

Annotated list to the flora of Farasan Archipelago, Southern Red Sea, Saudi Arabia

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Alfarhan A. H., Al-Turki A. T., Thomas J. & Basahy R. A. 2002. Annotated list to the flora of Farasan Archipelago, Southern Red Sea, Saudi Arabia. *Taeckholmia* **22**(1):1-33.

An annotated list of vascular plants of Farasan group of Islands is presented. Flora of these islands, though not unique in terms of species diversity or endemism, is important as it represents a transition point between the flora of East African countries and the Arabian Peninsula. The entire archipelago is an arid region with sparse vegetation. Most of the species, except mangroves and few other dominant perennials, are occasional annuals and not necessarily present in all years. A total of 202 species of vascular plants have been reported in this study, of which 155 are dicots and 47 are monocots. No endemic plant is, so far, collected from any part of the archipelago despite the region's isolated nature. However, 14 species collected from these islands are not known in any other part of Saudi Arabia. Vernacular names of popular species and keys for the identification of families, genera and species are also provided.

Key words: Angiosperms, Farasan Archipelago, Flora, Saudi Arabia.

Introduction

Farasan archipelago, lies in the southern part of Red Sea ($16^{\circ} 20' - 17^{\circ} 20' N$, $41^{\circ} 24' - 42^{\circ} 26' E$), about 40 km away from the Jizan coast and attains a width of approximately 120 km in SE–NW direction, (Fig.1). A total of 36 islands, both big and small, make the Farasan group of islands. Being separated from the main lands, the flora and vegetation of these islands did not receive any serious attention in the past. On the other hand, the study of the flora and plant communities of the archipelago is of great significance, as they inhabit an environment totally dependent of the influence of other communities of the mainland.

Presently, Farasan Al-Kabir is a protected area because of the presence of the only remaining wild population of Arabian Gazelle. These islands are important for migratory birds as nesting place and as a conducive environment for a number of endemic races of snakes.

However, the first and foremost factor that makes Farasan group of islands unique is the presence of two important mangrove communities, of *Avicennia marina* and *Rhizophora mucronata*. These are highly productive littoral biotopes important as a refuge for many small animals, birds and fish (Mandura *et al.*, 1987). The pneumatophores that grow erect above water are an ideal site for the breeding of a number of fish, particularly of shrimps, prawns and crabs. Both species share the same shore-line habitat and seen growing side by side. Though intermixed with each other, *Rhizophora mucronata* can be easily pin pointed from a distance by its shiny, dark green leaves.

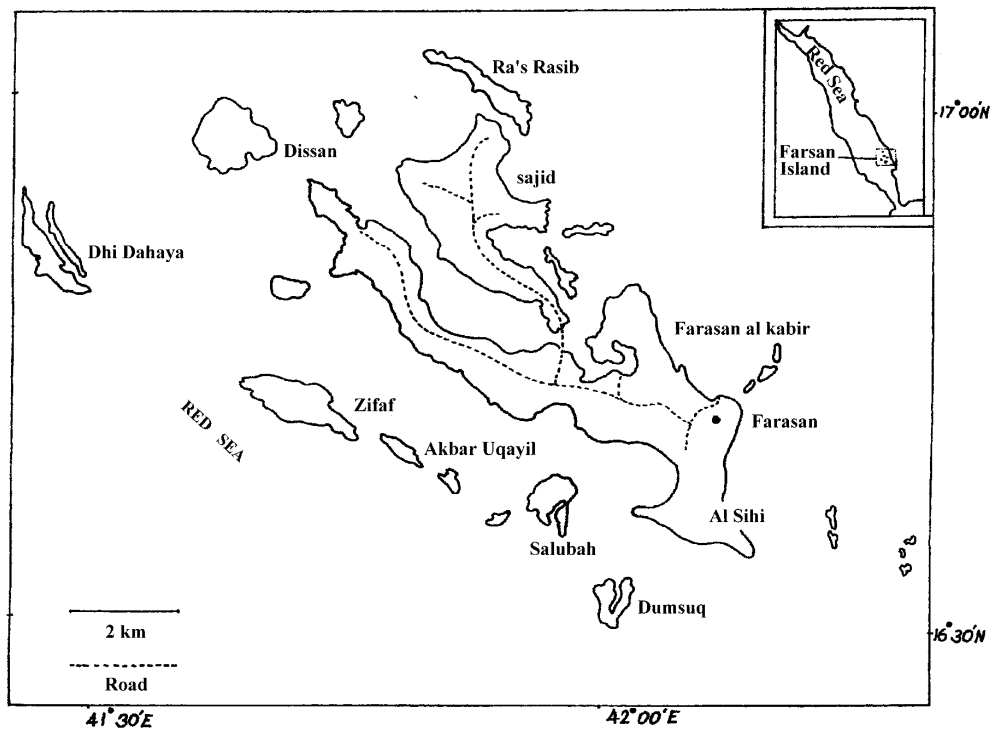


Fig. 1. Farasan Archipelago

Area of study

The southern portion of the Red sea forming the archipelago is very shallow (*c.*100 m) and has a width of approximately 360 km. between Jizan coast and the corresponding Eritrean coast. Among the group of islands, Farasan Al-Kabir (369 km²) has the longest perimeter (216 km) and the highest population (*c.* 4500). Other important islands with longest perimeters are Sajid (109 km²), Qummah (14.3 km²) and Zifaf (10 km²). The altitude of these islands ranges from 20 to 70 m. The general topography of other islands such as Zifaf, Dawshak, Dumsuq, *etc.* are more or less same as that of Farasan Al-Kabir; however, in Zifaf, the fossil coral is in the form of ridges and folds with a number of wadis.

Geology

The entire archipelago lies within the Somali-Masai regional center of endemism, a phytogeographical zone extending from the North-East Africa to Southwestern and Southern Arabian Peninsula (Al-Farhan, 1999). Geologists hold the view that Arabian Peninsula was part of Africa and the tectonic movement of the major plates separated the former and placed it in the present position as part of western Asia. These islands are either remnants of early land bridges which once connected the African and Asian continents, or were uplifted from the Tertiary sediments.

Soil

The entire region is an uplifted coral reef, and is composed mainly of fossil, coral surfaces along wadis and runnels and eroded coral cliffs or coral sands along coastal regions (Dabbagh *et al.*, 1984, Alwelaie *et al.*, 1993). However, soil formations like Aeolian and alluvial soil deposits can also be seen in some areas such as in protected bays, sandy shores, *etc.* In other areas, especially in Farasan Al-Kabir, long narrow ravines have developed due to the leaching of salt substratum and the collapse of overlying coral surfaces. These ravines are about 15 m deep and possess a sizable portion of the floral components, mostly ephemerals. Generally islands consist of uniform reef flat that are underlain by bright white marly limestones. Farther down, these are replaced by yellow-green sequences with isolated clay interlayers. An overall evaluation of the Farasan archipelago, particularly in Farasan Al-Kabir and Sajid, shows that the area has numerous faults and fault bundles. Though there are various speculations about the development of these fault structures, the present day fracturing of the area is apparently due to the ascending salt and so in part to the associated gravitational sliding process (Dabbagh *et al.*, 1984).

Climate

There are no weather stations located in any part of the archipelago. The climatic data is, therefore, collected from Jizan meteorological station. Similar to the climate of Tihama region in the mainland, all islands are also generally dry with unpredictable rain. The data recorded from 1985 to 1998 shows that the highest average precipitation was reported in December and the highest average temperature was in the months of June and August (Fig. 2).

Vegetation

Although the study area lies within the Afro-Asian phytogeographical zone, the floral elements recorded from these islands have more affinities towards Arabian flora than the floras of Eritrea, Somalia or Ethiopia (Hassan & Al-Hemaid, 1996). Occasional rains, condensation of dews or underground water sources are the main influential factors for the growth of annual vegetation in these islands. The highest concentration of the vegetation is seen in the sheltered wadis with fine silty-clay. The southeastern area of Farasan Al-Kabir, where the land is rugged, contains the highest number of plant species whereas the northwestern unbroken plateau and the western facing shoreline are devoid of plants except for a few annual species. Among the higher plants, a considerable number of them are halophytes or semi-halophytes and the growth of these plants is influenced by the salinity of the soil and the proximity to the seashore. Vegetation along the shoreline of Farasan and Sajid islands, particularly along the inlets and bays is dominated by *Avicennia marina* whereas in

Zifaf and Dumsuq islands another mangrove, *Rhizophora mucronata*, also show its presence along with *Avicennia marina*.

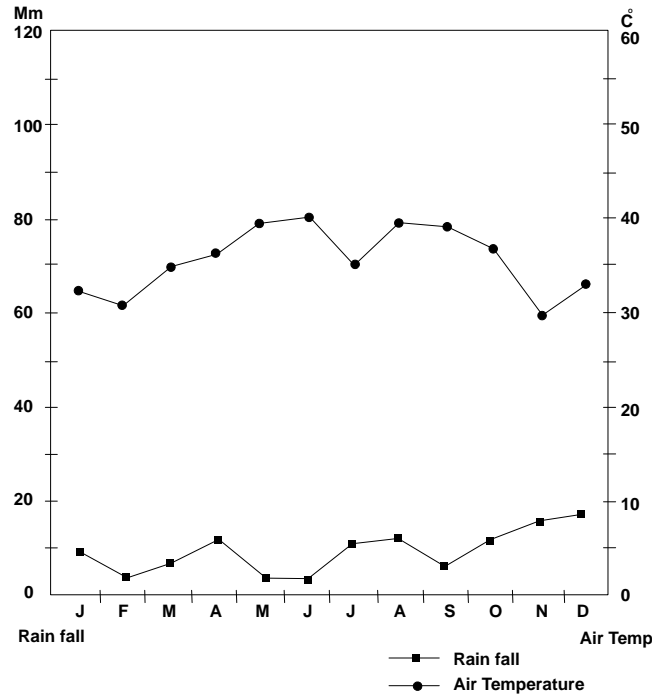


Fig. 2. Climatic diagram. Highest average rainfall and highest average temperature for a period between 1985 and 1998.

