



Palestine polytechnic University

Collage of Applied Sciences

Applied Biology Department

Graduation Project

Biodiversity of Yatta Protected Area

By

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Supervisor

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**Submitted to the Department of Applied Biology in the of Collage
Applied**

**Sciences Palestine Polytechnic University to meet part of the
requirements to obtain Bachelors of Science in Applied Biology**



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**The project was submitted to the Department of Applied Biology at the
Faculty of Applied Sciences to meet partial requirements of the
Bachelor's degree**

Signature of the Head of the Department :.....

Signature of the project supervisor:.....

Palestine Polytechnic University
Second Semester 2017

إلى من لا يمكن للكلمات أن توفي حقهما
إلى من

العزيز في عمرهما

إلى المنارات التي أضاءت عتمات الليالي ..
. وإلى

الشموع التي أضاءت سبل الحياة ..
جميعاً

إلى الحبيب و

وأخص بالإهداء أنا أشواق إلى رفيق

" سني الدراسة زوجي الغالي "
وابنتي " هبة الرحمن "

مني ميسون إلى الروح التي سكنت
" "

اليكم ايها الافاضل يا من انتم سر

الشكر

نشكر الله العلي القدير الذي انعم علينا
العقل والدين

القائل في محكم التنزيل: "
عليم" صدق الله العظيم. سورة يوسف آية
.

فله الحمد حمداً كثيراً طيباً
نعمه التي لاتعد ولا تحصى
خيراً.

يبقى لنا دائماً العجز في وصف كلمات

رواح التي تمضي خلال الأيام والتي تتصف

الشكر تكون في غاية
الصعوبة عند صياغتها

ربما لأنها تشعرنا دوماً بقصورها وعدم
إيفائها حق من نهديه هذه الأسطر

لى رمز التواضع والعطاء صاحب القلب
الكبير والوجه المبتسم والعلم الوفير
تور طالب الحارثي فقد كنت لنا خير عون
وصبر وعطاء فلك منا جزيل الشكر.

لى كل من ضاء بعلمه عقل غيره
و هدى بالجواب الصحيح حيرة سائله

سماحة العارفين

حيث نخصكم بالشكر
مازن قمسية والأستاذ الياس حنضل والأستاذ
مبارك زواخرة والى جميع الأخوة العاملين في
متحف التنوع الحيوي على دعمكم وتشجيعكم
لنا في مسيرتنا التعليمي فقد كنتم خير قدوة
ومثال حسن وينبوع علم غزير.

وشكر خاص إلى الأخ محمد لجبارين
رافقنا طوال الرحلات الميدانية لتعريفنا

والشكر الكبير الى قسمنا "قسم الأحياء
التطبيقية " بكافة الزملاء والزميلات.

وأخيراً نتقدم بجزيل شكري إلى كل من مدوا
لنا يد العون والمساعدة في اتمام هذا البحث

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Abstract

Biodiversity of Yatta protected area, fauna and flora

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ABSTRACT

Yatta protected area, which located in the south of Hebron, is one of the most interesting areas of particular interest. It is the first study of this kind in this area. As part of this work, we present in this research a survey of plants and animals in the period from December 2016 to May 2017. The presence of animals and plants is highly rich but faces a number of threats with habitat fragmentation and destruction. The work involved rich animals with 8 species of reptiles, three mammals, more than 60 species of invertebrates, 3 species scorpions and 44 species of plants. This is despite the destruction of samples and limited sampling (time, resource constraints). As a result of our analysis, we present six commandments but are very essential for the conservation of biodiversity in Yatta. Include: 1) to prevent hunting in those areas to protect rare species from extinction risk such as gazelles 2) to repair land by means of mountain chains to prevent soil erosion and restoration of what was destroyed by the remnants of settlements; 3) to prevent overgrazing and which has devastating effects on the environment of some species, 4) Establishment of educational centers to raise the awareness of the population to the importance of biodiversity and the need to preserve the environment ,5) To demand that local and international institutions face the danger of the settlements and their waste and the damage caused to the environment by all its components.

Keywords: Biodiversity, Yatta, protected area, occupied Palestinian territories, fauna, and flora.

التنوع البيولوجي في محمية يطا الطبيعية، الحيوانات والنباتات

أشواق النجار، ميسون أبو عر ، الياس ، مازن قمسية

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تعد محمية يطا التي تقع في جنوب مدينة الخليل من المناطق المثيرة للاهتمام والتي حظيت باهتمام خاص كمحمية طبيعية فلسطينية، وهذا البحث والأول من نوعه في المنطقة. وكجزء من هذا العمل، نورد في هذا البحث نتائج الأبحاث التي أجريتها في الفترة من 2010 إلى 2011. ويلاحظ وجود حيوانات نباتات غنية بشكوك كبير ولكنها تواجه عددا من التهديدات مع تنوع الموائل وتدميرها. وسجل هذا العمل حيوانات غنية مع أكثر من 4 أنواع من الحشرات و 4 أنواع من اللافقاريات. هذا على الرغم من تدمير موائل أخذ العينات المحدودة (الوقت، قيود الموارد). ونتيجة لتحويلنا، نقدم مستقوصا ولكننا نرى الحاجة لحفظ التنوع البيولوجي في يطا. منع الصيد في تلك المناطق لحماية الأنواع النادرة من خطر الانقراض مثل الغزلان (إصلاح الأراضي عن طريق سلاسل جبلية لمنع انجراف التربة وإصلاح مدمر تهمل مخلفات المستوطنات، منع إعياء الجائر والذيلها آثار مدمرة على بيئة بعض الأنواع، (مراكز تعليمية بغرض توعية السكان على أهمية التنوع البيولوجي وضرورة الحفاظ على البيئة) مطالبة المؤسسات المحلية والدولية بضرورة مواجهة خطر المستوطنات ومخلفاتها والأضرار التي تسببها للبيئة بكافة عناصرها.

:التنوع الحيوي، يطا، محمية طبيعية، الأراضي الفلسطينية المحتلة، الحيوانات، و

CHAPTER ONE

Introduction

Chapter 1 Introduction:

1.1 Definition of biodiversity

Biodiversity is variably defined as the diversity of living organisms (flora, fauna, microorganisms) produced via evolutionary diversification and is now considered integral to continuing life on earth as we now know it (Wilson and Peter 1988). It thus refers to the variety found in biota from genetic make-up of plants and animals to agricultural diversity (Cardinale and Bradley, 2012).

Biodiversity can be divided into three sections: 1) genetic diversity or variability in genes and their characteristics, 2) diversity in living species and measured by the group of organisms on the surface of the earth, and 3) diversity in the system of the environment where each ecosystem contains the common organisms and qualities distinguish it from others (Ashtia and Hamad, 1995)

Two hundred years ago, the first summit on biodiversity, the majority of countries around the world agreed that what humans do is destroying biodiversity and destroying ecosystems, species and biological processes at an alarming rate. Destruction of diversity is destruction of the ecosystem and results the scarcity of many of the goods and services necessary for the existence and prosperity of all life forms including humans (Cardinale and Bradley, 2012).

Increase in population growth and per capita consumption led to unsustainable exploitation of natural resources and produced climate change, ocean acidification and other anthropogenic environmental impacts. A successful conservation approach and adequate funding for this should be promoted. Radical changes are needed to recognize biodiversity as a global public good and to change people's misinterpretation and ignorance of the issue of biodiversity by integrating biodiversity conservation into policy and decision-making for resource production and consumption, (Rands and Michael, 2010).

1.2 Biodiversity in Palestine:

In 15 February 2002, a resolution on the state of the environment in the occupied Palestinian territories was adopted at the seventh special session of the Governing Council / Global Ministerial Environment Forum in Cartagena, Colombia. The Governing Council requested UNEP to undertake a desk study as a first step in implementing the decision to support and promote the preservation of the environment in the occupied Palestinian territory. The study to identify key areas of environmental threats was not very detailed (UNEP, 2003). The report estimates that more than 50,000 species live in Palestine in ECE report in 2003.(Qumsiyeh.2015).

Environmental conservation is increasingly recognized as essential for sustainable development. In developing countries, such as our region, it is difficult to pay attention to environmental conservation as the population is focused on mere survival in impoverished economic conditions. The Levant or Greater Syria includes Jordan, Palestine, Syria and Lebanon. It is an area rich in biodiversity because of its geographic position and geological history.

Palestine is home for a various plants and animals; This report estimates that over 50,000 species live in Palestine including approximately 540 birds and 100 mammal species (EQA ,2016), 97 reptile species, and seven amphibian species. There are also an estimated 2,780 plant species (Eliezer Frankenberg, 1997)

This rich biodiversity in a small area is because Palestine connects the three continents of the ancient world (Asia, Africa, and Europe) which made it a conduit for the migration of many species from north to south and vice versa and passage point for land animals. The geographic position at the northern tip of the African tectonic plate and its interaction with the Arabian plate cause the great rift valley that runs from Turkey through the Jordan Valley and the gulf of Aqaba to East Africa. This gives us high elevations like Mt. Hermon (JabalAlshaikh) and the lowest point on land (Dead Sea).

