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Floristic composition of the Plant Communities Associated with *Astragalus spinosus*

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AbstractThe current study investigates the floristic aspects of plant communites associated with *Astragalus spinosus*; including a list of plant species, duration, life-form spectra, and phytochorotype of the plant life in the Western Mediterranean coast and Wadi Hagoul, Eastern Desert. The total number of the documented taxa surveyed in the present work were 97 species belonging to 89 genera and related to 27 families. Asteraceae comprises 21 species, Fabaceae (11 species), Brassicaceae (9 species), Poaceae (10 species), Chenopodiaceae (7 species) and Cayophyllaceae (6 species). The maximum number of species (76) was documented in the inland desert habitat, while the Western Mediterranean coastal desert habitat was represented by 57 species. According to chorotype, the total number of recorded species were Mediterranean taxa and Saharo-Sindian element was highly represented.

keywords: *Cyperus* species; Desert; Floristic, Vegetation.

1. Introduction

Deserts, which develop when there is less than 50 cm of annual precipitation, make up one-fifth of the Earth's surface. Despite the fact that most deserts, including the Sahara in North Africa and the deserts in the southwest of the United States, Mexico, and Australia, are situated in low latitudes. Most deserts have a substantial number of specialist plants as well as particular vertebrate and invertebrate organisms. Soils typically have a surplus of nutrients since they only need water to become extremely productive and have little to no organic matter [1,2]. Due to the absence of appropriate circumstances and resources, only a few plant species might be found in deserts. It consists of plants that have undergone modifications or adaptations to live in the desert. Xerophytes are the name for these plants [3,4].

The Sahara is the world's largest hot, dry desert, and it is situated on the African continent. Contrary to all the natural odds seen in this area, it is interesting to see that some species of plants continue to flourish. African-Welwitchsia, date-palm, thyme, magaria, olive trees, orange trees, and fig-trees are among the Sahara Desert's plant life. Aside from this, the majority of the Sahara Desert is completely devoid of flora. Even Nevertheless, there are still certain parts of the Sahara Desert that are lush and have a lot of trees and other vegetation. The Nile valley has a lot of greenery and a lot of flora. This is feasible because the Nile river supplies this region with enough water [5,6].

Despite the lack of precipitation, Egypt's natural vegetation is diverse and may be divided into seven main categories: fresh-water vegetation, saline-water vegetation, reed swamp vegetation, sand dune vegetation, and desert vegetation [7]. The most significant and distinctive sort of natural plant life in Egypt, on the other hand, is the desert vegetation. It comprises mostly xerophytic shrubs and sub-shrubs and makes up around 95% of the country's total area. Despite having little rainfall, the Eastern Desert is home to a wide range of plants, including *Tamarix, Acacia,* and *Leptadenia*, as well as a wide range of prickly shrubs, tiny succulents, and scented herbs [8].

From Sallum in the east to Rafah in the west, the northern shore of Egypt's Mediterranean

coast stretches for roughly 970 kilometers. According to Zahran et al. [7,9], the narrow, less dry belt of Egypt is classified into three ecoregions: the western, middle, and eastern. The western section is the Western Desert's northern shore. It is a thin band of land that runs parallel to the Mediterranean Sea and either widens or narrows depending on where the Western Desert Plateau is located as its southern limit. Its typical north-south breadth, measured from the sea inland, is about 20 km, and its eastern boundary is formed by Lake Mariu [5].

The primary goal of this work is to investigate the floristic characteristics of the wild plants associated with *Astragalus spinosus*, such as registers of wild taxa, duration, life-form spectra, and phytochorotype.

2. Materials and Methods

2.1. Study area

The Eastern Desert, which extends from the Nile Valley to the Gulf of Suez and the Red Sea, makes up around 21% of Egypt's total land area. The Galalah Desert, which is Egypt's Eastern Desert and stretches east of the Nile Delta, is home to the Cairo-Suez Desert Road and Wadi Hagoul. These two areas, which resemble the natural xeric ecology, are mostly inhabited by xerophytic and psammophytic vegetation [10] (Figure 1).

