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# Contribution to the flora of Asir, Saudi Arabia

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## ABSTRACT

HOSNI, H. A. & A. K. HEGAZY (1996). Contribution to the Flora of Asir, Saudi Arabia. *Candollea* 51: 169-202. In English, English and French abstracts.

218 species belonging to 48 families from the Asir region (Saudi Arabia) are listed. Notes on ecology and geographical distributions are also provided. A new combination is proposed: *Tribulus pentandrus* var. *acanthopterus* (Kralik) H. Hosni. 12 species are treated as endemic to southwestern Arabian Peninsula; 6 species and one variety are recorded for the first time: *Leptadenia heterophylla*, *Brandella erythraea*, *Bidens bipinnata*, *Acacia sieberana*, *Tamarix arborea*, *Bromus diandrus* and *Tribulus pentandrus* var. *acanthopterus*. A total of 73 species (including the endemics) are restricted to southwestern Arabia which represents 33.3% of the whole collections.

## RÉSUMÉ

HOSNI, H. A. & A. K. HEGAZY (1996). Contribution à la flore d'Asir, Arabie Saoudite. *Candollea* 51: 169-202. En anglais, résumés anglais et français.

218 espèces appartenant à 48 familles sont citées de la région de l'Asir (Arabie Saoudite). Des indications écologiques ainsi que la distribution géographique complètent la liste. Une nouvelle combinaison est proposée: *Tribulus pentandrus* var. *acanthopterus* (Kralik) H. Hosni. 12 espèces sont considérées comme endémiques du Sud-ouest de la Péninsule arabique; 6 espèces et une variété sont récoltées pour la première fois dans la région: *Leptadenia heterophylla*, *Brandella erythraea*, *Bidens bipinnata*, *Acacia sieberana*, *Tamarix arborea*, *Bromus diandrus* et *Tribulus pentandrus* var. *acanthopterus*. Au total 73 espèces (y compris les endémiques) sont considérées comme restreintes au Sud-ouest de l'Arabie Saoudite ce qui constitue 33.3% des taxons cités.

## Introduction

Plant exploration in southwestern Arabia dates back since the time of FORSSKÅL (1775). Contributions to the flora of Arabia was reviewed by WICKENS (1982); among the recent contributions to the flora of Saudi Arabia are those of MIGAHID (1978, 1988-1989), COLLENETTE (1985), BOULOS (1985) and MANDAVILLE (1973, 1990).

In this account records of plants collected by Hegazy during the period December 1991-April 1992 in Asir, one of the less explored areas (Fig. 1), are given.

### *Studied area:*

The studied area is located in the southwestern territory of Saudi Arabia, which is unique in its environment and plant life. The region maintains varied topography: mountains, plains, escarpments, valleys, rolling lands, rocky hills, water falls, ponds, etc. As a result the climate changes drastically from hot dry in the lowland to cool in the highland (VESEY-FITZGERALD, 1955; BROOKS & MANDIL, 1983).

Figure 1 shows the sampling sites along the altitudinal gradient from the sea level up to 3000 m ASL. Plant materials were collected beginning from the coast of Gizan extending eastward to the town of Baysh, then northward through Tehama plains to Al Darb town, extending eastward along the altitudinal gradient from Al Darb to Abha and northward from Abha to Al Sodah area.

*Climate:*

The climate of the area generally is influenced by the southerly monsoon current associated with the intertropical front which is channelled along the Red Sea trench from which it is diurnally diverted towards Saudi Arabia by differential heating (BROOKS & MANDIL, 1983).

The average monthly temperature and rainfalls in three stations within the study area are shown in Figure 2. In Gizan (latitude 15°54'N, longitude 42°33'E) the climate is hot and dry all the year round with high mean annual temperature of 30.2°C and mean rainfalls of about 26.7 mm; rainfalls are expected during most of the year, but in small quantity. In Abha (latitude 17°80'N, longitude 42°46'E) and Al Sodah (latitude 18°15'N, longitude 42°22'E) the climate is wet with rainfalls at any time of the year, the mean annual temperature in Abha reached 16.8°C and the rainfalls averaged about 655.2 mm. In general, during most of the year, climate of Al Sodah is foggy, wetter and cooler than that of Abha.

### Enumeration of taxa

The sequence of taxa is alphabetical; collections (about 250 specimens) are kept in the Cairo University Herbarium (CAI). Records preceded by an asterisk (\*) are new to the flora of Arabia.

#### GYMNOSPERMAE

##### *Cupressaceae*

#### **Juniperus procera** A. Rich.

El Sodah, 2300 m, April 1992, 206 (CAI).

*Habitat:* semi desert bushland and grassland.

*Distribution:* N and T Africa to Pakistan.

##### *Ephedraceae*

#### \***Ephedra pachyclada** subsp. **sinaica** (Riedl) Freitag & Maier-Stolte

*Habitat:* rocky ground.

*Distribution:* NE Africa to India.

#### ANGIOSPERMAE

#### DICOTYLEDONEAE

##### *Acanthaceae*

#### **Barleria acanthoides** Vahl

Aqbet Dalaa, 100-1000 m, Feb. 1992, 73 (CAI).

*Habitat:* crèvices of limestone.

*Distribution:* E Africa, SW Arabia with slight extension into India.

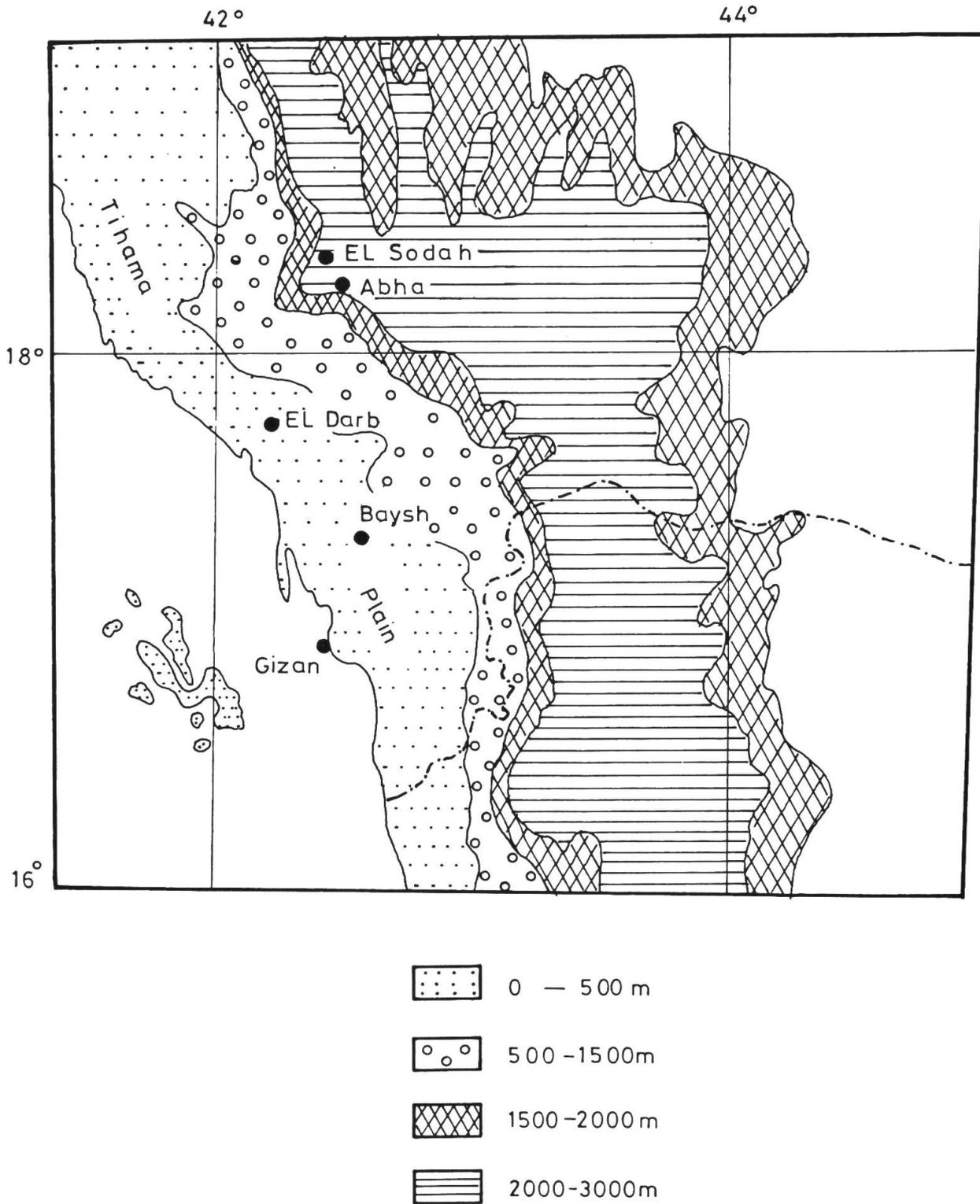


Fig. 1. – Map showing the sampling sites of the studied area.

