



زانكۆی سه‌ڵه‌دین - هه‌ولێر
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A Survey for Genera of Family Asteraceae on Korek Mountain in Kurdistan Region - Iraq

A Research Project

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Partial Fulfillment of the Requirements for the Degree of Bachelor in Biology

By

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CERTIFICATE

This research project has been written under my supervision and has been submitted for the award of the BSc. degree in Biology with my approval as a supervisor.

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DEDICATION

I dedicate my work to my Parents whom always have encouraged me during all the steps of the study. Also, I dedicate it to my sisters and my brothers whom have been helped me in every way possible to finish the study. My love for you all can never be quantified.

Muhammad Ibrahim Hasan

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SUMMARY

Field work survey conducted in this investigation area Korek Mountain (MRO, Kurdistan-Iraq). A study was conducted on the plant habitat structure and the endemic species of Family Asteraceae from Korek Mountain area. The distribution of vegetation composition in the location was identified. The important goals of this study are to determine main genera of family Asteraceae of this mountain because of have rich plant diversity which has not been surveyed in detailed by previous botanists up to now and it's not signified in Flora of Iraq. For this purpose, new localities for plant species should be reorganized in flora of Iraq. This survey includes all species of natural local flora of vascular plants which are distributed at the mountain. To constitute the floristic composition, field survey duration was from beginning of May 2022 and continue to early April 2022. At the result 37 plant species from 30 genera belong to family Asteraceae were determined and identified. Among them genus *Centaurea* was very diverse. The current habitat is also important for different threatened fauna, threats on the habitat assessed were overgrazing, random fires, road constructions/expansion, sign of urbanization expansion and pollution from the associated garbage and waste. In other locations, there are issues of reforestation of slopes by non-native trees and conversion of the natural habitat to tourist. The result of this study confirms the urgent need for plant habitat conservation in the study area for the sustainability of the living communities.

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LIST OF ABBREVIATIONS

1-Survey: examine and record the area and features of (an area of land) so as to construct a map, plan, or description.

2-Habitat: the natural home or environment of an animal, plant, or other organism

3- Random Survey: Random sampling is a part of the sampling technique in which each sample has an equal probability of being chosen

4- Vegetation: plants considered collectively, especially those found in a particular area or habitat.

5-Flora: a book or other work detailing the plants of a particular region or habitat.

6- Fauna: is all of the plant life present in a particular region or time.

7- Districts: an area of a country or city, especially one characterized by a particular feature or activity.

8- MRO: Mountain Rowanduz Districts.

9- Habit: General environment where plants are live.

10- Plant duration: *Plants* are classified by the number of growing seasons required to complete their life cycle.

1. INTRODUCTION

Kurdistan of Iraq is a mountainous area situated at the northern and north eastern parts of Iraq, varying from some 500-800 m in altitude in the lowest valleys to from 2000-3600 m at the summits of the highest ranges, and it is with a cold winter and relatively high rainfall upwards to 800 mm and the mountains above approximately the 1800 m level are snowbound for several months and snow often falls in the valleys, while the summer though hot and dry, is comparatively of shorter duration than on the other parts of Iraq (Guest and Al Rawi, 1966). These factors contribute to richer biodiversity situation especially the floral components.

Vegetation structure is as important as climate in shaping ecosystem functioning in study region. Maintaining and enhancing vegetation cover and species richness, particularly in grasses could reduce the adverse effects of climate change on ecosystem functioning in these ecosystems (Gaitan et al., 2014). Ecological factors play a fundamental role in vegetation. In particular; germination, growth and distribution. Flora is adapted to the ecological conditions everywhere, such as dry land plants, semi dry land plants or xerophytes and hydrophytes. The land cover varies according to their regions of growth or distribution. Botanical survey is important to investigate the vegetation cover at a certain area and to know the families, genus and species of plants and further information about plant density, frequency and the area covered with plants. Also, to investigate the type of plants such as the medicinal plants, pasture plants and those used to control desertification phenomenon. On an area basis, herbs contribute significantly to the world's land surface and an important share is devoted to grazing. Management of these areas alters drastically their natural characteristics with increasing livestock; pressure on natural and semi-natural rangelands is also increased. But not all range types have the same production potential. Destruction of flora mainly related to overpopulation. To enhance food production, grasslands possessing fertile soils have been ploughed and