The western portion (Mariut coast) reaches for around 550 km from Sallum to Abu Qir. It is a thin band of land that runs parallel to the Mediterranean Sea and either widens or narrows depending on where the Western Desert Plateau is located as its southern limit. Its typical north-south breadth, measured from the sea inland, is about 20 km, and its eastern boundary is formed by Lake Mariut [7,9].

2.2. Estimation of plant species

In the present investigation, Site 1 represented the Western shore (25 stands), while Site 2 represented Wadi Hgoul, Eastern Desert (20 stands). The stands were spread out across the study region to ensure sampling of a wide variety of vegetational variations and to cover the different ecosystems. All of the samples that were gathered are kept in the herbarium at Mansoura University's Faculty of Science. The taxonomy of living forms used in this study was built on Raunkiaer's classification system [11]. Davis [12], Zohary [13], Täckholm [14], Feinbrun-Dothan [15], and Boulos [16] were used for categorization, identification, nomenclature, and floristic categories.)

Figure 1: Map of Egypt showing the study area.

3. Results and Discussion

3.1. Floristic Composition and Distribution of Plant Species in the Study Area

In terms of presence percentages, the study's reported plant species are totalled (P%). The Western Mediterranean coastal desert and inland desert habitats are the two habitats represented in Table (1) by the floristic makeup of the plant species (north Eastern Desert).

According to the tabulated data, there were 97 different vascular plant species in the research region. While the Western Mediterranean coastal desert environment was represented by 57 species, the inland desert habitat had the largest number of species (76), accounting for about 78.35 percent of all species observed (58.76 percent). According to

their longevity, the 97 species that have been seen in the research region may be divided into three main groups as follows: 46 annual species, 2 biennial species, and 49 perennial species are all present.

The perennial taxa were documented throughout all field visits. Out of the perennials, 18 plant species have a wide range of distribution, where they were recorded in two habitats such as: Astragalus spinosus, Crotalaria aegyptiaca, Echinops spinosus, Farsetia aegyptia, Imperata cylindrical, Iphiona mucronata, Launaea mucronata, Launaea nudicaulis, Lavandula coronopifolia, etc. Whereas, 31 perennial species were recorded in one habitat type, among these species are; Achillea fragrantissima, Aerva javanica, Alhagi graecorum, Alkanna lehmanii, Anabasis articulate, Artemisia judiaca, etc .

Only two biennial species-Centaurea aegyptiaca and Launaea capitata—are listed in the floristic composition (P = 14.63 and 4.88 percent, respectively). According to their occurrence percentages (ecological broad range of distribution), the yearly species (46) may be divided into the following categories:

a) 17 species have a very wide range of distribution, being recorded in two habitats, these species include Aegilops bicornis, Astragalus bombycinus, Atriplex lindleyi, Emex spinosa, Enarthrocarpus lyrotus, Erodium laciniatum, Filago desertorum, Hordeum leporinum, etc.

b) 29species were recorded in one habitat type, among these species are have occurrence percentage of 50%, among of these taxa are Aizoon canariense, Volutaria lippii, Anchusa humilis, Anthemis cotula, Bassia indica, Bromus diandrus, Brassica tournefortii, Carduus getulus, Carthamus tenuis, Chenopodium murale, Cleome amblyocarpa, Daucus litoralis etc.

Table 1. Vegetation composition of the taxa of the different habitats in the study region.

