

## Floristic diversity of the rocky habitats and plains of the coastal area of Abyan Governorate, Yemen

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### Abstract

The present study deals with the floristic analysis of the Plain and coastal area of Abyan governorate. The present study reveals the presence of 266 species belonging to 179 genera and 68 families of vascular plants have been recorded. Based on species contribution, Poaceae, Asteraceae, Mimosaceae, Fabaceae, Malvaceae, Solanaceae, Capparaceae, Euphorbiaceae, Caesalpinaceae, Amaranthaceae, and Asclepiadiaceae, were found as dominant families. Life-forms in order of importance were Hemicryptophytes (25.93%), Chamaephytes (24.81%), Therophytes (24.43%), and Phanerophytes (21.05%), while the least frequent life form class was Geophytes (3.38%), and Epiphytes (0.37%). The proportion of plant life forms in the study area is very close, indicating that the study area is predominantly desert in nature. The large spread of *Acacia* sp. shrubs indicates the desert climate in the study area

**Keywords:** Life form, Rocky, coastal area, lower plateaus, Abyan Gov.

### Introduction:

The plant life forms are closely associated with the existing environment, and the biological spectrum is considered as the sensitive indicator of the prevailing physical and biological factors. Floristic knowledge of any location is essential for understanding the local ecology of any area while studying biodiversity (26). Floristic diversity expresses the variety of flora found in a given geographic place, which provides a platform for the proper identification and sustainable utilization of plants (15). Floristic diversity of a region refers to the number of species found within its borders, whether wild or cultivated ,and is an indicator of the region's flora and plant resources.

Raunkiaer (30) defined the life-forms as the sum of the adaptations of plants to climate. The life form differences in various societies make up basis of their structure and functions (12).

Several workers have studied the floristic composition and biological spectrum of different regions in Yemen some of them (7, 8, 9, 10, 16, 17,18 ,19,21, 22, 23, 24, 25,27, 28, 32, 33),

Abyan's flora received less attention ,but some studies where already done by (2, 5, 6, 11 13,14, 31).

The investigated area is stretch along the gGulf of Aden from Al-Alalm (border of Aden gov.) to Lesan Al-Muhved (border of Shabwa) for about 300 km. can be divided into: Coastal zone, plain area valleys rocky plains. The coastal area environmental factors differ from the plain and valley as well as low mountains places. The coastal area from Al-Alam to Sheikh Salem is a wind-gusted area on the coastline, forming sand dunes, that have a significant impact on vegetation and vegetation quality. This area is the poorest in the Sahel region (6). The plain area crossed by a number of Wades varies in their characters from one place to another, and the composition of their soil differs, in the coastal zone they are covered with sandy and muddy soil, while in the upper valleys, they are rocks and gravel. This diversity in the soil structure of the valleys leads to a diversity of vegetation (13).

**Aim of study:**

This study aimed to survey and identify the floristic composition and life form of the plains and coastal zone of the coastal region of Abyan Gov.

**Methods and materials:**

**The study area:** extends over approximately 300 km, from 13° 04' 65 and 45° 14' 66 in the west and 13° 73' 57, 47° 07' 74 in the east. The study area can be classified into 4 regions:

- a. A coastal zone which that extends from Al-Alam to the border of the governorate with Shabwah governorate at Lesan Al-Muhved.
- b. Wades area which dissected the region with a number of large and small valleys.
- c. Low elevation flood plain, including areas near Al-Maraqeshah mountain, Jabal Al-Aris, Al-Arqoub mountains, ,Hatat, Yaramis.
- d. The costal part of Abyan Delta area, it is a wide flat region stretching from Dufas to Sheikh Salem .Fig.1.

**Field works:**

The present study is based on several survey fields during different seasons of different years 2011, 2017, also based on published literature about the flora of the study region (2, 5, 6, 10, 11,13, 31).

**Life form analysis:** following Raunkiaer’s system.

Abbreviations of life form categories used in the paper include in order:

Ch = Chamaephytes, Th = Therophytes, Ph = Phanerophytes, He = Hemicryptophytes, G = Geophytes, Ep = Epiphytic.



**Fig. 1:** Location of investigated area (after Central Statistical Organization, 2004).

**Results and discussion:**

**Floristic Diversity:**

The study carried out a field survey of the low altitude plain, coastal area. A field survey observed differences in vegetation cover from one area to another. The diversity of the topographic and pedagogical structure of the study area leads to a diversity of vegetation. The floristic diversity of the study area has been recorded in table no. (1.)