According to the Palestine Central Bureau of Statistics (PCBS), as of the mid of 2015 the totalPalestinian population in West Bank and Gaza was approximately 4.68 million people. The population ofthe West Bank was approximately 2.86 million in 2015, including 255,686 Palestinians living in EastJerusalem. The population of the Gaza Strip was 1.82 million in 2015. As of mid-2015, mostPalestinians (73.9%) lived in urban areas urban, 16.7% lived in rural areas, and 9.4% were residents of refugee Camps. The National Spatial Planning office estimated that the Palestinian population will reach 6,060,000 by2025, and 11,320,000 people by 2050 (Hilal, 2015).

Large number of animal species in the Levant become no longer exists, or in some parts rather the others. This status happened due to the destruction of natural habitats for the purpose of settlement and human exploitation, or due to overfishing since ancient times. Since the late twentieth century several nature reserves across the Levant was set up, by the local efforts and some international events, to keep the rest of the animal species and natural habitats of unique. Some of those reserves resounding success in preserving wildlife and their home. (Post and George Edward, 1983).

There is some talk of establishing a Palestinian states divided into two distinct regions covering a total area of approximately 6,065 km² (6 million dunums). The larger of these two areas is called the West Bank (covering 5,700 km²), with the Gaza Strip covering only 365 km² (Isaac and Gasteyer, 1995). Yet, the West Bank has some 750,000 Jewish settlers and the situation environmentally is not conducive to a two state solution (see Qumsiyeh, 2004).

For the geographical location of the West Bank between latitude 31 ° 21 and 32 ° 33' and between 34 ° 52' And the longitude 35 ° 32 ', makes the region strongly influenced by the Mediterranean climate. The Mediterranean climate is characterized by a long, hot, dry summer and a short, cool and rainy winter. Rainfall is limited to winter and spring months. It usually starts in mid-October.Until the end of April. Snow and cold, though uncommon, may occur anywhere in the area. Especially to the western slopes facing the Mediterranean Sea (Rove &Ravitti, 1965)

The Palestinian authority designated many protected areas to help safeguard the rich biodiversity including in the southern West Bank (Al QarinWadi Al-QuffSuba, DeirRazeh, Abu Sauda, El Kanub, Al Kuweiyis, Fuqiiqis, Karza (Kurza) and Yatta (Safir, 2001).

1.3 Rational for this study:

Man as the dominant species has a great impact on life on earth. Dramatic landscapes changed as humans colonized the whole planet collected, destroyed, and cultivated. Hardly any habitat is left undisturbed on earth. Here in Palestine, human population has increased by fifteen folds over the past 150 years. This is not merely due to natural increase but also due to massive Jewish immigration under the banner of Zionism that wanted to change Palestine (with its majority non-Jewish population) to the Jewish state of Israel. This also created a large wave of refugees and today 7 million Palestinians are refugees or displaced people. These dramatic changes affect the environment. The

Israeli occupation severely effects the Palestinian environment (Qumsiyeh, 2004; Qumsiyeh et al., 2014,AlQutob, 2014)

More recently Israel's building of a segregation/apartheid wall disconnected human and other living communities from each other. Settlements and their residues that harm all forms of life (Hammad and Qumsiyeh, 2013; Qumsiyeh et al., 2014)

The South Hebron Hills to the east of Yatta were designated a protected area by the Palestinian authority but there are almost no studies of fauna and flora of the area even though it too suffers from habitat destruction due to human population growth and settlement expansion (ARIJ,2015) . This study aims to develop baseline data and to identify endangered species and discuss status of protection in the area.

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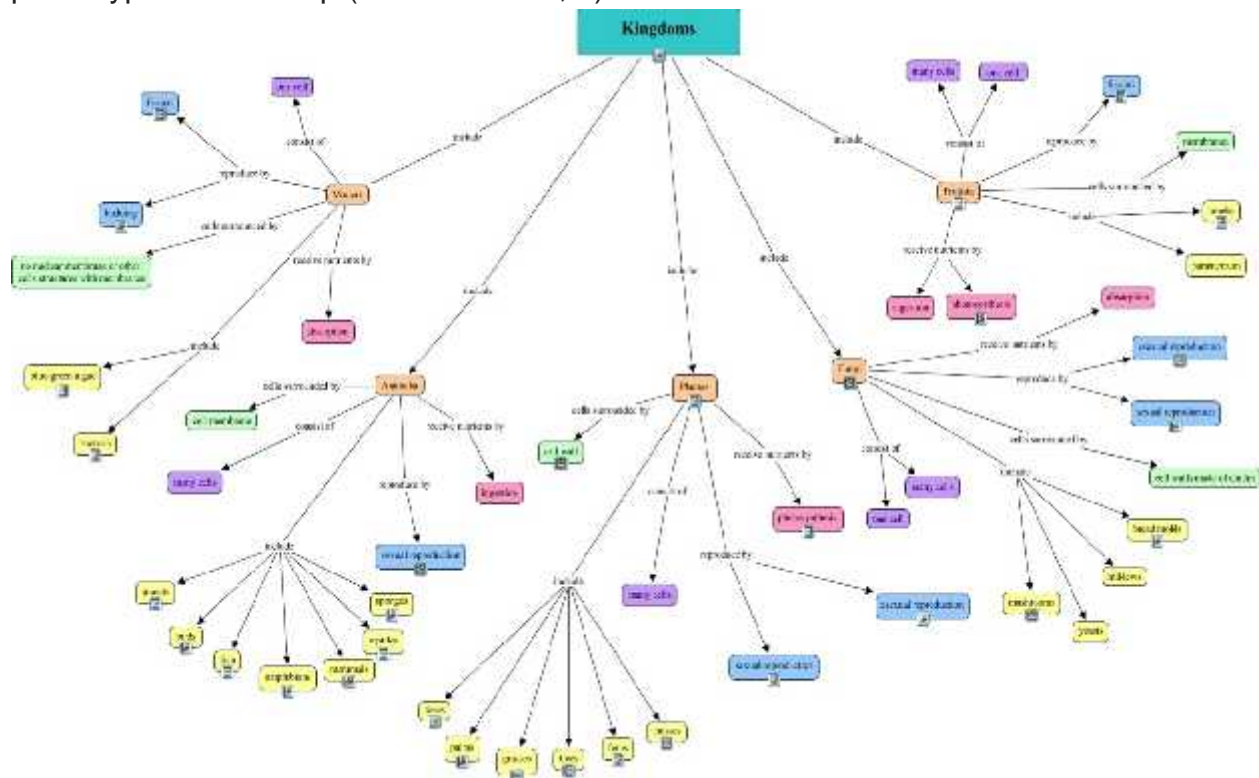
CHAPTER TWO

Literature review

Chapter2 Literature review

2.1 Introduction of classification system:

R.H. Whittaker's system of classification divides living organisms into five kingdoms: Monera, Protista, Fungi, Plantae, Animalia. The criteria for this system of classification are: cell structure (prokaryote or eukaryote), complexity of organism (unicellular or multicellular), life style (producer, consumer or decomposer), and phenotypic relationship (Miller & Levine, 2)



Figure(1): The criteria of classification of the five kingdoms.

The kingdom monera characterized by uni-celleular prokaryotes. They get their food by absorption and photosynthesis, moves by flagella structure and reproduces asexually. This kingdom is divided into two Phyla: bacteria and cyano-bacteria (blue green alga)(Miller & Levine,2004)

The kingdom Protista includes uni-cellular eukaryotes. They get their food by absorption and photosynthesis, move by flagella, cilia and streaming and reproduces both sexually and asexually. This kingdom is divided into three Phyla: protozoans, phytoplankton, and zooplankton.

The kingdom fungi characterized by uni-celled(yeast) and multicellular (mold and mushrooms) eukaryotes. They get their food by absorption or heterotrophic, but they are non-motile elements. They reproduce both sexually and asexually. This kingdom is divided into three Phyla: yeast, mold and mushrooms..(Milier& Levine,2004)

The kingdom plantae is characterized by multicellular eukaryotes and cellulosic cell wall. They get their food autotrophic by photosynthesis, but they are non-motile elements. They reproduce by both sexual and asexual routes. This kingdom is divided into four Phyla: Algae, Bryophytes, ferns, gymnosperms. (Milier& Levine,2004)

The Animalea are multicellular and all are heterotrophs (that means that all the individuals depend directly or indirectly on other organisms for their nourishment). They ingest and digest their food mostly in an internal cavity. They are mostly motile. The estimated number of animal species is 9 or 10 million. (Phil Myers,2017). This kingdom is divided into five different phyla : Cnidarian (invertebrates), Chordata(vertebrates), Arthropods, Molluscs and Echinoderms.

The groups expected to occur in our study area include the Phylum Mollusca (over 90,000 described species).The Arthropods include insects, crustaceans, spiders, scorpions and centipedes. The members of this phylum share a number of important distinguishing characteristics: Exoskeleton, Segmented Bodies, Jointed Appendages, Bilateral Symmetry, and Open Circulatory System. (Milier& Levine,2004)

Insects are the largest group and are hexapod with chitinous exoskeleton, a three-part body (head, thorax and abdomen), compound eyes and one pair of antennae. They are the most diverse group of animals on the planet that have more than a million described species and millions more yet to be described (Novotny,2002).

