Notes on the Distribution, Climate and Flora of the Oil Field Areas, South-West of Iran

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Abstract

The extensive lowland of Khuzistan in SW. Iran has been studied floristically. A brief information on the climate, habitat and lithology of area is presented. The hot desert of lowland along the persian Gulf with complex floristic situation is indicated. area. phytogeographical and taxonomic relationships are discussed in detail and attempts are made to relate the distributional patterns to certain ecological factors. 25.5% of the species are Irano - Turanian & Saharo - sindian, 22% saharo - sindian, 15.1% Irano - Turanian, 1.5% Mediterranean, 1.9% endemics, mostly derivatives of Saharo - sindian species, 6.4% cosmopolitan and 27.7% bi - or pluriregional. The highest number of endemics are found in the northern parts of the oil field areas, where they have a wetter climate than most of coastal plains.

Keywords: SW. Iran, Floristic composition, Saharo - Sindian region, Plant geography

Introduction

Up till now, information about the ecology, flora, and vegetation of the oil field areas in south—west Iran has been very scantly, as can be judged from the small entries in the voluminous work of Zohary (1973). Even the remarkable progress of the Flora Iranica project (Rechinger 1963 – 1999) has not altered the situation very much, as it includes only few data about the ecology of the species deal with, therefore, it my seems some what premature to discuss significant plant distributions in these

areas when our knowledge of its flora ecological situation is still very far from complete. The final picture will not be clear until all the distributional patterns of species have been accurately classified, but, this is certainly many years ahead (white, 1983; Breckle, 1986). The provisional account presented here is based on the author's own experience from field works carried out during three years in all seasons. The detailed floristic data on the oil field areas in, southwest Iran is highly incomplete, being limited to some earlier authors have considered aspects of plant distribution and phytogeography in Iran such as Rechinger (1963-99), Bobek (1951), Wendelbo (1971), Zohary (1973) and Leonard (1951- 89). The voluminous work of Zohary (1973), contain a great deal of basic information about plant life in southwest Asia, including Iran, and is a major source of reference. It must the flora of oil field areas is very fragmentarily known; this is particularly true for the southernmost area in khuzistan.

Terrain and climatological conditions

The oil field areas which cover about 20000 km² is situated in southwest Iran. This region extends at lower altitudes with extensive lowland in a belt of varying width all the way along the Persian Gulf from the border of Iraq (Khuzistan) to that of Buschir and Kohgiloyeh (Alaie, 1999; Leonard, 1989). This area comprises the coast land around the Persian Gulf, a rather flat alluvial plain at 0-20m elevation to where the terrain rises gradually to form a small chain of mountains at about 850m elevation. The coast land is fairly narrow and is featured by salines, sand dunes and alluvial plains; further inward the somewhat elevated terraces of the tertiary chalks and marls in the margin of Zagros system (Fig. 1). Although, there is a fairly large body of information available on the soils of most areas under review, there is so far no conclusive treaties on the relations between the soil and the vegetation of this area. For the purpose of classification most of the areas can be categorized as heavy saline and solonchak soils in coastal plains, alluvial - colluvial variety of soil that are usually cultivated and calcareous gypseous lithosols and marls over the higher terrain, also moving sand dunes are present in the north of the coastal plains. The coastal belt of Persian Gulf and the salt lands of Khuzistan are dominated mostly by

NaCl and other soluble salts such as; Na2S04, MgS04, CaCl2, MgCl2. Sodium chloride and gypsum salines are by far the commonest among the salines of the region (Breckle, 1986; David, 1982; Freitag, 1986). The alluvial soils usually with higher ground-water table, are cultivated under permanent irrigation. These are usually deep, fine textured and water-logged soils, often clearly differentiated profiles. Under arid condition, these soils tend to salinization (Zohary, 1973). There are six main soil types in the oil field areas: sandy of various origin; gravel desert, rocky ground with calcareous and gypseous lithosols, loessy alluvial plains, wadi beds, and salines. Each of these type is differentiated into number of soil varieties according to certain physical physiographical properties such texture, as microtopography, sloping and others factors (Bybordi, 1993; Freitag, 1986; White, 1983).