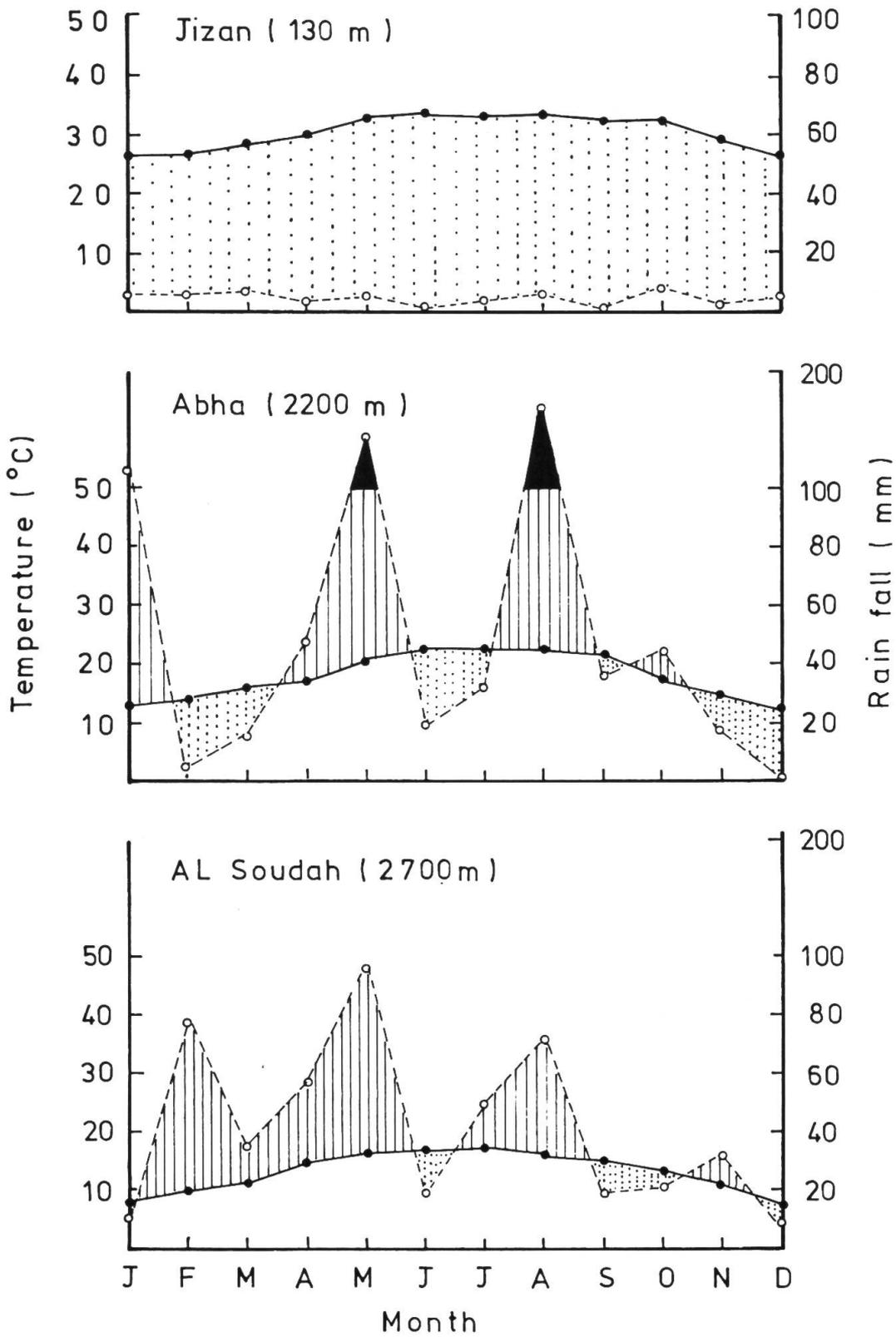


Fig. 2. -- Climate diagrams (Average of 9 years (1966-1974) of Gizan, Abha and El Sodah stations. Data taken from ABULFATIH & BAZZAZ, 1985; BINDAJI, 1981 and SCHYFSMA, 1978.

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

Tehama plain, El Darb, 200 m, Feb. 1992, 18 (CAI).

*Habitat*: hard sandy soil.

*Distribution*: E T Africa to India through Arabia.

**Ruellia patula** Jacq.

Aqbet Dalaa, 1000-2000 m, May 1992, 229 (CAI).

*Habitat*: rocky ground.

*Distribution*: known from Ethiopia and SW Arabia.

*Aizoaceae*

**Aizoon canariensis** L.

Tehama plains, 200 m, Feb. 1992, *s.n.* (CAI).

*Habitat*: sandy soil.

*Distribution*: T and N Africa to Arabia.

**Trianthera portulacastrum** L.

Tehama plain, El Darb, 200 m, Feb. 1992, 16 (CAI).

*Habitat*: weed of cultivated ground.

*Distribution*: T Africa to T Asia through southern Arabia.

*Amaranthaceae*

**Achyranthes aspera** L.

Abha, 2200 m, March 1992, 11 (CAI).

*Habitat*: crevices of mountains, in water courses and in fields.

*Distribution*: T regions of Africa and Asia through S Arabia.

**Aerva javanica** (Burm. fil.) Schultes

Gizan, Baysh, Feb. 1992, 9 (CAI).

*Habitat*: sand stone and calcareous areas.

*Distribution*: N and T Africa, SW Asia to India.

**Amaranthus graecizans** L.

Tehama plain, 200 m, Feb. 1992, *s.n.* (CAI).

*Habitat*: sandy places.

*Distribution*: S Europe, C Asia to Arabia.

**Pupalia lappacea** (L.) Juss.

Asir, Aqbet Dalaa, 1000-2000 m, March 1992, 84 (CAI).

*Habitat*: sand stone and rocky hillside.

*Distribution*: T and S Africa to India through S Arabia.

*Aristolochiaceae***Aristolochia bracteolata** Lam.

Tehama plain, 200 m, Feb. 1992, *s.n.* (CAI).

*Habitat*: sandy soil.

*Distribution*: C and TE Africa to India and Pakistan.

*Asclepiadaceae***Calotropis procera** Ait.

Tehama plain, 200 m, Feb. 1992, *s.n.* (CAI).

*Habitat*: sandy soil.

*Distribution*: E Africa extending through Egypt and Arabia to India.

**Caralluma penicillata** (Defl.) N. E. Br.

Tehama plain, 200 m, Feb. 1992, *s.n.* (CAI).

*Habitat*: rocky ground.

Endemic to SW Arabia.

**Gomphocarpus sinaicus** Boiss.

Abha, 2200 m, March 1992, 173 (CAI); Abha: Al Sodah road, March 1992, 217 (CAI).

*Habitat*: hard sand and stony desert.

*Distribution*: Egypt, Palestine and western Arabia.

**\*Leptadenia heterophylla** Decne.

Tehama plain, El Darb-Baysh, March 1992, 35 (CAI).

*Habitat*: sandy soil.

*Distribution*: Sudan and Eritrea.

**Leptadenia pyrotechnica** (Forssk.) Decne.

Baysh-Gizan, Feb. 1992, 14 (CAI).

*Habitat*: hot sandy deserts in hard sand.

*Distribution*: Ethiopia, Egypt, Palestine and W Arabia.

*Avicenniaceae*

**Avicennia marina** (Forssk.) Vierh.

Baysh shore, Feb. 1992, 1 (CAI).

*Habitat*: mangrove tree invading the sea on muddy flats of shallow water.