Of the vertebrates, birds and mammals are the best studied groups. Mammals were well studied in our region (see Qumsiyeh, 1996). Birds are a group of endothermic vertebrates, shared the following characters : feathers, toothless beaked jaws, a high metabolic rate, a heart with four chambers, and strong lightweight skeleton.The fossil record gave an indication that birds are related to the theropod group of saurischian dinosaurs (Brown et al, 2011). In our region, there are several studies describing observed avifauna(see Khalilieh,2014).Reptiles were studied well also in our region and the data compiled by (Werner,2016).

The name of amphibians comes from Greek words: the first is "amphi" meaning "two" and the second is "bios" which means "mode of life". The names related to species those have a diphasic life history: they live part of their lives in water and part on land. The class are divided into three orders: Gymnophiona (caecilians), Urodela (salamanders), and Anura (frogs)(Crump,2009).

The presence of amphibians in high altitudes and latitudes tend is characterized by: short breeding period of time and shorter activity period, and have longer larval period than adult stage .5(Morrison, C et al ,2003)

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The existence of amphibians is an indication of the level of environmental health 4(Salman et al,2014) because there are many factor that affect the development of reptiles. The factors are: extrinsic that include temperature, density and competition, food supply and quality, predation, breeding habitat) and inhibitory compounds, or Intrinsic factors include body size or egg size and yolk reserves (Morrison, C et al ,2003)

2.2 Biodiversity status in palestine:

In the rejoin of Palestine this region there are both endemic and non-endemic individuals that belonging to different biogeographic zones (Handal et al,2016). The animal life of Palestine consists of invertebrates, amphibians, reptiles, birds and mammals. The recorded numbers species in the area of Palestine are: 67 families of birds of that 45 are of local breeds, 33 families of mammals, 93 species and subspecies of reptiles ,and 6 families of amphibians(Authority, P.E., 1999.)

Wadi Al-Quf area, which closes to Yatta protected area, have been recorded as a rich fauna and flora speciation. More than 89 species of birds, 19 species of mammals, 21 reptiles, three amphibians, over 250- identified invertebrates, and over 230 species of plants were found in this area. (Qumsiyeh et al, 2014).

12 large number of isopods speciatin in the nourth of occupped Palestine in both xrice abdhumaid habitats (Stamou, 2012). Certain insect orders (Coleoptera and Hymenoptera) , members of the family (Carabidea, ground beetles) (order Coleoptera) , and unidentified species (Form 5) of the family (Formicidae) found inAlfara' area in the Palestinian West Bank (Ali, 2008).

The orders that exist in Palestine is: *Artiodactyla* (even-toed hoofed animals) , *Carnivora* (meat-eaters) , *Chiroptera* (bats), *Hyracoidae*(hyraxes, dassies), *Insectivora* (insect-eaters) , *Lagomorpha* (pikas, hares, and rabbits) ,*Perissodactyla* (odd-toed hoofed

animals), *Primates* (primates), *Proboscidea*(elephants) and *Rodentia* (gnawing mammals) (Qumsiyeh, 1996)

100 or more species of mammalian's can be found in different habitats in Palestine (Qumsiyeh, 1985). Some species expected to be observed in the area of our study are: *hemiechinusaurituse*, *GazalaGazala*, *Gazaladorcas*, *GerbillusHeneyi*, *Spalaxleucodone*, *Acomycahirinus*, *Jaculuusorientalis* (Qumsiyeh, 1996).

In the area of palestain there are 91 species of reptiles (9 freshwaters, marine, and land tortoises; 40 snakes; and 42 lizards). (Handal et al,2016). Some species expected to be observed in the area of our study are: *Testudogracca*, *Laudakiastellio*, *Pseudotrappelussinaitus*, *Uromastyxaegytia*, *Uromastyxornate*, *Chamaeleochamaeleorecticrista*, *hemidactylusturcicusturcicus*, *Ptyodactylusguttatus*, *Strnodactylustrnodactylus*, *Acanthodactylusbeereshrbensis*, *Acanthodactylusboskianus*, *Mesalinaguttulata*, *Ophisopselegans*, *Ablepharusrueppellii*, *Chalcidesocellatus*, *Chalcidesguentheri*, *Eumeccesschneideripavimentatus*, *Ophiomoruslatastii*, *Trachylepismvittata*, *Micrelapsmuelleri*, *Eryxjaculus*, *Hemorrhaisnummifer*, *Platycephscollaris*, *Spalerosophisdiadema*, *Eirenis coronella*, *Eirenisdeccemlineatus*, *Eirenisrothi*, *Malpoloninsignitus*, *Psammophisschokari*, *T.hoogstradli*, *Walterinnesiaaegyptia*, *Leptotyphlopsmacrorhynchus*, *Letheobiasimoni*, *Typhlopsvermicularis*, *Viperapalestinae*, *Hemidactylusturcicus*, *Chalcidesocellatus*, *pasammophisschokari*.(Yehuda L. Werner,2016).

The studies of amphibians started in the 19 century and give are impotent information of their history 6(Zuhair Amr,2016), Almost, there are no studies by local scientists on the herpetology of the occupied West Bank part (Handal et al,2016). There are 98 species of reptiles and amphibians, including 7 species of amphibians and 91 species of reptiles (9 freshwater, marine, and land tortoises; 40 snakes; and 42 lizards) represented in 26 families known in the area of Palestine (Zuhair Amr,2016).

Some species expected to be observed in the area of our study are

470 species of birds have been recorded in Palestine, which means large speciation due to: the geographical location of Palestine (route to and from Africa of the birds of Europe and western Asia), variation in habitats, and various climatic zones (14). In winter, Palestine is a rich area for more than 216 species, and for more than 175 breeding birds (Khalilieh,2014).

The status of bird's classification in Palestine is: 206 genera, belonging to 67 families and grouped in 21 orders. The largest families in the country are: *Sylviidae* (warblers) with 43 species, *Turdidae* (thrushes, chats) and *Anatidae* (swans, geese, ducks), both with 33 species, and *Accipitridae* (eagles, vultures, hawks) with 32 species. The most

populous genera are: *Sylvia* (warblers) with 15 species, *Emberiza* (buntings) with 14, and *Larus* (gulls) with 13, while *Oenanthe* (wheatears), *Sterna* (terns) and *Falco* (falcons) each comprise 11 species. The orders containing the largest numbers of species are: Passeriformes (songbirds) with 192 species, *Charadriiformes* (waders, plovers, gulls) with 88 species, *Falconiformes* (diurnal birds of Prey) with 44 species, and *Anseriformes* (swans, geese, ducks) with 33 species. The largest families in the country are: *Sylviidae* (warblers) with 43 species, *Turdidae* (thrushes, chats) and *Anatidae* (swans, geese, ducks), both with 33 species, and *Accipitridae* (eagles, vultures, hawks) with 32 species. The most populous genera are: *Sylvia* (warblers) with 15 species, *Emberiza* (buntings) with 14, and *Larus* (gulls) with 13, while *Oenanthe* (wheatears), *Sterna* (terns) and *Falco* (falcons) each comprise 11 species. (14)

The total number of birds recorded in Wadi Al-Quf was 623 birds which belong to 13 species. The species: are *Ciconiaciconia*, *Ciconianigra*, *Milvusmigrans*, *Neophronpercnopterus*, *Circaetusgallicus*, *Circus aeruginosus*, *Circus macrourus*, *Accipiter nisus*, *Accipiter brevipes*, *Buteobuteovulpinus*, *Aquila pomarina*, *Hieraaetuspennatus*, *Grusgrus* (Khalilieh, 2014).