Table 1. Floristic diversity of th study area

Family	Species	Life Span	Life form
Acanthaceae	<i>Anisotes trisulcus</i> (Forssk.) Nees	Per	Ch
	<i>Barleria farinose</i> Delf.	Per	Ch
	<i>Barleria proxima</i> Lindau	Per	Ch
	<i>Blepharis ciliaris</i> (L) Burt	Per	He
	<i>Blepharis linariifolia</i> Pers	Per	He
	<i>Ruellia grandiflora</i> (Forssk.) Blatter	Per	He
Agavaceae	<i>Sansevieria forskaliana</i> (Schult.)f.)Hepper & Wood	Per	G
Aizoaceae	<i>Aizoon canariense</i> L.	Ann	Th
	<i>Glinus lotoides</i> L.	Ann	Th
	<i>Trianthema crystallina</i> (Forssk)Vahl	Ann	Th
Aloeceae	<i>Aloe abyssicola</i> Lavr. & Balaidi	Per	Ch
	<i>Aloe vera</i> (L.)Burm.f.	Per	Ch
	<i>Aloe inermis</i> Forssk.	Per	Ch
Amaranthaceae	<i>Achyranthes aspera</i> L.	Per	He
	<i>Aerva javanica</i> (Burn.f.) juss.	Per	He
	<i>Amaranthus graecizans</i> L.	Ann	Th
	<i>Amaranthus ascendens</i> Lois	Ann	Th
	<i>Amaranthus sparganiocephalus</i> Thell	Ann	Th
	<i>Amaranthus spinosus</i> L.	Ann	Th
	<i>Amaranthus viridis</i> L.	Ann	Th
	<i>Digera muricata</i> (L.) Mart.	Ann	Th
Anacardiaceae	<i>Manjifera indica</i> L.	Per	Ph
	<i>Rhus flexicaulis</i> Bak .	Per	Ch
	<i>Rhus villosa</i> L.	Per	Ch
	<i>Schinus mole</i> L.	Per	Ph
Annonaceae	<i>Annona squamosa</i> L.	Per	Ph
Apicaceae	<i>Coriandrum sativum</i>	Ann	Th
	L. <i>Cuminum cyminum</i>	Ann	Th
Apocynaceae	<i>Adenium obesum</i> (Forssk.)Reom .et.Schult	Per	Ph
	<i>Nerium oleander</i> L.	Per	Ch
	<i>Thevetia peruviana</i> (Pers.)K.Schum	Per	Ch
Arecaceae	<i>Cocos nusifera</i> L.	Per	Ph