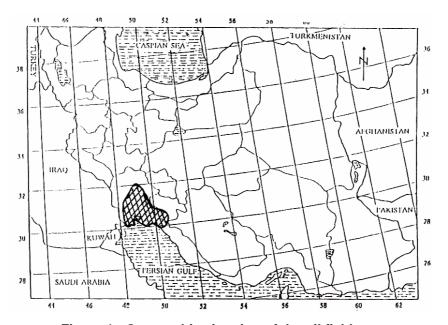


Figure 1 - Geographic situation of the oil field area.

The hot southern gulf region with its high winter and summer temperature and scant amount of rain (150-250mm) displays a climatic regimen similar to that of tropical northeast African and hot Sindian

deserts, but occasionally with more extreme maxima and minima (Zohary, 1973). For instance, the absolute minimum and maximum temperature of Ahwaz is -0.6 and 50.40 The mean minimum of January is 7.5°C and the mean maximum of July 47.1°C. Gachsaran (margin of Zagros system) has an extreme maximum of 47¢Žand a minimum of -3.6℃. Bander-Imam (Persian Gulf) has 4℃ as its extreme minimum and 47.7°C as its extreme maximum, while its mean maximum (July) and its mean minimum (January) are 41.5°C and 9°C respectively. Aghajari (medium altitude) has an extreme maximum of 51¢É and a minimum of 0.90X the mean minimum of January is 8.30X and the mean maximum of July 45.5% (Fig. 2). Annual precipitation ranges in southwest Iran from over 430 mm (Masjed-soleyman) to 184mm or less (Abadan). One of the most important factors in rain climate of this areas appears to be the seasonal rain distribution, and the bulk of areas receives its rains in autumn, winter and spring. Despite, there are very few rainfall records for the gulf region, but from the occurrence of arboreal components in the vegetation cover of this area it is evident that the amount of rainfall is greater there than in the central plateau, although it does probably not exceed 150-450mm (Ghahreman, 1974-

1990; Zohary, 1973). The coast land around the Persian Gulf is fairly narrow and is featured by local sand dunes and salines; further inward the somewhat elevated terraces of tertiary chalks and marls support a very poor savanna and pseudo - savanna vegetation. The relative humidity is not different in any part of areas, and shows a mean of 48% (Alaie, 1999; Sabeti, 1971; Tregubov, 1970). Therefore, hot desert climate is characterized by high temperature and erratic, often scanty

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rainfall (Fig. 2).

There are several striking general characteristics of plant life in these lands. As everywhere in severe habitats, plant species growing in the oil field areas, of SW. Iran are highly adapted to their special environment. The particular stresses are dying off of seedlings by rapid exsiccation of upper soil layer or by extremely high temperatures, desiccation by outblow roots, burial by sand, alkalinity and salinity of soils, etc (Freitag, 1986; Ghahreman, 1994). Much less known are the

advantages of comparatively high amounts of water stored in the subsoil and absence of higher salt contents. It is not surprising that most species are highly specialized as xerophytes and halophytes. The number of extreme xerophytes and psammophytes. Under natural conditions without strong human pressure, they form open shrublands and littoral salt marshes. Beside these, a growing number of more ubiquitous species occur, but they remain subordinate. They are very few cases that usually development over the gypsum and marls habitats. According to our study, The vegetation of the oil field areas contains 531 species (49 species is cultivated), 1 fern, 2 gymnosperms and 528 angiosperms. There are reasons to believe that the number of species will increase considerably, when the area has been fully investigated, because the collecting has also been limited in time. The 531 species belong to 81 families and 351 genera. The largest family is Gramineae (64 species). This family is completely dominating in vernally aspects of flora and vegetation. Other large families are Compositae species), Papilionaceae (58 (49 species), Cruciferae (35 species), Umbeliferae (26 species) Chenopodiaceae (23 species, dominating in autumnal aspects of flora) and Boraginaceae (22 species). The largest genus is Astragalus with 11 species, followed by Medicago (9), Convolvulus (8), Centaurea (8), Erodium (7), Trifolium (7), Tamarix (5), and Plantago (5).