CHAPTER THREE

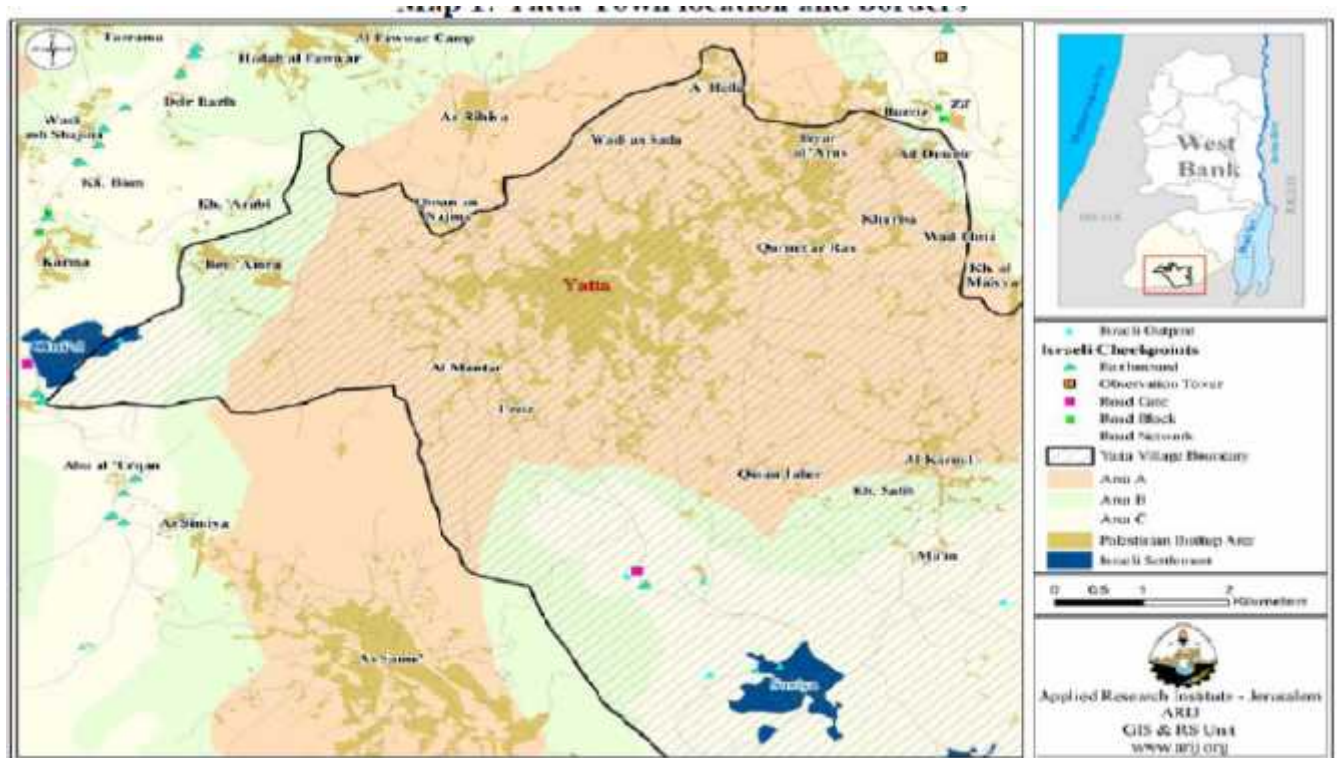
Methodology

3.1 Study area :

3.1.1 Yatta Town location and borders

Yatta is a Palestinian town located in the West Bank, on the south of Hebron about 12 kilometers. The region itself extends from Yatta east in the south Hebron hills which have altitudes from 760 to 850 meter above sea level (see map 1).

Map 1: Yatta Town location and borders



The town of Yatta is one of the ancient towns inhabited by the Canaanites since ancient times. There are many monuments, caves and wells that date back to the Canaanite and Roman eras. One of the stories mentioned in the area of Yatta is that our master Zakaria lived there when he preached to our Lord Yahya. The Virgin Mary was coming to visit her relative, Yahya, in the city of Yatta(Dabbagh, 1991).



Figure 2. Al- Berkh town has an ancient ruins and a water use system that dates back to the Roman and Byzantine times.

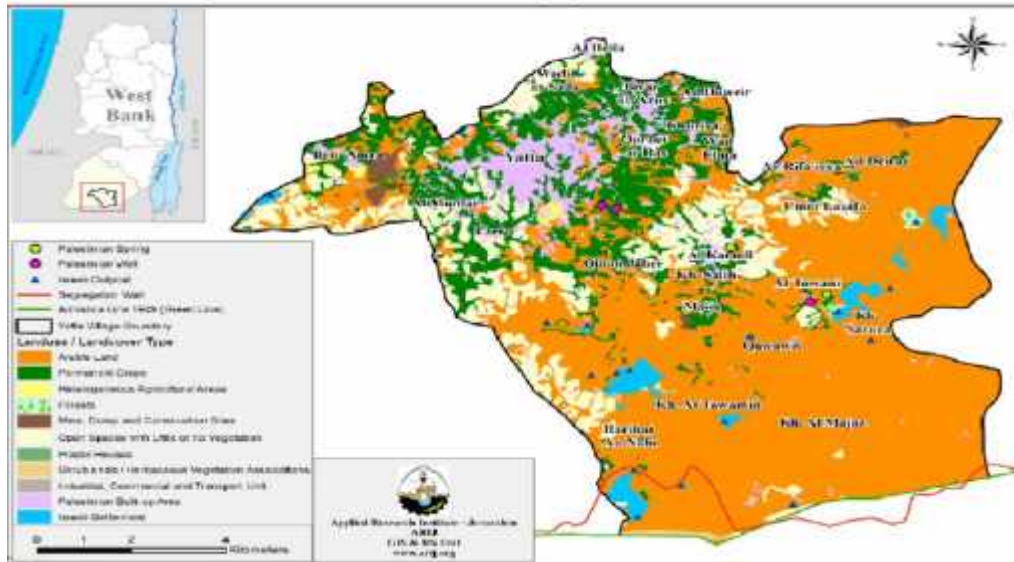
According to the classification of the Ministry of Local Government, the town of Yatta administers the following areas: Yatta, Al-Mentar, Khirisa, Raqqa, Qafir, Shuwamrah, Marmala, Dirat, Fattuh, Qurnat Al Ras, WadiAqiz, KhalletAtbish, KhalletMezher, Al-Maqtha and Al-Ghuwaytah village. Since 1971, Yatta has been run by a municipal council of 13 members and 60 employees. The average rainfall is annual About 303 ml, while the average temperature reaches 18 ° C. The relative humidity rate is about 61%. (ARIJ, 2006-2009).

3.1.2 Population, agriculture and industry:

The population of Yatta is 64,300 according to the Palestinian Statistics Center for 2014 (Palestinian Statistics Center , 2014)

Agriculture in the town depends mainly on rainwater, and irrigated agriculture depends on the water of the collection wells and the water of the network. Yatta town lies on a total area of 270,000 dunums. 115,000 dunums are considered arable land, however, only 37,578 dunums are cultivated area and 77,422 dunums are uncultivated area. In the town of Yatta, there is a total area of 10,392 dunums planted with olive trees. Other trees planted in the area are mostly grape vines, almond trees, fig trees and stone fruits. (Ministry of Agriculture, 2006) see map 3

Map2: Land use/land cover and segregation wall in Yatta town (ARIJ, 2006-2009)



The economic base of Yatta town also depends on many economic institutions including factories, oil stations, nine stone cutting workshops, 14 of soap factories, small crafts workshops and more than 600 grocers, 350 clothing shops, 15 butchers, 50 blacksmiths, 35 carpenters, 70 services and 80 other shops (ARIJ, 2006-2009)

3.1.3 Biogeography

From the map, and through the various visits to Yatta, we note that they contain a diversity in environments and habitats (Figure 4). The area includes at least three recognizable biogeographic zones: Mediterranean, Irano-Turanian, and Saharo-Arabian.

The Mediterranean zone extends into our region. From coastal plain to the north of Gaza to the mountains of Galilee, the area stretches to the east covering the western slopes of the mountain ranges of Palestine (from the Galilee to the South Hebron Hills). Annual rainfall can go from 1000 mm in the north to 350 mm here in Yatta. The soil types include Terarrosa and Rendzina to Terra Rosa. The natural cover is the high trees and forests to shrubby gariga in this part. Many Mediterranean forests have been destroyed including in most of the southern part of the West Bank. , Rain-fed (Baal) agriculture is common here. There are still batches of Sidr, oak, *retama* and other trees in Yatta.

The Irano-Turanian zone consists of a narrow longitudinal strip in Palestine from the northeastern part of the west Bank to the Negev passing by eastern parts of the Yatta region studied. The average annual precipitation ranges between 150-300 mm. The soil type includes gray steppe soils and loess soil in the depression. Trees in these areas are rarely found (characteristic flora includes *Zizphuslutus*, *Retama*, *Artemisia herba-alba*). Rainfed agriculture in these areas is less common and key localities visited representing this zone includes. Khallet Al-Dabaa ,ShehebAlbtom, and Jenba see map4.