*Distribution*: S and E Africa, India and Australia. Common in western shore of Arabia.

*Boraginaceae*

**Alkanna orientalis** (L.) Boiss.

Abha: Al Sodah road, 2300 m, March-April 1992, 194 (CAI).

*Habitat*: rocky ground, creeping over stones.

*Distribution*: SW Asia extending to Mediterranean.

**\*Brandella erythraea** (Brand) A. Miller

Abha: Al Sodah road, 2300 m, March 1992, 185 (CAI).

*Habitat*: mountain slopes.

*Distribution*: Sudan, Egypt and Arabia.

**Cynoglossum bottae** DeFl.

Abha, 2200 m, March 1992, 154 (CAI).

*Habitat*: damp ground.

Endemic: to SW Arabian Peninsula.

**Echium rauwolfii** Del.

Abha, 2200 m, March 1992, 149 (CAI).

*Habitat*: sandy desert.

*Distribution*: central Sahara, eastward to Egypt, Sudan, Arabia and Pakistan.

**Heliotropium aegyptiacum** Lehm.

El Darb-Baysh, Feb. 1992, 47 (CAI); Aqbet Dalaa, 100-1000 m, Feb. 1992, 55 (CAI).

*Habitat*: sandy soil.

*Distribution*: T E Africa to Arabia.

**Heliotropium arbainense** Fresen.

El Darb-Baysh, Feb. 1992, 48 (CAI); Aqbet Dalaa, 100-1000 m, Feb. 1992, 89 (CAI).

*Habitat*: hard sand and stony ground.

*Distribution*: Palestine, Jordan, Egypt, Sudan and W Arabia.

**Heliotropium longiflorum** (Hochst. & Steud. ex DC.) Jaub. & Spach

Aqbet Dalaa, 1000-2000 m, March 1992, 70 (CAI).

*Habitat*: among rocks.

*Distribution*: NE Africa with slight extension into SW Arabia.

*Capparaceae***Cadaba longifolia** DC.

El Darb-Baysh, Dec. 1991, 150 (CAI).

*Habitat*: rocky hillside.

*Distribution*: known only from Ethiopia and SW Arabia.

**Cadaba rotundifolia** Forssk.

Baysh-Gizan, Feb. 1992, 3 (CAI).

*Distribution*: only known from NE Africa and SW Arabia.

**Capparis decidua** (Forssk.) Edgew.

Tehama Plain, 200 m, Feb. 1992, *s.n.* (CAI).

*Habitat*: wadis of hot deserts.

*Distribution*: T Asia and Africa.

**Capparis spinosa** var. **aegyptia** (Lam.) Boiss.

Aqbet Dalaa, 1000-2000 m, Feb. 1992, 99 (CAI).

*Habitat*: limestone and rocky ground.

*Distribution*: Europe, Mediterranean, N Africa to Arabia.

**Dipterygium glaucum** Decne.

Tehama plain, 200 m, Feb. 1992, *s.n.* (CAI).

*Habitat*: in deep sand.

*Distribution*: Arabia to India.

*Caryophyllaceae***Cometes abyssinica** R. Br.

Aqbet Dalaa, 1000-2000 m, March 1992, 88 (CAI).

*Habitat*: hard sand among rocks.

*Distribution*: known from Ethiopia and SW Arabia.

**Minuartia filifolia** (Forssk.) Schweinf. ex Mattf.

Abha-Al Sodah road, 2300 m, April 1992, 184 (CAI).

*Habitat*: in crevices and cracks.

*Distribution*: known from E Africa and SW Arabia.

**Paronychia arabica** (L.) DC.

Abha, 2200 m, March 1992, 143-163 (CAI).

*Habitat*: sandy desert and littoral sand soil.

*Distribution*: only known from Palestine, Egypt and W Arabia.

**Spergularia diandra** (Guss.) Heldr. & Sart.

El Darb-Baysh, March 1992, 28 (CAI).

*Habitat*: sandy soil of steppes and plains.

*Distribution*: Mediterranean, Sudan to India through Arabia.

**Telephium sphaerospermum** Boiss.

Al Sodah, 2300 m, March 1992, 213 (CAI).

*Habitat*: hard limestone.

*Distribution*: NE Africa with slight extension into SW Arabia.

*Chenopodiaceae*

**Halopeplis perfoliata** Wallr.

Tehama plain, 200 m, Feb. 1992, *s.n.* (CAI).

*Habitat*: well saline soil.

*Distribution*: known from NE Africa and Arabia.

**Suaeda monoica** Forssk. ex J. F. Gmel.

Tehama plain, 200 m, Feb. 1992, *s.n.* (CAI).

*Habitat*: wet saline soil.

*Distribution*: N Africa to W India through South Arabia.

*Cleomaceae*

**Cleome brachycarpa** Vahl ex DC.

El Darb-Baysh, Feb. 1992, 42 (CAI); Aqbet Dalaa, 100-1000 m, Feb. 1992, 59 (CAI).

*Habitat*: in hard sand.

*Distribution*: T Africa to India through Arabia.

**Cleome viscosa** L.

El Darb-Baysh, Feb. 1992, 37 (CAI).

*Habitat*: edges of cultivated ground.

*Distribution*: Arabia and NE Africa.

**Gynandropsis gynandra** (L.) Briq.

Tehama plain, 200 m, Feb. 1992, *s.n.* (CAI).

*Habitat*: weed of waste places and fields.

*Distribution*: N and T Africa to India and America.

*Compositae***Achillea arabica** Kotschy

El Sodah, 2300 m, April 1992, 209 (CAI).

*Habitat*: sandy soil.

Endemic to SW Arabia.

**Anthemis tigreensis** J. Gay ex A. Rich.

Abha-Al Sodah road, 2300 m, April 1992, 211 (CAI).

*Habitat*: sandy soil.

*Distribution*: Ethiopia and SW Arabia.

**\*Bidens bipinnata** L.

Aqbet Dalaa, 1000-2000 m, March 1992, 105 (CAI).

*Habitat*: weed of cultivated area.

*Distribution*: tropical regions of Africa and Asia.

**Calendula arvensis** L.

Abha, 2200 m, March 1992, 113 (CAI).

*Habitat*: rocky hillside and cultivated fields.

*Distribution*: S Europe, Mediterranean extending through Arabia to India.

**Cichorium bottae** Defl.

Al Sodah, 2300 m, April 1992, 208 (CAI).

*Habitat*: in fields and among rocks.

Endemic to SW Arabia.

**Conyza incana** Willd.

Abha, 2200 m, March 1992, 145 (CAI); Al Sodah, 2300 m, April 1992, 200, 201 (CAI).

*Habitat*: hard sand among rocks.

*Distribution*: Ethiopia and SW Arabia.

**Echinops spinosissimus** Turra

Abha, 200 m, May 1992, 232 (CAI).

*Habitat*: roadside and waste ground.

*Distribution*: E Mediterranean to Iran.

**Echinops spinosus** L.

Abha-Al Sodah road, 2300 m, March 1992, 191 (CAI).

*Habitat*: among rocks.

*Distribution*: known only from Ethiopia and SW Arabia.

**Euryops arabicus** Steud.

Abha, 2200 m, March 1992 (CAI); Al Sodah, 2300 m, March 1992, 207, 214 (CAI).

*Distribution*: Somalia, Socotra and SW Arabia.

**Felicia abyssinica** Sch.-Bip. ex A. Rich. subsp. **abyssinica**

Abha, 2200 m, March 1992, 146 (CAI); Abha, 2200 m, April 1992, 162 (CAI).

*Habitat*: sandy and granite boulders.

*Distribution*: T Africa to SW Arabia.

**Helichrysum glumaceum** DC.

Aqbet Dalaa, 1000-2000 m, Feb. 1992, 92 (CAI).

*Habitat*: among rocks.

*Distribution*: T and E Africa, SW Arabia and Socotra.

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

Abha, 200 m, March 1992, 117 (CAI).

*Habitat*: maritime hard sand and deserts.

*Distribution*: N Africa, SW Asia extending to Pakistan.

**Lactuca serriola** L.

Abha, 2200 m, May 1992, 233 (CAI).

*Habitat*: rocky slopes, field margins, fallow and cultivated land.

*Distribution*: Euroasia, N Africa to Arabia.