Taxa	Family	L.F.	Floristic category	Habitats		P%
				Inland	Coastal	
Perennials:						
Achillea fragrantissima (Forssk.)Sch.Bip.	Asteraceae	Ch	IR-TR+SA-SI	+	-	2.44
Aerva javanica (Burm.F.) Juss. ex Schult.	Amaranthaceae	Ch	SA-SI+S-Z	+	-	2.44
Alhagi graicorum Boiss	Fabaceae	H	ME+IR/TR	-	+	2.44
Alkanna lehmanii (Tin.) A.DC.	Boraginaceae	H	ME	+	-	12.20
Anabasis articuilata (Forssk.) Moeq.	Chenopodiaceae	Ch.	IR/TR+SA/SI	+	-	7.32
Artemisia judiaca L.	Asteraceae	Ch	ME+SA-SI	+	-	4.88
Astragalus spinosus (Forssk.) Muschl.	Fabaceae	Ch	IR-TR+SA-SI	+	+	100.00
Atriplix halimus L.	Chenopodiaceae	Nph.	ME+SA/SI	-	+	2.44
Cyperus capitatus Vand.	Cyperaceae	G	ME	-	+	2.44
Calligonum polygonoides L. subsp. *comosum* (L′Hér.)Soskov	Polygonaceae	Nph	IR-TR+SA-SI	-	+	2.44
Convolvulus arvensis L.	Convolvulaceae	H	COSM	-	+	4.88
Crotalaria aegyptiaca Benth.	Fabaceae	Ch	SA-SI	+	+	7.32
Cynodon dactylon(L.)Pers.	Poaceae	G.	COSM	+	-	7.32
Diplotaxes harra (Forssk.) Boiess.	Brassicacea	Ch.	ME+SA/SI	+	-	17.07
Devarra tortuosa (Desf.)DC.	Apiacea	Ch.	SA/SI	+	-	19.51
Echinops spinosus L.	Asteraceae	H	ME+SA-SI	+	+	4.88
Euphorbia terracina L.	Euphorbiaceae	H	ME	-	+	26.83
Fagonia arabica L.	Zygophyllaceae	Ch	SA-SI	+	-	9.76
Farsetiea aegyptia Turria.	Brassicacea	Ch.	SA/SI+S/Z	+	+	39.02
Gypsopila capillaris (Forssk.)C.Chr.	Caryophyllaceae	H	IR-TR+SA-SI	+	-	7.32
Haloxylion salicornicum (Moq.)Buinge ex Boiss.	Chenopodiacea	Ch.	SA/SI	+	-	26.83
Hyosceyamus muiticus L.	Solanacea	Ch	SA/SI	+	-	2.44
Imperatae cylindrice (L.)Raeusch.	Poaceae	H.	P.A.L.	+	+	12.20
Leptadenia pyrotechnica (Forrsk.)Decne.	Asclepiadaceae	Nph	SA-SI	+	-	7.32
Iphiona mucronata (Forssk.)Asch.&Schweinf.	Asteraceae	Ch	SA-SI	+	+	21.95
Lasiurus scindicus Henrard.	Poaceae	G	SA-SI+S-Z	+	-	12.20
Launaae mucronata (Forssk.)Muischl.	Asteracea	H.	ME+SA/SI	+	+	12.20
Launaae nudicaulis (L.)Hooek.f.	Asteracea	H.	SA/SI	+	+	19.51
Lavandula coronopifolia Poir.	Lamiaceae	Ch	SA-SI	+	+	12.20
Lotus glinoides Delile	Fabaceae	H	ME+IR-TR+ER-SR	+	+	17.07