Map3: Yatta Town location and borders (ARIJ,2006-2009) and Map4 of the division of Palestine into vital areas and geographical- Plant environment geopotany (Azoharey,1990)

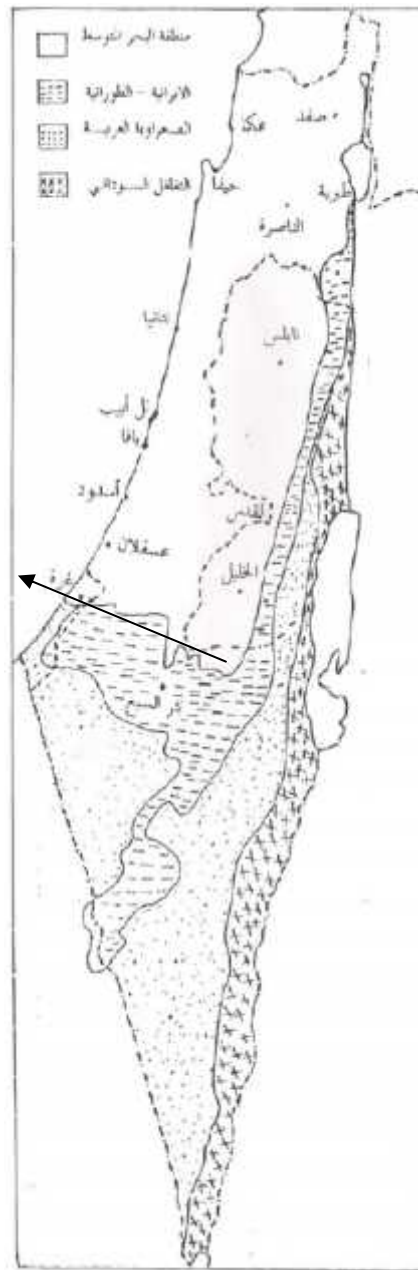




Figure (3)Al-Tawaanah town



Figure (4)Al-Berka (town spring)



Figure (5): Al-Sharkea town

The Saharo Arabian zone includes extends from the Jerusalem wilderness to the Negev desert south and the rate of precipitation annually is between 50-150 mm. These areas are free from vegetation exept some *sudea asphylletum*, *zygophylletum* to places close to the water and springs are confined in the eastern and southern regions.(MUSAFA Yatta area: Wadi al-Hor , Wadi al-Hakr, Zair farm , Ankeiba and al-Qaradiyah)(Azoharey,1973)

In the end the Sudanese environment includes the areas of the Dead Sea, WadiAraba and the southern valleys, where there are some Sudanese vegetation due to high temperature and confined to agriculture within the oases, which are dry and hot nature and paralyzing the end of the area end of MASAFA Yatta and the beginning of the Dead Sea dam area see figure5.



Figure (6) Dead Sea area(Al-sad)

3.1.4 Israeli settlements and their impact on the region:

As in other Palestinian towns and villages, the city of Yatta and its villages are continuously exposed to the Israeli occupation authorities' policy of confiscating hundreds of dunums of Palestinian-owned land in order to build Israeli settlements and build bypass roads and build military bases there. Currently there are five Israeli settlements built on the land of the city of Yatta and occupy an area of 2580 dunums, all religious settlements see figure 6.(Sherwood Harriet ,2012).



Figure (7) one of the Israeli settlements in Tawaanah-Yatta town. Forested by European pine trees (monoculture)

The Israeli occupation forces also confiscated land from the farmers of the town of Yatta, in order to build a special road for settlers south of the town of Yatta, known as Route 80 bypass. This road connects the existing Israeli settlements in the southern West Bank with the southern Jordan Valley area to the Bardala area in the north of the Jordan Valley. In addition, this road will serve as a barrier to cut and isolate Palestinian communities east of the road near the Jordan Valley, About the main center of Yatta, where most of the main services are located. This road is under full Israeli control and requires a buffer zone of 50-70 meters on each side of the bypass road, which does not permit construction, which limits the expansion and urban development of the surrounding Palestinian communities see map 5 and figure6 . The Israeli occupation that limit Yatta are Otniel (Etienne) (1983), Crete (1981), 1980), Susia (1983), Beit Yater (1977).

Map 5: Distribution of Israeli settlement in the West Bank



Figure (8): Israeli barricades separating land from each other

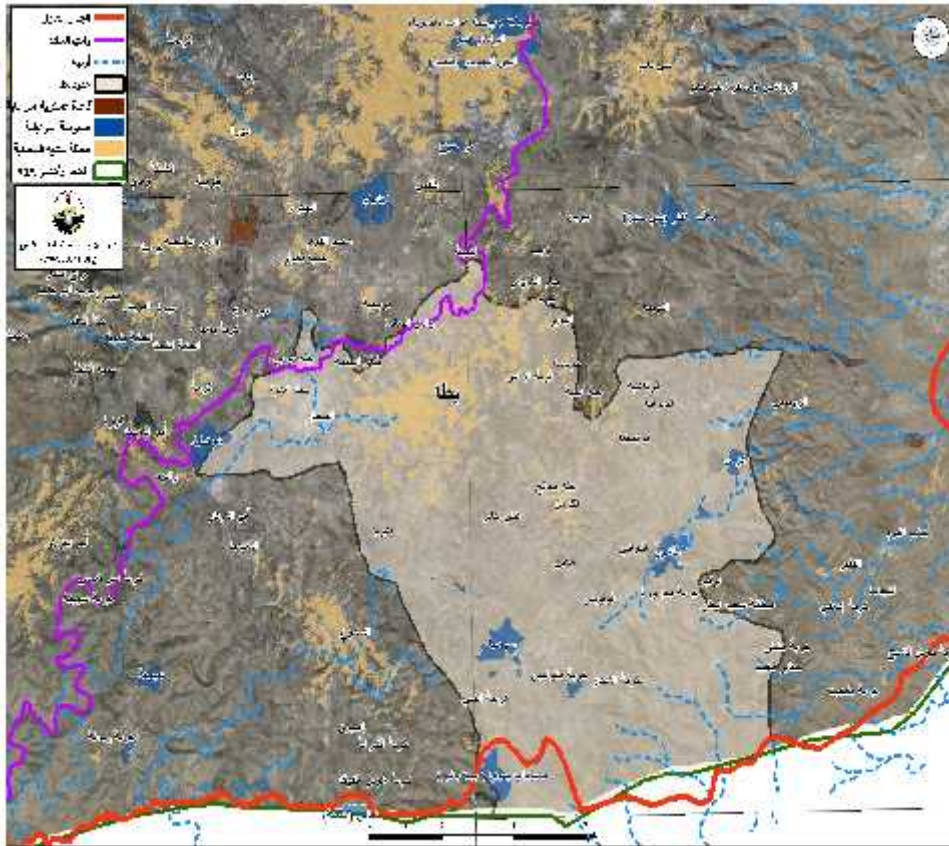
The Israeli plan to isolate the city from the construction of the wall has had a negative impact on the city of Yatta. The Israeli occupation forces confiscated the Palestinian lands in both Hebron and Yatta. The policies and practices of the occupation forces have not stopped at the time of the confiscation of land, but have extended their policies to restrict the movement of citizens by preventing Palestinian farmers from reaching their lands, burning their crops, attacking them by the settlers and the occupation army, destroying and demolishing their homes, and other trees, deforestation and forest areas. . (Bilal Abdul Rahim.2005)

It is worth mentioning that the Israeli occupation is still working on the construction of two parallel walls, isolating the Palestinian communities from one side of the wall from the Green Line (the Armistice Line 1949) and the other from Yatta and the Hebron governorate. Yatta get it. According to these data, the Apartheid Wall isolates hundreds of acres of land south of Yatta, which residents no longer have access to. The total area of land that has been isolated and confiscated is estimated at 3961 acres of the city's land, most of which are fertile agricultural lands, forests and areas. In addition, the separation wall was designed to encircle the Palestinian communities and annex the five Israeli settlements to Israel, which occupies 587 acres of the total area, bringing the total number of lands that will be isolated from the territory of Yatta by the Wall 4548 acres.(Bilal Abdul Rahim.2005)

3.1.5 Wastewater problem in Yatta:

The problem resulting from the flow of wastewater from the Palestinian communities through Wadi Al-Saman without treatment is exacerbated by the random disposal of wastewater from Israeli settlements and their factories located on the governorate's lands. Wastewater is collected in KiryatArba and Kharsina to the sewers to end up and move towards the lands of Hebron and BaniNa'im, to Yatta, through Wadi al-Samman and Tabor, all in the southern West Bank. In addition, the wastewater from the settlement of Atna'el flows from the settlement and flows through several areas to reach Wadi al-Samman to increase the flow of wastewater in this valley see map7.

Map6: wastewater from the Palestinian communities through Wadi Al-Saman.



Wastewater in Wadi Al-Samman is concentrated. The results of laboratory tests for water samples taken by the Applied Research Institute-Jerusalem (ARIJ) showed that its biological load (BOD) exceeded 624 mg / L, Bioactive oxygen found in developed countries as well as Israel. The high concentration of wastewater threatens the nature and the ecosystem, causing health and environmental damage, emitting unpleasant odors, and providing an environment for breeding insects, epidemics and diseases. It was also found that the concentration of nitrates in wells close to Wadi al-Saman is high compared to the recommended rate globally, due to the mixing of wastewater with well water. It is worth mentioning here that seven sewage pumping stations have been established in Wadi Al-Haman. These stations are expected to pump wastewater from Wadi Al-Saman to the eastern part of Yatta. However, for several reasons, these stations have not yet operated.

3.2.1 Collecting Equipment's:

Net, forceps, vials, envelopes, preservatives, disobeyed, traps, knife, headlamp, box, 10x lens.

3.2.2 Insects and Spiders:

Fauna Survey and Study of Insects and Spider :(S.Bhaskar,K.Khan.2015)

The study of insects is very important and necessary, because the preparation of insects make up 90% of the various forms of life on a glass floor and

Batalli are a variety of groups in the animal kingdom and its structure differs from one type to another type, so the collection of samples is the best solution in order to be classified and not only collected but also to work on preservation in order to be considered as a reference for future studies.