Endemics

The number of endemic species in the oil field areas is 9, which is 1.69% of the total flora. The "subendemics" (Shmida 1984), i.e. endemics of SW Iran, Persian Gulf region or SW Iran and Baluchistan are not included here. Taxa, whose distribution areas are continuous in southwest Iran and south Iran, are included in the list. Such are *Physorrhynchus chamaerapistrum* which inhabits the Gachsaran gypsum highland and southeast Iran and Oman; and *Achillea eriophora* of Behbahan and south Fars and Baluchistan. A few species that have been recorded from southwest Iran (Khuzistan) but were not collected by us are included in the present list. Endemic subspecies and varieties are not included in the list. The list of the oil field area's endemics, including their life form, area of distribution, chorotype, and habitats, is

presented in Table 1. It is evident that the highest number of endemics (8=88.9%) are found in the northern part of the area. These areas have a wetter climate than most of coastal plains (Fig. 2). Altogether 5 species (55.6%) of the endemics are found in the marls and gypseous habitats, and 1 species (11.1%) in sandy dunes, 3 species in mountainous lithosols. The two endemic genera of Umbelliferae, *Dicyclophora* and *Ergocarpon* (Hedge & Lamond, 1973) and one endemic species of Caryophyllaceae, *Silene wendelboi* (Assadi, 1977) are curious members, whereas the other genera are widely dispersed in subtropical Persian Gulf region (Alaie, 1999; Ghahreman, 1999), (Fig.

3). Silene wendelboi is a rare endemic of the oil field areas. It occurs at elevation about 35-50m on the sand dunes. It has been found so far in the following places; Albaji, Khalfabad (ca.50m, Alaie 1998). Centaurea khuzistanica was described as a new and rare species from southwest Iran (Mozaffarian, 1992). It has been found in Dezful to

Shahion, after Bishebozan, Aghajari to Gachsaran (Alaie, 1998). **Table 1 - The endemic species of the oil field area, Iran** *Life - forms: Ch chamaephyte; T therophyte; Hm hemicryptophyte*

Chorotype: IT Irano - Turanian; SS Saharo - Sindian

Species	District	Chorotype	Habitat	Life - form	
Acanthophyllum	Khuzistan SS Marls and		Ch		
khuzistanicum Rech.f.		gypsum places			
Achillea eriophora DC.	E.khuzistan, Fars,	SS	Sandy soil, wadi	Hm	
	Baluchistan		beds		
Astragalus gypsocolus	Khuzistan	SS	Gypseous soil	Hm	
Maassoumi.ex Mozaffarian					
Centaurea khuzistanica	Khuzistan	SS	Smooth rocks	Hm	
Mozaffarian					
Dicyclophora persica	Khuzistan, Fars,	SS	Marls, heavy	T	
Boiss.	Buschir, Hormozgan		soil		
Ergocarpon cryptanthum	Khuzistan, S.Fars	SS	Calcareous	T	
C.C.Townsend			places		
Physorrhynchus	Khuzistan, Buschir,	SS	Gypsum places	Ch	
chamaerapistrum (Boiss.)	Hormozgan				
Boiss.					
Platychaete mucronifolia	Khuzistan, Fars	SS, IT	Marls and	Ch	
(Boiss.)& Hausskn.			gypseous soil		
Silene wendelboi Assadi	Khuzistan	SS	Sandy dunes	T	

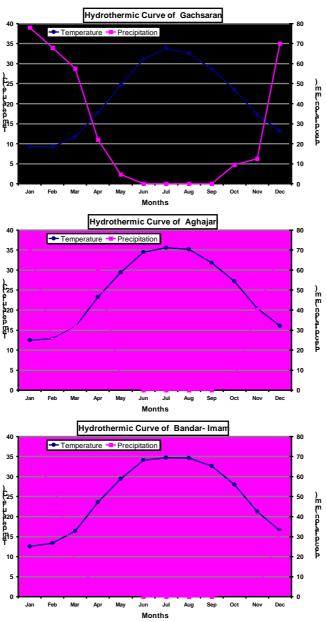


Figure 2 – Hydrothermic curves for selected sites of the oil fields area, south west Iran.