The vegetation in the sandy beaches is dominated, mainly, by halophytes such as *Limonium axillare*, *Suaeda monoica*, *Halopeplis perfoliata*, *Zygophyllum* spp., *Aeluropus lagopoides*, *Cress cretica*, etc. On the basis of habit and degree of grazing pressure by wild and domestic herds, communities of *Euphorbia fractiflexa*, *Panicum turgidum*, *Commiphora opobalsamum*, *Acacia ehrenbergiana*, *Blepharis ciliaris*, *Zygophyllum simplex*, *Salvadora persica*, etc. are developed in almost all major islands (Alwelaie *et al.*, 1993). In another study, seven habitats (silty runnels, palm orchards, rocky plains, rocky plateau crevices, coastal sand dunes, sandy plains and mangroves) have been identified with the help of TWINSPAN technique (El-Demerdash, 1996). Seven communities were also identified in these habitats, comprising 13 dominant perennials and 87 associate species. Tree species are rare in these islands. The common species are *Acacia ehrenbergiana*, *Commiphora opobalsamum*, *C. erythraea*, *Rhizophora mucronata*, *Ficus cordata ssp. salicifolia* and *Ziziphus spina-christi*.

Materials and methods

About 15 plant collecting expeditions were conducted between 1984 and 1996 to the various islands of the Archipelago. Cultivated plants were excluded from the collection except for *Prosopis juliflora* and *Panicum coloratum*, which are naturalized in the inlands. Normal herbarium and taxonomic practices were followed; relevant floristic documents dealing with

the plants of Arabian Peninsula and East Africa were consulted (Miller & Cope, 1996; Wood, 1997; Hedberg & Edwards, 1989; Edwards *et al.*, 1995; Thulin, 1993; Chaudhary, 1989, 1999, 2000; Collenette, 1999). Identification of specimens was carried out in the Herbaria of Royal Botanic Garden, Edinburgh (E), UK, and the Department of Botany and Microbiology, King Saud University (KSU), Riyadh, KSA and the voucher specimens are housed in these herbaria. A few specimens are also deposited in the National Herbarium of Ministry of Agriculture (RIY), Riyadh, KSA. The plant species collected, their Arabic local names, whenever available, and keys to genera and species are given for each family, together with very brief annotation for each species.

Results

Two hundred and two species of vascular plants falling in 49 families have been recorded from these islands. Among these, over 70% of plants are collected from the largest island, Farasan Al-Kabir. Pteridophytes and Gymnosperms are absent in the Archipelago. Gramineae is the largest family with 31 species followed by Leguminosae and Convolvulaceae with 20 and 12 species respectively.

No endemics are so far known from the study area. However, a few specimens, belonging to genera *Dipcadi* (Collenette 5595), *Glossonema* (Collenette 4834), *Argyrolobium* (Collenette 9250), *etc.*, need to be studied further, to see whether they would require new status or that they would be accommodated within the variability of the existing species. Although there are no endemics, there are 14 species of non-endemic plants restricted to the Archipelago; they are not known from any other parts of the Kingdom. These species are listed in Table 1.

Table 1. List of non-endemic species restricted to Farasan Archipelago, Saudi Arabia.

No.	Species	Family
1	<i>Basilicum polystachion</i> (L.) Moench	Labiatae
2	<i>Cleome noeana</i> ssp. <i>brachystyla</i> Chamberlain & Lamond	Capparaceae
3	<i>Commiphora erythraea</i> (Ehrenb.) Engl.	Burseraceae
4	<i>Dinebra retroflexa</i> (Vahl) Panzer	Gramineae
5	<i>Drake-brockmania somalensis</i> Stapf	Gramineae
6	<i>Ficus populifolia</i> Vahl	Moraceae
7	<i>Glossonema</i> sp. aff. <i>boveanum</i> (Decne.) Decne.	Asclepiadaceae
8	<i>Indigofera semitrijuga</i> Forssk.	Leguminosae
9	<i>Ipomoea hochstetteri</i> House	Convolvulaceae
10	<i>Limonium cylindrifolium</i> (Forssk.) Verdc.	Plumbaginaceae
11	<i>Micrococca mercurialis</i> (L.) Benth.	Euphorbiaceae
12	<i>Nothosaerva brachiata</i> (L.) Wight	Amaranthaceae
13	<i>Taverniera cuneifolia</i> (Roth) Arn.	Leguminosae
14	<i>Vahlia digyna</i> (Retz.) Kuntze	Vahliaceae

Table 2 lists sea grasses occurring in the shallow waters of various islands. *Cymodocea ?rotundata* is characterized by its ligulate, ribbon-shaped leaves with 9-13 nerves whereas in all other species, leaves are non-ligulate. In *Thalassia* spp., the rhizome is thick (0.5-1.5 cm) and ligneous and leaves' nerve reticulate while in *Halophila ovalis* the rhizome is thin and herbaceous and leaves ovate-elliptic (Aleem, 1979).

Table 2. List of sea grasses occurring in the sea shores of the various Farasan islands.

No.	Species	Family	Islands in which the species is represented
1	<i>Cymodocea</i> sp. (? <i>rotundata</i>)	Cymodoceaceae	As-Sajid Is.
2	<i>Halophila ovalis</i> R. Br.	Hydrocharitaceae	Farasan Al-Kabir Is., Zifaf Is.
3	<i>Thalassia hemprichii</i> (Ehr.) Aschers	Hydrocharitaceae	Farasan Al-Kabir Is.
4	<i>Thalasia testudinum</i> Koenig et Sims	Hydrocharitaceae	Zifaf Is.

Hussain and Khoja (1993) recorded *Halophila ovalis* R. Brown and *Thalassia hemprichii* (Ehr.) Aschers., *T. testudinum* Koenig et Sims and *Cymodocea* sp. from the shorelines of major islands. Although we have not seen any specimens of these species, their presence in Farasan islands cannot be ruled out.

Taxonomic Treatment

The plant species collected, their Arabic local names (whenever available), and keys to genera and species are given for each family, together with very brief notes on each species. The families are arranged in the alphabetic sequence under two sections, the Dicotyledons and Monocotyledons.

Dicotyledons

Acanthaceae

- 1.a. Corolla 1-lipped, perfect stamens 4..... *Blepharis*
- b. Corolla 2-lipped, perfect stamens 2 2
- 2.a. Anther lobes at unequal heights, lobes tailed at the base *Justicia*
- b. Anther lobes at equal heights, lobes not tailed at the base 3
- 3.a. Calyx divided into 5 equal parts *Ecbolium*
- b. Calyx divided into 4 unequal parts *Barleria*

Barleria hochstetteri Nees

Unarmed undershrub. *Collenette* 5014 (E)

Blepharis ciliaris (L.) B.L. Burt “Naqee, Zughaf”

Perennial, prickly herb. *R. Basahy* 3385 (KSU)

Ecbolium viride (Forssk.) Alston “Khussair, Madaid”

Glabrescent shrub or undershrub. *S.Collenette* s.n. (E)

Justicia flava (Vahl) Vahl “Dhamairan”

Weak-stemmed to erect, perennial herb. *R. Basahy* 3187 (KSU).

Aizoaceae

- 1.a. Leaves linear in basal rosette only; branches thin delicate *Mollugo*
- b. Leaves broad, opposite; branches thick 2
- 2.a. Plants hairy-tomentose; sepals free to base *Glinus*
- b. Plants usually glabrous; sepals fused at the base 3

- 3.a. Leaves elliptic, styles 2-3; fruit 2-valved *Zaleya*
 b. Leaves ovate-orbiculate; style 1; fruit circumsissile *Trianthema*

Glinus lotoides L. "Ghobaira, Em-Tofaa"
 Stellate-tomentose, prostrate herb. *R. Basahy* 3139 (KSU)

Mollugo nudicaulis Lam.
 Ascending annual herb *S. Collenette* s.n. (E)

***Trianthema* L.**

- 1.a. Flowers solitary; leaves ovate-orbiculate, more than 1 cm long *T. portulacastrum*
 b. Flowers clustered; leaves elliptic-obovate; less than 1 cm long *T. sheilae*

T. portulacastrum L. "Laani"
 Prostrate annual herb. *S. Collenette* 5594 (E); *S. Chaudhary* 10360 (RIY).

T. sheilae A.G. Miller
 Bushy annual or perennial herb. *R. Basahy* 3140 (KSU); *S. Collenette* 5026 (E)

Zaleya pentandra (L.) Jeffrey "Laani"
 Prostrate, perennial herb *Collenette* 8982 (E)

Amaranthaceae

- 1.a. Perennial tomentose subshrubs; flowers embedded in white-woolly hairs *Aerva*
 b.. Annual, subglabrous herb; flowers not embedded in white-woolly hairs 2
 2.a. Each fertile flower is subtended by one sterile flower on each side *Digera*
 b. Flowers not as above 3
 3.a. Leaves alternate; perianth glabrous *Amaranthus*
 b. Lower leaves opposite, upper leaves alternate; perianth densely hairy
 outside *Nothosaerva*

Aerva javanica (Burm. f.) Juss. ex Schultes "Arwa, Ra, Tarfa"
 Dioecious plants with dense, cylindrical spikes. *R. Basahy* 3137 (KSU)

***Amaranthus* L.**

- 1.a. Flowers in axillary clusters *A. graecizans*
 b. Flowers usually in terminal spicate inflorescence *A. viridis*

A. graecizans L. "Shadakh, Sindar"
 Annual, erect herbs with linear lanceolate leaves. *R. Basahy* 3172; *S. Collenette* 9416 (E)

A. viridis L. "Sindar, Shadakh"
 Annual erect herb with ovate-oblong leaves. *R. Basahy* 3171 (KSU).

Digera muricata (L.) Mart. "Degir, Dyddjer"
 Glabrous erect herb with ovate-rhomboid leaves. *R. Basahy* 3173 (KSU); *S. Collenette* 5005 (E).

Nothosaerva brachiata (L.) Wight

Slender herb with elliptic-oblong leaves. In Saudi Arabia this species is recorded from Farasan Island only. *R. Basahy* 3174 (KSU); *S. Collette* 8997 (E).