3.2.2.1 Insects and Spider: When and Where to Collect?

Insects and Spider exist every ecosystem (terrestrial or aquatic ecosystems. Some insects are diurnal and others are nocturnal. Some are active in summer or some are active during winter, but most of them will go to hibernate during winter season. Some insect species prefer particular plant for their food purpose. The vegetation time of plants is very important for insect collection. Insects choose season and habitat wisely according to their ability to adapt with the environment.

3.2.2.2 Methods for insect and Spider collection:

- 1- Hand collection: Large insect's (grasshoppers and beetles) collection can be done by hand. This collection method is inappropriate for poisonous and dangerous ones (which have stings)see figure (9).
- 2- Net collection: Two types of insect nets were used for collection of insects.
 - Aerial net: This net will be used for active fliers such as butterflies, moths, dragonflies, and wasps. This net is very light weight.
 - Sweep net: This net is suitable for collecting grasshoppers and leafhoppers and other insects. Insect's preservation in Insect cabinet box samples preservation in envelopes. Samples collection near water Segregate the samples for identification.

For all flying insects, nets collection is the most suitable method. They are active (mid-morning/late afternoon)see figure(10) .

- 3- Traps: Is a very effective and easy method for collecting insects (mainly small insects). Any device, often containing something to which the insects are attracted is a trap.



Figure (9, 10): hand collection & nets collection.

3.2.2.3 Preservation:

The preservation of specimens is very important for recording in lab.

3.2.2.3.1 The methods preservation are:

(1) Dry preservation: specimens are preserved by using pins in insect cabinet box. All hard-bodied insects were preserved by using paper envelopes and pinning of insects see figure 9. The materials were used for preservation of insects is :

- Paper envelopes: Paper envelopes were used for preserving the large winged insects such as butterflies, dragonflies, and moths.
- Spreading board: It is used for spreading the wings of dead insects.
- Pins: For pinning the nickel-plated (rust resistant) pins were used, which are specially prepared for preserving the insects.

(2) Pinning: it is a most common and suitable method for preserving "hard-bodied" insects. Pinning should be done in a proper way (to identify diagnostic characters clearly). Based on the size of the insect, pins are selected (small size pins for smaller insects and large size pins for larger insects). Place of pinning varies from insect to insect. The pinning region in various groups of insects is described in Table 2.1. After pinning, the insects have to be shifted to insect cabinet boxes for long-term preservation see figure (13,14).

Table(1) Showing pinning position for various:

S. no.	Insect group	Pinning region
1	Grasshoppers, crickets, praying mantids, and cockroaches	Pronotum
2	Bugs	Scutellum
3	Stick insects	Metanotum
4	Beetles and weevils	Right elytron
5	Earwigs	Right tegmen
6	Dragonfly, damselfly, green lacewings, moths, butterflies, bees, wasps ants, and true flies	Thorax

Source: Ragumoorthi et al. (2003)

(3) Wet preservation or liquid preservation:

Suitable for Soft-bodied insects are nymphs, larvae, caddis flies, and mayflies.

Ethyl alcohol (70–80 %) was used for preservation of soft-bodied specimens.

Many solutions such as Hood's solution, Kahle's solution, and alcoholic Bouin's solution can be used for preservation. For this study (70–80 %) ethyl alcohol was used see figure 12.



Figure(11, 12) :Wet preservation or liquid preservation



Figure (13, 14): Dry preservation.

3.2.2.4 Study of Vertebrates:

3.2.2.4.1 Survey and Monitoring of Amphibians:

Survey and sampling was done in both aquatic and terrestrial systems. Sampling requires search in specified habitats (under the logs and stones, digging through litter and soil, searching short bushes and tree hollows, and under fallen barks and water-catchments).

The suitable methods for surveying and monitoring amphibians are: torch count method (aquatic frogs), pitfall trap methods (terrestrial frogs), vocal sound and photographs. Continuous surveys are required to obtain good collection of amphibian species diversity in study sites.



Figure(15,16):Survey and Monitoring of Amphibians

3.2.2.4.2 Survey and Monitoring of Reptiles:

Reptile survey techniques are: standard walk transect, visual encounter survey and pitfall trap. Photographs are useful for identification of species.

3.2.2.4.3 Survey and Monitoring of Birds:

Birds sampling is done by using:

- Line transects: a straight line of 1 km is drawn, and all birds seen or heard till a range of 25 m on either side of the transect were recorded. The method needs one hour or more.
- Point counts: the observer will stand in a randomly chosen point and birds seen or heard in 50 m radius are recorded for 5 min. The observation is repeated in another point at least 300 m from the first point.
- Opportunistic bird sightings: During traveling in study area, many bird species will be photographed in survey time.

→ Using bird vocal sounds and photographs is useful for species identification.

3.2.2.4.4 Survey and Monitoring of Mammals

Survey will be done by:

- Transect method (walking and in vehicle): it's used for all major habitats for surveying of mammals by direct and indirect evidence.
- Direct observation technique: is used for surveying large and medium sized mammal Bait traps
- Visual encounters: is used for small mammals (rodents and squirrels).

→ Good photographs will be useful for species identification

CHAPTER FOUR

Results

Chapter 4 Result:

This work involved rich fauna and flora with 8 species of reptiles, three mammals, more than 60 species of invertebrates, 3 species scorpions and 44 species of plants. Several references were used to classify the collected species. (See “references for classification”).

4.1 Flora result:

Table 2: Flora species:

No	Location	Date	Family	English Name	Latin Name
1	Al-Berka Town	25/03/17	Berberidaceae	Prophet-Flower	<i>Onesma Orussaei</i>
2	Wade Al- Heker Town	08/04/17	Caryophyllaceae	Whitlow-Wort	<i>Paronychia Sinaica</i>
3	Al- Tawaanah Town	25/03/17	Compositae	Palestine Chamomile	<i>Anthemis Palaestina</i>
4	Al-Berka Town	25/03/17	Labiatae	Shell Flower	<i>Moluccella Laervs</i>
5	Kalet Saleh Town	17/03/17	Papaverceae	Poppy	<i>Paparer Subpiriforme</i>
6	Al- Tawaanah Town	25/03/17	Cruciferae	Perfoliate Pennycress	<i>Thlaspi Perfoliatum</i>
7	Al- Tawaanah Town	22/01/17	Cruciferae	Perfoliate Pennyeress	<i>Texiera Glastifolia</i>
8	Al-Berka Town	25/03/17	Liliaceae	Bellevalia	<i>Bellevalia Macrobetrys</i>
9	Al- Tawaanah Town	15/04/17	Iridaceae	Iris Ofnaqab	<i>Iris Regis-Uzziae Feinbrn</i>

10	Wade Al-Heker Town	25/03/17	Rosaceae	Shrubby Burnet	<i>Sarcopoterium Spinosum</i>
11	Wade Al-Hewar Town	15/04/17	Malvaceae	Common Mallow	<i>Malva Sylvestris</i>
12	Al-Berka Town	22/01/17	Compositae	Syrian Thistle	<i>Notobasis Syriaca</i>
13	Al-Tawaanah Town	25/03/17	Boraginaceae	Bugloss	<i>Echium Judaeum</i>
14	Al-Sed Town	15/04/17	Berberidaceae	Dyers-Gronwell	<i>Arnebia Tinctoria</i>
15	Wade Al-Heker Town	25/03/17	A Maryllidaceae	Sickenbergs Pancratium	<i>Panocratium Sickenbergeri</i>
16	Al-Sed Town	25/03/17	Liliaceae	Asphodel	<i>Asphodelus Aestivus</i>
17	Al-Berka Town	08/04/17	Zygophyllaceae	Nitaria	<i>Nitrario Retusa</i>
18	Al-Tawaanah Town	22/01/17	Orchidaceae	Punctate Orchid	<i>Orchis Punctulata</i>
19	Wade Al-Heker Town		Compositae	Iberian Centaury	<i>Centaurea Iberica</i>
20	Kalet Al-Tabeh Town	10/02/17	Scrophulariceae	Thyme Leaved Water Hyssop	<i>Bacopa Monnieri</i>
21	Kalet Al-Tabeh Town	25/03/17	Leguminosae	Juniper Bush	<i>Retama Raetam</i>

22	Wade Al-Hewar Town	15/04/17	Compositae	Moab Cousinia	<i>Cousinia Moabitica</i>
23	Al-Sed Town	15/04/17	Urticaceae	Roman Nettle	<i>Urtica Pilaiifera</i>
24	Al-Berka Town	15/04/17	Capparaceae	Egyptine Caper	<i>Copparis Spinosa</i>
25	Al-Berka Town	25/03/17	Compositae	Orinetail Lactuca	<i>Lactuca Orinentalis</i>
26	Wade Al-Heker Town	15/04/17	Zygophyllaceae	Soft Fagonia	<i>Fagonia Mollis</i>
27	Kalet Saleh Town	15/04/14	Compositae	Slender Safflower	<i>Carthamus Tenuis</i>
28	Kalet Saleh Town	14/02/17	Asteraceae	Chiliadenus Bocconeii	<i>Chiliadenus</i>
29	Al-Sed Town	15/04/17	Compositae	Herba-Alba Wormwood	<i>Artemisia Inculta</i>
30	Al-Sed Town	15/04/17	Resedaceae	Hawthorn	<i>Cratagus Aronia</i>
31	Al-Berka Town	22/02/17	Compositae	African Fleabane	<i>Phagnlon Rupestre</i>
32	Kalet Saleh Town	17/03/17	Labiatae	Dominica Sage	<i>Salvia Dominica</i>
33	Wade Al-Heker Town	25/03/17	Labiatae	Jerusalem Sage	<i>Salvia Hieroslymitana</i>
34	Al-Kaldea Toen	14/02/17	Liliaceae	Gagea	<i>Gagea Chlorantha</i>