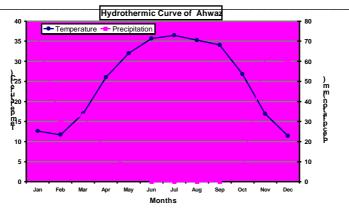


Figure 2 - Continued.

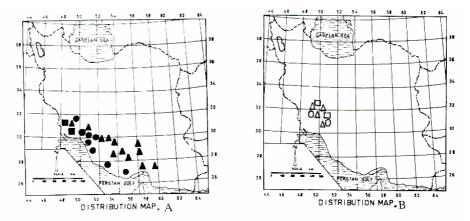


Figure 3 - Total ranges of A)?‡Physorrhyncus chamaerapistrum (Cruciferae) and ?‡ Dicyclophora persica (Umbelliferae) and ?‡ Silene wendelboi (Caryophyllaceae) B) ?½Centaurea khuzistanica (Compositae) and ?ý Acanthophyllum khuzistanicum (Caryophyllaceae), and ?= Astragalus gypsocolus (Papilionaceae).

Distributional Types of the Flora in the Oil Field Areas

As already mentioned, the flora of the oil field areas is made up of two phytogeographical categories. These are: 1) The uniregional groups or the elements i.e. the endemic or sub-endemic taxa, 2) The bi-and pluriregional groups. These are mostly considerable in number and various combinations. The percentage of these groups in the composition of total flora of the area clearly reflects the phytogeographical nature of the area. It will be shown in the following table that each habitat has a

phytogeographically complex flora and that only the uni-regional groups of the flora in each habitat provide the key for the division of the respective habitats into phytogeographical territories. As a matter of fact, we have several times encountered direct contacts between Irano-Turanian and Saharo-Sindian elements and some combined communities or stands containing elements of both above mentioned regions, e.g. Pistacia atlantica with Acanthophyllum khuzistanicum and Ziziphus spina-christi, Amygdalus scoparia with Periploca aphylla, Astragalus fasciculifolius with Platychaete mucronifolia, Covolvulus oxyphyllus with Achillea tenuifolia, Moltkiopsis ciliata with Cyperus conglomeratus and Tamarix aphylla.

All these point to the lack of Saharo - Sindian territory in Iran. Though the number of Omnino - and East Saharo - Sindian species in southwest Iran is quite considerable the plants are nowhere centered within a particular area. They are mostly scattered among both the Saharo - Sindian and the Irano - Turanian vegetation.

This is not surprising in view of the fact that Iran is at prasent open to floral exchange with Arabia only in its south - western part (Persian Gulf), but in this area the climatic conditions, at least the thermal ones, are decidedly tropical. Also in the geological past, when southern Iran was connected with Arabia all along the Gulf of Oman, Iran received from East Africa via Arabia the bulk of the Sudanian element and very few Saharan plants for the climatical reasons mentioned above. That makes them particularly suitable for phytogeographical considerations, because their respective areas are generally more strictly controlled by actual climatic factors than in many other species. Nevertheless, other ecological factors such as competition with other species (particularly of the same life form) and history (age of the taxon and possibility of migrations during the past periods with different climates) are likewise effective.

Widespread Species

A remarkably high number of species are spread all over the habitats of the oil field areas in southwest of Iran, and adjacent areas. Species of all life-forms belong here, but annuals and a few perennials (particularly of chamaephytes) are more numerous. Evidently those species do not respond to the considerable variation of climate and ecological factors, e.g. edaphic, thermal and biotic within the areas under concern. Most of them do not extend further S or SW of Iran but are widespread in

the oil field areas. They are mostly representative of the Irano - Turanian and Saharo - Sindian floristic elements, and include at least large parts of the oil field areas as the eastern sector of the Saharo-Sindian florestic region (Table 2).