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	<i>Hyphaena thebaica</i> L.	Per	Ph
	<i>Phoenix dactylifera</i> L.	Per	Ph
	<i>Wissmania carinensis</i> Chiov.	Per	Ph
Aristolochiaceae	<i>Aristolochia bracteolata</i> Lam.	Per	He
Asclepiadaceae	<i>Blyttia spiralis</i> (Forssk.) D.V. Field & Wood	Per	Ch
	<i>Calotropis procera</i> Ation F.	Per	Ph
	<i>Caralluma adenensis</i> (Defl.)Schum.	Per	He
	<i>Caralluma chrysostephana</i> (defl.) Burg.	Per	He
	<i>Caralluma cicatricose</i> (Defl.) N.E.Br.	Per	He
	<i>Leptadnia arborea</i> (Forssk.)Schweinf.	Per	Ch
	<i>Leptadnia pyrotechnica</i> (Forssk.)Decne	Per	Ch
	<i>Pergularia tomentosa</i> L.	Per	Ch
	<i>Sarcostemma viminalis</i> (L.)R.Br.	Per	Ch
Asparagaceae	<i>Asparagus africanus</i> Lam.	Per	Ch
Asteraceae	<i>Flaveria trinervia</i> (Spreng.)Mohr.	Per	He
	<i>Iphionia scabra</i> DC.	Per	Ch
	<i>Kleinia odora</i> (Forssk.)A.Berger	Per	Ch
	<i>Launaea massauensis</i> (Fresen)Sch.	Ann	Th
	<i>Launaea nudicaulis</i> (L.)Hook.f.	Ann	Th
	<i>Launaea procumbens</i> (Roxb.)Ramayya & Rajgopal.	Ann	Th
	<i>Pluchea indica</i> ssp. <i>yemenisis</i> S.King-Jones .	Per	Ch
	<i>Pulicaria jaubertii</i> Gamal Eldin	Ann	Th
	<i>Pulicaria undulata</i> (L.) C.A.Mey	Ann	Th
	<i>Sonchus oleraceus</i> L	Ann	Th
	<i>Tarhonanthus comphoratus</i> L.	Per	He
	<i>Vernonia spatulata</i> (Forssk.)Sch-Bip.	Per	He
	<i>Xanthium spinosum</i> L.	Per	Ch
	<i>Xanthium strumarium</i> L.	Per	Ch
Balanitaceae	<i>Balanites aegyptiaca</i> Del.	Per	Ph
Boraginaceae	<i>Cordia ovalis</i> R.Br.ex.Dc.	Per	Ph
	<i>Heliotropium bottae</i> Jaub et.	Per	He
	<i>Heliotropium pterocarpm</i> Hochst.et.st.	Per	He
	<i>Heliotropium europaeum</i> L.	Per	He
	<i>Heliotropium longiflorum</i> jaub. et Spach.	Ann	Th
	<i>Trichodesma africanum</i> (L.)R.Br.	Per	He
Brassicaceae	<i>Brassica oleracea</i> L	Ann	Th
	<i>Eruca sativa</i> Miller	Ann	Th
	<i>Farsetia longisiliqua</i> Decne	Per	He
	<i>Farsitia stylosa</i> R.Br.	Per	He
	<i>Raphanus sativus</i> L.	Ann	Th
	<i>Schouwia purpurea</i> (Forssk.) Schweinf.	Per	He
Buraceraceae	<i>Commiphora abyssinica</i> (Berg.) Engl.	Per	Ph
	<i>Commiphora africana</i> (A.Rich.) Engl.	Per	Ph
	<i>Commiphora foliacea</i> Sprague	Per	Ph
	<i>Commiphora gileadensis</i> (L) chr	Per	Ph
	<i>Commiphora kua</i> (J.F.Royle) Vollesen	Per	Ph

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Caesalpinaceae	<i>Caesalpinia bonduc</i> (L.)Roxb	Per	Ch
	<i>Senna hookeriana</i> Batka	Per	He
	<i>Senna italica</i> (Mill.)Lam.	Per	He
	<i>Senna occidentalis</i> L.	Per	He
	<i>Senna alexandrina</i> Mill.	Per	He
	<i>Delonix elata</i> (L.)Gamble	Per	Ph
	<i>Delonix regia</i> (Boj.)Raf.	Per	Ph
	<i>Parkinsonia aculeate</i> L.	Per	Ph
	<i>Tamarindus indica</i> L.	Per	Ph
Capparaceae	<i>Cadaba farinose</i> Forssk.	Per	Ch
	<i>Cadaba glandulosa</i> Forssk.	Per	Ch
	<i>Cadaba rotundifolia</i> Forssk.	Per	Ch
	<i>Capparis cartilaginea</i> Decen .	Per	Ch
	<i>Capparis spinosa</i> L.	Per	He
	<i>Cleome noeane</i> Boiss.	Ann	Th
	<i>Cleome barchycarpa</i> (Forssk.)Vahl. ex.Dc.	Ann	Th
	<i>Cleome scaposa</i> Dc.	Ann	Th
	<i>Dipterygium glaucum</i> Decen	Ann	Th
	<i>Maerua crassifolia</i> Forssk.	Per	Ph
	<i>Maerua oblongifolia</i> (Forssk.) A.Rich.	Per	Ph
Caricaceae	<i>Carica papaya</i> L.	Per	Ph.
Caryophyllaceae	<i>Cometes abyssinica</i> R. Br	Per	He
	<i>Polycarphae spicata</i> Wt. et Arn.	Ann	Th
Casuarinaceae	<i>Casuarina equisetifolia</i> L.	Per	Ph
Chenopodiaceae	<i>Arthroceum glaucum</i> (Del.) Ung .Sternb.	Per	He
	<i>Caroxylon imbricatum</i> (Forssk.) Moq.	Per	He
	<i>Caroxylon spinescens</i> (Moq.) Akhani & Roalson	Per	Ch
	<i>Suaeda monoica</i> Forssk.	Per	Ch
	<i>Suaeda vermiculata</i> (Forssk). ex Gmel.	Per	Ch
Combretaceae	<i>Conocarpus lancifolius</i> En	Per	Ph
Commelinaceae	<i>Commelina bengalensis</i> L.	Ann	He
Convolvulaceae	<i>Convolvulus arvensis</i> .L.	Per	He
	<i>Convolvulus fatmensis</i> Kunze	Per	He
	<i>Cressa cretica</i> L.	Per.	He
Cucurbitaceae	<i>Citrullus colocynthis</i> (L.) Schrad.	Ann	Th
	Schrad. <i>Citrullus vulgaris</i>	Ann	Th
	<i>Coccinia grandis</i> (L.) Voigt.	Per	Ch
	<i>Cucumis melo</i> L	Ann	Th
	<i>Cucumis prophetarum</i> L.	Per	He
	<i>Cucumis sativus</i> L.	Ann	Th
	<i>Cucurbita pepo</i> L.	Ann	Th
	<i>Momordica balsamina</i> L.	Per	Ch
Cyperaceae	<i>Cyperus conglomeratus</i> Rottb.	Per	G
	<i>Cyperus leavigatus</i> L	Per	G
	<i>Cyperus rotundus</i> L.	Ann	G

