

## A Contribution to the Flora of the Asir Mountains, Saudi Arabia

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ABSTRACT. The Asir Mountains, in the SW of Saudi Arabia, have a rich and varied flora still inadequately known. The author was able, in May 1980, to collect in an area to the south of Abha, 266 species of vascular plants in 59 families are listed from his collections; some are reported as new for Saudi Arabia or the Arabian peninsula; 98 of these species are not recorded in Migahid, Flora of Saudi Arabia, 2nd ed., 1978.

The flora of Asir Mountains, Southwest Saudi Arabia, is rich and varied, has close affinities with that of Northern Yemen and East Africa. The recent discoveries of new plants such as *Sonchus saudensis* (Boulos 1983) and *Senecio asirensis* (Boulos & Wood 1983) known from Asir Mountains and Northern Yemen, with closely related species in East Africa, confirms this relationship.

The present paper is a further contribution to this inadequately known flora. It provides the results of a botanical excursion by the author to the Asir Mountains, Southwestern Saudi Arabia, from 15 to 24 May 1980. The area of study was between Al-Taif and Al-Jarrah National Park, some 40 km south of Abha.

The localities from which collections were made are listed below, with the corresponding dates and numbers of collected specimens.

13801-13843: Wadi Liyyah, 12-18 km south of Al-Taif, 15 May 1980.

13844-13890: Al-Shafa, 24 km west of Al-Taif, 16 May 1980.

13891-13948: Wadi Bida, 15 km south of Al-Baha, 17 May 1980.

13949-13982: Cliffs near the highway of Al-Taif to Abha, facing Wadi Al-Haddara, 137 km south of Al-Taif, 18 May 1980.

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- 13983-14018: Ballahmar, 80 km north of Abha, along the highway of Abha to Al-Taif, weeds in wheat fields and in waste ground, 18 May 1980.
- 14019-14079: Al-Makhad, 18 km southwest of Abha, near Al-Aziza, in and around a spring and its adjacent pond, weeds in fields near granite cliffs in the vicinity of the pond, 20 May 1980.
- 14080-14114: Al-Mansah, 8 km southwest of Abha, on granite slopes, weeds in fields and roadside plants, 20 May 1980.
- 14115-14181: Al-Mahmoud, 35 km north of Abha, 10 km below Jabal Al-Sooda, wheat fields and canals fed by a spring, 21 May 1980.
- 14182: Abha, in waste ground, 23 May 1980.
- 14183-14230: 22 km southwest of Abha, 8 km northeast of A-Qar'aa National Park, huge eroded granite blocks, with *Acacia negrii* trees, 23 May 1980.
- 14231-14279: 40-42 km south of Abha, near Al-Jarrah National Park and Tamniah village, 24 May 1980.

Two complete sets of specimens collected are deposited in the Herbarium of the National Research Centre, Dokki, Cairo (CAIRC), and in the Herbarium of the Faculty of Science, King Abdulaziz University, Jeddah. Duplicate collections are kept in the Herbarium of Cairo University (CAI); the Herbarium of the Agricultural Research Centre, Ministry of Agriculture, Dokki, Cairo (CAIM); the Herbarium, Royal Botanic Garden, Edinburgh (E); Conservatoire et Jardin botaniques, Genève (G); the Herbarium, Royal Botanic Gardens, Kew (K).

The entire collection was identified at the Herbarium, Royal Botanic Gardens, Kew, England, during summer 1982, with the exception of a few specimens sent to the Royal Botanic Garden, Edinburgh, Scotland, in 1983. The identifications are mainly made by the author unless otherwise mentioned. However, I stand responsible for any misidentification as well as for any opinion expressed throughout the paper.

The collections amounted to 480 numbers, comprising 266 species, related to 59 families of vascular plants. Among these, four are new to science, of which two Compositae were recently described: *Sonchus saudensis* Boulos, 1983 and *Senecio asirensis* Boulos & Wood, 1983. The two others, a *Micromeria* sp. (Labiatae) and a *Periploca* sp. (Asclepiadaceae) are yet to be described. Three species are new to the Arabian Peninsula: *Piptatherum miliaceum* (L.) Cosson, Gramineae (Dr. T.A. Cope, private communication); *Trigonella monspeliaca* L., Leguminosae (cf. Townsend 1974), and *Sisymbrium runcinatum* Lag., Cruciferae (cf. Hedge and King 1983). Five species are new to Saudi Arabia, of which three are grasses: *Ehrharta erecta* Lam., *Eleusine multiflora* Hochst. ex A. Rich., *Festuca arundinacea* Schreber (Dr. T.A. Cope, private communication); *Cineraria abyssinica* Sch. Bip. ex A. Rich., Compositae, and *Commelina diffusa* Burm. fil., Commelinaceae (Mr. J.R.I. Wood, private communication).