Aristolochiaceae

Aristolochia bracteolata Lam. “Loiya, Iqleet”

A leafy vine with ovate-cordate leaves. *S. Collette* s.n. (E)

Asclepiadaceae

- 1.a. Leafless, fleshy, angular dwarf-looking herbs; angular sides toothed or tuberculate 2
- b. Normal looking, leafy plants 4
- 2.a. Inflorescence racemose looking; stems slender, narrowing towards Apex; stem tooth straight 3
- b. Inflorescence terminal, umbellate; stems robust, not tapering; stem tooth curved down *Desmidorchis*
- 3.a. Flowers on persistent stem tips; corolla lobes hairy *Caralluma*
- b. Flowers on deciduous stem tips; corolla lobes glabrous *Cryptolluma*
- 4.a. Weak-stemmed plants, climbers or twiners; corolla lobes twisted in bud, follicles linear, lanceolate, smooth *Pentatropis*
- b. Erect herbs or shrubs; corolla lobes not twisted in bud; follicles sub-globular or ovoid-lanceolate, surface smooth or with soft spines 5
- 5.a. Large shrubs; leaves oblong with auriculate base, margin entire; Follicles subglobose, 5-10 cm wide, smooth *Calotropis*
- b. Small herbs; leaves ovate-lanceolate with undulate margins; follicles ovoid, strongly echinate *Glossonema*

Calotropis procera (Aiton) W.T. Aiton “Ushar”

Erect, glaucous shrub with corky bark. *S. Collette* s.n. (E).

Caralluma subulata Forssk. ex Decne.

Slender stemmed succulent. Flowers purplish, nodding. *S. Collette* 4854 (E)

Cryptolluma edulis Plowes

Succulent, mottled stems. Corolla pale greenish with deflexed lobes. *S. Collette* 6888 (E)

Desmidorchis retrospeciens (Forssk.) Plowes

Stout succulent plant with many branches from the base. Flowers in spherical heads.

S. Collette 4944 (E).

***Glossonema* Decne.**

- 1.a. Leaves grayish in colour; flowers 4 mm wide *G. boveanum*
- b. Leaves bright green; flowers 1 cm wide *G. sp. aff. boveanum*

G. boveanum (Decne.) Decne.

Herb; leaves grayish; flowers axillary, pale-pink. *R. Basahy* 3205 (KSU)

G. sp. aff. boveanum (Decne.) Decne.

Bushy, leafy perennial herb. In Saudi Arabia, specimens are collected from Farasan Island only.

S. Collette 4834, 4863 (E).

Pentatropis nivalis (J.F. Gmel.) D.V. Field & J.R.I Wood

Slender vine with narrow heart shaped leaves. *R. Basahy* 3208, 3209 (KSU)

Boraginaceae

***Heliotropium* L.**

- 1.a. Flowers bracteate; leaves up to 2.5 mm wide, linear *H. strigosum*
- b. Flowers ebracteate; leaves more than 4 mm wide 2
- 2.a. Corolla lobes acuminate *H. zeylanicum*
- b. Corolla lobes rounded 3
- 3.a. Leaves sessile or subsessile, revolute margined; spike usually less than 5 cm long; corolla tube white 4
- b. Leaves petiolate, margin entire, not revolute margined; spike usually more than 10 cm long; corolla tube green *H. longiflorum*
- 4.a. Nutlets 2, glabrous, usually winged; two posterior calyx lobes fused .. *H. pterocarpum*
- b. Nutlets 4, pubescent, without wings; calyx lobes free *H. ramosissimum*

H. longiflorum Hochst. & Steud.

Perennial herb; flowers on long spikes. *R. Basahy* 3381 (KSU); *S. Collette* 9253 (E).

H. pterocarpum (DC.) Hochst. & Steud.

Annual herb with ovate-lanceolate leaves. *S. Collette* 9254 (E)

H. ramosissimum (Lehm.) Sieb. ex A. DC.

Perennial, bristly pubescent herb. *R. Basahy* 3130 (KSU); *S. Collette* 4855 (E)

H. strigosum Willd.

Intricately branched, perennial herb; appressed bristly-hairy. *S. Collette* s.n. (E).

H. zeylanicum (Burm. f.) Lam.

Bushy bristly hairy subshrub. Leaves lanceolate. *S. Collette* 9252 (E).

Burseraceae

***Commiphora* Jacq.**

- 1.a. Fruit 4-valved; leaflets crenate to serrate *C. erythraea*
- b. Fruit 2-valved; leaflets entire *C. gileadensis*

C. erythraea (Ehrenb.) Engl.

Trees; bark whitish or yellowish, smooth, peeling off in papery flakes; leaflets 3-5. In Saudi Arabia, this species has been collected from Farasan island only. *R. Basahy* 3159 (KSU); *S. Collette* 4832, 6830 (E).

C. gileadensis (L.) C. Chr.

Trees, branches drooping; leaves 3-5 foliolate. *R. Basahy* 3160 (KSU); *S. Collenette* 4995, 6825 (E). Dominant.

Capparaceae

- 1.a. Branches with spiny stipules *Capparis*
- b. Branches exstipulate or with non spiny stipules 2
- 2.a. Shrubs, trees or climbers; fruit indehiscent or if dehiscent, then, seeds embedded in pulp 3
- b. Herbs, fruit dehiscent *Cleome*
- 3.a. Stamens 4-5, fruit dehiscent, seeds surrounded by coloured pulp *Cadaba*
- b. Stamens numerous, fruit indehiscent, torulose *Maerua*

***Cadaba* Forssk.**

- 1.a. Leaves glandular hairy *C. glandulosa*
- b. Leaves glabrous or farinose 2
- 2.a. Leaves linear-elliptic or ovate-oblong; petals present 3
- b. Leaves orbicular, petals absent *C. rotundifolia*
- 3.a. Leaves ovate-oblong, less than 2.5 cm long; fruit farinose, somewhat torulose *C. farinosa*
- b. Leaves linear-elliptic, usually more than 3 cm long; fruit densely glandular, cylindrical *C. longifolia*

C. farinosa Forssk. "Asal, Sarh"
Shrub with farinose branches. *S. Collenette* s.n. (E)

C. glandulosa Forssk. "Qarmat, Tannaim"
Glandular, aromatic shrub; petals absent; fruit ovate-cylindrical. *R. Basahy* 3264 (KSU).

C. longifolia DC. "Ghassa, Matlawi"
Shrub with long pedicelled flowers; petals yellow, stamens 4. *R. Basahy* 3262 (KSU).

C. rotundifolia Forssk. "Qadhab"
Shrub with drooping branches; fruit narrowly cylindrical. *S. Chaudhary* 13781 (RIY)

***Capparis* L.**

- 1.a. Leaves elliptic to orbiculate, thick succulent; sepals green, unequal, posterior sepal strongly hooded; fruit ovoid, c. 6 cm long *C. cartilaginea*
- b. Leaves deciduous; branches usually leafless looking; sepals orange-red, unequal; fruit globose, c. 1 cm in diameter *C. decidua*

C. cartilaginea Decne. "Shafallah, luf"
An evergreen spiny shrub with thick leathery leaves. Plants of rocky habitat. *R. Basahy* 3259 (KSU).

C. decidua (Forssk.) Edgew. “Tandhab; Sodad”
Small tree or a large shrub with intricate branches. *R. Basahy* 3253 (KSU).

Cleome L.

- 1.a. Leaves digitately compound 2
- b. Leaves simple *C. noeana* ssp. *brachystyla*
- 2.a. Leaves mostly trifoliolate; androphore absent *C. brachycarpa*
- b. Leaves 5-7 foliate; androphore conspicuous *C. gynandra*

C. brachycarpa Vahl ex DC.
Perennial herb with stipitate glands. Seeds glabrous. *R. Basahy* 3265 (KSU)

C. gynandra L. “Unis”
Erect annual herb; stamens 6; seeds reticulate, glabrous. *S. Collenette* s.n. (E)

C. noeana ssp. *brachystyla* Chamberlain & Lamond
Perennial densely glandular hairy herb; stamens 4. *S. Collenette* 4860, 6891 (E). In Saudi Arabia, this species is recorded from Farasan Island only.

Maerua oblongifolia (Forssk.) A. Rich.
A climbing shrub, leaves narrowly oblong. *R. Basahy* 3255 (KSU); *S. Collenette* 6885 (E).

Caryophyllaceae

***Polycarpea* Lam.**

- 1.a. Annual, glabrous herb; flowers in dense terminal spicate heads; leaves entire, acute *P. spicata*
- b. Perennial, tomentose herb, flowers in axillary or terminal cymes; leaves revolute-margined, distinctly mucronate *P. repans*

P. spicata Wight
Leaves in basal rosette, obovate. *R. Basahy* 3164 (KSU); *Collenette* 4172 (E).

P. repans (Forssk.) Aschers. & Schweinf. “La’laah, Ruqayyiqah”
Leaves opposite or whorled; sepals scarious margined. *S. Collenette* s.n. (E)

Celastraceae

Maytenus parviflora (Vahl) Sebsebe
Spiny shrub with elliptic-ovate leaves. Capsule obconic, pink. *S. Collenette* 4844 (E).

Chenopodiaceae

- 1.a. Plants with normal leaves; fruit enclosed in two leafy bracts *Atriplex*
- b. Plants with modified leaves or leaves absent 2
- 2.a. Branches made of articulate (jointed) segments *Arthrocnemum*
- b. Branches not like above 3
- 3.a. Leaves succulent 4

- b. Leaves linear or broadly triangular ending in a spine, clasping *Cornulaca*
- 4.a. Leaves subglobular, perfoliate, sometimes reddish tinged stamens 1-2 *Haloepelis*
- b. Leaves scale-like or linear cylindrical or club shaped 5
- 5.a. Leaves scale-like; fruiting perianth with membranous wings *Salsola*
- b. Leaves linear, cylindrical or club shaped, somewhat flattened above; fruiting perianth not winged *Suaeda*

Arthrocnemum macrostachyum (Moric)K Koch. “Shu”
Perennial halophytic shrub; leaves reduced to cupules at each node. *S.Collenette* 4839 (E).

