

## Flora, Life Form and Vegetation Structure Geographical Distribution of Plants in Mining in the West of Iran

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### ABSTRACT

In this study, we examined the flora of Iran are in Gulalai. Gulalai mine is nearby S& kilometers North West of the province border Hamedan, Kermanshah, Sanandaj, in the coordinates 47 degrees 65 minute: north and 34 degrees 59 minutes East is wide. Collecting plant: by classical method is the regional floristic study. Sample by conventional methods of plant taxonomy and the use of resources were identified and families, genera and species of each were determined. Samples collected in this study will be stored in the Herbarium of the study showed that iron mining region Galalai, 36. Families and 116 genera and 147 species and subspecies which have been identified as the family asteraceae (sun Hower). Brassicaceae (Brassica), Poaceae (gresses), Fabaceae (legumes) and Lamiaceae (mints) were the most frequent. The Biological forms area are %1 phanerophytes %5 cryptophytes, %49 Hemi Cryptophytes, 9.6 Chamaephytes and %39 Thermophiles. Most geographical distribution, species belongs to the Iran –Trainman area.

**KEYWORDS:** Plant diversity, Geographic distribution, life forms, floristic, Gulalai mine

### INTRODUCTION

Iran is one of the most important centers of plant diversity in the old world, is that nearly 22 percent of the 8000 plant species of flora are the endemic Floristic survey of the area is very important because, like a birth certificate for each region[1].

Shows the existence of plants and their status[2] The shape of the flat feature any biological plant is based on a compromise with the never mental conditions of the morphologically plant created various factors such as the Ecologic plants each region involved can be the height of the location, depth, wind speed, land moisture and to been grated[3].



Figure 1. Map of Iran, Western Hamadan province (gray color).

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Ecological factors of each area plays an important role getting the composition of floristic [4]. Any changes in ecological factors can lead to changes in the composition and fluidics or even herbal. Given that each Habitat has a combination of ecological factors on its special, certain effects of the combined to special [5] Therefore, the role and importance of ecological factors on the composition of the vegetation and their bilateral relations in a specific Habitat [6]. So a variety of ecological factors and the change and the impact of such phenomena as ecological factors and replacement action is caused to different ecological conditions and result in the creation of different habitat in an area. [7]. Flora of Iran belongs to the eastern countries flora which includes photo geographical area named Iran- Turani. On the flora of soils rich heavy metals did mania and Haji blond (2007) studied. Ghorbanli and his associates [8] specifies on the review and study of flora of that copper mine the largest species of this area belongs to the Asteraceae [9]. The accumulation of species in the year 2007 Yousefi. Introduced flora at the Hamekasi mine, the nearest to Gulali mine, in Province Hamedan, Golmohammadi. In the year 2004 studied the lead and zine mine Ahangaran in Hamedan Province so that introduced the flora of the mine plant. Carillo and Gonzalez [10] informed the mechanism of heavy metals accumulation in plants of some of Mexico's mining waste and identified those places were introduced flora. In reviews of herbaceous plants, shrubs and trees on the growth in cool mine in India were observed between tree species, maximum positive connection for copper, element in the stems and leaves of the plant [11]. This is the first study in the area of Gulali iron mine in the city of curve Kurdistan, bug that setting the bio-geographical phlorystic prepare the list of plant species took to diversity [12] the status of the plants and the potential of the region in terms of investigation and ecological studies, as well as in understanding the potential of significant plant operation in terms of medicinal herbs forest, pasture and the help [13].

## MATERIALS AND METHODS

Gulali iron mine with the extent of 9.225 km<sup>2</sup> is placed in the geographical coordinates of 47 degrees and 54 minutes Eastern, 34 degrees and 59 minutes North longitude and elevation 2425m of sea level. In terms of position at a distance of approximately 58 km northwest of Hamadan and 50 km northwest Asad Abad, 27 km north west of the village Chenar Abbaskhan, 1 km village Gulali is been located. According to the country's Meteorological agency classified the area dry and cold in the placed under the group so that the region's cold winter climate and high temperature in summer. The mean annual precipitation is about 330 mm and the minimum and maximum temperatures between -33<sup>0</sup> and 40<sup>0</sup> c. [14]. In this research to determine the flora, the total area of the plant from March 2009 till September 2010 with a systematic random method is been studied. [15]After being pressed the specific details on the card in the brief, and in addition to that of the sample, such as height, location, date of collection and the collected specimens were recorded, then the numbers of plants were recorded, then the number of plants were analyzed using the mentioned books flora Iranian [16]and flora an authentic hero (2004), Iranian flor [17] were identified and their Persian name using the book culture of plants [18]The medicinal value of plants being posture and also with the use of books and available resources were identified[19]In order to determine the different forms of bio-region is conventional method Ranker used. [20]This system is based on the position of bud plants reviver to five groups phanrophytes, zoophytes, Cryptophytic, Hemicryptophytes and trophies [20]then Cerotype's (geographic distribution) of species according to their emission areas in Iran and other countries, and was diagnosed on the basis of the compilation of geographical division of regions of Iran. [21]Takhtajan (1986) Zohary (1973) Map of the geographical scope of the case study (scale of 1:2.000.000) and access road to the Golali mine [22]