35	Shehb Al-Botom Town	25/03/17	Compositae	Hawkweed	<i>Crepis Sancta</i>
36	Wade Al-Hewar Town	25/03/17	Cruciferae	Globe Mustard	<i>Texiera Glastifolia</i>
37	Al-Tawaanah Town	25/03/17	Caryophyllaceae	Egyptian Catchfly	<i>Silene Aegyptiaca</i>
38	Shehb Al-Botom Town	15/04/17	Compositae	Days Cousinia	<i>Cousinia Dayi</i>
39	Al-Karbea Town	15/04/17	Thymelaeaceae	Yitra	<i>Thymelaea Hirsuta</i>
40	Kalet Saleh Town	15/04/17	Berberidaceae	Italian Alkanet	<i>Anchusa Italica</i>
41	Wade Al-Hewar Town	15/04/17	Compositae	Grey Vipers Grass	<i>Scorzonera Subintegra</i>
42	Al-Kaldea Toen	15/04/17	Loranthaceae	Stemless Hollyhock	<i>Alcea Acaulis</i>
43	Al-Karbea Town	15/04/17	Compositae	Slender Safflower	<i>Carthamus Tenuis</i>
44	Kalet Saleh Town	17/03/17	Ajugoideae	Teucrium	<i>Teucrium</i>



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Figure 17: photo of flora result 17.1 *onesma orussaei*, 17.2 *Paronychia sinaica*, 17.3 *anthemis palaestina*, 17.4 *moluccella laervs*, 17.5 *paparar subpiriforme*, 17.6 *thlaspi perfoliatum*, 17.7 *texiera glastifolia*, 17.8 *bellevalia macrobetrys*, 17.9 *iris regis-uzziae feinbrn*, 17.10 *sarcopoterium spinosum*, 17.11 *malra sylrestris*, 17.12 *notobasis syriaca*, 17.13 *echium judaeum*, 17.14 *arnebiatincteria*, 17.15 *pancratium sickenbergeri*, 17.16 *asphodelus aestivus*, 17.17 *nitrario retusa*, 17.22 *orchis punctulata*, 17.19 *centaurea iberica*, 17.20 *bacopa monnieri*, 17.21 *retama raetam*, 17.22 *cousinia moabitica*, 17.23 *urica pilaifera*, 17.24 *copparis spinosa*, 17.25 *lactuca orinentalis*, 17.26 *fagonia mollis*, , 17.27 *Chiliadenus*, 17.28 *artemisia inculta*, 17.29 *cratagus aronia*, 17.30 *phagnlon rupestre*, 17.31 *salvia dominica*, 17.32 *salvia hieroslymitana*, 17.33 *gagea chlorantha*, 17.34 *crepis sancta*, 17.35 *texiera glastifolia*, 17.36 *silene aegyptiaca*, 17.37 *cousinia dayi*, 17.38 *maresia pygmaea*, 17.39 *Thymelaea hirsute*, 17.40 *anchusa italica*, 17.41 *scorzonera subintegra*, 17.42 *Alcea acaulis*, 17.43 *Teucrium*, 17.44 *carthamus tenuis* (Al-Eisawe, 1998) and (Amer atl, 2011)

4.2 Fauna Results:

Table (3): Insects species:

No.	location	Date	Order	English Name	Latin Name
1	Masafer yatta		Centipeds	-	<i>Adesmus bicarinatum</i>
2	Al-Sed Town	15/4/17	Coleoptera	weevils or snout beetles	<i>Curculionidae spp</i>
3	Al-Sed Town	15/4/17	Coleoptera	chafer beetle s	<i>Oxythyran abigail</i>
4	Al-Sed Town	15/4/17	Coleoptera	ladybird	<i>Coccinella septempunctata</i>
5	Al-Sed Town	15/4/17	Coleoptera	-	<i>Tropinota hirta</i>
6	Al-Sed Town	15/4/17	Coleoptera	-	<i>Eulasia hyrax</i>
7	wadi alhour	15/4/17	Coleoptera	bluish beetle	<i>Chysolina coeruleus</i>
8	al-qurdia town	8/4/2017	Coleoptera	-	<i>Gonocophalum ruticum</i>
9	Al-Sed Town	15/4/17	Coleoptera	-	<i>Blaps cribrosa</i>
10	Al-Sed Town	15/4/17	Coleoptera	-	<i>Tentyria spp</i>
11	Al-Sed Town	15/4/17	Coleoptera	darkling beetles	<i>Pimelia (Pimelia) derasoides Schuster</i>
12	Al-Sed Town	15/4/17	Coleoptera	-	<i>Pimelia nazareua</i>
13	Al-Sed Town	15/4/17	Coleoptera	-	<i>Trachyderma hispida</i>
14	Al-Sed Town	15/4/17	Coleoptera	eaf beetles	<i>Chysolins ssp.</i>
15	Ship al-butom town	8/4/17	Coleoptera	flea beetle	<i>Cerpidodera Fulvicornis</i>
16	Ship al-butom town	8/4/17	Coleoptera	scarab beetle family	<i>Dynastinae</i>
17	Ship al-butom town	8/4/17	Coleoptera	scallop	<i>Pygopleurus orientalis</i>
18	Ship al-butom town	8/4/17	Coleoptera	-	<i>Hyeleus fuscus</i>
19	Ship al-butom town	8/4/17	Coleoptera	oil beetles	<i>Meloe ticuius</i>
20	Ship al-butom	8/4/17	Coleoptera	-	<i>tentyris herculeaua</i>

	town				
21	Ship al-butom town	8/4/17	Coleoptera	-	<i>Mylabris spp</i>
22	Ship al-butom town	8/4/17	Coleoptera	-	<i>amnodeis gebieni</i>
23	Al-Sed Town	15/4/17	Coluoptera	-	<i>Broscuslavigatus</i>
24	Al-Sed Town	15/4/17	Coleoptera	-	<i>adesmia bicrinata</i>
25	Al-Sed Town	15/4/17	Coleoptera	-	<i>ameles heldrerichi</i>
26	Al-Sed Town	15/4/17	Coleoptera	leaf beetle	<i>chrysolina gypsophilae</i>
27	wadi alhour	15/4/17	Coleoptera	hickory shoot curculio	<i>Conotrachelus aratus</i>
28	Al-Sed Town	15/4/17	coleoptera	-	<i>ammodeis gebien</i>
29	Al-Tawaanah Town	10/2/17	Coleoptera	-	<i>broscus laevigatus</i>
30	mazarie alzzayr town	25/3/17	Coleoptera	-	<i>caiocleous nigcosuturatus</i>
31	Al-Tawaanah Town	10/2/17	Coleoptera	-	<i>brachycerus hermanicus</i>
32	mazarie alzzayr town	25/3/17	Coleoptera	-	<i>labidostmois cerealis</i>
33	al-berka town	25/3/17	Coleoptera	convergent lady beetle	<i>hippodamia spp.</i>
34	Al-Sed Town	15/4/17	Coleoptera	longhorn beetle	<i>agapanthia pustulifera</i>
35	ship al-butom	8/4/2017	Coleoptera		<i>Nemognathatha spp</i>
36	Al-Tawaanah Town	10/2/17	Dermaptera	common earwig or European earwig	<i>forficula symrnensis</i>
37	mazarie alzzayr town	25/3/17	Hemiptera	Pentatomidae	<i>Eurydema ornatum</i>
38	Al-Sed Town	15/4/17	Hemiptera	seed bugs	<i>Spilostethus paudurus</i>
39	Al-	10/2/17	Hemiptera	Red Bug	<i>scantius aegyptius</i>