***Atriplex* L.**

- 1.a. Leaves auricled-cordate; fruiting bracteoles ovate elliptical, entire *A. farinosa*
- b. Leaves deltoid-ovate; fruiting bracteoles distinctly reniform to obcordate, minutely dentate *A. halimus*

A. farinosa Forssk. “Osfai, Waadah”
Perennial, grey herb with woody stems. *R. Basahy* 3240 (KSU); *S.Collenette* 4843 (E).

A. halimus L. “Qataf”
Perennial shrub. *S.Collenette* 6228 (E).

Cornulaca ehrenbergii Asch.
Densely branched shrub with imbricate clasping leaves. *S.Collenette* 6376, 9415 (E)

Haloepelis perfoliata (Forssk.) Bunge ex Asch “Khurrayz”
Succulent perennial; leaves subglobular. *S.Chaudhary* 12196 (RIY).

Salsola sp.
Semisucculent, perennial herb. *S.Collenette* 9255 (E)

***Suaeda* Forssk.**

- 1.a. Large shrubs, up to 2-4 m tall with woody stems. Leaves usually flat on both sides *S. monoica*
- b. Herbs or small shrubs, up to 1.5 m tall. Leaves linear- cylindrical or flat on the upper side 2
- 2.a. Annual herb, ovary adnate to the perianth. Leaves 10-30 mm long *S. aegyptiaca*
- b. Perennial shrub, ovary free from perianth, leaves 5-13 (-115) mm long *S. vermiculata*

S. aegyptiaca (Hasselq.) Zoh. “Mulleih, Suwwad”
Flowers in dense axillary clusters; perianths incurved. *S.Collenette* 4853, 6824 (E).

S. monoica Forssk. “Aasal”
Shrub with distinct trunk. *R. Basahy* 3237 (KSU); *S.Chaudhary* 14077 (RIY)

S.vermiculata Forssk. ex J. Gmelin “Suwwad, Tahma”
Perennial shrubs. *S.Collenette* 5597, 6373 (E); *S.Chaudhary* 13086 (RIY)

Compositae

- 1.a. All florets ligulate, leaves usually pinnately sinuate-lobed *Launaea*
- b. Florets at least some of them tubular; leaves undivided 2
- 2.a. Plants non-aromatic, flowers pinkish; leaves serrate heads numerous, corymbose; pappus 1-seriate *Pluchea*
- b. Plants strongly aromatic; flowers yellow; leaves entire, wavy; heads solitary on long peduncles; pappus 2-seriate *Pulicaria*

Launaea intybacea (Jacq.) Beauverd.

Glabrous, annual herb, leaves oblanceolate; flower heads in clusters. *R. Basahy* 3248 (KSU)

Pluchea dioscoridis (L.) DC.

Shrub with sessile leaves; involucre villous. *S.Collenette* s.n. (E).

Pulicaria jauberti Gamal Ed Din "Khawah; Munas"

Grey-villous herb with oblanceolate, sessile leaves. *S.Collenette* 4856 (E).

Convolvulaceae

- 1.a. Styles 2, completely separate or almost so 3
- b. Style 1 2
- 2.a. Stigmas two, linear, pollen grains smooth *Convolvulus*
- b. Stigma one, capitate, pollen grains spiny or spinulose *Ipomoea*
- 3.a. Ovary glabrous; styles deeply forked; stigmas 2, capitate *Evolvulus*
- b. Ovary hairy at the top; styles not forked; stigmas capitate 4
- 4.a. Flowers in terminal clusters; stamens and styles exerted *Cressa*
- b. Flowers 1-3 in cymose inflorescence; stamens and styles included *Seddera*

Convolvulus L.

- 1.a. Annual herbs. Leaves attenuate or cuneate at base 2
- b. Perennial herbs, often twining. Leaves sagittate or auriculate 3
- 2.a. Plant usually prostrate, adpressed pubescent; basal leaves often undulate; flowers usually at the tip of the branches *C. pilosellifolius*
- b. Plant usually erect or ascending, tomentellous with erect hairs; basal leaves not undulate; flowers distributed along the stem *C. rhyniospermus*
- 3.a. Flowers sessile, 4-10 in compact cymes; sepals pubescent *C. glomeratus*
- b. Flowers pedicelled, solitary or up to 3 in each cymes. sepals glabrous *C. arvensis*

C. arvensis L. "Faja'ah, `Ujal, Fadakh"

Prostrate or twining herbs. Corolla white or pink. *S.Collenette* s.n. (E)

C. glomeratus Choisy

A twining herb with oblong-lanceolate leaves; corolla white. *R. Basahy* 3176 (KSU).

C. pilosellifolius Desr.

Prostrate or ascending herbs with oblanceolate or oblong leaves. *S.Collenette* 4846, 5022 (E).

C. rhyniospermus Hochst. ex Choisy
Tomentellous-pubescent herb; corolla distinctly lobed, white. *S.Collenette* 5008, 9256 (E).

Cressa cretica L. “Shuwwayl”

Erect perennial herb with small ovate-lanceolate, sessile leaves. *R. Basahy* 3181 (KSU).

Evolvulus alsinoides (L.) L.

Semi-prostrate herbs; leaves elliptic; corolla blue.

***Ipomoea* L.**

- 1.a. Leaves 3-5-lobed, seeds orange-red, subglobular, sepals ovate to trullate-ovate *I. hochstetteri*
- b. Leaves not lobed, cordate based; seeds brown, trigonal 2
- 2.a. Outer sepals auriculate at base *I. sinensis*
- b. Outer sepals ovate 3
- 3.a. Sepals and capsules glabrous, flowers laxly arranged in cymes *I. obscura*
- b. Sepals and capsules hairy; flowers in axillary clusters *I. eriocarpa*

I. eriocarpa R. Br.

Prostrate, annual herb; leaves ovate-cordate or sub-hastate. *S.Collenette* 9257 (E)

I. hochstetteri House

Twining, glabrous herb; corolla purple. *S.Collenette* 8996, 9256 (E).

I. obscura (L.) Ker-Gawl.

Perennial, prostrate or twining herb, corolla yellowish with purple base. *S.Collenette* s.n. (E)

I. sinensis ssp. *blepharosepala* (A. Rich.)Meeuse

Trailing herbs; leaves ovate-cordate; corolla pink with purple center. *S.Chaudhary* 16027 (RIY)

***Seddera* Hochst.**

- 1.a. Leaves narrowly linear 15 x1.5 mm, flowers usually at the tip of the branches *S. virgata*
- b. Leaves ovate-elliptic with a curved tip; 6x3 mm. Flowers usually at the axils of leaves *S. latifolia*

S. latifolia Hochst. & Steud.

Woody shrublet, leaves ovate-elliptic with a curved tip; flowers sub-sessile. *S.Collenette* s.n. (E).

S.virgata Hochst. & Steud. ex Hochst

Ascending shrublet; leaves 1-nerved. *S.Collenette* 4883 (E).

Cucurbitaceae

- 1.a. Stamens 5, fruit conical, beaked *Kedrostis*
- b. Stamens 3, fruit subglobose or ellipsoid without beak 2
- 2.a. Fruit up to 15 mm long; stamens bi-thecous *Zahneria*
- b. Fruit about 5.5 cm long; stamens at least one of them monothealous *Cucumis*

Cucumis L.

- 1.a. Fruits covered with prominent tubercles or bristles *C. sp. aff. prophetarum*
- b. Fruits surface smooth, without any tubercles *C. melo ssp. agrestis*

C. melo ssp. agrestis Naud

Annual, trailing herb with ovate-cordate leaves. *R. Basahy* 3133 (KSU); *S. Collenette* 4993 (E).

C. sp. aff. prophetarum L.

Perennial, trailing herb. Leaves ovate, weakly lobed. *S. Collenette* 4824, 5017 (E).

Kedrostis gijef (Forssk.) Jeffrey

Perennial, dioecious, woody climber. Leaves lobed, scabrid. *S. Collenette* 4857 (E).

Zahneria anomala C. Jeffrey

Glabrous, woody climbing perennial; leaves entire, deeply lobed. *S. Collenette* 5015 (E).

Euphorbiaceae

- 1.a. Inflorescence a cyathium (a number of male flowers and a female flower arranged in an involucre); milky latex present *Euphorbia*
- b. Inflorescence not a cyathium; male and female flowers separate; plants without milky latex 2
- 2.a. Leaves simple 3
- b. Leaves palmately 3-5 lobed 4
- 3.a. Leaves entire or indistinctly crenulate 5
- b. Leaves serrate 7
- 4.a. Flowers enclosed in a pair of 3-lobed leaf-like bracts *Dalechampia*
- b. Flowers not as above *Jatropha*
- 5.a. Dioecious shrubs; fruit a white globose drupe *Flueggea*
- b. Monoecious herbs; fruit a capsule 6
- 6.a. Prostrate herb; petals present *Andrachene*
- b. Erect herbs; petals absent *Phyllanthus*
- 7.a. Flowers on interrupted, axillary racemes with clusters of male and female flowers together *Micrococca*
- b. Flowers spicate; male flowers above and female flowers below..... *Acalypha*

Acalypha indica L.

Pubescent, annual herb. Leaves ovate. Spike axillary, female bracts enlarging in fruit. *R. Basahy* 3375 (KSU); *S. Collenette* 4996 (E).

Andrachene aspera var. *glandulosa* Hochst.

Glabrous, blue-green, perennial herb. Leaves orbicular with cordate base. *S. Collenette* 5007 (E).

Delechampia scandans var. *cordofana* (Hochst.) Muell.-Arg.

Perennial climber. Leaves dentate; flowers axillary. *S. Collenette* 6893 (E).

***Euphorbia* L.**

- 1.a. Succulent, spiny, leafless plants; spines paired; branches winged 3-angled, perennial; cyathia at the tip of the branches; capsule glabrous *E. fractiflexa*
- b. Non succulent, unarmed plants; leaves opposite with unequal base
Annuals, cyathia axillary; capsule pubescent *E. granulata*

E. fractiflexa S. Carter & Wood

Ascending, succulent shrub. *R. Basahy* 3386 (KSU); *S. Collenette* 4836 (E).

E. granulata Forssk.

Procumbent herb. Leaves oblong or obovate. *S. Collenette* s.n. (E).