As a result of the present work, the following examples are pointed out to illustrate the new additions to some genera and families with reference to Migahid's flora of Saudi Arabia, second edition, 1978. Among the eight species of *Solanum*,

six are new to Migahid's Flora, i.e. Both *Salsola* species, both *Lactuca* species, both *Juncus* species, both *Polygonum* species, both *Galium* species and both *Verbascum* species are new to Migahid's flora. Among the six recorded Umbelliferae, four species and one genus are new. Among six Euphorbiaceae, four are new: two genera and two species. Two genera are new to Crassulaceae: *Crassula* and *Sedum*. Among 41 species of Compositae, 20 are new to Migahid's Flora, including two recently described new species and two genera new to Saudi Arabia. Two ferns belonging to different families are also new. Summing up: out of the 266 taxa of vascular plants recorded in the present paper from the Asir Mountains, 98 are new to Migahid's Flora of Saudi Arabia, ed. 2. Species not recorded in this flora are marked by a single asterisk (\*), genera not recorded, 13 in all, with a double asterisk (\*\*).

**List of Species**  
**Alphabetically Arranged by Family**

ACANTHACEAE

*Blepharis ciliaris* (L.) B.L. Burt  
13807.

*Hypoestes forskalei* (Vahl) Sol. ex Roem. & Schult. Syn. *H. verticillaris* (L.fil.)  
Sol. ex Roem. & Schult.  
13847, 14075, 14194, 14278.

The nomenclature of this species was kindly checked by R.K. Brummitt, Kew, 1982.

AIZOACEAE

*Aizoon canariense* L.  
13831.

ALLIACEAE

*Allium stamineum* Boiss.  
13978.

AMARANTHACEAE

**det. Azza El-Hadidy, 1982.**

*Aerva javanica* (Burm.fil.) Juss. ex Schultes  
13818 (male), 13820 (female), 14227.

\**Amaranthus hybridus* L. subsp. *hybridus*  
14023, 14170.

## ASCLEPIADACEAE

det. D.V. Field, 1982.

\**Caralluma quadrangula* (Forssk.) N.E.Br.  
14228.

This species is most probably what Migahid (1978) considers *Caralluma sinaica* (Decne.) A. Berger; according to Feinbrun-Dothan (1978), *C. sinaica* is restricted to Palestine and Sinai. Therefore, *C. quadrangula* may replace *C. sinaica* in Saudi Arabia.

*Gomphocarpus sinaicus* Boiss.  
13943, 14269.

\*\**Huernia saudi-arabica* D.V. Field (fig. 1)  
14226.

*Pergularia tomentosa* L.  
13817.

\**Periploca visciformis* (Vatke) Schumann  
14215.

*Periploca* sp. nov. ined.  
14277.



Fig. 1. A close-up of *Huernia saudi-arabica* after being detached from the soil, note the open flower and flower buds.



*Sarcostemma viminale* (L.) R.Br.  
14229, flowers white.

## BORAGINACEAE

*Alkanna orientalis* (L.) Boiss.

13995, 14035, 14083, 14275.

*Arnebia hispidissima* (Lehm.) DC.

14189.

\*\**Cynoglossum bottae* Deflers

14119.

*Echium horridum* Batt. det. Azza El-Hadidy, 1983.

14205.

*Echium rauwolfii* Del. det. Azza El-Hadidy, 1983.

14152.

*Gastrocotyle hispida* (Forssk.) Bunge

Syn. *Anchusa hispida* Forssk.

13901.

*Heliotropium strigosum* Willd. var. *bicolor* Hochst. & Steud. det. Azza El-

Hadidy, 1983.

13843.

## CAMPANULACEAE

*Campanula edulis* Forssk.

13874, 13952, 14021, 14171, 14262.

## CAPRIFOLIACEAE

*Lonicera etrusca* Santi

14034.

## CARYOPHYLLACEAE

*Arenaria serpyllifolia* L.

14129, 14242.