Table 2 - Widespread thermophilous species (mostly Irano-Turanian and Saharo-Sindian elements: bi-and pluri- regional elements are marked with +)

Shrubs, dwarf shrubs + Lycium shawii Roemer & Schultes Pergularia tomentosa L. Periploca aphylla Dene. + Prosopis fareta (Banks& Soland.) Macbr. Ziziphus nummularia (Burm.f) Wight. Arn Ziziphus spina-christi (L. Wild. Zygophyllum eurypterum subsp. Gontsharowii (Boiss.) Hadidi Other perenials Acanthophyllum khuzistanicum Rech.f. + Alhagi mannifera Desv. + Astragalus fasciculifolius Boiss. Subsp. arbuculinus Bornm. Astragalus talimansurensis Rech.f. Capparis spinosa L. Convolvulus oxyphyllus Boiss Erodium glaucophyllum (L.) Aiton + Halocnemum strobilaceum (Pall.) M.B. + Scrophularia deserti Del. + Suaeda fruticosa Forssk. ex J.F.Gmel. + Teucrium polium L. Annuals (and biennials) + Anagallis arvensis L. + Centaurea bruguierana (DC.) Cornulaca leucacantha Aell. Diplotaxis erucoides (L.) DC. HandMaz. Diplotaxis harra (Forssk.) Boiss. + Erucaria hispanica (L.) Miller. + Heliotropium lasiocarpum Ledeb. Matthiola longipetala (Vent.) DC. + Parentucellia latifolia Viv. + Plantago ovata Forssk. Rumex vesicarius L. + Salsola incanescens C.A.Mey. Salsola jordanicola Eig + Spergula fallax (Lowe) E.H.L.Krause + Stipa capensis Thunb. Suaeda aegyptiaca (Hasselq.) Zoh.	Saharo-Sindian elements: bi-and pluri- regional elements are marked with +)			
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Suaeda aegyptiaca (Hasselq.) Zoh.	+ Spergula fallax (Lowe) E.H.L.Krause			
	+ Stipa capensis Thunb.			
Trifolium tomentosum L.	Suaeda aegyptiaca (Hasselq.) Zoh.			
y · · · · · · · · · · · · · · · · · · ·	Trifolium tomentosum L.			

Species With More Restricted Areas of Distribution

In south - west Iran, the Saharo - Sindian region extends at lower altitudes in a belt of varing width all the way along the Persian Gulf from Khuzistan to that of Baluchistan. As hinted above, it contains a complex mixture of intergrading elements, with more restricted areas of distribution (Ghahreman, 1990; Rechinger, 1999). We have recognised four: North African / Arabian; East - west - tropical African / Arabian; Mediterranean; Irano - Turanian.

1. North African / Arabian. There are a large number of herbaceous or shrubby species in this category which extend from north Africa (Morocco) to Pakistan - a distance of up to 8000 Km. There are several monotypic genera restricted to this broad zone, a few endemic species, and many genera are represented by vicarious species across the belt (Freitag, 1986; Ghahreman, 1999). A selection of these species is shown in Table 3.

Table 3 - A selected of North African / Arabian elements with restricted areas of distribution in the oil field areas

Anastatica hierochuntica L.
Anchusa strigosa Labill.
Asteriscus pygmaeus (DC.) Cosson & Dur
Asthenatherum forsskalii (Vahi.) Nevski
Astragalus tribuloides Del.
Centaurea khuzistanica Mozaffarian
Citrullus colocynthis (L.) Schrad.
Cleome oxypetala Boiss.
Convolvulus gonocladus Boiss.
Cornulaca monacantha Del.
Cutandia dichotoma (Forssk.) Trab.
Erysimum oleifoium J.Gay
Fagonia glutinosa Del.
Geranium trilophum Boiss.
Gymnarrhena micrantha Desf.
Heliotropium digynum (Forssk.) Aschers. ex C.Christ
Hedypnois ragadioloides F.W.Schmidt
Hyparrhenia hirta (L.) Stapf
Hyoscyamus orthocarpus Schoenbeck – Temesy
Lasiopogon muscoides (Desf.) DC.
Moltkiopsis ciliata (ForssK.)L.M.Johnst.

Table 3 - Continued.