***Flueggea* Willd.**

- 1.a. Branches ending in thorn-like points; leaves spatulate *F. leucopyrus*
- b. Branches unarmed; leaves variable obovate to orbiculate *F. virosa*

F. leucopyrus

Dioecious shrub. *S. Collenette* 5024 (E).

F. virosa (Roxb. ex Willd.) Voight "Nahaf"

Glabrous shrub, branches becoming spine-like; flowers in axillary clusters. *S. Chaudhary* 15995 (RIY).

Jatropha lobata (Forssk.) Muell.-Arg.

Erect shrublet with dentate leaves; stipules branched, filiform. *S. Chaudhary* 14408 (RIY)

Micrococca mercurialis (L.) Benth.

Erect, annual herb. Leaves ovate-elliptic, crenate. Recorded from Farasan Island only. *S. Collenette* 5599 (E).

***Phyllanthus* L.**

- 1.a. Leaves narrowly elliptic or oblanceolate *P. maderaspatensis*
- b. leaves orbicular to obovate *P. rotundifolius*

P. maderaspatensis L.

Perennial herb; sepals 6, obovate; fruit sessile. *S. Collenette* 4999 (E).

P. rotundifolius Klein ex Willd.

Erect herb; leaves obovate to orbicular, sepals 6, fruit pedicel c.1.5 mm long. *R. Basahy* 3134 (KSU)

Labiatae

- | | | |
|------|--|--------------------|
| 1.a. | Calyx 10-toothed; calyx tube oblique at the throat | <i>Leucas</i> |
| b. | Calyx 5-toothed, tube not oblique at the throat | 2 |
| 2.a. | Style bifid; annual herb; leaves glabrous | <i>Basilicum</i> |
| b. | Style single, perennial herb; leaves pubescent on both sides | <i>Orthosiphon</i> |

Basilicum polystachion (L.) Moench

Perennial herb with heart shaped leaves, 15 cm high. In Saudi Arabia, this species is collected from Farasan Island only. *S. Collette* 9244, 9373 (E).

Leucas urticifolia (Vahl) R. Br.

Erect, annual herb; leaves ovate, crenate. *S. Collette* 4997 (E); *S. Chaudhary* 5980 (RIY).

Orthosiphon pallidus Royle ex Benth.

Erect, non-aromatic annual herb. *S. Collette* s.n. (E)

Leguminosae

- | | | |
|-------|---|--|
| 1.a. | Inflorescence a globular head; stamens numerous | <i>Acacia</i> |
| b. | Inflorescence a spicate raceme or a simple raceme, stamens usually 10 | 2 |
| 2.a. | Inflorescence a spicate raceme; leaves bipinnate | <i>Prosopis</i> |
| b. | Inflorescence a simple raceme or a capitate head or flowers solitary looking | 3 |
| 3.a. | Corolla papilionaceous, stamens usually equal, either monadelphous or diadelphous | 4 |
| b. | Corolla not papilionaceous; stamens unequal, free | <i>Senna</i> |
| 4.a. | Leaves unifoliolate | 5 |
| b. | Leaves compound | 7 |
| 5.a. | Shrub; leaves obovate; pod segmented with hooked or straight bristles | <i>Taverniaria</i> |
| b. | Annual herb; leaves oblong or linear | 6 |
| 6.a. | Pod 1-seeded, globose, appressed pubescent | <i>Indigofera</i>
(<i>I. linifolia</i>) |
| b. | Pod 5-segmented, glabrous, transversely rugose | <i>Alysicarpus</i> |
| 7.a. | Leaves trifoliolate | 8 |
| b. | Leaves pinnate | <i>Indigofera</i> |
| 8.a. | Pod segmented, densely hairy-echinate | <i>Taverniaria</i> |
| b. | Pod not as above | 9 |
| 9.a. | Terminal leaflet subtended by small stipules(stipels) | <i>Rhynchosia</i> |
| b. | Terminal leaflet without stipels | 10 |
| 10.a. | Stamens monadelphous, calyx deeply two-lipped | <i>Argyrolobium</i> |
| b. | Stamens diadelphous, calyx not two lipped | 11 |
| 11.a. | Flowers purple or pink, style tapering | 12 |
| b. | Flowers white or pale pink; style ribbon-like | <i>Tephrosia</i> |
| 12.a. | Plant spiny, pod tetragonal | <i>Indigofera</i>
(<i>I. spinosa</i>) |
| b. | Plant spiny | 13 |
| 13.a. | Pod linear oblong, 50x3 mm, vexillum pubescent outside, style twisted | <i>Tephrosia</i> |
| b. | Pod ovoid, about 12 mm long; vexillum glabrous outside; style not twisted, sometimes incurved | <i>Crotalaria</i> |

Acacia ehrenbergiana Hayne “Salam”
Large shrub with long stipular spines. Pod falcate, c. 7 mm wide. Dominant plant. *R. Basahy* 3201 (KSU).

Alysicarpus glumaceus (Vahl) DC.
Erect annual herb with leaf opposed racemes, corolla red. *S. Collenette* 4988 (E).

Argyrolobium sp. aff. *arabicum* (Decne.) Jaub. & Spach
Erect, perennial herb; racemes 1-4-flowered, corolla pale yellow. *S. Collenette* 9250 (E).

Crotalaria microphylla Vahl “Fija’ah”
Prostrate, leafy annual herb; corolla pink. *S. Collenette*. s.n. (E)

***Indigofera* L.**

- 1.a. Leaves unifoliolate *I. linifolia*
- b. Leaves trifoliolate or pinnate 2
- 2.a. Inflorescence axis spiny, leaves trifoliolate *I. spinosa*
- b. Inflorescence axis not spiny, leaves pinnate 3
- 3.a. Leaflets alternate 4
- b. Leaflets opposite 5
- 4.a. Semiprostrate herb, pod 5x2 mm, calyx half as long as corolla, lobes much longer than tube; standard petal sparsely pubescent on the back ... *I. semitrijuga*
- b. Shrublet, pod 15x2 mm; calyx less than half the length of corolla, lobes slightly longer than tube, standard petal densely pubescent with appressed hairs on the back *I. oblongifolia*
- 5.a. Annuals; pod flattened, 5-9-seeded; leaflets oblanceolate *I. hochstetteri*
- b. Perennials, pod torulose, 3-4-seeded, leaflets obovate to suborbicular *I. coerulea*

I. caerulea Roxb
Bushy shrublet; flowers yellowish; pods slightly constricted pods. *S. Collenette* 4825 (E).

I. hochstetteri Baker
Prostrate branching herb with clusters of short flat curved pods. *Y. Wutaid* 12609 (RIY)

I. linifolia (L. f.)Retz.
Prostrate herb with narrow trifoliolate leaves and white downy pods. *S. Collenette* 5004 (E).

I. oblongifolia Forssk. “Hasa’r”
Spreading shrublet, c. 1 m. high; flowers red; pod narrow cylindrical. *R. Basahy* 3193 (KSU). Dominant plant.

I. semitrijuga Forssk.
Semi-prostrate herb with silvery leaves and dark red flowers. *R. Basahy* 3197 (KSU); *S. Collenette* 4176 (E). In Saudi Arabia, this species is recorded from Farasan island only.

I. spinosa Forssk. “Qataf, Hil, Qasar”
Bushy spiny shrublet; flowers pale scarlet. *S. Collenette*. s.n. (E)

Prosopis juliflora DC. “Brosopis”
 Shrubby spiny tree with bright green leaves; pod pale yellow, up to 8-15 cm long .
S. Collenette – 4851 (E).

***Rhynchosia* Lour.**

- 1.a. Abaxial surface of leaves densely gland-dotted; flower about 5 mm long *R. pulverulenta*
- b. Abaxial surface of leaves less prominent (distance between the gland is more than the width of an individual gland); flower about 8 mm long *R. minima*

R. minima (L.) DC.
 Tangled vine with trifoliolate leaves; flowers yellow. *S. Collenette* 4175, 4829 (E). Dominant plant on restricted localities.

R. pulverulenta Stocks
 Weak stemmed vine; flowers pale yellow. *S. Collenette* 9418 (E).

***Senna* Mill.**

- 1.a. Woody stemmed shrub; leaflets acute *S. alexandrina*
- b. Annual or perennial herb; leaflets obtuse *S. holocericea*

S. alexandrina Mill. “Senna Makki”
 Small shrub with narrow, elliptic leaves; flowers yellow. *S. Chaudhary* 13113 (RIY).
 Abundant in restricted localities.

S. holocericea (Fresei) Greuter
 Bushy downy herb with oblong, obtuse leaves; pod flat, curved. *R. Basahy* 3198 (KSU)

***Taverniera* DC.**

- 1.a. Old stems densely hairy; leaves usually trifoliolate *T. lappacea*
- b. Old stems glabrous or glabrescent; leaves usually unifoliolate *T. cuneifolia*

T. cuneifolia (Roth) Arn.
 Bushy shrub, flowers pink. In Saudi Arabia, this species is collected from Farasan Island only. *S. Collenette* 8995 (E).

T. lappacea (Forssk.) DC.
 Low branching woody herb; leaflets obovate; flowers yellowish. *S. Collenette* 9245 (E).

***Tephrosia* Pers.**

- 1.a. Leaves glabrous above 2
- b. Leaves pubescent above *T. quartiniana*
- 2.a. Style tapering, twisted, legume 9-12 (-13)-seeded *T. uniflora*
- b. Style ribbon-like, not twisted, legume 5-9-seeded/ *T. subtriflora*

T. quartiniana Greuter & Burdet

Leafy, prostrate herb, flowers pale pink. *S. Collenette* 4173 (E).

T. subtriflora Hochst. ex Bak

Branching leafy herb; white flowers. *S. Collenette* 4989 (E).

T. uniflora Pers. ssp. *petrosa* (Blatt. & Hallb.) Gillet & Ali

Woody herb, c. 30 cm high; flowers solitary, pink. *S. Collenette* 5012 (E).

Lythraceae

Ammania baccifera L.

Erect herb; stems terete; leaves opposite, sessile leaves; flowers axillary. *S. Collenette* 9536 (E).