converted to agricultural lands. Three syndromes, i.e., desertification, deforestation is inherent to global grazing. These syndromes have widespread and differential effects on; the structure, flora diversity, hydrology, biosphere and atmosphere exchange ecosystems as well as represent a major component of global environmental change. Managing the vegetation represents a major shift in thinking and practice. In some parts of the world leading many to believe this is the required stimuli to develop sustainable flora management approach. There is an increasing need for better management of herbs in developing countries in view of the alarming depletion causing by population pressure, agricultural expansion, and misuse of rangelands. Basic to the implementation of any vegetation management strategy, whether it is for assessment and allocation to sustainable uses or for rehabilitation of grasses and denudate lands, is a clear understanding of how much natural resources there are, where they are located, and their present condition. Knowledge of the flora and its geographical environment are essential for proper planning of sustainable vegetation management. To meet those requirements, precise and up-to date information regarding the status of the flora and potential of vegetation rehabilitations important to upgrade and to design proper management for future improvement of the green cover. Several studies reported successful mapping of vegetation in arid and semi-arid environments as well as in temperate areas based on remotely sensed data. In tropical and subtropical areas, attempts to classify land cover have been performed. In the study area, raring cattle are a very important economic activity and continuous grazing all year round is possible at almost all sites. Hence, precise land-cover information and a quantification of the study area are required. Several studies conducted in the north of Iraq from these; where made a survey on natural plants in the Duhok area northern region of Iraq and identified 17 families, 43 genus, 219 species and found that the average coverage was 70.1% and the density 129.9 plant/m² and concluded that this region contains a wide variety of herbaceous plants, which could be used as pastures (Ma'roof, 1978). Another study made a survey on

different regions in north Iraq such as Sinjar, Atrosh, Zawita and West of Mosul in Sinjar found that the first two regions have a good cover of plants because of the annual rainfall which reach 600 mm, while the latter was poor due to the low rate of rainfall about 300 mm/y, in addition to the severe grazing by animals. So others reported that the northern region of Iraq is very rich in vegetation cover which consider a great inhabitant to achieve interaction between organisms, for addition to aesthetic and tourism value for the flora (Springfield, 1954). The aim of this research is to study natural heritage provide systematic lists of flora of Korek Mountain as an introductory effort to prepare more comprehensive lists for Kurdistan of Iraq.

2. MATERIALS AND METHODS

Plant samples are the materials of this study which collected and dried according to standard herbarium technique (Bridson and Forman, 1998). The plant samples are collected in primitive May 2022 and continued to early April of 2022. For the perfect and accurate identification process, complete characters both vegetative and reproductive must be present predominately. The specimens morphologically analysis with dependent (stem, flower, fruit and leaves) has been cross-sectioned by hand and most of the taken species were photographed in their habitat. The study area is located in the Kurdistan Region of Iraq (KRG) within Erbil Governorates. The area is situated in Korek Mountain (MRO). All Seven volumes of Flora of Iraq; Volume 1, 2, 3, 4 (part A), 4 (part B), 8 and 9 (Townsend CC. et al., 1966, Guest, 1966) were studied to determine the recorded plant species in the study area. random wander plant survey is generally used and useful in difficult terrain or irregularly-shaped localities. The identification process dependent on the available floras, journals, scientific papers, plant field guides and dissertation pertinent to the flora of Iraq and neighboring countries. During this study about 37 specimens were collected on 5 field trips. The identification process was followed on the present floras; Flora of Iraq, (Khalaf, 1980), (Fatah, 2003), (Ahmed, 2010), (Ahmad, 2013), (Hameed, 2016), and (Darwesh, 2017). And PlantNet android software was used for pre-identification of specimen.

3. RESULT AND DISSCUSION

The study area contains about 30 genera, 37 plant species (Table 1) (Figure 1-3). The highest number of species belongs to genus *Centaurea* with 5 species. The presence of such high number of species indicates the high richness and diversity of plant species in the study area. It is worth to know that this area contains a lot of flora as pasture plants used as forage or animal food, supported by the favorable conditions for growth where consider the region as tourism site. Similar studies were carried in north of Iraq found similar results (Guest, 1966, Al-Tikriti and Abdullah, 1969, Townsend CC. et al., 1966). To explore the current status of vegetation habitat and the availability of the plant species in the study area, data from field surveys of representative locations of the study area was integrated with the historical data in Flora of Iraq (all seven volumes). This action is attempted for checking the status of plant species, because some of the historical data has been gathered at different times in the past and the habitat ranges might be changed with time, due to climate change and human activities (Rinawati et al., 2013). The highest percentage in the area was 95% and the minimum was 75%. There is a reduction in this character due to the continuous tillage, agricultural operations, overgrazing, logging, firing, urbanization, and weed control. If this area is left without any operations the expected coverage will reach 100%, The reason of riches of flora in study region due to the northern of Iraq in special Mountain Rowanduz Districts (MRO) had been high values of mean annually rainfall and snowing in compare with middle Iraq (Al-Rijabo and Salih, 2013). However, Alkaradaghi et al. (2018), found about 16 genera within Asteraceae family. Our results were confirmed by Saeed (2021), they found about 30 genera of family Asteraceae.