Launaae spinoesa (Forssk)Sech.Bip. ex Kuntze.	Asteracea	Ch.	SA/SI	+	+	21.95
Lycium shawii Roem. & Schult.	Solanaceae	Nph	SA-SI+S-Z	+	+	0.00
Ochradenus baccatus Delile.	Resedaceae	Nph	SA-SI	+	-	26.83
Panicum turgidum Forssk.	Poaceae	H	SA-SI	+	+	9.76
Paranochia argentea L.	Caryophyllaceae	Ch	ME+SA-SI+S-Z	+	-	7.32
Phragmitis australies (Cav.) Terin.ex Steud.	Poacea	G.,He.	C.O.S.M.	+	-	7.32
Pulicaria undulata (L.)C.A.Mey.	Asteraceae	Ch	SA-SI+S-Z	+	+	14.63
Retamea raetam (Forrssk.)Webb&Bertrhel.	Fabacea	Nph.	SA/SI	+	+	14.63
Scophularia deserti Delile	Scrophulariaceae	Ch	SA-SI	+	-	2.44
Sileine succulentia Forssk.	Caryophyllacea	H.	M.E	-	+	4.88
Silybum marianum (L.)Gaertn.	Asteraceae	H	ME+IR-TR+ER-SR	-	+	0.00
Spergularia rubra (L.)J. &C.Presl.	Caryophyllaceae	H	ME+ IR-TR+ER-SR	+	+	12.20
Suaedae monoeica Forssk.	Chenopodiacea	Ch.	ME+SA/SI	+	-	17.07
Symphyotrichium squamatuim (Spreng.)Nesom .	Asteracea	Ch.	N.E.O.	+	+	7.32
Tamarix aphylla (L.) H. Karst.	Tamaricaceae	Nph	SA-SI+S-Z	+	-	29.27
Trichodesma africanum (L.) R.Br.	Boraginaceae	H	SA-SI+S-Z	+	+	31.71
Zygophyllium coccinieum L.	Zygophyllacea	Ch.	SA/SI	+	-	26.83
Zilla spinosa (L.)Prantl.	Brassicaceae	Ch	SA/SI	+	-	12.20
Zygophyllium deciumbens Delile.	Zygophyllacea	Ch.	SA/SI	+	-	2.44
Bienniales:						
Centauriea aegiyptiaca L.	Asteracea	Th.	SA/SI	+	+	14.63
Launaea capitata (spreng). Dandy	Asteraceae	Th	SA-SI+S-Z	+	-	4.88
Annuales:						
Aegilopis bicoirnis (Forssk.) Jaub	Poacea	Th.	ME+SA/SI	+	+	9.76
Aizoon canariense L.	Aizoaceae	Th	SA-SI+S-Z	+	-	4.88
Volutareia lippeii (L.) Cass. Ex Meaire	Asteracea	Th.	SA/SI	+	-	12.20
Anchusa humilis (Desf.) I.M. Johnst.	Boraginaceae	Th	ME+SA-SI	-	+	4.88
Anthemis cotula L.	Asteraceae	Th	ME+IR-TR+ER-SR	+	-	7.32
Astragalus bombycinus Boiss.	Fabaceae	H	IR-TR+SA-SI	+	+	4.88
Atriplex lindleyi Moq. subsp. *inflata* (Muell.) Willson.	Chenopodiaceae	Th	ME+IR-TR+ER-SR	+	+	9.76
Basseia indicea (Wight) Scoett.	Chenopodiacea	Th.	IR/TR+S/Z	-	+	21.95