**Osteospermum vaillantii** (Decne.) T. Norl.

Abha, 2200 m, Feb. 1992, 168 (CAI); Abha, 2200 m, March 1992, 169 (CAI).

*Habitat*: rocky hillside.

*Distribution*: S Palestine, Sinai, Ethiopia and Somalia, widespread in Asir and S Hedjaz.

**Psiadia arabica** Jaub. & Spach

Abha-El Sodah road, 2300 m, April 1992, 193 (CAI).

*Habitat*: rocky hillside.

*Distribution*: S and T Africa to Arabia, widespread in southern mountains.

**Pulicaria schimperi** DC.

Aqbet Dalaa, 1000-2000 m, March 1992, 80, 103 (CAI).

*Habitat*: sandstone and rocks.

Endemic to SW Arabia.

**Pulicaria undulata** (L.) C. A. Mey.

Abha-El Sodah, 2300 m, April 1992, 210 (CAI).

*Habitat*: sandstone.

*Distribution*: T Africa, Middle East and Arabia.

**Scorzonera tortuosissima** Boiss.

Abha, 2200 m, March 1992, 174 (CAI).

*Habitat*: hard sand.

*Distribution*: Arabia to Iran.

**Senecio odorus** Sch.-Bip.

Abha, 2200 m, March 1992, 162 (CAI); May 1992, 231 (CAI).

*Habitat*: limestone.

Seems to be endemic to SW Arabia.

**Verbesina encelioides** (Cav.) Benth. & Hook. ex A. Gray

Abha, 2200 m, March 1992, 155 (CAI).

*Habitat*: gravel sand.

*Distribution*: S America and Australia, T Arabia.

**Xanthium pungens** Wallr.

Tehama plain, 200 m, Feb. 1992, *s.n.* (CAI).

*Habitat*: weed of cultivation and disturbed area.

*Distribution*: cosmopolitan.

*Convolvulaceae*

**Cressa cretica** L.

Tehama plain, 200 m, Feb. 1992, *s.n.* (CAI).

*Habitat*: salty and sandy soil and near coastal sand dunes.

*Distribution*: throughout tropical regions of the world.

**Seddera arabica** (Forssk.) Choisy

Aqbet Dalaa, 1000-2000 m, May 1992, 226 (CAI).

*Habitat*: stony ground and rocky slopes.

*Distribution*: T and NE Africa to Arabia.

**Seddera latifolia** Hochst. & Steud.

Aqbet Dalaa, 1000-2000 m, Feb. 1992, 65, 74 (CAI).

*Habitat*: crevices of hard rocks and wadi beds.

*Distribution*: E and NE Africa-India; widespread in the southern lowlands.

*Cruciferae*

**Anastatica hierochuntica** L.

Tehama plains, 200 m, Feb. 1992, *s.n.* (CAI).

*Habitat*: sandy runoff and rocky deserts.

*Distribution*: N Africa, Middle East with slight extension into Arabia.

**Dipterygium glaucum** Decne.

Baysh-Gizan, Feb. 1992, 7, 16 (CAI).

*Habitat*: deep sand.

*Distribution*: NE Africa to NW India.

**Farsetia longisiliqua** Decne.

El Darb-Baysh, Feb. 1992, 20 (CAI); Aqbet Dalaa, 1000-2000 m, March 1992, 102 (CAI); Abha, 2200 m, Feb. 1992, 133 (CAI).

*Habitat*: hard sand.

*Distribution*: Egypt, E Africa to Arabia.

**Savignya parviflora** (Del.) Webb.

Tehama: plain, 200 m, Feb. 1992, *s.n.* (CAI).

*Habitat*: sandy soil of steppes and plains.

*Distribution*: N Africa, Palestine and Arabia.

**Schouwia schimperi** Jaub. & Spach

El Darb-Baysh, Feb. 1992, 45 (CAI).

*Habitat*: in deep sand.

*Distribution*: only known from Egypt, Ethiopia and SW Arabia.

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

Tehama plain, 200 m, Feb. 1992, *s.n.* (CAI).

*Habitat*: sandy soil.

*Distribution*: T and N Africa to Pakistan and Afghanistan.

**Cucumis prophetarum** subsp. **dissectus** (Naud.) C. Jeffrey

Baysh-Gizan, Feb. 1992, 12 (CAI); Aqbet Dalaa, 1000-2000 m, Feb. 1992, 78 (CAI).

*Habitat*: sandy damp soil.

*Distribution*: NE Africa and Arabia.

*Dipsacaceae***Petrocephalus pulverulentus** Boiss. & Bal.

Al Sodah, 2300 m, April 1992, 220 (CAI).

*Habitat*: rocky places and cliffs.

*Distribution*: Middle East and Arabia.

*Euphorbiaceae***Andrachne telephioides** L.

Abha, 2200 m, Feb. 1992, 118 (CAI); Abha-Al Sodah road, 2300 m, Feb. 1992, 181 (CAI).

*Habitat*: coarse sandy soil.

*Distribution*: N Africa to India.

**Chrozophora obliqua** (Vahl) A. Juss. ex Spreng.

Aqbet Dalaa, 1000-2000 m, Feb. 1992, 85 (CAI).

*Habitat*: hard sand.

*Distribution*: T Africa to India through Egypt. Fairly widespread in Arabia specially at South.

**Clutia myricoides** Jaub. & Spach

Abha, 2200 m, March 1992, 175 (CAI); Sodah, 2300 m, March 1992, 212 (CAI).

*Habitat*: in Juniperus forest.

*Distribution*: only known from Ethiopia and SW Arabia.

**Euphorbia cuneata** Vahl subsp. **cuneata**

El Darb-Baysh, Feb. 1992, 410 (CAI).

*Habitat*: sandy soil and rocky hillside.

*Distribution*: NE Africa and S Arabia.

**Euphorbia hirta** L.

Tehama plain, 200 m.

*Habitat*: cultivated lands and waste places.

*Distribution*: tropical and subtropical regions to C America.

**Euphorbia prostrata** Ait.

Tehama plain, 200 m, Feb. 1992, *s.n.* (CAI).

*Habitat*: disturbed ground in gardens, cultivated lands in dry sandy soil.

*Distribution*: native to T America, recently introduced to various parts of Old World.

**Euphorbia schimperiana** Scheele var. **schimperiana**

Abha-El Sodah road, 2300 m, April 1992, 190 (CAI).

*Habitat*: weed of cultivation and rocky hillside.

*Distribution*: Ethiopia and SW Arabia.

**Euphorbia triaculeata** Forssk.

El Darb-Baysh, Feb. 1992, 51 (CAI).

*Habitat*: in rocky ravine.

*Distribution*: Ethiopia and SW Arabia.

**Jatropha glauca** Vahl

Tehama plain, 200 m, Feb. 1992, *s.n.* (CAI).

*Habitat*: sandy soil.

*Distribution*: E Africa and SW Arabia.

**Jatropha perlargoniifolia** Courbon var. **perlargoniifolia**

El Darb-Baysh, Feb. 1992, 29 (CAI); March 1992, 30 (CAI).

*Habitat*: hard sand and rocky hillside.

*Distribution*: NE Africa, SW Arabia to Oman.

*Geraniaceae*

**Erodium cicutarium** (L.) L'Hér.

Abha, 2200 m, March 1992, 112 (CAI).

*Habitat*: rocky hillside.

*Distribution*: NE Africa to SW Asia. Fairly common in western Arabia especially in mountains.

**Erodium neuradifolium** Del. ex Godr.

Abha-El Sodah road, 2300 m, April 1992, 195 (CAI).

*Habitat*: rocky and sandy soil.

*Distribution*: Middle East and western Arabia; fairly common in southern mountains.

*Labiatae***Lavandula citriodora** A. G. Miller

Abha, 2000 m, March 1992, 122, 171 (CAI).

*Habitat*: rocky hillside and stony habitat of higher altitudes.

Endemic to South Asir mountains of Arabia.

**Lavandula coronopifolia** Poir.

Aqbet Dalaa, 1000-2000 m, March 1992, 90 (CAI).

*Habitat*: open rocky slopes and stony habitats of higher altitudes.

*Distribution*: N and NE Africa, Middle East to Iran.