Moricandia sinaica (Boiss.) Boiss.
Neurada procumbens L.
Onosma dasytrichum Boiss
Schimpera arabica Hochst.
Stipagrostis penneta (Trin.) De Winter
Tamarix passerinoides Del.
Tricholaena teneriffae (L.f.) Link

2. East - west - tropical African / Arabian. This is a very important part of the floristic make – up of the Saharo - Sindian region in south – west Iran. It corresponds largely with Zohary's "Sudanian" region (Ghahreman, 1994; Leonard, 1989). Many of the species within this, tropical Africa element extend, or have clear connections, much further to the south sometimes to S or SW Africa and many also grow in peninsular India. In the oil field they grow quite intermixed with the species of the previous N African / Arabian element. A very large number of species come within this element and Table 4 shows a selection of them.

Table 4 - A selected of East-West-Tropical African/ Arabian elements with restricted areas of distribiution in the oil field areas

Aizoon hispanicum L.	
Belepharis persica Juss.	
Calotropis procera (Willd.) R.Br.	
Cenchrus ciliaris L.	
Cistanche tubulosa (Schenb.) R.Wright	
Cymbopogon olivieri (Boiss.) Bor	
Cyperus conglomeratus Rottb.	
Dichanthium annulatum (Forssk.) Stapf.	
Dipterygium glaucum Dcne.	
Ebenus stellata Boiss.	
Fagonia bruguieri DC.	
Grantia aucheri Boiss.	
Leptadenia pyrotechnica DC.	
Pennisetum divisum (Gmel.) Henrard	
Rumex crispus L.	
Tamarix aphylla (L.) Krast.	
Viola cinerea Boiss.	

3. Mediterranean. There are quite clear indication of typically Mediterranean species in the Persian Gulf of Iran. Whether they, in many cases, are completely indigenous or not is impossible to say, but there is no doubt about their present - day occurrence. Most of them are herbaceous and a few are annuals; some occur as weeds, other at the edges of fields, several are in more or less natural vegetation. Some of these plants are also found in the adjacent parts of Irano - Turanian region where a Mediterranean influence is even more obvious. Some examples of Mediterranean elements in Persian Gulf are shown in Table 5.

Table 5 - Some of Mediterranean elements with restricted areas of distribiution in the oil field areas

alou biation in the on hera areas	
Asphodelus tenuifolius Cav.	
Biscutella didyma L.	
Hippocrepis bicontorta Loisel.	-
Hymenocarpus circinnatus (L.) Savi	
Hypecoum pendulum L.	
Scorpiurus muricatus L.	
Urginea maritima (L.) Baker	

4. Irano - Turanian. We have several times encountered direct contacts between Irano - Turanian and Saharo - Sindian elements and also some combined communities containing elements of both above mentioned regions. One of the causes of the lack of a Saharo - Sindian territory in SW. Iran is that the local Irano - Turanian element displays an extremely wide ecological differentiation and is capable of populating the most desertic habitats by plants of its own. In other words, the different types of steppes, sand dunes, salines and desolate hammadas, strongly reminiscent of the Saharo - Sindian ones, are vegetated in the oil field areas of south – west Iran by populations supplied by Irano - Turanian stock. A selection of these species is shown in Table 6.

Table 6 - Some of Irano - Turanian elements with restricted areas of distribution in the oil field areas

Alcea aucheri (Boiss.) Alef.
Alkanna orientalis (L.) Boiss.
Amygdalus scoparia Spach.
Bunium paucifolium DC.
Centaurea luristanica Rech. f
Ducrosia flabellifolia Boiss.
Fumaria parviflora Lam.
Halocharis sulphurea Moq
Limonium thouinii (Viv.) O.Kuntze
Ornithogalum persicum Hausskn. ex Bornm.
Pistacia atlantica Desf.
Postia puberula Boiss. & Hausskn.
Psylliostachys spicata (Willd.) Nevski
Haplophyllum tuberculatum (Forssk.) Juss.
Reichardia orientalis (L.) Hochreutiner
Rubus anatolicus (Focke) Focke ex Hausskn.
Taeniatherum crinitum (Schreb.) Nevski
Teucrium olivieranum Gingins
Torularia torulosa (Desf.) O.E.Schulz
Tulipa clusiana vent.