	<i>Scirpus maritimus</i> L.	Per	G
Euphorbiaceae	<i>Chrozophora oblongifolia</i> (Del.) Juss	Per	Ch
	<i>Euphorbia cuneata</i> Vahl.	Per	Ch
	<i>Euphorbia granulate</i> Forrsk.	Ann	Th
	<i>Euphorbia hirta</i> L.	Ann	Th
	<i>Euphorbia heterophylla</i> L.	Per	He
	<i>Jatropha glauca</i> Vahl.	Per	Ch
	<i>Jatropha pelargonifolia</i> Courb.	Per	Ch
	<i>Jatropha spinosa</i> (Forssk.) Vahl.	Per	Ch
	<i>Phyllanthus maderspatensis</i> L.	Per	Ch
	<i>Ricinus communis</i> L.	Per	Ch
Fabaceae	<i>Alhagi maurorum</i> Hedw.	Per	He
	<i>Cadia purpurea</i> (pice) Ait.	Per	Ch
	<i>Indigofera articulate</i> (Gouan)	Per	He
	<i>Indigofera coerulea</i> Roxb.	Per	He
	<i>Indigofera oblongifolia</i> (Forssk.)	Per	Ch
	<i>Indigofera semitrijuga</i> forssk.	Per	He
	<i>Sesbania grandiflora</i> (L.)Poir.	Per	Ph
	<i>sesbania pachycarpa</i> DC..	Per	Ch
	<i>Tephrosia nubica</i> (Boiss.) Baker	Per	Ch
	<i>Tephrosia purpurea</i> (L.)	Per	He
Lamiaceae	<i>Ocimum basilicum</i> L.	Per.	He
	<i>Menthe longifolia</i> (L.)L.	Per.	He
	<i>Plactraanthus hadiense</i> (Forssk.)Schweinf. Ex Sprenger	An.	Th
Lilicaceae	<i>Allium cepa</i> L.	An.	G
	<i>Allium sativum</i> L.	An.	G
Loranthaceae	<i>Loranthus acaciae</i> Zucc	Per.	Epi
Lythraceae	<i>Lawsonia inermis</i>	Per.	Ph
Malvaceae	<i>Abelmoschus esculentus</i> (L.)Moench	An.	Th
	<i>Abutilon fruticosum</i> Guill&perr	Per	Ch
	<i>Abutilon pannosum</i> (Forst. F.) Schlecht	Per	Ch
	<i>Gossypium nanking</i> Meyen	Per	Ch.
	<i>Hibiscus rosa sinensis</i> L.	Per	Ch.
	<i>Hibiscus sabdariffa</i>	Per	Ch.
	<i>Hibiscus vitifolius</i> L.	Ann	Th
	<i>Malva parviflora</i> L.	An.	Th
	<i>Senra incana</i> (Cav.) DC.	Per	He
<i>Thespesia populnea</i> (L,)Solender ex.corre	Per	Ph	
Meliaceae	<i>Azadirachta indica</i> (L.) jass.	Per	Ph
	<i>Trichilia emetica</i> Vahl.	Per	Ph
Mimosaceae	<i>Acacia asak</i> (Forssk.) Willd.	Per	Ph
	<i>Acacia edgeworthii</i> T. Anders.	Per	Ch
	<i>Acacia ehrenbergiana</i> Hayne	Per	Ph
	<i>Acacia etbaica</i> Schweinf.	Per	Ch