*Dianthus strictus* Banks & Sol.

13864, 13967, 13996, 14232.

*Gypsophila arabica* Barkoudah

13815, 13928.

*Herniaria hirsuta* L. var. *cinerea* Herm:

13912.

*Loeflingia hispanica* L.

14279.

*Minuartia filifolia* (Forssk.) Mattf.

13863, 13974.

- Paronychia arabica* (L.) DC.  
13918.
- Paronychia sinaica* Fresen.  
13982, 14237.
- Polycarpha repens* (Forssk.) Aschers. & Schweinf.  
13804, 14190, 14239.
- Polycarpon tetraphyllum* (L.) L.  
13909, 14123, 14233.
- Silene burchellii* Otth. det. I.C. Hedge *et al.*, 1983.  
13852.
- Silene colorata* Poir.  
13971, 14111, 14163, 14235.
- Silene conoidea* L.  
13992.
- \**Silene macrosolen* Steud. ex A. Rich. det. I.C. Hedge *et al.*, 1983.  
13854, 13994a.
- \**Silene schimperiana* Boiss.  
13969.
- Silene vulgaris* (Moench) Garke  
13994b, 14084.
- \**Spergularia bocconii* (Scheele) Aschers. & Graebn. det. I.C. Hedge *et al.*,  
1983.  
13913.
- Stellaria media* (L.) Vill.  
14121.

## CHENOPODIACEAE

- Bassia muricata* (L.) Murr.  
13834.
- Chenopodium album* L.  
13929, 14159, 14272.
- Chenopodium murale* L.  
14161.
- Chenopodium schraderianum* Schult.  
13858, 14031, 14155.
- \**Salsola bottae* (Jaub. & Sp.) Boiss.  
Syn. *Halothamnus bottae* Jaub. & Sp.  
13808.
- \**Salsola spinescens* Moq.  
Syn. *S. forskalii* Schweinf.  
13812. Local vernacular name: 'Araḍ عَرَاض

## COMMELINACEAE

- \**Commelina diffusa* Burm. fil. det. J.R.I. Wood, 1982.  
14077.

## COMPOSITAE

- \**Achillea biebersteinii* Afan.  
13897, 13987.
- \**Anthemis tigrensensis* J. Gay ex A. Rich.  
13998, 14099, 14180.
- Artemisia abyssinica* Sch. Bip. ex Oliv. & Hiern  
14178.
- \**Calendula arvensis* L.  
Syn. *C. micrantha* Tineo & Guss., *C. persica* C.A. Mey., *C. aegyptiaca* auct.  
13891, 14003, 14019.
- According to Heyn *et al.* (1974), *Calendula arvensis* L., Sp. Pl., ed. 2: 1303 (1762-1763) is the correct name for some annual species erroneously listed in the literature under several names, among which are the following three epithets in Migahid (1978), and which he considers three separate species: *Calendula micrantha* Tineo & Guss., *C. persica* C.E. Mey., *C. aegyptiaca* Desf. These three names may be listed under *C. arvensis* as synonyms.
- \**Centaurea pseudosinaica* Czerep.  
13819, 13986, 14087, 14153.
- What Migahid (1978) refers to as *Centaurea sinaica* DC, is a misidentification and may be replaced by *C. pseudosinaica* Czerep., including the illustrations pages 579 & 580.
- Centaurea schimperi* DC.  
13940.
- \**Centaurothamnus maxima* (Forssk.) Wagenitz & Dittrich  
Syn. *Centaurea maxima* Forssk., *C. verbascifolia* Vahl  
13958.
- \**Cichorium bottae* Defl.  
13845, 13954, 13983.
- \*\**Cineraria abyssinica* Sch. Bip. ex A. Rich.  
14148.
- \**Cirsium vulgare* (Savi) Ten.  
14064.

*Conyza bonariensis* (L.) Cronq.

Syn. *C. linifolia* (Willd.) Täckh. (name used by Migahid 1978),  
*Erigeron bonariense* L., *E. linifolium* Willd., *E. crispum* Pourr.  
14092.

\**Conyza hochstetteri* Sch. Bip. ex A. Rich.  
14089, 14253.

*Conyza incana* Willd.  
13936, 14107.

*Conyza stricta* Willd.  
13942, 14219, 14251.

\**Crepsis foetida* L.  
13908.

*Crepsis rueppellii* Sch. Bip.  
14072.