Broemus diaendrus Roth	Poacea	Th.	M.E.	-	+	29.27
Brassicea tourinefortii Goeuan	Brassicacea	Th.	ME+IR/TR+SA/SI	-	+	2.44
Carduus getulus Pomel	Asteraceae	Th	SA-SI	-	+	9.76
Carthamus tenuis (Boiss. & Blanche) Bornm	Asteraceae	Th	ME	-	+	2.44
Chenopodium murale L.	Chenopodiaceae	Th	COSM	+	-	4.88
Cleome amblyocarpa Barratte&Murb.	Cleomaceae	Th	SA-SI	+	-	9.76
Dauceus liteoralis Sm.	Apiacea	T.h.	M.E.	-	+	2.44
Diplotaxis acris (Forssk.)Boiss.	Brassicaceae	Th	SA-SI	+	-	12.20
Emiex spinoesa (L) Caempd.	Polygonacea	T.h.	ME+SA/SI	+	+	51.22
Enarthrocarpus lyrotus (Boiss)	Brassicaceae	Th	SA-SI	+	+	17.07
Erodieum lacieniatum (Cav.) Wild.	Geraniacea	Th.	M.E.	+	+	19.51
Erysimum repandum L.	Brassicaceae	Th	ME+IR-TR+ER-SR	+	-	2.44
Filago desertorum Pomel	Asteraceae	Th	IR-TR+SA-SI	+	+	12.20
Herniariea hemistemeon J.Gay.	Cayophyllacea	Th.	ME+ SA/SI	+	-	7.32
Hordeuem leporeinum	Poacea	T.h.	ME+IR/TR+ER/SR	+	+	12.20
*Iflogea spiceata (*Forssk.) Sch. Beip.	Asteracea	T.h.	SA/SI	+	-	14.63
Lactucea serreiola L.	Asteracea	T.h.	ME+IR/TR+ER/SR	-	+	14.63
Lobulearia libyeca (Viv.) C.F. W. Meeissn.	Brassicacea	T.h.	SA/SI	+	+	26.83
Malvea parvifolrea L.	Malvacea	T.h.	ME+IR/TR	+	+	26.83
Matthiolea longipetalea (Vent.)DC.	Brassicacea	T.h.	ME+IR/TR	+	-	29.27
Medicaego polymorphea L.	Fabaceaee	T.h.	ME+IR/TR+SA/SI	-	+	4.88
Meliloteus indicues (L.)All.	Fabaceaee	T.h.	ME+IR/TR+SA/SI	+	-	7.32
Mesembryanthemuem forsskaoleii Hochst. ex Boiss.	Aizoaceaee	T.h.	SA/SI	+	-	7.32
Neurada procumbens L	Neuradaceae	T.h.	SA-SI+S-Z	+	+	24.39
Onobrychis crista-galli.	Fabaceae	T.h.	IR-TR+SA-SI	-	+	4.88
Ononies serratea Forssk.	Fabaceaee	T.h.	ME+SA/SI	-	+	19.51
Parapholeis incurvea (L.) C.E. Hubb	Poaceeae	T.h.	ME+IR/TR+ER/SR	+	+	9.76
Plantago ovata Forssk.	Plantaginaceae	T.h.	IR-TR+SA-SI	+	+	12.20
Poa annua L.	Poaceae	T.h.	COSM	+	-	2.44
Reichardia tingitana (L.)Roth.	Asteraceae	T.h.	ME+IR-TR	+	+	9.76
Resedea decurseiva Forssk.	Reseedaceae	T.h.	SA/SI	+	+	14.63