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	<i>Acacia hamulosa</i> Benth	Per	Ph
	<i>Acacia mellifera</i> (Vahl) Benth.	Per	Ch
	<i>Acacia nilotica</i> (L.) Del.	Per	Ph
	<i>Acacia oerfota</i> (Forssk.) Schweinf.	Per	Ch
	<i>Acacia tortilis</i> (Forssk.) Hayne	Per	Ph
	<i>Acacia seyal</i> Del.	Per	Ph
	<i>Albizia lebbeck</i> (L.) Benth.	Per	Ph
	<i>Piethecellobium dulce</i> (Roxb.)Benth	Per	Ph
	<i>Prosopis cineraria</i> (L.) Druce	Per	Ph
	<i>Prosopis juliflora</i> (S.w) DC.	Per	Ch
Moraceae	<i>Ficus cordata</i> L.	Per	Ph
	<i>Ficus populifolia</i> Vahl.	Per	Ph
	<i>Ficus cordata</i> ssp. <i>salicifolia</i> (Vahl) C.C.Berg	Per	Ph
	<i>Ficus vasta</i> Forssk.	Per	Ph
Moringaceae	<i>Moringa peregrine</i> (Forssk.) Fiori .	Per	Ph
Musaceae	<i>Musa paradisiaca</i> L	Per	G
Myrtaceae	<i>Eucalyptus camaldulensis</i> Dehnh.	Per	Ph
	<i>Eucalyptus grandis</i> (Hill)ex.Maiden	Per	Ph
	<i>Psidium guajava</i> L.	Per	Ph
Nyctaginaceae	<i>Boerhavia diffusa</i> L.	Per	He
	<i>Boerhavia elegans</i> Chiov.	Per	He
	<i>Bougainvillea spectabilis</i> (Willd)	Per	Ch
Oleaceae	<i>Jasminum grandiflorum</i> L	Per	Ch
Pandanceae	<i>Pandanas odoriferous</i> (Forssk.)Chiov.	Per	Ph
Papaveraceae	<i>Argemone mexicana</i> L.	An.	Th
Pedaliaceae	<i>Sesamum indicum</i> L.	An.	Th
Plumbaginaceae	<i>Limonium axillare</i> (Forssk.) Ktze	Per	He
	<i>Limonium cylindrifolium</i> (Forssk.) Verde.	Per	He
Poaceae	<i>Aeluropus lagopoides</i> (L) Trin. Et. Tw	Per	He
	<i>Arstida adscensionis</i> L.	Per	He
	<i>Brachiaria leersioides</i> (Hochst.) Stapf.	Per	He
	<i>Cenchrus ciliaris</i> L.	Per	He
	<i>Cenchrus pennisetiformis</i> Hochst.ex Steud.	Per	He
	<i>Chloris barata</i> Sw.	Per	He
	<i>Cymbopogon schoenanthus</i> (L.) Spreng	Per	He
	<i>Cynodon dactylon</i> (L.) Pers.	Per	He
	<i>Dactyloctenim aegyptiacum</i> (L.) Willd.	Ann.	Th
	<i>Desmostachya bipinnata</i> (L.) Stapf.	Per.	He
	<i>Echinochloa colona</i> (L.) Link.	Ann	Th
	<i>Eragrostis ciliaris</i> (L.)R.P.R	Ann	Th
	<i>Eragrostis papposa</i> (Roen.et Schult.) Steud.	Ann	Th
	<i>Halopyrum mucronatum</i> ( L) stapf	Per	He
	<i>Odyssea mucronata</i> (Forssk.) STapf.	Per.	Ch
	<i>Panicum turgidum</i> Forssk	Per.	He
	<i>Pennisetum glaucum</i>	Ann.	Th
	<i>Setaria barbata</i> (Lam.) Kunth.	Per.	Th
<i>Sorghum bicolor</i> (L.)Moench.	Ann.	Th	

