. ex Busch) Janchen – *5022*

Linaria haelava (Forssk.) Delile – *2287, 2378, 4747, 4939, 4986, 5068*

Scrophularia deserti Delile – *5001*

Verbascum cf. **sinuatum** L. Boiss. – *2319*

Verbascum sp. – *4750*

Solanaceae

Hyoscyamus aureus L. – *8990*

Hyoscyamus pusillus L. – *2430, 4990*

Lycium depressum Stocks – *4190, 4235, 4276*

Lycium europaeum L. – *5043*

Lycium shawii Roem. & Schult. – *2277, 2347, 2405, 2475, 4266, 8985*

Solanum incanum L. – *4772, 4974*

Solanum luteum Miller – *2431*

Solanum sinaicum Boiss. – *8989*

Tamaricaceae

Reaumuria hirtella Jaub. & Sp. – *2342, 5065, 5044*

Tamarix jordanis Boiss. – *5024*

Tamarix nilotica (Ehrenb.) Bunge – *2352*

Tamarix tetragyna Ehrenb. – *5079*

Tamarix sp. – *4941, 4282*

Tiliaceae

Corchorus trilocularis L. – *2265*

Umbelliferae

Ammi majus L. – *2268, 4752*

Anisosciadium isosciadium Burm. – *8953*

Pimpinella cretica Poir. – *4191*

Urticaceae

Forsskaolea tenacissima L. – *2314, 2366, 4187*

Parietaria alsinifolia Delile – *4755, 4988*

Verbenaceae

Lippia nodiflora (L.) Michx.; syn.: *Phyla nodiflora* (L.) Greene – *4746*

Zygophyllaceae

Fagonia arabica L. – *2282, 8982*

Fagonia bischarorum Schweinf. – *4967*

Fagonia bruguieri DC. – *2283*

Fagonia glutinosa Delile – *2285, 2335, 2393, 2422, 2462, 4247, 8929*

Fagonia latifolia Delile – *5076*

Fagonia mollis Delile – *2318, 2409, 4211, 4216*

Nitraria retusa (Forssk.) Ascherson – *2280, 2403, 4279, 5028, 5083*

Peganum harmala L. – *5014*

Tribulus bimucronatus Viv. – *2365*

Tribulus longipetalus Viv. – *2313*

Zygophyllum dumosum Boiss. – *2333, 2410, 5012, 5056, 8972*

Zygophyllum simplex L. – *4280, 4964, 5002*

ACKNOWLEDGEMENTS

I would like to thank the University of Jordan for their financial support. I am indebted to the Curator and the Staff of the Herbarium, Royal Botanic Gardens, Kew, for the facilities during the identification of the specimens. I would like to thank my wife Sawsan (the Herbarium supervisor) for her great help in the preparation of this manuscript, also thanks are due to Mr. R. Jarrar, Miss S. Abdeen, and Mr. G. Odeh, for their help.

REFERENCES

BOULOS, L. (1977). Studies on the flora of Jordan, 5. On the flora of El Jafr-Bayir Desert. *Candollea* 32(1): 99-110.

– & D. M. AL-EISAWI (1977). Studies on the flora of Jordan. 6. On the flora of Ras en Naqb. *Candollea* 32(1): 111-120.

– & J. LAHHAM (1977). Studies on the flora of Jordan. 3. On the flora of the vicinity of the Aqaba gulf. *Candollea* 32(1): 73-80.

– & J. LAHHAM (1977). Studies on the flora of Jordan. 4. On the desert flora north-east of Aqaba. *Candollea* 32(1): 81-98.

FEINBRUN-DOTHAN, N. (1978). *Flora Palaestina.* 3. Jerusalem.

POST, G. E. & J. E. DINSMORE (1932-1933). *Flora of Syria, Palestine and Sinai,* 1 & 2. Beirut.

TÄCKHOLM, V. (1974). *Students flora of Egypt,* ed. 2. Beirut.

ZOHARY, M. (1962). *Plant life of Palestine,* ed. 2. Beirut.

– (1966, 1972). *Flora Palestina,* 1 & 2. Jerusalem.

Address of the author: University of Jordan, Faculty of Science, Amman, Jordan.