## RESULTS

Identification of the flora of this area, which is in the region of 36 iron mine plant family (33 monocot led onus and 3 of two breeds family), 116 kinds (99 kinds of t200 breeds and 17 mono) and 147 species (130 species of single species and 17 double). The almost important family area Asteracea with 31 species, Poaceae 14 species, Brassicacaeae with 14 and Fabaseae 12 species. (Pic no) Names of plant species are arranged in table 1 of this region by alphabetic letters the family has been set up According to the pic no.3. Biofilms of plants area includes %1 phanrophytes, %5 cryptophytic, %49 Hemichryptophte, %6 zoophyte and %39 throphyte. In term of cerotype's most species belongs to the Iran- Turani area.

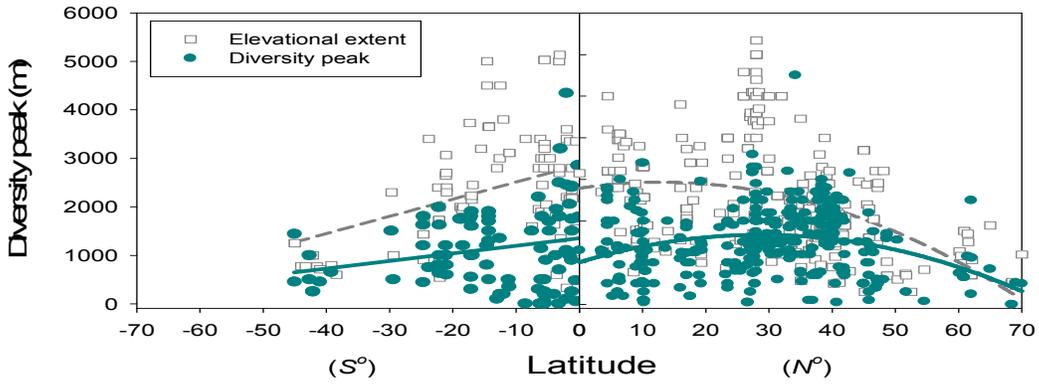


Figure 2. The positions of diversity peaks in relation to the sampled elevation extent across latitudes

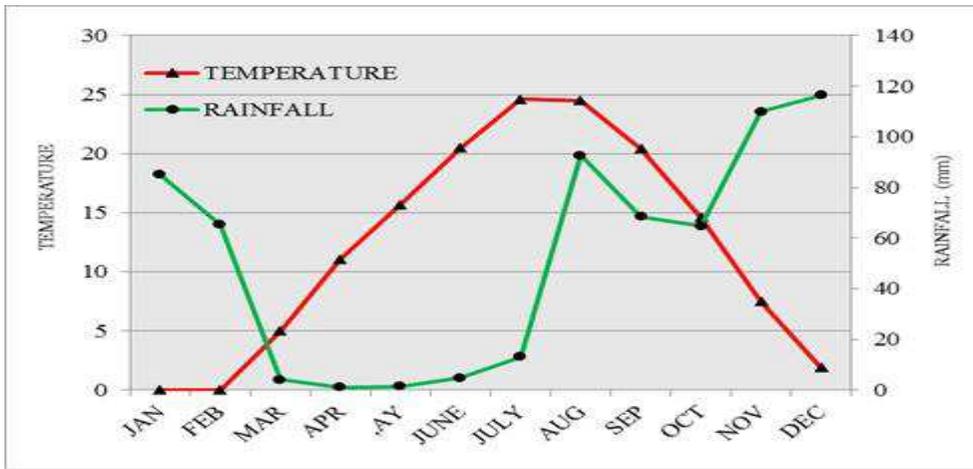


Figure 3. Emberothermic curve of study area.