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	<i>Sporobolus comsimilis</i> Fresen	Per	He
	<i>Sporobolus spicatus</i> (Vahl.) Kunth	Per	He
	<i>Tetrapogon villosus</i> Desf.	Per	Th
	<i>Zea mays</i> L.	Ann.	Th
Polygalaceae	<i>Polygala erioptera</i> (SW)DC .	Per.	Th
Polygonaceae	<i>Calligonum comosum</i> (L) Hertt	Per	Ph
	<i>Polygonum aviculara</i> L.	Per.	Th
Portulacaceae	<i>Rumex vesicarius</i> L.	Per.	Ch
	<i>Portulaca oleracea</i> L.	Ann.	Th
Punicaceae	<i>Portulaca quadrifida</i> L.	Ann.	Th
	<i>Punica granatum</i> L	Per	Ph
Resedaceae	<i>Ochradenus baccatus</i> Del	Per	Ch
	<i>Reseda sphenocleoides</i> Defl.	Per	He
Rhamnaceae	<i>Ziziphus spina-christii</i> (L.)Willd.	Per	Ph
Rutaceae	<i>Citrus limon</i> (L.)Burn.	Per	Ph .
Salvadoraceae	<i>Salvadora persica</i> (L.)Garcin	Per	Ch
Sapindaceae	<i>Sapindus saponaria</i> L.	Per	Ch
Scrophulariaceae	<i>Bacopa monnieri</i> (L.)Penn.	Per.	He
	<i>Schweinfurthia pedicellata</i> (T.Anders.) Benth.et Hook	Per.	He
Solanaceae	<i>Capsicum frutescens</i> L.	Ann.	Th
	<i>Capsicum annum</i> L.	Ann.	Th
	<i>Datura innoxia</i> Mill	Per.	He
	<i>Lycopersicum esculentum</i> Mill	Ann	Th
	<i>Lysium shawii</i> Roem.et Schult.	Per	Ch
	<i>Solanum coagulans</i> Forssk.	Per	He
	<i>Solanum incanum</i> L.	Per	Ch
	<i>Solanum melongena</i> L.,	Ann.	Th
	<i>Solanum nigrum</i> L.	Ann.	Th
	<i>Solanum villosum</i> (L.) Lam.	Per.	He
Sterculiaceae	<i>Withania somnifera</i> (L.) Dun	Per	Ch
	<i>Sterculia africana</i> (Forssk) fiori	Per	Ph
Tamaricaceae	<i>Tamarix aphylla</i> (L.) Karst.	Per	Ph
	<i>Tamarix nilotica</i> (Ehrenb.) Bunge	Per	Ph
Tiliaceae	<i>Corchorus depressus</i> (L.)Stocks	Ann	Th
	<i>Corchorus olitorius</i> L.	Ann	Th
	<i>Corchorus trilocularis</i> L.	Ann	Th
	<i>Grewia tenax</i> (Forssk) fiori	Per	Ch
Typhaceae	<i>Typha domingensis</i> pers.	Per.	G
Uriticaceae	<i>Forsskaolea griersonii</i> A.G.Mill. & J.A.Nyberg	Per	He
Verbenaceae	<i>Lantana camara</i> L.	Per	Ch
	<i>Phyla nodiflora</i> (L.) Greene	Per	He
Vitaceae	<i>Cissus rotundifolia</i> (Forssk.) Vahl.	Per	Ch
	<i>Cissus quadrangularis</i> L.	Per	Ch
	<i>Cyphostemma ternatum</i> (Forssk.) Descoing	Per	Ch
Zygophyllaceae	<i>Fagonia arabica</i> L.	Per	He
	<i>Fagonia indica</i> Burm. F.	Per	He
	<i>Fagonia schweinfurthii</i> Hadidi	Per	He



	<i>Tribulus pentandrus</i> Forssk.	Ann	Th
	<i>Tribulus terrestris</i> L.	Ann	Th
	<i>Tetraena simplex</i> (L.) Beier & Thulin	Ann	Th

**Floristic analysis:**

The floristic composition of the study area reveals the presence of 266 species belonging to 179 genera and 68 families of vascular plants . Based on species contribution Poaceae, Asteraceae, Mimosaceae, Fabaceae, Malvaceae, Solanaceae, Capparaceae, Euphorbiaceae, Caesalpinaceae, Amaranthaceae, and Asteraceae, were found as dominant families in the investigated area ,table (1) and Fig.(2).