Table 1. Natural plants growing in the area of work according to their genera and species.

NO.	GENERA	SPECIES
1	<i>Anthemis</i>	<i>arvensis</i>
2	<i>Asparagus</i>	<i>officinalis</i>
3	<i>Aster</i>	<i>sapalatus</i>
4	<i>Callendula</i>	<i>arvensis</i>
5	<i>Carduus</i>	<i>pyconocephalus</i>
6	<i>Carthamus</i>	<i>oxyacantha</i>
7	<i>Carlina</i>	<i>corymbosa</i>
8	<i>Centaurea</i>	<i>behen, iberica, solstitialis, cynaus, and calcitraba</i>
9	<i>Cichorium</i>	<i>intybus</i>
10	<i>Cynara</i>	<i>cardunculus</i>
11	<i>Crepis</i>	<i>sancta</i>
12	<i>Crupina</i>	<i>crupinastrum</i>
13	<i>Echinnops</i>	<i>Galalensis and spinosissimus</i>
14	<i>Filago</i>	<i>pyramidata</i>
15	<i>Gundelia</i>	<i>tournefortii</i>
16	<i>Hedypnois</i>	<i>rhagadioloides</i>
17	<i>Helichrysum</i>	<i>arenarium</i>
18	<i>Lactuca</i>	<i>Serriola, and saligna</i>
19	<i>Matricaria</i>	<i>Aurea and chamomilla</i>
20	<i>Notobasis</i>	<i>syriaca</i>
21	<i>Onopordum</i>	<i>carduchorum</i>
22	<i>Picnomon acarna</i>	<i>acarna</i>
23	<i>Scorzonera</i>	<i>pseudolanata</i>
24	<i>Rhagadiolus</i>	<i>stellatus</i>
25	<i>Senecio</i>	<i>vernalis</i>
26	<i>Silybum</i>	<i>marianum</i>
27	<i>Sonchus</i>	<i>oleraceus</i>
28	<i>Taraxacum</i>	<i>officinale</i>
29	<i>Urospermum</i>	<i>picroides</i>
30	<i>Xanthium</i>	<i>strumarium</i>

4. CONCLUSION AND RECOMMENDATION

Mountain Rowanduz Districts (MRO) especially Korek Mountain area characterize by excellent vegetation cover because of the prevailing environmental conditions such as; climate rainfall, fertile soil and should be preserve the flora from the decline and extinction which clear its importance in the maintenance of soil from erosion and desertification so preventing damage that affects them. Vegetation covers integrated investigating ecosystem where achieve the case of biological diversity between organisms and has been environmental, pastoral, aesthetic, medical and health important so requires sustainability and continuity their qualifying. Observed stripping the land cover in the study area by the mechanical manner in the flowering season and this hinders formation of seed and reseed-seeding. The burning process continuously status to get rid of the vegetation cover after drying must therefore be prevented in the summer the fires affected on large areas of flora and forests. The citizens grazing the animals in the wild herbs where gets overgrazing of natural pastures, especially at the flowering stage which effects on their sustainability. Require expansion the natural reserves to achieve interaction status between living natural resources and non-living natural resources. Urbanization has a significant effect on the destruction of vegetation in the region should move towards vertical construction.

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6. APENDICES



Figure 1. shows plant species: 1. *Anthemis arvensis*; 2. *Carlina corymbosa*; 3. *Centaurea calcitrapa*; 4. *Cynara cardunculus*; 5. *Silybum maianum*; and 6. *Senecio vernalis*.



Figure 1. shows plant species: 7. *Creps sancata*; 8. *Sonchus oleraceus*; 9. *Crauus pycnocephalus*; 10. *Taraxacum officinale*; 11. *Notobasis syraca*; and 12. *Matricaria chamomilla*.



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پوویبۆیه ک بۆ رەگەزەکانی خێزانی Asteraceae لە سەر چیا کۆرەکە لە هەرێمی کوردستان - عێراق

پڕۆژەی دەرچوونە

پێشکەش بە بەشی بایۆلۆژی کراوە، وەک بەشێک لە پێداویستیەکانی
بەدەستەپێانی بروانامەی بەکالۆریۆس لە زانستی بایۆلۆژی

ئامادەکراوە لە لایەن:

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