\*\**Dichrocephala chrysanthemifolia* DC.  
13873, 13981, 14070.

*Echinops* sp. 1  
13824.

*Echinops* sp. 2  
14090.

Further research is needed for the identification of both *Echinops* species.

*Euryops arabicus* Steud.  
13881, 13953, 14093, 14266.

*Felicia abyssinica* Sch. Bip. ex A. Rich.  
13865, 14108, 14134.

*Felicia dentata* (A. Rich.) Dandy det. I.C. Hedge *et al.*, 1983,  
13979.

*Filago desertorum* Pomel  
13923, 13966, 14250.

*Gnaphalium luteo-album* L.  
13902, 14141.

*Ifloga spicata* (Forssk.) Sch. Bip.  
14258.

\**Lactuca inermis* Forssk.  
Syn. *L. capensis* auctt.  
13905.



- \**Lactuca serriola* L.  
14174.
- Launaea mucronata* (Forssk.) Muschl.  
13927.
- \**Osteospermum muricatum* E. Mey.  
14151.
- Osteospermum vaillantii* (Decne.) T. Norl.  
13895, 13950, 14095; 14168.
- \**Phagnalon scalarum* Schweinf. ex Schwartz  
13887, 13973.
- \**Picris longirostris* Sch. Bip.  
13856, 13911, 13955, 14106.
- Psiadia punctulata* (DC.) Vatke  
Syn. *P. arabica* Jaub. & Sp. (name used by Migahid 1978).  
13932, 14060.
- Pulicaria arabica* (L.) Cass.  
14068.
- Pulicaria crispa* (Forssk.) Benth. ex Oliver  
Syn. *Aster crispus* Forssk., *Francoeria crispa* (Forssk.) Cass. (name used by  
Migahid 1978).  
13825, 14212, 14260.
- Reichardia tingitana* (L.) Roth  
14114, 14176.
- \**Scorzonera musilii* Velen. det. J.R.I. Wood, 1982.  
14187.
- \**Senecio asirensis* L. Boulos & J.R.I. Wood  
14066.
- A newly described species restricted to Asir region in Saudi Arabia. It also  
occurs in the neighbouring district of Khawlan Ash Sham in the Yemen Arab  
Republic (cf. Boulos & Wood 1983).
- Sonchus oleraceus* L.  
13899, 14146.
- \**Sonchus saudensis* Boulos  
13860, 13976.

A newly described species from Asir Mountains, Saudi Arabia, also known from the mountains of Yemen Arab Republic (*cf.* Boulos 1983).

*Verbesina encelioides* (Cav.) Benth & Hook. fil.  
14222.

CONVOLVULACEAE

*Convolvulus arvensis* L.  
14125.

\**Convolvulus asyrensis* Kotschy det. F. Sa'ad, 1983.  
14192.

*Cuscuta pedicellata* Ledeb.  
Syn. *C. arabica* Fresen.  
13810. Parasite on *Indigofera spinosa* Forssk.

CRASSULACEAE

**det. G.E. Wickens, 1982.**

\*\**Crascula schimperi* Fisch. & Mey.  
13965, 14074, 14249.

*Kalanchoe alternans* (Vahl) Pers.  
14038.

\*\**Sedum hispanicum* L.  
13962.

*Umbilicus repestis* (Salisb.) Dandy  
13964.

CRUCIFERAE

\**Alyssum desertorum* Stapf det. I.C. Hedge *et al.*, 1983.  
14008.

\*\**Arabis caucasica* Willd.  
13689, 13977 (flowers white).

*Capsella bursa-pastoris* (L.) Medicus  
14011, 14032.

*Eremobium aegyptiacum* (Spreng.) Hochr. var. *lineare* (Del.) Hochr.  
Syn. *E. lineare* (Del.) Aschers. & Schweinf. (name used by Migahid 1978).  
13840.

\**Erucastrum arabicum* Fisch. & Mey.  
14018, 14098.

*Farsetia longisiliqua* Decne.  
13827.

*Morettia canescens* Boiss.  
13838.

\**Neslia apiculata* Fisch., C.A. Mey. & Avé-Lall.  
14015.

*Notoceras bicornis* (Ait.) Amo  
13931, 14208.

*Sisymbrium irio* L.  
13922, 13990, 14048.

*Sisymbrium orientale* L.  
14058.

\**Sisymbrium runcinatum* Lag.  
14056.