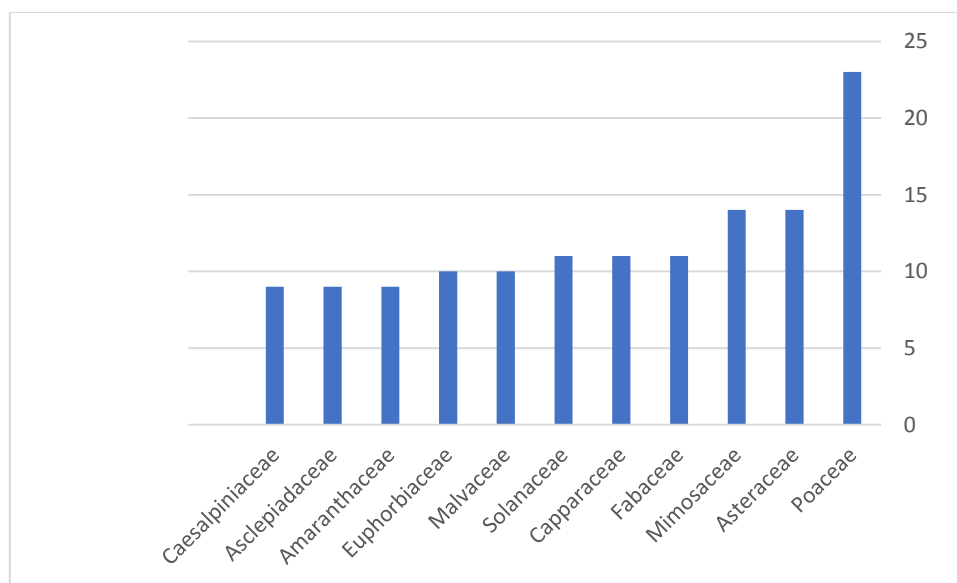


Fig.2. Dominant families based on species contribution recorded from investigated area

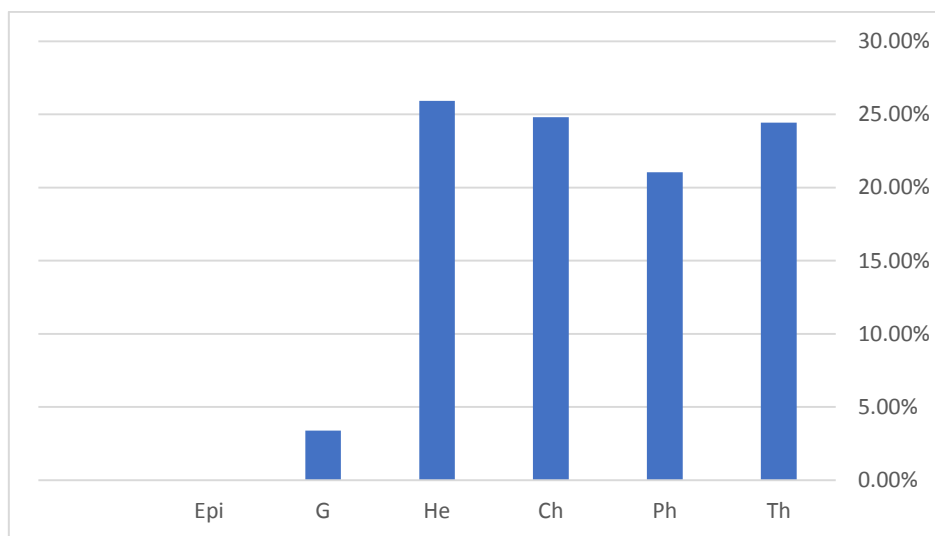
A comparison of families in terms of the number of species found in this study compared with studies of nearby regions with similar habitats (10,16, 23) was done, Poaceae was the largest family in all studies.

**Life form analysis:**

The table (2) and Fig. (3), explains the status of the life- form spectrum. The life-form spectrum in the present study is characteristic of an arid desert region with the dominance of Hemicryptophytes (25.93), Chamaephytes (24.81%) ,and therophytes (24.43%), of the recorded species followed by phanerophytes (21.05%),While Geophytes and epiphytes were the lowest with a total relative value of (3.38 %) and (0.37 %) respectively (Fig. 3). The chamaephytes and therophytes may be attributed to the hot dry climate, geological factors and the topography (3, 4). Chamaephytes and therophytes are associated with a dry climate (1 ,33), and are characteristics vegetation type of desert flora, as influenced by microclimate and soil conditions (31). The proportion of plant life forms in the study area is very close, indicating that the study area is predominantly desert in nature

**Table.2.** Different life –forms classes of the study area

Life form classes	Abbreviation	No. of species	Percentage
Chamaephytes	Ch	66	24.81%
Therophytes	Th	65	24.43%
Phanerophytes	Ph	56	21.05%
Hemicryptophytes	He	69	25.93%
Geophytes	G	9	3.38 %
Epiphytes	Epi	1	0.37 %
<b>Total</b>		266	100



**Fig.3.** Different life –forms classes of the lower plateaus and Coastal area of Abyan governorate

**Life- Span Analysis:**

The plant taxa of the investigated area varied between perennial (75.94%) and annuals (24.06%) as indicated in Fig. (4). The majority of Perennial indicated that this region is arid land area , the annuals were hot-weather species (e.g., *Amaranthus graecizans* L. *Portulaca* sp., *Corchorus* sp. , and a few were non-seasonal species responding to rainfall at any time of the year e.g., *Tribulus terrestris* L., and *Solanum nigrum* L.