**Lavandula dentata** L.

Abha, 2200 m, March 1992, 147 (CAI); El Sodah, 2300 m, April 1992, 204 (CAI).

*Habitat*: open rocky slopes and stony habitat of higher altitudes.

*Distribution*: N and E Africa, Middle East to Iran.

**Lavandula pubescens** Decne.

Abha, 200 m, March 1992, 170 (CAI).

*Habitat*: hard sand, open rocky ground and stony habitat.

*Distribution*: Middle East, Somalia and southern Arabia.

**Marrubium vulgare** L.

Abha, 2000 m, March 1992, 153 (CAI); El Sodah, 2300 m, April 1992, 202 (CAI).

*Habitat*: sandy soil.

*Distribution*: Mediterranean to India through Arabia.

**Micromeria biflora** (Ham.) Benth.

Abha, 2200 m, Feb. 1992, 121 (CAI); Abha-El Sodah road, 2300 m, Feb. 1992, 182 (CAI).

*Habitat*: in granite soils and among rocks.

*Distribution*: T and S Africa to India.

**Nepeta deflersiana** Schweinf. ex Hedge

Abha, 200 m, March 1992, 164, 165 (CAI); Abha-El Sodah road, 2300 m, April 1992, 199 (CAI).

*Habitat*: Wadi beds of high altitudes.

*Distribution*: seems to be endemic to SW Arabia.

**Orthosiphon pallidus** Royle ex Benth.

Aqbet Dalaa, 1000-2000 m, May 1992, 228 (CAI).

*Habitat:* in granite ravine.

*Distribution:* NE Africa to NW India.

**Otostegia fruticosa** subsp. **schimperi** (Benth.) Sebald

Abha-El Sodah road, 2300 m, April 1992, 192 (CAI).

*Habitat:* rocky hillside and stony ground.

*Distribution:* N and T Africa and southern Arabia.

**Salvia lanigera** Poir.

El-Sodah, 2300 m, April 1992, 205 (CAI).

*Habitat:* hard sand and chalky sand stones.

*Distribution:* S Mediterranean to Arabia.

**Salvia verbenaca** L.

Abha, 2200 m, March 1992, 144 (CAI).

*Habitat:* sandy soil and fallow fields.

*Distribution:* Mediterranean, S Europe, N Africa with slight extension into SW Arabia.

**Teucrium yemense** Defl.

Abha-El Sodah road, 2300 m, March 1992, 180 (CAI).

*Habitat:* crevices of a flat granite.

Endemic to SW Arabia.

*Leguminosae*

**Acacia asak** (Forssk.) Willd.

Aqbet Dalaa, 1000-2000 m, April 1992, 100 (CAI).

*Habitat:* rocky hillside and crevices of wadi beds.

*Distribution:* NE Africa, Middle East and SW Arabia.

**Acacia ehrenbergiana** Hayne

Tehama plain, 200 m, Feb. 1992, *s.n.* (CAI).

*Habitat:* sandy soil and wadi beds.

*Distribution:* NE Africa to Arabia.

**Acacia etbaica** Schweinf. subsp. **etbaica**

Aqbet Dalaa, 1000-2000 m, April 1992, 107 (CAI); Abha-El Sodah road, 2300 m, April 1992, 196 (CAI).

*Habitat:* sandy and rocky slopes of high altitudes.

*Distribution:* T Africa to western Arabia.

**Acacia hamulosa** Benth.

El Darb-Baysh, Feb. 1992, 38 (CAI).

*Habitat*: rocky hillside.

*Distribution*: Middle East, E Africa to W Arabia.

**Acacia mellifera** (Vahl) Benth.

Tehama plain, 200 m, April 1992, 109 (CAI).

*Habitat*: crevices of rocky slopes.

*Distribution*: NE Africa, Middle East and western Arabia.

**Acacia saligna** Wendl.

Abha, 2200 m, April 1992, 109 (CAI).

Recently introduced, native to NW Australia.

**\*Acacia sieberana** DC.

El Sodah, 2300 m, April 1992, 109, 197 (CAI).

*Habitat*: hot deserts.

*Distribution*: widely spread in all Africa.

**Acacia tortilis** (Forssk.) Hayne subsp. **tortilis**

Gizan, Baysh, Feb. 1992, 8 (CAI); Aqbet Dalaa, 100-1000 m, Feb. 1992, 58a (CAI).

*Habitat*: hot desert wadis and rocky hillside.

*Distribution*: NE Africa, Middle East and Arabia.

**Acacia tortilis** subsp. **raddiana** (Savi) Brenan

El Darb-Baysh, Feb. 1992, 39 (CAI); Aqbet Dalaa, 100-1000 m, Feb. 1992, 58b (CAI).

*Habitat*: hot desert wadis and depressions.

*Distribution*: NE Africa extending into western Arabia and Middle East.

**Argyrobium arabicum** (Decne.) Jaub. & Spach

Abha, 2200 m, March 1992, 120 (CAI); April 1992, 134 (CAI).

*Habitat*: gravel sand.

*Distribution*: E Africa and Middle East; widespread in Asir and southern Hedjaz.

**Argyrobium confertum** Polhill

El Sodah, 2300 m, April 1992, 183 (CAI).

*Habitat*: limestone slopes.

*Distribution*: SW Arabia, Ethiopia and Somalia.

**Astragalus atropillosulus** subsp. **abyssinicus** (Hochst.) J. B. Gillett

Abha, 2200 m, May 1992, 114 (CAI).

*Habitat*: among rocks.

*Distribution*: southern Arabia, Ethiopia and Sudan.

**Astragalus sparsus** Del. ex Decne.

Abha, 2200 m, Jan. 1992, 130 (CAI).

*Habitat*: sandy soil.

*Distribution*: Mediterranean, Middle East to western Arabia.

**Astragalus tribuloides** var. **minutus** (Boiss.) Boiss.

Abha, 2200 m, April 1992, 116 (CAI).

*Habitat*: sandy wadis of steppes and deserts.

*Distribution*: Middle East, E Africa to India.

**Astragalus vogelii** (Webb) Bornm.

Abha, 2200 m, April 1992, 119 (CAI); Feb. 1992, 132 (CAI).

*Habitat*: sandy deserts.

*Distribution*: Middle East, T Africa to India.

**Cassia senna** L.

Tehama plain, 200 m, Feb. 1992, *s.n.* (CAI).

*Habitat*: wadis in hot deserts.

*Distribution*: SW Arabia, E Africa through Egypt and Palestine.

**Indigofera arabica** Jaub. & Spach

Abha, 2200 m, March 1992, 142, 158 (CAI).

*Habitat*: granit sand.

*Distribution*: Middle East, E Africa to Arabia.

**Indigofera hochstetteri** Baker

Tehama plain, 200 m, Feb. 1992, *s.n.* (CAI).

*Habitat*: sandy soil.

*Distribution*: Middle East, T Africa to India; widespread in southern foothills.

**Indigofera schimperi** Jaub. & Spach

Tehama plain, Gizan road, 200 m, March 1992, 224 (CAI).

*Habitat*: gravel sand.

*Distribution*: T Africa and T Asia.

**Indigofera spinosa** Forssk.

Tehama El Darb-Bisha, March 1992, 24 (CAI).

*Habitat*: sandy ditches of semi deserts.

*Distribution*: NE Africa, Middle East and Arabia.

**Medicago laciniata** var. **brachyacantha** Boiss.

Abha, 2200 m, May 1992, 115 (CAI).

*Habitat*: deserts, sandy ground and rocky hillside.

*Distribution*: N Africa, Middle East and India.

**Medicago sativa** L.

Abha, 2200 m, March 1992, 138 (CAI).

*Habitat*: cultivated and escaped in damp places in steppes; cultivated as human food and livestock fodder.

*Distribution*: cosmopolitan.

**Rhynchosia minima** var. **memnonia** (Del.) Cooke

Tehama plain, 200 m, Feb. 1992, *s.n.* (CAI).

*Habitat*: climbing on trees.

*Distribution*: T Africa, Sudan, Egypt and Arabia.

**Senna italica** Mill. subsp. **italica**

Gizan-Baysh, Feb. 1992, 11 (CAI).

*Habitat*: sandy deserts.

*Distribution*: drier regions of Africa to SW Asia.