Species new to the Arabian Peninsula (cf. Hedge & King, 1983).

## CUCURBITACEAE

*Citrullus colocynthis* (L.) Schrad.  
13809.

*Cucumis prophetarum* L.  
13830, 14197.

\*\**Zehneria scabra* (L. fil.) Sond. det. C. Jeffrey, 1982.  
14104, 14172.

## CYPERACEAE

**det. S.S. Hooper, 1982.**

*Cyperus esculentus* L.  
14162.

\**Cyperus rigidifolius* Steud.  
14044.

*Scirpoides holoschoenus* (L.) Sojak  
Syn. *Scirpus holoschoenus* L. (name used by Migahid 1978)  
13947, 14274.

## DIPSACACEAE

- \**Pterocephalus pulverulentus* Boiss. & Bal.  
13951, flowers mauve.

## EUPHORBIACEAE

- Andrachne aspera* Spreng.  
13841, 13871, 13949, 14211.

- \*\**Clutia myricoides* Jaub. & Sp. det. A.R. Smith, 1982.  
13882, 14094, 14230.

- Euphorbia helioscopia* L.  
14115.

- \**Euphorbia inaequilatera* Sond.  
13829, 14133, 14236.

A widespread prostrate annual herb.

- \**Euphorbia schimperana* Scheele det. A.R. Smith, 1982.  
13985, 14028, 14101, 14195, 14265.

Perennial shrublet, with a woody base and reddish branches, widespread, especially in the region of Abha.

- \*\**Tragia* sp. aff. *arabica* Baill. det. A.R. Smith, 1982. (inter *arabica* et *moamarensis* Baill.)  
14196.

## FUMARIACEAE

- Fumaria parviflora* Lam.  
14001, flowers white with dark spot at the top; 14142, a shade form with broad leaf segments; 14144.

## GERANIACEAE

- Erodium cicutarium* (L.) L'Hérit.  
13930, 14109.

- Erodium pulverulentum* (Cav.) Willd.  
13920, 13999.

- \**Geranium arabicum* Forssk.  
14037 (flowers white), 14137 (flowers violet).

## GRAMINEAE

det. T.A. Cope, 1982.

*Agrostis viridis* Gouan

Syn. *Polypogon semiverticillatus* (Forssk.) Hyl., *Agrostis semiverticillata* (Forssk.) C. Chr. (name used by Migahid, l.c.), *Polypogon viridis* (Gouan) Breistr.  
14053.

*Andropogon distachyos* L.

13885.

*Aristida adscensionis* L.

13833, 13835, 14224.

\**Aristida congesta* Roemer & Schultes

14105, 14207.

*Avena fatua* L.

13993, 14124.

\**Brachiaria reptans* (L.) C. Gardener & C.E. Hubb.

14245.

\**Bromus pectinatus* Thunb.

13991.

\**Bromus sericeus* Drobov

14118.

*Bromus tectorum* L.

13894.

*Cenchrus ciliaris* L.

13837, 14112, 14209, 14257.

*Chloris virgata* Swartz

13839.

*Cynodon dactylon* (L.) Pers.

14234.

\**Ehrharta erecta* Lam.

14147.

\**Eleusine multiflora* Hochst. ex A. Rich.

14164.

\**Eragrostis aspera* (Jacq.) Nees

13898.



*Eragrostis minor* Hochst.

14138.

*Eragrostis papposa* (Roemer & Schultes) Steudel

13811, 14238.

\**Festuca arundinacea* Schreber

14055.

*Gastridium phleoides* (Nees & Meyen) C.E. Hubb.

13910, 14241.

\**Hordeum murinum* L. subsp. *glaucum* (Steud.) Tzvelev

Syn. *H. glaucum* Steudel

13853, 14006.

Local vernacular name: R'ei Al-Jahid رعي الجهد grains eaten by birds.

The only *Hordeum* species listed by Migahid (1978) is *H. leporinum* Link, probably a misidentification for *H. murinum* subsp. *glaucum*.

*Hyparrhenia hirta* (L.) Stapf

13822, 13963, 14110, 14255, 14273.

*Lagurus ovatus* L.

14182.

*Lamarckia aurea* (L.) Moench

13903, 13961, 14122, 14188, 14252.

*Lolium multiflorum* Lam.

14014.

*Lolium rigidum* Gaudin

14073.

*Panicum turgidum* Forssk.