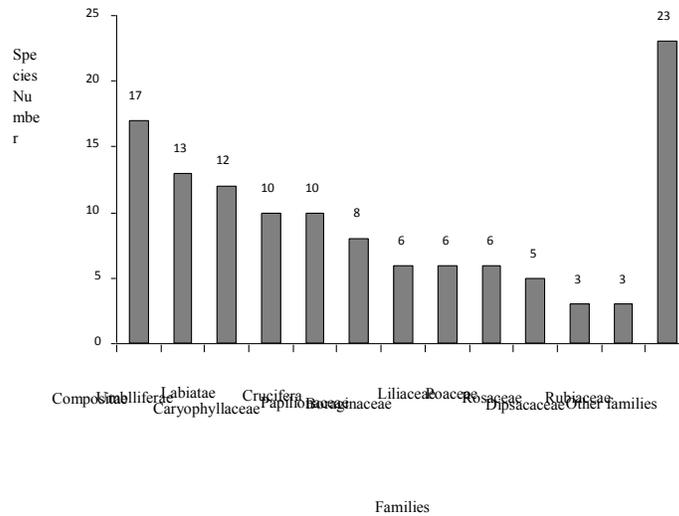


Figure 4. Frequency of plants families

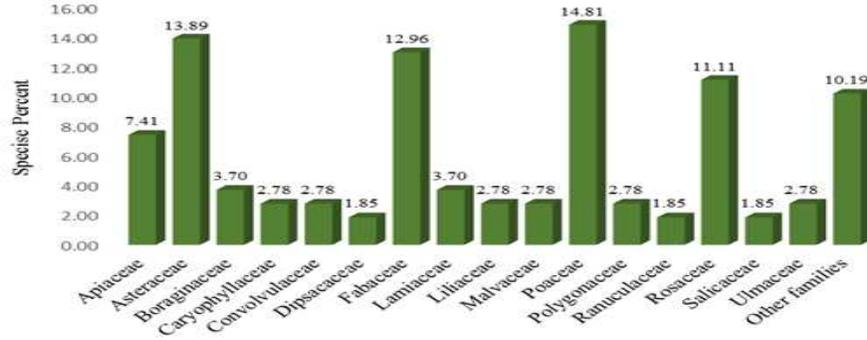


Figure 5. Percent graph of plants families in the study area.

Table 1. List of the species, families, their life-forms and geographical

Families / Species	Life Forms	Geographical Distribution	
<b>Compositae</b>			
Acroptilon repens (L.) DC.	T	IT	
Carthamus glaucus M.Bieb	T	IT	
Carthamus oxyacantha M.Bieb	T	IT	
Chardinia orientalis Desf.	T	IT	
Cichorium intybus L.	H	Cosm	
Cichorium pumilum Jacq.	H	IT	
Cirsium Mill.	T	IT	
crepis sancta (L.) Babc.	T	IT,M	
Echinops orientalis Trautv	H	IT	
Echinops ritrodes Bunge	H	IT	
Gundelia tournefortii L.	H	IT	
Lactuca serriola L.	H	IT,M	
Sonchus asper Hill.	H	IT	
Sonchus maritimus L.	H	IT	
Tanacetum polycephalum Sch.Bip.	H	IT	
Taraxacum baltisticum V.Soest	H	IT	
Anthemis cotula L.	T	IT	
<b>Umbelliferae</b>			
Dorema aucheri Boiss.	H	IT	
Eryngium billardieri F. Delaroché	H	IT,M	
Falcaria vulgaris Bernh.	H	IT	
Ferula asafetida Spreng.	H	IT	
Grammosciadium scabridum Boiss.	T	IT	
Physospermum cornubiense DC.	H	IT,M	
Prangos uloptera DC.	H	IT	
Prangos ferulacea Lindl.	H	IT	
Scandix stellata Soland.	T	IT-ES,M	
Torilis leptophylla Reichenb	T	IT,M	
Turgenia latifolia Hoffm.	T	IT	
Bunium sp	G	IT	
Chaerophyllum macropodium Boiss.	H	IT	
<b>Labiatae</b>			
Acinos graveolens Link	T	IT,M	
Ajuga chamaecistus Ging ex Benth.	T	IT,M	
Hymenocrater incanus Bunge	T	IT	
Lamium amplexicaule L.	T	IT	
Nepta oxydonta Boiss.	T	IT	
Nepta persica Boiss.	H	IT	
Phlomis olivieri Benth.	H	IT	
Salvia atropatana Bunge	H	IT	
Salvia reuterana Boiss.	H	IT	
Stachys benthamiana Boiss.	H	IT	
Stachys pilifera Benth.	H	IT	
Teucrium polium L.	H	IT,M	