**Tephrosia purpurea** subsp. **apollinea** (Del.) H. Hosni & El Karemy

Gizan, Baysh, Feb. 1992, 15 (CAI).

*Habitat*: wadis, gravel sand and among rocks.

*Distribution*: E Africa to India and Middle East.

**Trigonella hierosolymitana** Boiss.

Tehama plain, 200 m, Feb. 1992, *s.n.* (CAI).

*Habitat*: common weed of cultivation.

*Distribution*: NE Africa to India.

*Malvaceae***Abutilon fruticosum** Guill. & Perr.

Aqbet Dalaa, 1000-2000 m, Feb. 1992, 82 (CAI).

*Habitat*: wadis and hot desert among rocks.

*Distribution*: T Africa to India through S Arabia and Middle East.

**Abutilon pannosum** (G. Forster) Schlecht.

Tehama plane, 200 m, Feb. 1992, *s.n.* (CAI).

*Habitat*: sandy and clay soil.

*Distribution*: Egypt, Palestine, Iraq and western Arabia.

*Menispermaceae*

**Cocculus pendulus** (J. R. & G. Forst.) Diels

Aqbet Dalaa, 100-1000 m, Feb. 1992, 61 (CAI); Aqbet Dalaa, 1000-2000 m, March 1992, 97 (CAI).

*Habitat*: hard sand among rocks and cliffs, climbing.

*Distribution*: N Africa Sahara to Arabia.

*Molluginaceae*

**Corbichonia decumbens** (Forssk.) Exell

Aqbet Dalaa, 1000-2000 m, March 1992, 76 (CAI).

*Habitat*: between rocks.

*Distribution*: T and NE Tropical Africa to India.

*Moraceae*

**Ficus palmata** Forssk. subsp. **palmata**.

Abha, 2200 m, March 1992, 141 (CAI).

*Habitat*: rocky places.

*Distribution*: Sudan, Ethiopia, E Egypt, SW Arabia and India.

*Nyctaginaceae*

**Boerhavia diffusa** L.

El Darb-Baysh, Feb. 1992, 21 (CAI); Aqbet Dalaa, 1000-2000 m, March 1992, 71 (CAI).

*Habitat*: damp sand.

*Distribution*: NE Africa to western Arabia.

**Commicarpus helenae** (Roem. & Schult.) Meikle

Aqbet Dalaa, 1000-2000 m, Feb. 1992, 87 (CAI).

*Habitat*: edge of cultivation.

*Distribution*: NE T Africa to India through Egypt and Palestine.

**Commicarpus plumbagineus** (Cav.) Standl.

Abha, 2200 m, March 1992, 222 (CAI).

*Habitat*: rocky ridges.

*Distribution*: T and S Africa to western Arabia and S Palestine, fairly widespread in Asir and S Hedjaz.

*Orobanchaceae***Orobanche ramosa** L.

El Sodah, 2300 m, March 1992, 215 (CAI).

*Habitat*: sandy dunes, parasites on legumes.

*Distribution*: S Europe, Mediterranean, E Africa to Pakistan and Afghanistan through SW Arabia.

*Plantaginaceae***Plantago ovata** Forssk.

Abha, 2200 m, March 1992, 131 (CAI).

*Habitat*: rocky hillside.

*Distribution*: N and E Africa to India.

*Polygalaceae***Polygala abyssinica** R. Br. ex Fresen.

Abha-El Sodha road, 2300 m, March 1992, 186 (CAI); Gizan, Tehama plain, March 1992, 225 (CAI).

*Habitat*: sandy soil.

*Distribution*: SW Arabia and Ethiopia.

*Polygonaceae***Rumex vesicarius** L.

Aqbet Dalaa 1000-2000 m, Feb. 1992, 104 (CAI); Abha, 2200 m, March 1992, 137 (CAI).

*Habitat*: damp sandy soil.

*Distribution*: NE Africa to Iran.

**Rumex nervosus** Vahl

Abha, 2200 m, March 1992, 137, 167 (CAI); El Sodah, 2300 m, April 1992, 198 (CAI).

*Habitat*: rocky valley and sandy soil.

Endemic to SW Arabia.

*Portulacaceae*

**Portulaca oleracea** L.

Tehama plain, 200 m, Feb. 1992, *s.n.* (CAI).

*Habitat*: sandy soil.

*Distribution*: cosmopolitan.

**Portulaca quadrifida** L.

Aqbet Dalaa, 1000-2000 m, Dec. 1991, 81 (CAI).

*Habitat*: stony hillside.

*Distribution*: T Africa to India.

*Resedaceae*

**Caylusa hexagyna** (Forssk.) M. L. Green

Abha, 2200 m, March 1992, 139, 140 (CAI).

*Habitat*: deserts on sandy clay.

*Distribution*: E Africa to Arabia; widespread in Asir and S Hedjaz.

**Reseda sphenocleoides** Defl.

Aqbet Dalaa, 1000-2000 m, Feb. 1992, 83 (CAI).

*Habitat*: wadi beds among rocks.

Endemic to SW Arabia.

*Rosaceae*

**Rosa abyssinica** R. Br.

El Sodah, 2300 m, April 1992, 203 (CAI).

*Habitat*: climbing among rocks.

*Distribution*: Ethiopia and SW Arabia.

*Salvadoraceae*

**Dobera glabra** (Forssk.) Juss. ex Poir.

Aqbet Dalaa, 100-1000 m, Feb. 1992, 60 (CAI).

*Habitat*: rocky hillside.

*Distribution*: Ethiopia and SW Arabia; widespread near Gizan and southern foothills.

**Salvadora persica** L.

Tehama plain, 220 m, Feb. 1992, *s.n.* (CAI).

*Habitat*: sandy and calcareous soil; wadi beds.

*Distribution*: T and N Africa to India through W Arabia; widespread especially at South.

*Sapindaceae***Dodonaea viscosa** (L.) Jacq.

El Darb-Baysh, Dec. 1991, 36 (CAI); Abha-El Sodah road, 2300 m, March 1992, 188, 189 (CAI).

*Habitat*: crevices of hard rocks at higher altitude.

*Distribution*: widespread in tropics and subtropics of both hemispheres.

*Scrophulariaceae***Kickxia hastata** (R. Br. ex Benth.) Dandy

Aqbet Dalaa, 1000-2000 m, March 1992, 69 (CAI).

*Habitat*: sandy soil.

*Distribution*: NE Africa to western Arabia.

**Lindenbergia sinaica** (Decne.) Benth.

Aqbet Dalaa, 1000-2000 m, March 1992, 73, 74 (CAI).

*Habitat*: sandy soil, slopes and wadis.

*Distribution*: E Africa to Western Arabia through Egypt and Palestine.

**Schweinfurthia pedicellata** (T. Anders.) Balfour

El Darb-Baysh, Feb. 1992, 46 (CAI).

*Habitat*: sandy plains, wadis and depressions; rocky slopes.

*Distribution*: N Africa to SW Arabia and Socotra.

**Schweinfurthia pterosperma** (A. Rich.) A. Braun

El Darb-Baysh, Dec. 1991, 27 (CAI); Aqbet Dalaa, 100-1000 m, Feb. 1992, 54 (CAI).

*Habitat*: rocky hillside.

*Distribution*: NE Africa to Pakistan.

**Striga hermontica** Benth.

Tehama plain, 200 m, Feb. 1992, *s.n.* (CAI).

*Habitat*: parasitic herb on grasses specially on Sorghum and Zea.

*Distribution*: E Africa to Egypt and western Arabia.

**Verbascum nubicum** Murb.

Abha, 2200 m, March 1992, 150 (CAI).

*Habitat*: granite rocks.

*Distribution*: NE Africa to SW Arabia.

**Verbascum yemense** Defl.

Abha-El Sodah road, 2300 m, March 1992, 216 (CAI).

*Habitat*: granite sand.

Endemic to SW Arabia.

*Solanaceae*

**Datura innoxia** Mill.

Tehama plain, 200 m, Feb. 1992, *s.n.* (CAI).

*Habitat*: waste places.

*Distribution*: tropical and subtropical parts of the world.

**Datura stramonium** L.

Tehama plain, 200 m, Feb. 1992, *s.n.* (CAI).

*Habitat*: sandy soil and as a weed of cultivation.

*Distribution*: throughout tropics and temperate regions.