13836.

*Pennisetum setaceum* (Forssk.) Chiov.

14100, 14166, 14246.

\**Pennisetum villosum* R. Br.

14002, 14082.

*Phalaris minor* Retz.

14126.

\**Piptatherum miliaceum* (L.) Cosson

Syn. *Oryzopsis miliacea* (L.) Aschers. & Schweinf.

14103.

Species new to the Arabian Peninsula.

\**Schima nervosum* (Rottler) Stapf  
14149.

*Themeda triandra* Forssk.  
13851, 14198, 14268.

*Trachynia distachya* (L.) Link  
Syn. *Brachypodium distachyon* (L.) Beauv.  
13896, 14009, 14096.

*Tragus berteronianus* Schultes  
13805, 14200.

## GUTTIFERAE

\**Hypericum revolutum* Vahl  
14067.

## JUNCACEAE

\**Juncus fontanesii* J. Gay  
14022.

\**Juncus punctorius* L. fil. det. S.S. Hooper, 1982.  
14024.

## LABIATAE

\**Ajuga bracteosa* Wall.  
14045 (flowers blue).

*Lavandula dentata* L.  
13850, 13946.  
Local vernacular name: Dorom <sup>دوروم</sup>

*Lavandula pubescens* Decne.  
13941, 14183.

*Marrubium vulgare* L.  
13849, 14167.

*Mentha longifolia* (L.) L. subsp. *schimperi* (Briq.) Briq. det. R.M. Harley,  
1982.  
14047, 14154.

*Micromeria imbricata* (Forssk.) Christen.  
13867, 13914, 14113, 14254.

*Micromeria* sp. nov. ined.  
13859, 13980.

*Nepeta deflersiana* Schweinf. ex Hedge  
13846, 13944, 13959.

*Ostegia fruticosa* (Forssk.) Schweinf. ex Penzig  
13803, 13886, 14054, 14270.

? *Plectranthus marrubioides* Hochst. ex Benth.  
14043.

*Salvia aegyptiaca* L.  
13806, 14213.

\**Salvia schimperi* Benth.  
13989 (flowers white with bluish edges).

\*\**Scutellaria arabica* Jaub. & Sp.  
14027.

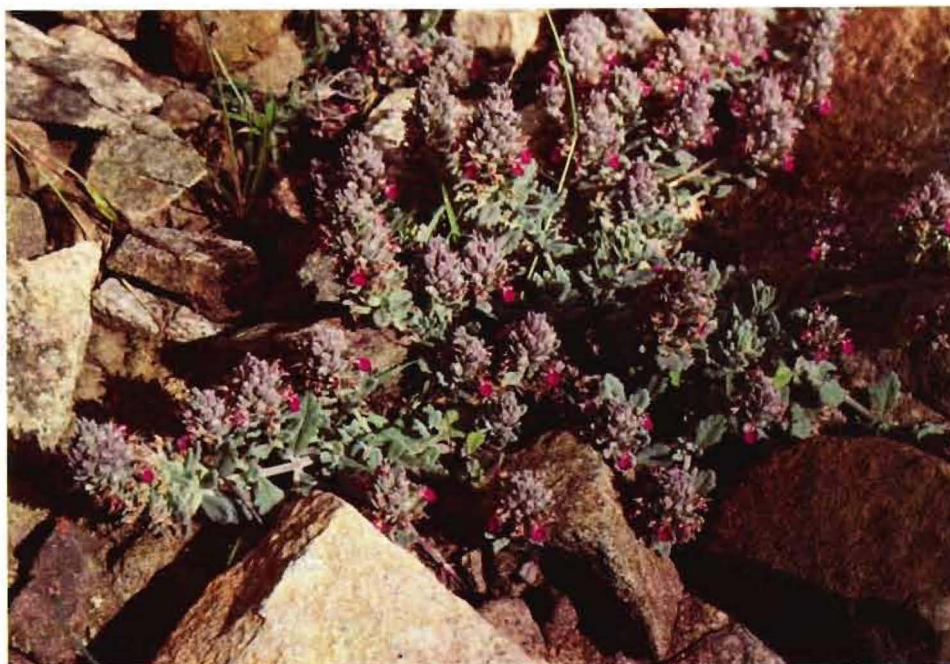


Fig. 2. *Teucrium yemense* in its natural habitat, growing inbetween rocks.

*Teucrium polium* L.