Senecio aegyptius L.	Asteraceae	T.h.	ME+IR-TR+ER-SR	+	+	26.83
Rumex vesicarius L.	Polygonaceae	T.h.	ME+SA-SI+S-Z	+	+	12.20
Sisymbrieum ireio L.	Brassicaceeae	T.h.	ME+IR/TR+SA/SI+ER/SR	-	+	21.95
Stellarra pallida (Dumort.)Murb.	Caryophyllaceae	T.h.	ME+ER-SR	-	+	12.20
Trigonealla stelleata Forssk.	Fabaceeae	T.h.	IR/TR+SA/SI	+	-	34.15
Urticea ureens L.	Urticaceeae	T.h.	ME+IR/TR+ER/SR	+	-	7.32
Zygophyllum simplex L.	Zygophyllaceae	T.h.	SA-SI	+	-	26.83

3.2. Plant duration in the Study region

The plant species found in the two habitats of the research region may be divided into three main categories based on their length of existence: annuals, biennials, and perennials. As was previously noted, 97 taxa of plant species were discovered in the research region. 46 annuals (47.42%), 2 biennials (2.07%), and 49 perennials were identified among these species (50.52 percent).

There were 57 species found in the Western Mediterranean coastal desert environment, of which 30 were annuals (52.63%), 1 was a biennial (1.75%), and 26 were perennials (45.62 percent). On the other side, 76 species were found in the inland desert ecosystem, with 33 annuals (43.22%), 2 biennials (2.63%), and 41 perennials (53.95 percent). It is noteworthy that, in two distinct ecosystems in the research region, the plant life-span (duration) was practically equal (Table 1). In comparison to the coastal environment of the Western Mediterranean, annual and perennial plant occurrence percentages were greater in the inland desert ecosystem. Two biannual species were found in the inland desert habitat, while one biennial species was recorded in the coastal habitat of the Western Mediterranean (Figure 2).

3.3. Plant documented Life-Forms

The listed life forms in the study's flora were divided into six kinds based on Raunkiaer's 1934 description and categorization of life forms: therophytes, geophytes, hemicryptophytes, chamaephytes, nanophanerophytes, and helophytes. The majority of the recorded species were therophytes (48.45%), followed by chamaephytes (23.71%), hemicryptophytes (16.49%) and then nanophanerophytes (7.22%), while the geophytes attained value of 4.12%. Helophytes attained the lowest value of life-forms (1.03%) as shown in Table (1) and Figure (3).

It is clear that the percentages of the various living forms differed from one environment to another. The 57 species that have been seen in the Western Mediterranean coastal environment may be divided into five categories of living forms: therophytes (52.63%), hemicryptophytes (24.56%), chamaephytes (14.04 %), nanophaneropytes (7.02 %) and geophytes (1.75%). In the inland desert habitat, the recorded species (76) can be classified into the following life forms: therophytes (44.74%), chamaephytes (30.26%), hemicryptophytes (14.47%), nanophaneropytes (6.58%), geophytes (3.95%) and helophytes .(%1.32)

It is worth to mention that, the life-form spectrum in all habitats of the study area was mainly represented by therophytes and chamaephytes as well as partly by Nanophanerophytes and hemicryptophytes. Geophytes and helophytes are represented by relatively low values

3.4. The Floristic Analysis of the Study Area

The total number of the recorded plant species surveyed in the present study was 97 species belonging to 89 genera and related to 27 families. Table (2) showed that, Asteraceae comprises 21 species (21.64%) of the total number of recorded species, followed by Fabaceae (11 species = 11.34 %), then Brassicaceae (9 species = 9.27 %), Poaceae (10 species = 10.30%), Chenopodiaceae (7 species = 7.21%) and Cayophyllaceae (6 species = 6.18%). Zygophyllaceae was represented by 4 species (4.123%), Boraginaceae and Polygonaceae were represented by 3 species each (3.09%, each). The remaining families were represented by either two or one taxa.

Table lists the floristic divisions of the plant life in the research region (2). Biregional (7 species), Saharo-Sindian (6 species), pluriregional (5 species), Neotropical,

Palaeotropical, and Mediterranean were the floristic regions represented by the Asteraceae (one species each). In Fabaceae, the floristic categories were Biregional (6 species), Pluriregional (3 species) and Saharo-Sindian were represented by 2 species. In the Brassicaceae, Saharo-Sindian was represented by four species, while Biregional and Pluriregional were each represented by three species. In the Poaceae, the components of Pluriregional, Cosmopolitan, and Biregional were each represented by two species, while the elements of Palaeotropical, Saharo-Sindian, and Mediterranean were each represented by one species. Four species in the Chenopodiaceae family exhibit biregional components, while one species each represents cosmopolitan, pluriregional, and saharo-sindian elements. In Caryophyllaceae the floristic categories were Pluriregional (3 species), Biregional (2 species) and Mediterranean (one species). In Zygophyllaceae, the floristic categories were Saharo-Sindian (4 species). The public floristic categories in Boraginaceae were Biregional (2 species) and Mediterranean (one. species each). In Polygonaceae the floristic categories were Biregional (2 species) and Pluriregional (one species). The remaining families (22), on the other hand, were represented by three or fewer species.