Malvaceae

- 1.a. Fruit a schizocarp with mericarps 2
- b. Fruit a capsule 3
- 2.a. Epicalyx present, staminal tube 5-toothed above; seeds one in each mericarp *Pavonia*
- b. Epicalyx absent, staminal tube without teeth; seeds 2-9 per mericarp *Abutilon*
- 3.a. Epicalyx 3, foliaceous, corolla violet *Senra*
- b. Epicalyx 4-many, linear; corolla white or pale yellow or pink 4
- 4.a. Capsule with prominently veined wings *Fioria*
- b. Capsule without wings *Hibiscus*

Abutilon Mill. "Khaura'a, Atayb"

- 1.a. Mature carpels acuminate or acute at apex 2
- b. Mature carpels rounded at apex 3
- 2.a. Carpels 8-10, flowers solitary or paired in the axils of leaf *A. fruticosum*
- b. Carpels 13-18; flowers in small axillary panicles *A. bidentatum*
- 3.a. Flowers yellow with a purple center; leaves velvety above *A. pannosum*
- b. Flowers yellow, without a purple center; leaves scabrous above *A. muticum*

A. bidentatum A. Rich.

Shrub, 1 m high with cordate, dentate leaves; flowers yellow. *S. Collenette* s.n. (E)

A. muticum (Del. ex DC.) Sweet

Erect shrub, leaves ovate, cordate, margin deeply serrate; flowers yellow. *S. Collenette* 4830 (E) (as *A. figarianum* Webb).

A. fruticosum Guill. & Perr.

Sparsely branched shrub with silvery downy leaves; flowers yellow. *S. Collenette* s.n. (E)

A. pannosum (G. Forst.) Schldl.

Shrub with densely pubescent branches; leaves ovate; flowers yellow with crimson centre. *S. Collenette* s.n. (E).

Fioria dictyocarpa (Webb) Mattei

An erect undershrub; leaves glandular, palmately-veined, lobed, dentate; flowers yellow with purple centre. *S. Collette* 5000 (E).

Hibiscus micranthus L. f.

Bushy shrub with small obovate, serrate leaves; flowers white. *S. Collette* s.n. (E).

Pavonia arabica Hochst. ex Steud.

Erect herb with ovate downy entire leaves; flowers pale pink. *S. Collette* 8990 (E).

Senra incana Cav.

Grey-tomentose undershrub with palmately lobed leaves. *R. Basahy* 3141 (KSU).

Menispermaceae

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

“Labakh al-Jabal, Kathan”

A leafy vine with oblong, mucronate leaves; flowers green. *S. Collette* s.n. (E).

Moraceae

***Ficus* L.**

- 1.a. Leaves broadly cordate; tip caudate *F. populifolia*
- b. Leaves obtuse or minutely cordate at base; leaf tip not caudate 2
- 2.a. Young branches densely pubescent; leaves about 5x3 cm, elliptic-oblong; fig ostiole 2-lipped without any visible bracts *F. glumosa*
- b. Young branches glabrous; leaves c. 15-25x2.5-3 cm, linear-lanceolate; fig ostiole 3-lipped with 3 bracts over it .. *F. cordata* ssp. *salicifolia*

F. cordata ssp. *salicifolia* (Vahl) C.C. Berg “Tha’ab”

A bushy tree with downy leaves; figs clustered. *R. Basahy* 3167 (KSU).

F. glumosa Delile “Dhalif”

A tall tree, c. 10 m high with milky juice, fig crowded in young branches. *R. Basahy* 3165 (KSU); *S. Collette* 6821 (E).

F. populifolia Vahl “Vadah, Mudah”

A small tree with shiny hanging leaves; fig stalked. *R. Basahy* 3169 (KSU); *S. Collette* 4845 (E). In Saudi Arabia, this species is collected from Farasan island only.

Nyctaginaceae

- 1.a. Anthocarp with wart-like glands; 10-ribbed *Commicarpus*
- b. Anthocarp sparsely to densely glandular; wart-like glands Absent; 5-ribbed *Boerhavia*

Boerhavia diffusa L. “Roqma”

Prostrate herb with sticky glandular stems; flowers clustered; corolla deep magenta. *S. Collette* s.n. (E).

Commicarpus helenae (Schult.) Meikle

Weak stemmed glabrous herb; flowers pink. *S. Collette* 4852 (E)

Orobanchaceae

Cistanche tubulosa (Schenk) Hook

Parasitic perennial herb with succulent stem; bracts ovate, deep-orange; calyx lobes 5.

S. Collette 5028 (E); *S. Chaudhary* 5978 (RIY).

Plumabaginaceae

***Limonium* Mill.**

1.a. Leaves flat, oblanceolate, c. 6 mm wide *L. axillare*

b. Leaves cylindrical up to 2 mm wide *L. cylindrifolium*

L. axillare (Forssk.) Kuntze

Perennial sea-shore plant with arching flower stems; flower deep magenta. *S. Chaudhary*

130334, 15605 (RIY); *S. Collette* s.n. (E). Dominant plant.

L. cylindrifolium (Forssk.) Verdc.

Bushy undershrub with linear cylindrical succulent leaves. *S. Collette* 4840; *S. Chaudhary*

16001 (RIY). In Saudi Arabia, this species is collected from Farasan and Zifaf islands only.

Polygalaceae

Polygala erioptera DC.

Perennial, bushy herb with narrow elliptic leaves; inflorescence axillary; inner sepal (wing)

with a distinct midrib. *S. Collette* 4990 (E); *S. Chaudhary* 5960 (RIY)

Portulacaceae

Portulaca oleracea L. "Rijla, Baqla"

Prostrate or ascending, succulent herb with obovate leaves; corolla yellow. *R. Basahy* 3163

(KSU); *S. Collette* s.n. (E).

Resedaceae

Ochradenus baccatus Delile "Qardha"

Woody, tangled shrub with small narrow leaves; fruit globular, white. *R. Basahy* 3380

(KSU).

Rhamnaceae

Ziziphus spina-christi (L.) Desf. "Sidir"

Small spiny tree with oblong-elliptic leaves; flowers in axillary clusters; berry globular. *R.*

Basahy 3135 (KSU); *S. Collette* s.n. (E)

Rhizophoraceae

Rhizophora mucronata Lam. "Qandal"

A sea-shore mangrove tree with bright green leaves; flowers white. *R. Basahy* 3155

(KSU); *S. Collette* 5117, 6375 (E).

Rubiaceae

- 1.a. Inflorescence terminal; corolla tube up to 15 mm long; capsule subglobose minutely tubercled *Kohautia*
 b. Inflorescence axillary; corolla tube up to 1 mm long; capsule ovoid to globose, crowned by persistent calyx teeth *Oldenlandia*

Kohautia caspitosa Schnitzl.

Woody, perennial under shrub; leaves linear-narrow; flower tubular, pale brown. *S. Collette* 4828, 4838 (E); *S. Chaudhary* 10036 (RIY)

Oldenlandia corymbosa L.

Prostrate annual. Leaves sessile, narrowly elliptic. Flowers 1-3 together, cymes pedunculate.

T. Abbasi 14104 (RIY)

Salvadoraceae

Salvadora perisica L. "Ra'k"

A bushy shrub with drooping branches; flowers in panicles; berry globular, pink. *R. Basahy* 3154 (KSU); *S. Collette* s.n. (E)

Scrophulariaceae

- 1.a. Corolla yellow 2
 b. Corolla blue, pink or white 3
 2.a. Flowers spurred; leaves hastate, entire *Kickxia*
 b. Flowers without spur; leaves ovate, dentate, glandular hairy herb *Lindenbergia*
 3.a. Parasitic herbs; flowers in terminal spikes; corolla tube sharply curved *Striga*
 b. Plants not parasitic; flowers axillary or in a leafy terminal spike, corolla tube not curved 4
 4.a. Plants densely glandular-hairy; leaves not succulent; corolla lobes equal *Anticharis*
 b. Plants glabrous; leaves semi-succulent, corolla 2-lipped *Schweinfurthia*

Anticharis glandulosa Asch.

A bushy herb with glandular leaves; flowers tubular, blue. *S. Collette* s.n. (E).

Kickxia Dum.

- 1.a. Pedicel curved *K. corallicola*
 b. Pedicel straight *K. hastata*

K. corallicola D. Sutton

Prostrate, annual herb with hastate leaves; flowers yellow. *S. Collette* 4171, 5003 (E).

Dominant in restricted localities.

K. hastata (*R. Br. ex Benth.*) Dandy

Erect annual herb; pedicels many times longer than flower. *S. Collette* 4859, 5018 (E)

Lindenbergia indica (L.) Kuntze (forma *abyssinica*)

Bushy, glandular-hairy perennial herb; corolla orange yellow, 2-lipped. *S. Collette* 4837, 4992 (E); *S. Chaudhary* 5963 (RIY).

Schweinfurthia pterosperma A. Braun

Annual, glabrous herb with oblanceolate semi succulent leaves; flowers white. *R. Basahy* 3377 (KSU); *S. Collenette* 9540 (E).

Striga sp. aff. *gesnerioides* (Willd.) Vatke

“Fijil Al Ard”

Erect, purplish stemmed root parasite; flowers pink. *S. Collenette* 5020 (E).

Solanaceae

***Solanum* L.**

- 1.a. Prickles straight, leaves ovate-lanceolate to oblong, distinctly sinuate-lobed; calyx prickly 2
- b. Prickles curved; leaves ovate-orbicular, usually entire or slightly lobed; calyx not prickly *S. forskalii*
- 2.a. Leaves membranous, oblong-lanceolate or elliptic-ovate; dorsal surface prickly on the veins; fruit not enclosed in the calyx *S. surratense*
- b. Leaves not membranous, ovate-lanceolate, prickles absent on the dorsal side; fruit enclosed in the enlarged prickly calyx *S. coagulans*

S. coagulans Forssk.

Spiny herb; leaves sinuately lobed; flowers pink. *R. Basahy* 3188(KSU), *S. Collenette* s.n. (E).

S. forskalii Kotschy ex Dunal

Thorny, bushy-shrublet; corolla pink with deflexed petals. *R. Basahy* 3190 (KSU); *S. Collenette* 5019 (E).