13844.

Local vernacular name: Ja'ad جَعْد

\**Teucrium yemense* Deflers (Fig. 2)

13904, 14206, 14244 (flowers violet).

LEGUMINOSAE

\**Acacia negrii* Pichi-Serm. (Fig. 3)

14040, 14193.

*Anagyris foetida* L.

14088.

\**Astragalus fatmensis* Hochst.

14191, 14248 (flowers bluish-violet).

\**Astragalus sieberi* DC.

13816.



Fig. 3a. An open scrub of *Acacia negrii* trees, note the large granite boulders in the area.



*Astragalus tribuloides* Del. det. I.C. Hedge *et al.*, 1983.  
14007.

*Indigofera arabica* Jaub. & Sp.  
14202.

*Indigofera spinosa* Forssk.  
13823.

\*\**Lathyrus cicera* L.  
14017.

*Lotononis platycarpa* (Viv.) Pichi-Serm.  
14158, 14210, 14256.

\**Lotus lalambensis* Schweinf.  
13935.

*Medicago laciniata* (L.) Mill. var. *brachyacantha* Boiss.  
Syn. *M. aschersoniana* Urb. (name used by Migahid 1978).  
13893, 13968, 14204, 14231.



**Fig. 3b.** Some branches of *Acacia negrii* bearing flowers and fruits.



*Medicago lupulina* L.

14036.

\**Medicago polymorpha* L. var. *brevispina* (Benth.) Heyn

14000, 14139.

*Medicago sativa* L.

14130.

Escape from cultivation.

*Ononis reclinata* L.

13926.

*Trifolium fragiferum* L.

14030 (flowers white to pale pink).

\**Trignella monspeliaca* L.

14116.

According to Townsend (1974), this species was not previously recorded from the Arabian Peninsula.

\*\**Vermifruax abyssinica* (A. Rich.) Gillett det. J.B. Gillett, 1982.

13900, 13972, 14243.

*Vicia sativa* L.

14013, 14145.

#### LILIACEAE

*Asparagus africanus* Lam.

14085.

*Asphodelus fistulosus* L.

Syn. *A. tenuifolius* Cav.

13878, 13945.

#### LYTHRACEAE

*Lythrum hyssopifolia* L.

14042.

#### MALVACEAE

\**Malva nicaeensis* All.

14052.

*Malva parviflora* L.

13997, 14140.

## MORACEAE

*Ficus palmata* Forssk.

Syn. *F. pseudosycomorus* Decne.

14062, 14177.

## NYCTAGINACEAE

**det. R.D. Meikle, 1982.**

*Boerhavia coccinea* Mill.

13814.

*Commicarpus plumbagineus* (Cav.) Stundl.

13821, 14218.

## OROBANCHACEAE

*Orobanche cernua* Loefl. det. F.N. Hepper, 1982.

13855, 13957, 14181, 14185.

*Orobanche* cf. *ramosa* L.

14097.

## OXALIDACEAE

*Oxalis corniculata* L.

13870, 13907, 14050, 14120, 14214.

## PAPAVERACEAE

*Argemone mexicana* L.

13802.

\**Papaver dubium* L.

14020, 14173.

## PLANTAGINACEAE

*Plantago afra* L.

14005, 14169.

*Plantago albicans* L. det. I.C. Hedge *et al.*, 1983.

13937, 13984, 14240.

*Plantago lanceolata* L.  
14039.

*Plantago ovata* Forssk.  
13842, 13889, 13890, 13970, 14203.

## POLYGALACEAE

*Polygala abyssinica* R. Br. ex Fresen.  
13892, 14263.

## POLYGONACEAE

\**Polygonum aviculare* L.  
14135.

\**Polygonum salicifolium* Brouss. ex Willd.  
14179.

\**Rumex chalepensis* Mill.  
13988.

*Rumex nervosus* Vahl  
13883, 13938, 14081, 14276.

*Rumex vesicarius* L.  
13948.

## PORTULACACEAE

*Portulaca oleracea* L.  
14051.

## PRIMULACEAE

*Anagallis arvensis* L.  
13915, 14026, 14128, 14131.

## RANUNCULACEAE

\**Ranunculus multifidus* Forssk.  
14046.  
Aquatic herb.

## RESEDACEAE

*Caylusea hexagyna* (Forssk.) M.L. Green  
13933, 14220.