Results and Summation Remarks

According to present-day knowledge, the vegetation of the oil field areas contains 531 species (49 species is cultivated), 1 fern, 2 gymnosperms and 528 angiosperms. These species belong to 81 families and 351 genera. The largest family is Gramineae, that is completely dominating in vernal aspects of the flora and vegetation, but dominant aspects of the flora in autumn is chenopodiaceae. About 295 of the species, somewhat more than 45%, are annuals; 41 species, about 7.7% are phanerophytes; 92 species, about 17.3%, hemicryptophytes; 47 species, about 8.9% chamaephytes; 41 species, about 7.7% geophytes; whereas the rest are hydrophytes and helophytes and parasites.

Nine species can be expected to be endemic to the oil field areas. In order to the flora of the oil filed areas (SW Iran) are a complex nature, there occur present day distributions which, with our poor knowledge of geological past, are hard to understand. This is certainly true for a few of anomalies which are now listed without comment. A typical and are rare species in the oil field areas (SW of Iran) in Saharo – Sindian territory bordering Irano - Turanian stock are *Ebenus stellata*; *Postia*

puberula and Erysimum oleifolium. Eebnus stellata is the sole member of sect. Tragacantha and endemic to Iran and adjacent Oman. There are 4 other species with restricted area of distribution, that can be subendemic to S and SW of Iran: Hyoscyamus orthocarpus Schonbeck - Temesy, on cliff and margin of seasonal rivers; Onosma dasytrichum Boiss. and Onobrychis gypsicola Rech.f on gypsum and marls places; Verbascum Kochiformis Boiss. & Hausskn. In sandy, gravely places of lowlands.

According to our knowledge, with regard to distributional patterns (see Table 7), the overwhelming majority of species (25.5%) belong to the Iran - Turanian & Saharo- Sindian elements. This is followed by high percentage of Saharo - sindian (22%) and a much smaller number of Irano - Turanian (15.1%) and some bi -or pluri regional species. The tabulation demonstrates the Irano - Turanian & Saharo - Sindian character of flora in lowlands of the oil field areas. Finally, in the lowlands of Persian Gulf area, the floristic situation is complex. African links are strong. The more or less tropical pan - African - S Arabian and Irano - Turanian one are very prominent and possibly the most important.

Another important element is provided by those taxa which stretch all the way from NW Africa through Arabia To South Persia (oil field areas) to Pakistan and SE Afghanistan. In the oil field areas there is no clear differentiation between these three distributional type, the former palaeo- tropic, the two latter holarctic in origin. Also there is very little evidence of SE Asiatic and Euro - Siberian influence on the flora of the Gulf area but there is comparatively strong Mediterranean elements. This is obvious in the north of the oil filed areas and outer parts of the Zagros system in Irano - Turanian region. There are also clear endemic elements in the Saharo - Sindian territories, showing autochthonous development within it.

Table 7 - Distributional types and life form in flora of the oil field areas,

Disributional types	Shrubs, dwarf shrubs	Other perennials	Geophytes	Annuals, biennials	Total	S.%
Irano-Turanian	7	21	10	33	71	15.1
Saharo-Sindian	20	30	4	50	104	22
Mediterranean	-	-	1	6	7	1.5
IrTur.& Saharo- Sinidian	12	27	9	72	120	25.5
IrTur. & Mediterranean	1	4	-	35	40	8.5
SahSin.& Mediterranean	2	1	-	9	12	2.5
IrTur.& Sah Sin.&Med.	3	7	5	37	52	11
IrTur. & Euro- Siberian	-	1	1	2	4	0.84
IrTur.& Med.& Euro-sib.	-	2	1	13	16	3.4
IrTur.& SahSin. & Euro-Sib.	-	1	-	6	7	1.5
Cosmopolitan	3	2	10	15	30	6.4
Endemics	2	4	-	3	9	1.9
Total	50=10.5%	100=21.2%	41=8.7%	281=59.5%	472=100%	

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