S. surratense Brum. f.

Dwarf, white spiny herb; flowers pink. *S. Collenette* 6823 (E)

Tamaricaceae

Tamarix aphylla (L.) Karst “Athl”

A large tree; leaves scale-like, amplexicaulis; flowers in a raceme, white. *R. Basahy* 3152 (KSU)

Tiliaceae

- 1.a. Shrubs or small trees; fruit a drupe, 2-4-lobed; petals glandular or hairy at base *Grewia*
- b. Herbs or under shrubs; fruits a loculicidal capsule; petals glabrous *Corchorus*

***Corchorus* L.**

- 1.a. Prostrate, perennial herb; capsule 4-valved, flowers tetramerous *C. depressus*
- b. Erect annual herbs; capsule either 3- or 5-valved; flowers pentamerous 2
- 2.a. Capsule 3-valved, stamens more than 20 *C. trilocularis*
- b. Capsule 5-valved; stamens 15-20 *C. olitorius*

C. depressus (L.) Stocks “Steeh”

Woody based herb with small obovate, cuneate leaves, margin crenate; capsule up to 1.5 cm long. *R. Basahy* 3150 (KSU); *S. Collenette* s.n. (E). Abundant in restricted localities.

C. oltorius L. “Malukhia”

Erect annual; leaves serrate; capsule 5-10 cm long. *S. Collenette* s.n. (E).

C. trilocularis L.

Erect herb with serrate leaves; flowers bright yellow; capsule 2-7 x 0.3 cm. *R. Basahy* 3149 (KSU); *S. Collenette* 8991 (E).

Grewia L.

- 1.a. Leaves 5-nerved, more or less orbicular or ovate, drupe glabrous fruiting pedicel 7-12 mm long *G. tenax*
- b. Leaves 3-nerved, obovate; drupe pubescent; fruiting pedicel 2-4 (-15) mm long *G. erythraea*

G. erythraea Schweinf. “Naba’a”

Shrub; leaves petiolate, serrate; ripe orange fruits in clusters of three or four. *R. Basahy* 3146 (KSU); *S. Collenette* s.n. (E).

G. tenax (Forssk.) Fiori “Khaddar”

Shrub, 3 m tall with round, dentate leaves. *R. Basahy* 3147 (KSU).

Urticaceae

Forskoalea viridis Ehrenb.

Annual herb; leaves woolly tomentose; involucral bracts broadly ovate. *S. Collenette* 4861 (E).

Vahliaceae

Vahlia digyna (Retz.) Kuntze

Glandular hairy herb, c. 35 cm tall with sessile leaves and yellow flowers. *S. Collenette* 9261, 9534 (E). A rare plant, recorded from Farasan Island only.

Verbenaceae

- 1.a. Flowers capitate or in compound cymes; trees or shrubs 2
- b. Flowers in spicate or in racemose inflorescence; herbs 3
- 2.a. Ovary 2-locular with 2 ovules; fruit elongate, adpressed to the peduncle ... *Chascanum*
- b. Ovary 4-locular with 4 ovules; fruit sub globose, pendulous *Priva*
- 3.a. Flowers capitate, fruit a two-valved capsule, mangrove tree *Avicennia*
- b. Flowers in compound cymes, fruit a four-locular drupe *Premna*

Avicennia marina (Forssk.) Vierh. “Qarm”

A large shrub with grayish leaves. The common mangrove along Saudi coast. *R. Basahy* 3158 (KSU); *S. Collenette* s.n. (E). Dominant plant.

Chascanum marrubifolium Fenzl ex Walp.

Herb, c. 30 cm high with ovate, cuneate leaves; corolla creamy, tubular, curved. *S. Collenette* 5011 (E); *S. Chaudhary* 5962 (RIY).

Priva adhaerens (Forssk.) Chiov.

Weak-stemmed leafy glandular-hairy herb; flowers white. *S. Collenette* s.n. (E)

Premna resinosa (Hochst.) Schauer

Erect, bushy shrub; leaves opposite, small; flowers white, hooded, drupe red. *R. Basahy* 3157 (KSU); *S. Collenette* 5029, 6883 (E).

Vitaceae

Cissus quadrangularis L. “Sila’, Khudam”

Succulent, square-stemmed glabrous vine; leaves often 3-lobed with dentate margin; berry red. *R. Basahy* 3252 (KSU). *S. Collenette* s.n. (E). Dominant.

Zygophyllaceae

Zygophyllum L.

- 1.a. Leaves simple, sessile *Z. simplex*
- b. Leaves compound, petiolate 2
- 2.a. Leaflets white, tomentose; flowers subsessile, capsule obconical, adpressed-hairy, as long as broad *Z. album*
- b. Leaflets green, glabrous; flowers pedicellate; capsule cylindrical-ellipsoid, glabrous, longer than broad *Z. coccineum*

Z. album L. f. “Humaym”

Bushy succulent herb; flowers greenish-white; fruits star-like, oboconical. *S. Chaudhary* 14168 (RIY); *S. Collenette* s.n. (E).

Z. coccineum L.

Succulent herb; flowers white, c. 4 mm wide; fruit oblong. *R. Basahy* 3225 (KSU); *S. Collenette* 5598, 6378 (E) (as *Z. boulosii sensu* Hadidi). Dominant in restricted localities.

Z. simplex L. “Qarmal”

Slender stemmed succulent herb with bright yellow flowers, fruit rounded, ridged. *R. Basahy* 3229 (KSU); *S. Collenette* s.n. (E). Dominant.

MONOCOTYLEDONS

Amaryllidaceae

Pancratium maximum Forssk.

A bulb with shiny green leaves. Flowers solitary, white. *R. Basahy* 3153 (KSU).

Commelinaceae

Commelina L.

- 1.a. Leaves ovate-elliptic to shortly triangular, margin entire; seeds normally 5 per capsule *C. benghalensis*
- b. Leaves oblong, margin wavy; seeds usually 3 per capsule *C. forsskalii*

C. benghalensis L.

Branched annual herb with ascending stem; petals blue. *S.Collenette* s.n. (E)

C. forsskalii Vahl

Short-lived herb, leaves' margin undulate. *R. Basahy* 3126 (KSU)

Cyperaceae

Cyperus L.

- | | | |
|------|---|----------------------|
| 1.a. | Inflorescence rayed, umbellate | <i>C. bulbosus</i> |
| b. | Inflorescence solitary, compact head | 2 |
| 2.a. | Tufted perennial; leaves as long as the stem; spikelets 2-3 mm wide | <i>C. jeminicus</i> |
| b. | Annual; leaves shorter than the stem; spikelets 3-5 mm wide | <i>C. rubicundus</i> |

C. bulbosus Vahl

Tufted perennial; bracts 3-6, as long as the inflorescence. Spikelets dark brown. *S.Collenette* 8981 (E).

C. jeminicus Rottb.

Erect herb; base subtended by brown fibrous leaf sheaths; glumes with a curved mucro. *R. Basahy* 3245 (KSU); *S.Collenette* 4174 (E).

C. rubicundus Poir

Tufted herb, glumes keeled in the upper half, mucronate. *S.Collenette* s.n. (E).

Gramineae

- | | | |
|------|---|-------------------------|
| 1.a. | Inflorescence digitate or subdigitate spikes | 5 |
| b. | Inflorescence a spike or a panicle | 2 |
| 2.a. | Inflorescence dense, sub-spherical ovate head-like | 7 |
| b. | Inflorescence otherwise | 3 |
| 3.a. | Inflorescence cylindrical or narrow spicate panicle; spikelets subtended by many bristles | 8 |
| b. | Inflorescence otherwise | 4 |
| 4.a. | Inflorescence an open or compact terminal panicle | 9 |
| b. | Inflorescence a narrow spike-like panicle | 14 |
| 5.a. | Spikelets awnless | 6 |
| b. | Spikelets awned | <i>Chloris</i> |
| 6.a. | Spikes 4 mm or more wide; spike axis ending in a naked tip, spikelets glabrous | <i>Dactyloctenium</i> |
| b. | Spikes 1-2 mm wide; spike axis ending in a spikelet; spikelets ciliate-frilled | <i>Digitaria</i> |
| 7.a. | Annual grass; spike glabrous, several on each axis; glumes as long as or longer than lemmas | <i>Drake-brockmania</i> |
| b. | Perennial grass; spike hairy, one on each axis; glumes shorter than lemmas | <i>Aeluropus</i> |
| 8.a. | Involucral bristles flattened and united at base; sometimes forming a cup at the base | <i>Cenchrus</i> |

- b. . Involucral bristles uniform in thickness, free from each other, persistent, not falling off with the spikelets *Setaria*
- 9.a. Awns of lemma three branched; none of the branches plumose *Aristida*
- b. Awns of lemma not as above, either awnless or with one simple awn 10
- 10.a. Spikelets one-flowered; glumes 1-nerved *Sporobolus*
- b. Spikelets 2-flowered; glumes 3-5-nerved 11
- 11.a. Spikelets arranged singly glumes membranous unequal; lower one usually smaller 12
- b. Spikelets in pairs, one-pedicelled and the other sessile; glumes not membranous usually as long as the spikelet *Chrysopogon*
- 12.a. Spikelets hairy, culm not woody 13
- b. Spikelets glabrous; robust perennial with woody rootstock *Panicum*
- 13.a. Hairs much longer than spikelets and enclosing it; a circular disc present between spikelet and pedicel; perennial grass *Tricholaena*
- b. Hairs as long as or smaller than spikelets; circular disc absent, annual grass *Brachiaria*
- 14.a. Spike distinctly flat 15
- b. Spike not flat 16
- 15.a. Glumes 3-5-nerved; perennial stoloniferous grass *Halopyrum*
- b. Glumes 1-nerved; annual grass (our material) *Eragrostis*
- 16.a. Spikes dense, continuous 17
- b. Spikes interrupted or loose 19
- 17.a. Inflorescence about 5 mm wide; spikelets 4-7-flowered; lowest lemma obovate *Tetrapogon*
- b. Inflorescence about 3.5 mm wide; spikelets paired; lemmas elliptic 18
- 18.a. Lower glume with prominently dentate margins with tuft of hairs from the teeth; apex of glume ending in two long awn-like bristles *Elionurus*
- b. Lower glume elliptic with entire margins; a distinct circular pit present towards the tip; glumes awnless; upper lemma of sessile spikelet ending in a awn; pedicellate spikelet awnless *Dichanthium*
- 19.a. Spikelets wedge-shaped; glumes much longer than florets, coriaceous *Dinebra*
- b. Spikelets not wedge-shaped; glumes shorter than or as long as lemmas, not coriaceous 20
- 20.a. Spikelets mostly paired, pubescent; upper glume ending in a short awn, lower glume obsolete *Eriochloa*
- b. Spikelets arranged alternately in two rows, glabrous; upper glume without awn; lower glume ovate-truncate, only half the length of spikelet *Paspalidium*