## RHAMNACEAE

\**Rhamnus oleoides* L.  
13876, 14069.

*Ziziphus spina-christi* (L.) Willd.  
13832, a form with small leaves.

## ROSACEAE

*Rosa abyssinica* R. Br. (Fig. 4)  
14086, 14271.



Fig. 4. A flowering branch of *Rosa abyssinica*.

## RUBIACEAE

det. D. Bridson &amp; F. Ehrendorfer, 1982.

\**Galium jemense* Kotschy  
13857, 13975.

\**Galium tricornutum* Dandy  
14004.

## RUTACEAE

*Ruta chalepensis* L. var. *bracteosa* (DC.) Boiss.  
14049.

## SAPINDACEAE

*Dodonaea viscosa* Jacq.  
14065, 14080.

## SCROPHULARIACEAE

*Anarrhinum forskahlii* (J.F. Gmel.) Cuf.  
Syn. *A. orientale* Benth.  
13879, 13956, 14025, 14217.

*Misopates orontium* (L.) Rafin.  
Syn. *Antirrhinum orontium* L.  
13925, 14010, 14132.

\**Verbascum bottae* (Deflers) Huber-Morath det. I.C. Hedge, 1984.  
14165.

\**Verbascum yemense* Deflers  
13848, 14201, 14259.

*Veronica anagallis-aquatica* L.  
14057, 14157.

*Veronica polita* Fries  
14127.

## SOLANACEAE

*Datura stramonium* L.  
14156.



*Lycium shawii* Roem. & Schult.

14136 (flowers blue).

*Solanum albicaule* Kotschy ex Dunal

13826.

\**Solanum carense* Dunal

13888, 14184 (flowers white).

\**Solanum grossidentatum* A. Rich.

14150, leaves densely white villous.

\**Solanum hirtulum* Steud. ex A. Rich.

14223 (flowers blue), 14225 (flowers white).

*Solanum incanum* L.

13828, 14059, 14216.

\**Solanum platacanthum* Dunal

14041.

\**Solanum schimperianum* Hochst. ex A. Rich.

14267, (flowers bluish).

\**Solanum villosum* Miller subsp. *puniceum* (Kirschlenger) Edmonds

13934, 14102.

*Withania somnifera* (L.) Dunal

13875, 14063, 14175, 14221, 14261.

Multiform, probably more than one taxon, needs a further taxonomic investigation.

#### TYPHACEAE

*Typha domingensis* Pers.

14079.

#### UMBELLIFERAE

*Apium nodiflorum* (L.) Lag.

14033, aquatic plant, flowers white.

\**Ducrosia anethifolia* (DC.) Boiss.

13924.

\**Foeniculum vulgare* (L.) Mill.

14061.

\**Pimpinella menachensis* Schweinf. ex Wolff  
13880, 13960.

\*\**Scandix pecten-veneris* L.  
14016.

\**Torilis arvensis* (Huds.) Link  
13862, 13917, 14012, 14143.

## URTICACEAE

*Parietaria alsinifolia* Del.  
13921, 14117.

## VERBENACEAE

*Verbena officinalis* L.  
14160.

## ZYGOPHYLLACEAE

*Fagonia indica* Burm. fil.  
13801.

*Peganum harmala* L.  
13813.

## CUPRESSACEAE

*Juniperus excelsa* M. Bieb.  
Syn. *J. procera* Hochst. ex Endl.  
13884, 13939, 14091, 14244.

## EPHEDRACEAE

\**Ephedra foliata* Boiss. ex C.A. Mey.  
13877.

## EQUISETACEAE

*Equisetum ramosissimum* Desf.  
14029.

## FILICALES

## ASPLENIACEAE

- \**Asplenium aethiopicum* (Burm. fil.) Becherer  
13861, 14078, 14247.  
A widespread fern on high altitudes.

*Ceterach officinarum* DC.  
13866, 13916, 14199.

## CRYPTOGRAMMACEAE

*Onychium melanolepis* (Decne.) Kuntze  
13906.

## SINOPTERIDACEAE

\**Cheilanthes coriacea* Decne. det. I.C. Hedge *et al.*, 1983.  
14076a.

*Cheilanthes pteridioides* (Reich.) C. Chr.  
13872, 13919, 14076.

*Cheilanthes vellea* (Ait.) F. Mueller  
Syn. *C. catanensis* (Cos.) H.P. Fuchs  
13868.

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