According to Table 3 floristic analysis of the study region, 41 species (or around 42.27 percent of the total number of reported species) are Mediterranean taxa. These taxa were either multiregional (17 species, or 17.53%), biregional (16 species, or 16.50%), or monoregional (8 species, or 8.25%). It has been also found that, the Saharo-Sindian element was highly represented by 65 species (67.01%), which can be subdivided into: 28 species (43.08%) as Monoregional, 31 species (47.69%) as Biregional and 6 species (9.23%) as Pluriregional elements. On the other hand, 7 species or about 7.22% of the total number of recorded species were either Cosmopoliton (5 species = 5.16%), Palaeotropical and Neotropical (one species = 1.03%). Another floristic categories were poorly represented, as they were represented by a few number of species .

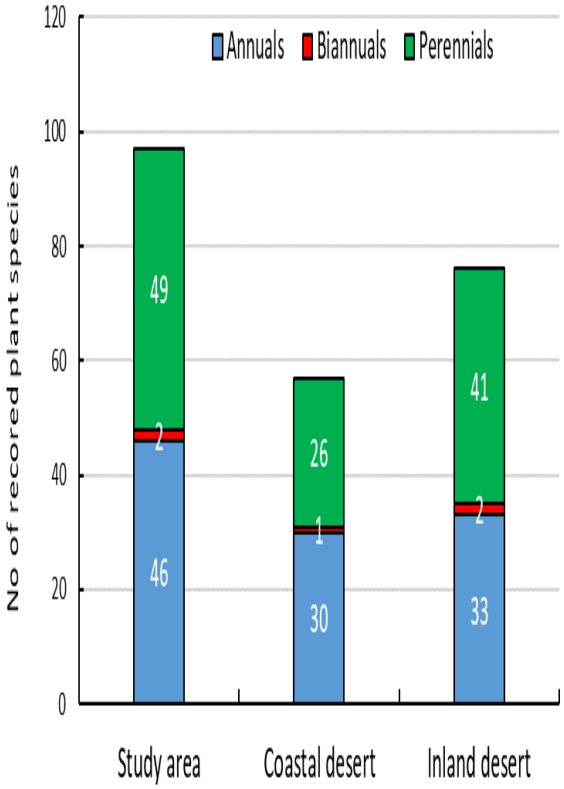

Fig 2. Plant duration in the study place

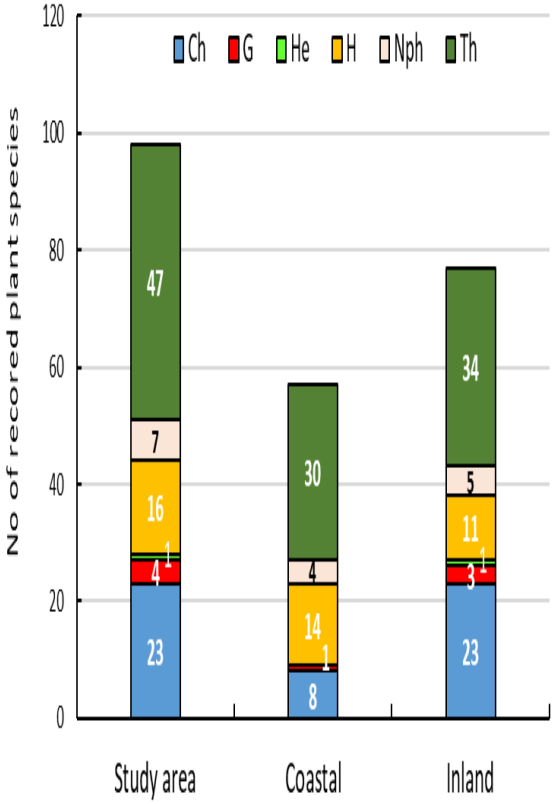

Fig 3. Plant listed life-form in the study place

Table 2. The dominant chorotype among the research zone's families.