**Lycium shawii** Roem. & Schult.

Abha, 2200 m, March 1992, 148 (CAI).

*Habitat*: wadi beds among rocks and sandy stone ridges.

*Distribution*: E Africa to Arabia.

**Solanum incanum** L.

Aqbet Dalaa, 1000-2000 m, March 1992, 101 (CAI); Abha, 2200 m, March 1992, 215 (CAI).

*Habitat*: hot valleys.

*Distribution*: S Africa through Arabia to India; widespread in Asir and southern Hedjaz.

**Solanum nigrum** L.

Tehama plain, 200 m, Feb. 1992, *s.n.* (CAI).

*Habitat*: weed of cultivation.

*Distribution*: cosmopolitan except polar regions.

**Solanum schimperianum** Hochst.

Abha-El Sodah road, 2300 m, March 1992, 178 (CAI); El Sodah, 2300 m, March 1992, 218 (CAI).

*Habitat*: rocky sandy soil.

*Distribution*: E Africa to SW Arabia.

**Solanum sepicula** Dun.

Abha, 2200 m, March 1992, 156 (CAI).

*Habitat*: rocky and sandy soil.

Endemic to SW Arabia.

**Withania somnifera** (L.) Dun.

Aqbet Dalaa, 1000-2000 m, March 1992, 86 (CAI); Abha, 2200 m, March 1992, 157 (CAI).

*Habitat*: waste places.

*Distribution*: N and E Africa to India through Arabia.

*Sterculiaceae***Melhania denhamii** R. Br.

Aqbet Dalaa, 1000-2000 m, May 1992, 227 (CAI).

*Habitat*: sandy soil.

*Distribution*: T Africa to India.

*Tamaricaceae***\*Tamarix arborea** (Sieb. ex Ehrenb.) Bunge

Abha, 2200 m, April 1992, 123 (CAI).

*Habitat*: sandy and saline soil.

*Distribution*: N Africa, Sudan and Palestine.

**Tamarix mannifera** (Ehrenb.) Bunge

Tahama plain, 200 m, Febn. 1992, *s.n.* (CAI).

*Habitat*: salty deserts and wadis.

*Distribution*: N Africa to Pakistan and Afghanistan.

*Tiliaceae***Corchorus depressus** (L.) Stocks

Tehama plain, 200 m, Feb. 1992, *s.n.* (CAI).

*Habitat*: sandy soil.

*Distribution*: paleotropic.

**Grewia villosa** Willd.

Aqbet Dalaa, 1000-2000 m, Feb. 1992, 63 (CAI).

*Habitat*: crevices of hard rocks.

*Distribution*: T Africa to India through Arabia.

**Triumfetta rhomboidea** Jacq.

El Darb-Baysh, Dec. 1991, 36 (CAI).

*Habitat*: sandy dunes.

*Distribution*: T Africa to SW Asia.

*Urticaceae*

**Forsskalea tenacissima** L.

Aqbet Dalaa, 1000-2000 m, Feb. 1992, 77 (CAI); Abha, 2200 m, March 1992, 172 (CAI).

*Habitat*: wadis of hot deserts.

*Distribution*: N Africa to Arabia and Palestine.

*Verbenaceae*

**Bouchea marrubiifolia** Schauer

Tehama plain, 200 m, May 1992, 230 (CAI).

*Habitat*: open sandy plains.

*Distribution*: T Africa to India.

*Vitaceae*

**Cissus quadrangularis** L.

Gizan-Baysh, Feb. 1992, 4 (CAI); El Darb-Baysh, Feb. 1992, 31 (CAI).

*Habitat*: sandy soil, climbing on trees.

*Distribution*: T Africa to Arabia.

**Cissus rotundifolius** (Forssk.) Vahl

El Darb-Baysh, Dec. 1991, 52 (CAI).

*Habitat*: sandy soil, climbing on trees.

*Distribution*: E Africa and Southern Arabia.

*Zygophyllaceae*

**Fagonia bruguieri** DC.

Gizan-Baysh, Feb. 1992, 10 (CAI).

*Habitat*: sandy and stony soil.

*Distribution*: NE Africa to Arabia with slight extension into Afghanistan.

**Fagonia indica** Burm. fil. var. **indica**

Abha-El Sodah road, 2300 m, March 1992, 177 (CAI).

*Habitat*: sand stone soil.

*Distribution*: E Africa to India through Arabia.

**Fagonia indica** var. **schweinfurthii** Hadidi

Tehama plain, El Darb-Baysh, Feb. 1992, 19 (CAI); Aqbet Dalaa, 100-1000 m, Feb. 1992, 62 (CAI); Aqbet Dalaa, 1000-2000 m, March 1992, 98 (CAI).

*Distribution*: NE Africa to India through S Arabia.

**Peganum harmala** L.

Abha, 2200 m, March 1992, 223 (CAI).

*Habitat*: sandy wadis.

*Distribution*: Mediterranean, SW Asia, N America to Australia.

**\*Tribulus pentandrus** var. **acanthopterus** (Kralik) H. Hosni, comb. nov.

≡ *Tribulus alatus* var. *acanthopterus* Kralik in Ann. Sci. Nat. Bot. ser. 3, 11: 30 (1849).

**Type**: Egypte, désert arabique, Torrah près du Caire, 22.10.1847, Kralik *s.n.* (P, holotype).

Tehama, El Darb-Baysh, March 1992, 25, 43 (CAI).

*Habitat*: sandy soil.

*Distribution*: Egypt, Sudan and W Arabia.

**Tribulus terrestris** L.

Tehama plain, 200 m, Feb. 1992, *s.n.* (CAI).

*Habitat*: open disturbed places on sandy soil, weed of gardens and waste places.

*Distribution*: S Europe, N Africa to India and Middle East.

## MONOCOTYLEDONEAE

*Cyperaceae***Cyperus conglomeratus** Rottb.

Gizan, Baysh, Feb. 1992, 5 (CAI).

*Habitat*: Inland sand and drifted sand dunes.

*Distribution*: N and T Africa, central Sahara, Middle East to India through Arabia.

*Gramineae***Aeluropus lagopoides** (L.) Trin. ex Thw.

= *A. brevifolius* Nees ex Steud.

= *A. massauensis* (Fresen.) Mattei ex Steud.

Baysh shore, Gizan Sea level, Feb. 1992, 2 (CAI).

*Habitat:* damp and arid places.

*Distribution:* Mediterranean to India.

**Aeluropus littoralis** (Gouan) Parl.

Tehama plain, 200 m, Feb. 1992, *s.n.* (CAI).

*Habitat:* sandy, loamy soil or salt marshes.

*Distribution:* Mediterranean to E Asia.

**Aristida mutabilis** Trin. & Rup.

El Darb-Baysh, Dec. 1991, 26 (CAI); Darb-Baysh, Feb. 1992, 41 (CAI).

*Habitat:* open and stony ground.

*Distribution:* T Africa to India.

**\*Bromus diandrus** Roth

Abha, 2200 m, April 1992, 127 (CAI).

*Habitat:* disturbed ground, heavy soil and hillslopes.

*Distribution:* Mediterranean to E Asia.

**Cenchrus ciliaris** L.

Aqbet Dalaa, 1000-2000 m, April 1992, 95 (CAI); Abha, 2200 m, March 1992, 124, 151, 152 (CAI).

*Habitat:* sandy and stony or rocky places.

*Distribution:* T and S Africa to India.

**Cenchrus pennisetiformis** Hochst. & Steud.

El Darb-Baysh, Feb. 1992, 23 (CAI); Aqbet Dalaa, 1000-2000 m, April 1992, *s.n.* (CAI).

*Habitat:* sandy and stony or rocky places.

*Distribution:* T Africa to India.

**Cenchrus setigerus** Vahl

El Darb-Baysh, March 1992, 33 (CAI); Aqbet Dalaa, 100-1000 m, Feb. 1992, 56 (CAI).

*Habitat:* rocky ground and short grassland.

*Distribution:* E and T Africa to India.

**Chloris virgata** Sw.

Tehama plain, 200 m, Feb. 1992, *s.n.* (CAI).

*Habitat:* sandy soil and areas of cultivation.

*Distribution:* throughout tropics.