Aeluropus lagopoides (L.) Trin ex Thw "Iqrish, Shirraib"
 Perennial, tufted, rhizomatous grass. Abundant in the island. *R. Basahy* 3125 (KSU)

***Aristida* L.**

- 1.a. Lower glume shorter than the upper glume; lemma column not articulated at its tip *A. adscensionis*
- b. Lower glume longer than the upper; lemma column articulated at its top *A. funiculata*

A. adscensionis L. “Sama’a; Safsaf”
Dwarf, tufted grass, glumes unequal. Abundant. *S. Chaudhary* 12622 (RIY)

A. funiculata Trin. & Rupr.
Tufted annual grass; panicle narrow few flowered. *S. Colletette* 6895 (E).

***Brachiaria* (Trin.) Griseb.**

- 1.a. Upper glume and lower lemma thinly cartilaginous *B. ovalis*
- b. Upper glume and lower lemma membranous *B. ramosa*

B. ramosa (L.) Stapf
Loosely, tufted annual grass; spikelets broadly elliptic. *R. Basahy* 3224 (KSU);
S. Colletette 5023 (E).

B. ovalis Stapf.
Annual, tufted grass; spikelets elliptic. *S. Colletette* 9260 (E).

***Cenchrus* L.**

- 1.a. Involucre cup-like; inner bristles rigid as long as the floret, flattened and connate for half the length *C. setigerus*
- b. Involucre not cup-like; inner bristles flexuous, much longer than florets, long ciliate *C. ciliaris*

C. ciliaris L. “Khadir”
Perennial grass with woody rhizome; panicle grey or purple. *S. Colletette* s.n. (E).

C. setigerus Vahl
Perennial grass. Involucre cupulate; outer bristles highly reduced. *S. Colletette* s.n. (E).

Chloris barbata Swartz
Perennial grass, spike purplish. *S. Chaudhary* 12703 (RIY)

Chrysopogon plumulosus Hochst. “Jirm, Gharz”
Perennial grass; leaves mostly near the base; panicle about 10 cm long. *S. Colletette* 5025, 9251 (E).

***Dactyloctenium* Willd.**

- 1.a. Annual, tufted grass; anthers less than 8 mm long 2
- b. Perennial, stoloniferous grass; anthers about 1 mm long *D. scindicum*
- 2.a. Digitate spikes open; each spike 3-5 cm long, seed distinctly transverse rugose *D. aegyptium*
- b. Digitate spikes close together, each less than 2 cm long; seed finely granular *D. aristatum*

D. aegyptium (L.) Willd “Naeem-as-Salib; Rgl-al-Harbaya”
Annual grass; spikelets 3-4-flowered; glumes subequal. *R. Basahy* 3218 (KSU)

D. aristatum Link.
Annual grass; leaves papillose-hispid; spikelets 3-5-flowered. *S. Collette* s.n. (E)

D. scindicum Boiss. “Marbaqah”
Perennial, stoloniferous grass. *S. Collette* s.n. (E).

Dichanthium foveiolatum (Del.) Roberty
Perennial grass; spike solitary. Dominant species. *R. Basahy* 3220 (KSU); *S. Chaudhary* 14400 (RIY).

Digitaria ciliaris (Retz.) Koel.
Annual grass; inflorescence digitate or subdigitate. *S. Collette* s.n. (E).

Dinebra retroflexa (Vahl) Panzer
Tufted annual grass, about a meter high; spikelets 1-3-flowered. *R. Basahy* 3216 (KSU);
S. Collette 4831, 6894 (E). In Saudi Arabia this species is recorded from Farasan Island only.

Drake-brockmania somalensis Stapf
Stoloniferous, annual grass, up to 15 cm tall; spikelets 5-9-flowered. *S. Collette* 5009 (E);
S. Chaudhary 9502, 9579 (RIY). Recorded from Farasan islands only.

Elionurus royleanus A. Rich
Annual grass, up to 30 cm tall; spike 2-6 cm long. *S. Chaudhary* 9585 (RIY).

***Eragrostis* P. Beauv.**

- 1.a. Paleas glabrous; spikelets 3-10 mm long, 8-20 (-30)-flowered, breaking up from base upwards *E. minor*
- b. Paleas distinctly ciliate on the keels; spikelets 2-4 mm long; 6-12-flowered; breaking up from apex downwards 2
- 2.a. Panicle open, stamens 3 *E. lepida*
- b. Panicle dense, cylindrical spike, stamens 2 *E. ciliaris*

E. ciliaris L.
Annual grass, reaching up to 40 cm; lemmas ciliate on the keel. *S. Collette* 4178, 4862 (E).

E. lepida (A. Rich.) Steudel.
A delicate annual grass. Panicle open; lemmas ciliate. *S. Collette* 4858 (E)

E. minor Host
Annual grass, about 60 cm tall; lemmas glandular on the keel. *S. Collette* s.n. (E)

Eriochloa fatmensis (Hochst. & Steudel) Clayton
Tufted annual grass. Panicle narrow 20 cm long *S. Collette* s.n. (E)

Halopyrum mucronatum (L.) Stapf

Stoloniferous grass, about 1.5 m tall. Inflorescence a narrow spicate panicle. *S. Collenette* s.n. (E).

***Panicum* L.**

- 1.a. Spikelets 4-4.5 mm long; lower glume $\frac{3}{4}$ to almost as long as the lemma; native desert grass *P. turgidum*
- b. Spikelets 3-3.5 mm long; lower glume $\frac{1}{3}$ the length of lemma, introduced and naturalized grass *P. coloratum*

P. coloratum L.

Tufted, perennial grass. Panicle c. 10-20 cm long with open branches. *S. Collenette* s.n. (E)

P. turgidum Forssk. “Thamman”

Robust, perennial grass with woody rootstock; panicle few-branched. *R. Basahy* 3217 (KSU).

Paspalidium desertorum (A. Rich.) Stapf

Stoloniferous, perennial grass, spikelets ovate; glumes unequal. *S. Collenette* 4847, 8986 (E)

***Setaria* P. Beauv.**

- 1.a. Spikelet-bristles antrorsely barbed *S. verticillata*
- b. Spikelet-bristles retrorsely barbed *S. viridis*

S. verticillata (L.) P. Beauv. “Lussaiq”

Tufted, annual grass with sticky, spicate panicle. *R. Basahy* 3223 (KSU)

S. viridis (L.) P. Beauv. “Shaer-al-far”

Tufted, annual grass. Spike c. 5 cm long. *S. Collenette* s.n. (E).

***Sporobolus* R. Br.**

- 1.a. Panicle narrow cylindrical-spike, glumes unequal, shorter than lemmas *S. spicata*
- b. Panicle open, verticillate, glumes equal, as long as lemmas *S. helvolus*

S. helvolus (Trin.) Dur. & Schinz

Perennial, stoloniferous grass. Abundant in restricted localities. *R. Basahy* 3212 (KSU); *S. Collenette* 4842 (E).

S. spicatus (Vahl) Kunth

Perennial, rigid, stoloniferous grass. Leaves rigid, convolute. *R. Basahy* 3222 (KSU)

Tetrapogon tenellus (Koenig ex Roxb.) Chiov.

Annual grass. Spike terminal, spikelets 4-6-flowered. *S. Collenette* 4991 (E)

Tricholaena teneriffae (L. f.) Link

Perennial grass; spikelet with long silky hairs. *S. Collenette* 5601 (E).

Juncaceae

Juncus rigidus Desf.

Densely tufted perennial; leaves terete, spine-tipped; flowers in clusters of 1-3. Reported by Hassan *et al.* (1996).

Liliaceae

- 1.a. Woody shrub or small tree, spiny; leaves represented by clusters of cladodes fruit a berry *Asperagus*
- b. Herbs; leaves normal, usually in a basal rosette; fruit a capsule 2
- 2.a. Succulent herbs or shrubs; leaves fleshy, 30-100 x 1 cm with toothed- margins; inflorescence branched; flowers yellow or red *Aloe*
- b. Bulbous herbs; leaves less than 1 mm thick, entire; flowers greenish- brown .. *Dipcadi*

Aloe officinalis Forssk. "Sabbar"

Succulent perennial herb with an open rosette of fleshy leaves; leaf margin serrate, tooth c. 1cm apart. *R. Basahy* 3137 (KSU); *S. Collette* 4293. A dominant plant in restricted localities.

Asperagus flagellaris (Kunth) Baker

A tangled, spiny-shrub. Leaves needle-like cladodes. Flowers white. *R. Basahy* 3138 (KSU); *S. Collette* 4841, 4994 (E). Dominant plant in certain localities.

Dipcadi sp. nov.

Bulbous-herb; leaves linear, grooved. Flowers green; outer tepels deflexed, hooded. *S. Collette* 5595, 6833 (E).

Palmae

Hyphaene thebaica (L.) Mart. "Dawm"

A tall palm with forked-branches; leaves fan shaped. *S. Collette* 6826 (E).

Acknowledgements

Authors wish to extend their gratitude to *S. Collette* for her valuable help in the present study, and to the coast guards and the authorities of NCWCD for permitting us to explore the islands. Authors also wish to thank the Director, General Directorate for Research Grant Programme, King Abdulaziz City for Science and Technology (KACST) for supporting this research by grant AR-17-7, sanctioned for the Flora of Jizan.

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