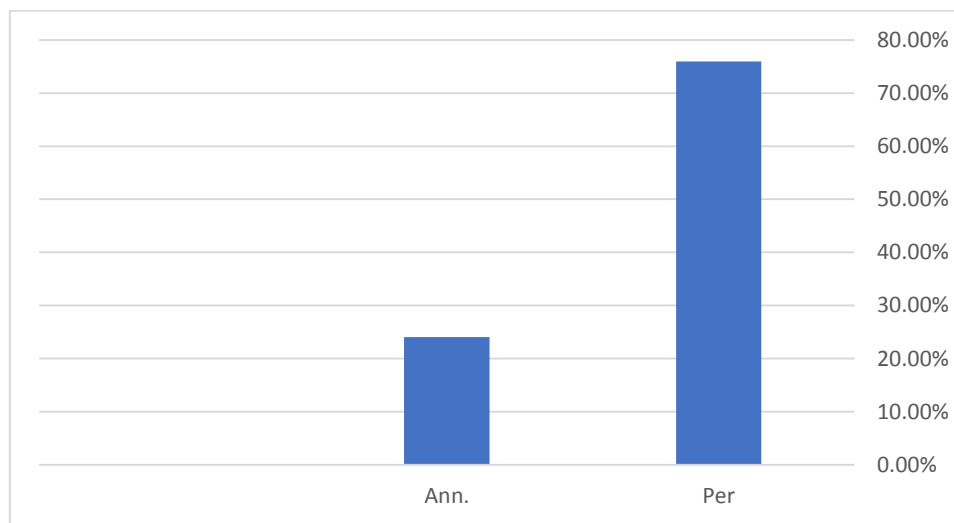


Fig.4. Number of the studied species by life – span

**Conclusion:**

The floristic composition and community structure along the study area mainly were determined by climatic conditions, but it was strongly influenced by human and animal's activities, which disturbed the equilibrium of the ecosystem and implicitly affected the entire vegetation types.

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## التركيب الفلوري والأشكال الحيوية لنباتات المنطقة الصخرية والسهلية من ساحل

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### الملخص

تناولت الدراسة تحليل لنباتات منطقة الصخرية والسهلية من لساحل محافظة أبين. أوضحت الدراسة وجود 273 نوعا نباتيا ننتمي الى 180 جنسًا وتضمها 68 فصيلة نباتية. وبحسب انتشار الأنواع النباتية فقد كانت الفصائل النباتية: النجيلية، المركبة، الطلحية، الفولية، الخبازية، الباذنجانية، الكبارية، اللبئية، البقمية، وعرف الديك والعشارية هي الفصائل السائدة.

أظهر الطيف البيولوجي أن النباتات Chamaephytes تشكل أعلى نسبة (28.20%) وتعتبر السائدة في منطقة الدراسة تليها نباتات كل من Therophytes بنسبة (27.84%) و Phanerophytes بنسبة (26.37%) ثم Hemicryptophytes بنسبة (13.55%) بينما كانت أقل أنواع اشكال الحياة لكل من Geophytes بنسبة، (3.66%) و Epiphytes بنسبة (0.36%). سيادة كل من Chamaephytes، therophytes و Phanerophytes يظهر الطيف البيولوجي لأشكال الحياة في منطقة الدراسة صفات المنطقة الصحراوية.

لقد كانت نسب اشكال الحياة في منطقة الدراسة متقاربة نسبها وذلك يشير إلى أن منطقة الدراسة يغلب عليها الطابع الصحراوي، كما أن الانتشار الواسع لشجيرات وأشجار السنط (Acacia) في منطقة الدراسة يؤكد ذلك.

**الكلمات المفتاحية:** أشكال الحياة، الطيف البيولوجي، منطقة الساحل، الهضبة السفلى، محافظة أبين.