**Crypsis aculeata** Ait.

Tehama plain, 200 m, Feb. 1992, *s.n.* (CAI).

*Habitat*: cultivated ground.

*Distribution*: C Europe and Mediterranean to C Asia.

**Cutandia dichotoma** (Forssk.) Trabut

Tehama plain, 200 m, Feb. 1992, *s.n.* (CAI).

*Habitat*: sandy wadi beds.

*Distribution*: N Africa to SW Asia.

**Cutandia memphetica** (Spreng.) Benth.

Tehama plain, 200 m, Feb. 1992, *s.n.* (CAI).

*Habitat*: sandy deserts and salt marshes.

*Distribution*: Mediterranean to SW Asia.

**Dactyloctenium aegyptium** (L.) Willd.

Tehama plain, 200 m, Feb. 1992, *s.n.* (CAI).

*Habitat*: stony ground and disturbed places.

*Distribution*: tropics and warm temperate Old World.

**Dactyloctenium scindicum** Boiss.

Aqbet Dalaa, 1000-2000 m, March 1992, 67, 75, 94 (CAI).

*Habitat*: sandy soil.

*Distribution*: NE Africa to NW India.

**Danthoniopsis barbata** (Nees) C. E. Hubb.

Aqbet Dalaa, 1000-2000 m, March 1992, 66 (CAI).

*Habitat*: rocky hillside and stony wadis.

*Distribution*: NE Africa to SW Arabia.

**Dichanthium foveolatum** (Del.) Roberty

El Darb-Baysh, Feb. 1992, 22 (CAI).

*Habitat*: open dry ground and waste places.

*Distribution*: N and E Africa to India.

**Digitaria ciliaris** (Retz.) Koel.

Tehama plain, 200 m, Feb. 1992, *s.n.* (CAI).

*Habitat*: cultivated and waste ground.

*Distribution*: throughout tropics.

**Digitaria sanguinalis** (L.) Scop.

Tehama plain, 200 m, Feb. 1992, *s.n.* (CAI).

*Habitat*: weed of cultivation.

*Distribution*: warm temperate regions.

**Echinochloa colona** (L.) Link

Tehama plain, 200 m, Feb. 1992, *s.n.* (CAI).

*Habitat*: weed in gardens and cultivated lands.

*Distribution*: tropical and subtropical areas.

**Enneapogon lophotrichus** Chiov. ex H. Scholz & P. Konig

El Darb-Baysh, Feb. 1992, 49 (CAI).

*Habitat*: wadi beds.

*Distribution*: Ethiopia, Somalia, S Egypt and Arabia.

**Eragrostis cilianensis** (All.) Vign.-Lut.

Aqbet Dalaa, 1000-2000 m, Feb. 1992, 65 (CAI).

*Habitat*: open ground and field margins.

*Distribution*: tropical and warm temperate Old World.

**Eragrostis tenella** (L.) P. Beauv. ex Roem. & Schultes

Aqbet Dalaa, 1000-2000 m, March 1992, 68 (CAI).

*Habitat*: damp sandy soil.

*Distribution*: tropics of the world.

**Hyparrhenia hirta** (L.) Stapf

Aqbet Dalaa, 1000-2000 m, March 1992, 106 (CAI); Abha-Al Sodah road, 2300 m, March 1992, 179 (CAI).

*Habitat*: stony hillside and hard sand; widespread in Asir Mountain region.

*Distribution*: Mediterranean and S Africa to SW Asia.

**Imperata cylindrica** (L.) Raeusch.

Tehama plain, 200 m, Feb. 1992, *s.n.* (CAI).

*Habitat*: in marshes and irrigated lands.

*Distribution*: tropical and warm temperate Old World.

**Lamarckia aurea** (L.) Moench

Abha, 200 m, March 1992, 126 (CAI).

*Habitat*: rocky ground in the mountains.

*Distribution*: Macronesia to NE Africa and C Asia through SW Arabia.

**Lasiurus scindicus** Henrard

= *L. hirsutus* (Vahl) Boiss.

Gizan, Baysh, Feb. 1992, 13 (CAI).

*Habitat*: sandy, stony and rocky soil.

*Distribution*: Tropical Africa to NW India.

**Panicum repens** L.

Tehama plain, 200 m, Feb. 1992, *s.n.* (CAI).

*Habitat*: a lawn weed.

*Distribution*: T Africa to Arabia.

**Panicum turgidum** Forssk.

Gizan-Baysh, Feb. 1992, 6 (CAI).

*Habitat*: sandy and saline places both inland and on coast.

*Distribution*: N and NE Africa to SW Asia.

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

Abha, 2200 m, March 1992, 166 (CAI).

*Habitat*: rocky fissures and wadi beds.

*Distribution*: T and NE Tropical Africa to SW Asia; fairly spread in southern Arabia.

**Pennisetum villosum** R. Br. ex Fresen.

Abha, 2200 m, April 1992, 128 (CAI).

*Habitat*: grown as an ornamental grass and weed of cultivation.

*Distribution*: Ethiopia and SW Arabia, naturalized in many warm parts of the world.

**Phalaris minor** Retz.

Tehama plain, 200 m, Feb. 1992, *s.n.* (CAI).

*Habitat*: common weed of cultivated area.

*Distribution*: Mediterranean to SW Asia.

**Phalaris paradoxa** L.

Abha, 2200 m, Feb. 1992, 125 (CAI).

*Habitat*: weed in crop fields; confined in Arabia to SW regions.

*Distribution*: S Europe, Mediterranean and temperate Asia.

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

Tehama plain, 200 m, Feb. 1992, *s.n.* (CAI).

*Habitat*: common weed in cultivated areas and damp soil.

*Distribution*: Mediterranean to NW India through Arabia.

**Rostraria cristata** (L.) Tzvelev

Tehama plain, 200 m, Feb. 1992, *s.n.* (CAI).

*Habitat*: desert sand and cultivated soil.

*Distribution*: Mediterranean to NW India through Arabia.

**Setaria verticillata** (L.) P. Beauv.

Tehama plain, 200 m, Feb. 1992, *s.n.* (CAI).

*Habitat*: common weed of cultivation.

**Setaria viridis** (L.) P. Beauv.

Tehama plain, 200 m, Feb. 1992, *s.n.* (CAI).

*Habitat*: common weed of cultivation.

*Distribution*: temperate Old World.

**Sorghum bicolor** (L.) Moench

Tehama plain, 200 m, Feb. 1992, *s.n.* (CAI).

*Habitat*: cultivated and escaped.

*Distribution*: cultivated in the Tropics; common in southern Arabia.

**Sporobolus spicatus** (Vahl) Kunth

Tehama plain, 200 m, Feb. 1992, *s.n.* (CAI).

*Habitat*: in saline desert sand.

*Distribution*: Africa to India.

**Sporobolus virginicus** (L.) Kunth

Tehama plain, 200 m, Feb. 1992, *s.n.* (CAI).

*Habitat*: sand dunes.

*Distribution*: T Africa and T Asia.

**Stipagrostis plumosa** (L.) Munro ex T. Anders.

Aqbet Dalaa, 100-1000 m, Feb. 1992, 57 (CAI).

*Habitat*: hard and stony soil.

*Distribution*: Mediterranean to SW Asia.

**Tetrapogon villosus** Desf.

Aqbet Dalaa, 1000-2000 m, April 1992, 93 (CAI); Abha, 2200 m, March 1992, 161 (CAI).

*Habitat*: stony hillside and granite soil.

*Distribution*: Macronesia, N and NE Africa to India.

*Liliaceae***Aloe vera** (L.) Burm. fil.

Tehama plain, 200 m, Feb. 1992, *s.n.* (CAI).

*Habitat*: sandy soil.

*Distribution*: naturalized in tropical and subtropical countries in both Old and New World.

**Asparagus africanus** Lam.

El Sodah, 2300 m, April 1992, 219 (CAI).

*Habitat*: rocky hillside.

*Distribution*: E and S Africa, SW Arabia and Socotra, widespread in Asir and S Hedjaz.

**Asphodelus fistulosus** var. **tenuifolius** (Cav.) Baker

= *A. tenuifolius* Cav.

Abha, 2200 m, March 1992, 129 (CAI).

*Habitat*: sandy soil.

*Distribution*: Mediterranean, NE Africa to SW Arabia.

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