No.	Family	Genus	Species	COSM	NEO	PAL	Plurioregional	Biregional	ME	SA-SI
1	Asteraceae	18	21		1	1	5	7	1	6
2	Fabaceae	10	11				3	6		2
3	Brassicaceae	9	10				3	3		4
4	Poaceae	10	10	2		1	3	2	1	1
5	Chenopodiaceae	6	7	1			1	4		1
6	Cayophyllaceae	6	6				3	2	1	
7	Zygophyllaceae	2	4							4
8	Boraginaceae	3	3					2	1	
9	Polygonaceae	3	3				1	2		
10	Aizoaceae	2	2					1		1
11	Resedaceae	2	2							2
12	Apiaceae	2	2						1	1
13	Amaranthaceae	1	1					1		
14	Asclepiadaceae	1	1							1
15	Cleomaceae	1	1							1
16	Convolvulaceae	1	1	1						
17	Cyperaceae	1	1						1	
18	Euphorbiaceae	1	1	1						
19	Geraniaceae	1	1						1	
20	Lamiaceae	1	1							1
21	Malvaceae	1	1					1		
22	Neuradaceae	1	1					1		
23	Plantaginaceae	1	1					1		
24	Scrophulariaceae	1	1							1
25	Solanaceae	2	2					1		1
26	Tamaricaceae	1	1					1		
27	Urticaceae	1	1				1			
Total		89	97	5	1	2	20	35	7	27
Percentage				5.15	1.03	2.06	20.62	36.08	7.22	27.84

Table 3. Various habitat types of research zonewith the number of taxa and the ratio of various chorotypes.

Phytochorotype	Area	Environment					
		Coastal strip		Inland wadi			
World wide							
C.O.S.M.	5	5.15	1	1.75	4	5.26	
NEO	1	1.03	1	1.75	1	1.32	
PAL	1	1.03	1	1.75	1	1.32	
Pluri-regional elements							
ME+IR-TR+SA-SI+ER-SR	1	1.03	1	1.75	-	-	
ME+IR/TR+SA/SI	3	3.09	2	3.51	1	1.32	
ME+IR/TR+ER/SR	11	11.34	8	14.04	9	11.84	
ME+SA/SI+S/Z	2	2.06	1	1.75	2	2.63	
Bi-regional elements							
ME+IR-TR	4	4.12	3	5.26	3	3.95	
ME+SA-SI	11	11.34	7	12.28	8	10.53	
ME+ER-SR	1	1.03	1	1.75		0.00	
IR-TR+SA-SI	10	10.31	6	10.53	8	10.53	
IR/TR+S/Z	1	1.03	1	1.75	-	-	
SA/SI+S/Z	10	10.31	5	8.77	10	13.16	
ME	8	8.25	7	12.28	2	2.63	
SA-SI	28	28.87	12	21.05	27	35.53	
Total	97	100	57	100	76	100	

Table (3) indicated that, the floristic categories were varied from one habitat to another. The highest number of Mediterranean elements (30 species = 30.93%) was recorded in the Western Mediterranean coastal desert habitat. These elements include 12 species (40.0%) of

Pluriregional taxa, 11 species (11.34%) of Biregional taxa and 7 species (23.33%) of Monoregional taxa. In the inland desert habitat, the number of Mediterranean taxa was 25 species (25.77%), these taxa were either Pluriregional (12 species = 48.0%), Biregional (11 species = 44.0%) or Monoregional (2 species = 8.0%). Generally, the Palaeotorpical and Neotropical elements were obviously comparable in all habitats of the study area. Another floristic categories were either poorly represented or completely missed in the different habitats

4. Conclusion

In Egypt, investigated studies are being made to exploit renewable resources from both cultivated and uncultivated regions to increase the productivity of food, forage, and medicinal goods. The current study'discovered plant species being 97 species, which were divided among 89 genera and 27 families. The total number of recorded species were Mediterranean taxa. It has been also found that, the Saharo-Sindian element was highly represented by 65 species. It is imperative to use important natural resources including land, water, air, minerals, forests, fisheries, and untamed flora and wildlife in a sustainable manner.

4. References

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