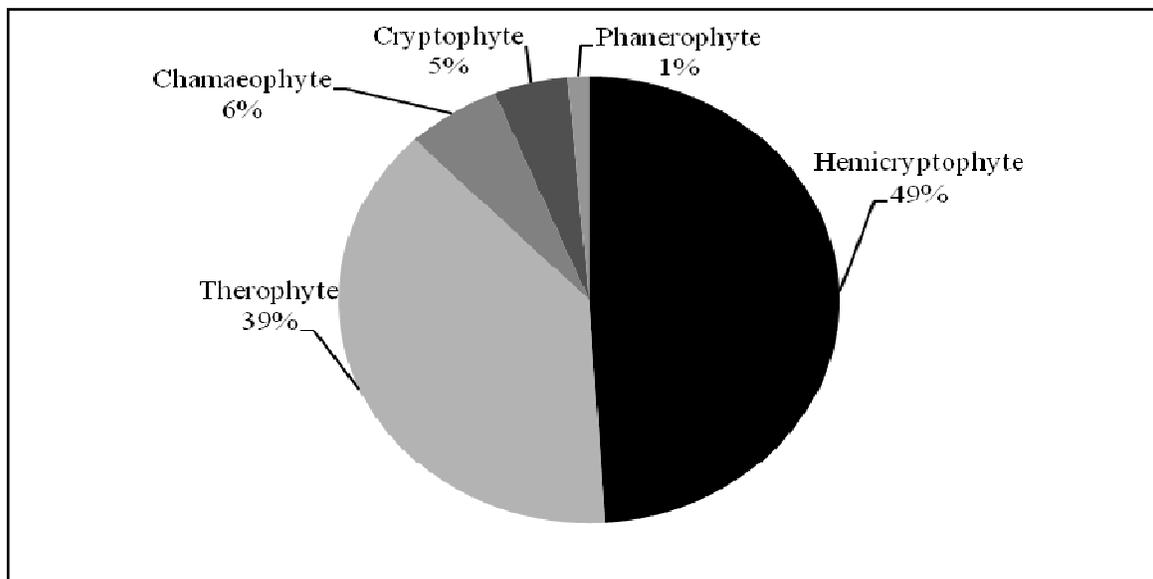


Figure 6. The pie chart of percentage of life form of species

### DISCUSSION AND CONCLUSIONS

A total of 36 plant families identified in the area, family asteraceae (sun flower), with 31 species of Brassicaceae (Brassie) and panaceas (grasses), each with 14 species, fabaceae (legumes) and lamiaceae each with 16 species were the most frequent. study area represent a diversity of plant life forms fairly well adapted life forms that because plants are soil and climatic conditions of the area climate factors, water and littler as the main causes and factors such as altitude, slope, (percent slope and aspect), soil factors, including pH, texture, organic matter contentment. Are affective in variety of floristic region [2] the high percentage of hemicryptophytes specific compatibility indicator plants is mountainous cold climate [7] and numerous helophytes indicate that the area has been destroyed. Due to high concentration of heavy metals in this area compares with the control area, plants are able to survive, that are resistant against soil pollution [9] family asteraceae a abundance in this area , can be caused by the percentage of degradation of vegetation and also the taxon resistance against heavy metals and contamination of soil. The results of this survey with the results Ghorbanali (2007) in the study of flora copper mine nectar that most species belonging to the family asteraceae and highest life forms were related to therophytes and hemicryptophytes match. Analysis of the flora of iron mine hamekasi (the nearest mine to mine Gulalai) shows the family Asteraceae (sun flower), with 18 species, Lamiaceae and poaceae (grasses) each with 13 species, Brassicaceae (Brassica) 6 species of fabaceae (legumes) with five species with the highest frequency [14] that these compliance with the results in iron mine Gualala. By the research of Stanislaw and colleagues (2007) also dark soils rich in heavy metals mentioned are present more than other families and species that are resistant and has the ability of phytoremediation the lead and zinc mine Ahangaran, the highest species richness in also awoned by the family Asteraceae [8]. Analysis of mining plants studied and compared the results with a control group, indicating that the native species introduced in the regions flora, plant species suitable for the purification plant to plant consolidation method (phytostabilization) and herbal extracts (phytoextraction) available have. Accumulator important species could be identified in the area, Tan acetum poly cepholum, Verbadcum specious. Chenopodium betrays, stipe barbata, Centaur virgate, pointed [12], these results seem molayeri etal (2004) and Golmohammadi (2005) which species to species centaurea virgata accumulated Ahangaran of mine introduced and khosropanah and Hajiboland (2004) which as the accumulation of manganese introduced Verbascum speciosum as accumulator by Homekasi mine. Because the climate is cold and dry, the chorology of /Iran Turanian 61/47 % , e-Europe Mediterranean-Iranturai-Siberia 24/12% , cosmopolitan 20,10 percent and the rest belongs to other growth areas.

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