	Tawaanah Town				
40	al-berka town	25/3/17	Hemiptera	sun pest	<i>Hippodamia spp.</i>
41	Al-Sed Town	15/4/17	Hemiptera	seed bug	<i>spilostethus pandurus</i>
42	al-berka town	25/3/17	Hemiptera	Red Bug	<i>scantius aegyptius</i>
43	Al-Tawaanah Town	10/2/17	Hemiptera	Shield-backed Bugs	<i>eurygaster spp.</i>
44	mazarie alzzayr town	25/3/17	Heteroptera	-	<i>Reutrista instabilis</i>
45	Al-Sed Town	25/3/17	Hemiptera	Semi-woven insect	<i>Cercopis intermedia</i>
46	mazarie alzzayr town	25/3/17	Heteroptera	-	<i>caencoris nerii</i>
47	khullat alddabe Town	25/3/17	Orthoptera	-	<i>Tmethis pulchripennis</i>
48	Al-Sed Town	15/4/17	Orthoptera	straight-winged insect	<i>Heteracris syriaca</i>
49	Al-Sed Town	15/4/17	Orthoptera	-	<i>Prionostheuns galericulatus</i>
50	Al-Sed Town	15/4/17	Orthoptera	-	<i>sphingonotus octofasciatus</i>
51	Al-Sed Town	15/4/17	Orthoptera	Straight bug	<i>oedipoda miniate</i>
52	Al-Tawaanah Town	25/3/17	otthroptera	-	<i>durouiella lacticornis</i>
53	khullat alddabe Town	25/3/17	Orthoptera	-	<i>tmethis pulchripennis</i>
54	Al-Sed Town	15/4/17	Orthoptera	Sphingonotus	<i>sphinngouotus octorasciatus</i>
55	Al-Sed Town	15/4/17	Orthoptera	Straight bug	<i>Acrotylus insubricus</i>
56	Al-Sed Town	15/4/17	Lepidoptera		<i>Zegris uarda</i>
57	Al-Tawaanah Town	25/3/17	Lepedoptera		<i>polymmaus lowii</i>
59	Al-Sed Town	15/4/17	Isopoda	-	<i>Isopoda savignyyi</i>

60	Al-Sed Town	15/4/17	Mantodea	praying mantis	<i>Blepharopsis medica</i>
61	Al-Sed Town	15/4/17	Mantodea	praying mantis	<i>Rivetina Byblica</i>
62	Al-Sed Town	15/4/17	Mantodea	-	<i>ameles heldreichi</i>
63	Al-Sed Town	15/4/17	Mantodea	-	<i>Ameles syriensis</i>
64	Al-Sed Town	15/4/17	Mnematidium	-	<i>Onthophagus truchmenus</i>
65	Al-Sed Town	15/4/17	Mantodea	praying mantis	<i>Empusa fasciata</i>
66	Al-Sed Town	15/4/17	Scarabaeoidea	scallop	<i>Eulasia nitidicollis</i>

Table (3): Butterfly species:

No .	Location	Data	Order	Family	English Name	Latin Name
1	Masafer yatta	15/4/17	Lepidoptera	Pieridae	Black vaineat white	<i>Aporia crataegi augataegi graves</i>
2	Masafer yatta	15/4/17	Lepidoptera	Pieridae	Common bule	<i>Polyommatus lewii uranilcola walker</i>
3	Masafer yatta	8/4/17	Lepidoptera	Pieridae	Greenish black-tip or lemon white	<i>Elphinstone charlonia charlonia denzel</i>
4	Masafer yatta	25/3/17	Lepidoptera	Nymphalidae	Painted layay	<i>Vanessa cardui cardia linnaeus</i>
5	Masafer yatta	8/4/17	Lepidoptera	Pieridae	Small white	<i>Artogeia rapae leucoseoma schawerdu</i>
6	Masafer yatta	25/3/17	Lepidoptera	Pieridae	Bath white	<i>Pontia dapidice dapidice linnaeus</i>
7	Masafer yatta	25/3/17	Lepidoptera	Pieridae	Orange tip	<i>Anthocharis cardamines phoenissa</i>
8	Masafer yatta	10/2/17	Lepidoptera	Pieridae	Tiger butterfly common	<i>Melitaea phoebe telona frashorfer</i>
9	Masafer yatta	10/2/17	Lepidoptera	Pieridae	Sooty orange tip	<i>Zegris euphemia urada hemming</i>
10	Masafer yatta	25/3/17	Lepidoptera	Nymphalidae	Levantine marbled white,	<i>Melanargin titea</i>

Table (5): scorpionspecies:

No.	Location	Data	Order	Family	English Name	Latin name
1	Masafer yatta	25/3/17	Scorpiones	Scorpionidae	Large-clawed Scorpion or Israeli gold scorpion	<i>Scorpio maurus</i>
2	Masafer yatta	8/4/17	Scorpiones	Buthidae	Omdurman scorpion, Naqab desert scorpion	<i>Leiurus quinquestriatu</i>
	Masafer yatta	8/4/17	Scorpiones	Diplocentridae		<i>Nebo hierichonticus</i>

Table (6): Reptiles species:

No.	Location	Date	Order	Family	English name	Latin name
1	Masafer yatta	25/3/17	Squamata	Typhlopidae	Blind European worm snake	<i>Xerotyphlops vermicularis</i>
2	Masafer yatta	8/4/17	Squamata	Colubridae	Lined dwarf snake	<i>Eirenis decemlineatus</i>
3	Masafer yatta	22/2/17	Squamata	Colubridae	Dwarf snake	<i>Eirenis rothi</i>
1	Masafer yatta	15/4/17	Gekkonidae	Squamata	Common house gecko	<i>Hemidactylus tersecus</i>
2	Masafer yatta	15/4/17	Phyllodactylidae	Squamata	Sinai Fan-fingered Gecko	<i>Ptyodactylus guttatus</i>
3	Masafer yatta	15/4/17	Gekkonidae	Squamata	Natterers Gecko	<i>Tropiocolotes nattereri</i>
4	Masafer yatta	8/4/17	Lacertidae	Squamata	Snake-eyed lizard	<i>Oplisops elegant</i>
5	Masafer yatta	25/3/17	Agamidae	Squamata	Sling-tailed agama	<i>Stellagama stellio brachydactyla</i>

Table (7): Land snails:

No.	Location	Family	Latin name
1	Masafer yatta	Hygromiidae	<i>Xeropicta krynickii</i>
2	Masafer yatta	Enidae	<i>Euchondrus septemdentatus</i>
3	Masafer yatta	Helicidae	<i>Helix pomatia,</i>
4	Masafer yatta	Helicidae	<i>Levantina lithophaga</i>
5	Masafer yatta	Ferussaciidae	<i>Calaxis hierosolymarum</i>
6	Masafer yatta	Chondrinidae	<i>Granopupa granum</i>
7	Masafer yatta	Oxychilidae	<i>Eopolita protensa jebusitica</i>
8	Masafer yatta	Hygromiidae	<i>Monacha syriaca</i>
9	Masafer yatta	Enidae	<i>Buliminus glabratus</i>

Table (8): vertebrate's species:**Birds and Mammals:**

No.	Location	Order	Family	Latine name	English name
1	Masafer yatta	Passeriformes	Motacillidae	<i>Motacilla alba</i>	Whitewhite wagetail
2	Masafer yatta	Galliformes	Phasianidae	<i>Alectoris chukar</i>	Chuder
3	Masafer yatta	Falconiformes	Accipitridae	<i>Buteo</i> genus	Long legged buzzard
4	Masafer yatta	Passeriformes	Muscicapidae	<i>Oenanthe lugens</i>	Mourning wheatear
5	Masafer yatta	Pelecaniformes	Ardeidae	<i>Bubulcus ibis</i>	Cattle egret
6	Masafer yatta	Apodiformes	Apodidae	<i>Apus apus</i>	Common swift
7	Masafer yatta	Bucerotiformes	Upupidae	<i>Upupa epops</i>	Hocpoe
8	Masafer yatta	Accipitriformes	Accipitridae	<i>Accipiter nisus</i>	Sparrow hawk
9	Masafer yatta	Artiodactyla	Camelidae	Camel	Camelus dromedarius
10	Masafer yatta	Artiodactyla	Bovidae	Gazelle	Gazella
11	Masafer yatta	Rodentia	Muridae	House Mouse	<i>Mus musculus</i>

4.3 discussion and conclusion:

One of the most significant results obtained in this research, which has been largely observed, is that many species in Palestine are threatened or are about to be extinct. Which is mainly due to man and the work that leads to the reduction of biodiversity, as in the intensive agricultural practices and the cultivation of land periodically, which makes the land become poor and turn into land is not suitable for agriculture day by day, and overgrazing sheep and livestock, loss of vegetation and the emergence of a lot of Plants and shrubs indicative of reduced biodiversity and degradation such as *savcopoterium spinosum*, *retama raetam* see figure7.

And maltreatment of habitats such as beating, killing and overfishing such as hippopotamus, deer and some snakes. and the illegal trade in these animals, which does not follow the laws and regulations of the environment, and unplanned human development and urban expansion and the conversion of a lot of land rich in those species, which is sometimes a citizen and the construction of factories and quarries not only directly affect them, but also the west which go only to those Land and transport corridors and roads from the center of these reserves and the establishment of landfills in those territories that contain a lot of toxins, especially Israeli settlements waste containing chemicals and toxin, which leads to the destruction of the soil and destroy Environments see figure8.





Figure 7: proplem of biodiversity in Yatta

Of the problems we encountered in the project 1) The main problem was the search in the time we started from January and the rainy periods were close and volatile, which made it difficult to collect samples and difficult to see in that atmosphere where most of the observations are made in sunny and warm weather 2) And the difficulty of access to many areas and the rough road 3) Weak information about all areas in the area Previous studies on them 4) Some serious and toxic species such as scorpions and snakes and the need for someone who has the skill to deal with them.

4.4 Recommendations:

- 1) To prevent hunting in those areas to protect rare species from extinction risk such as gazelles.
- 2) To repair land by means of mountain chains to prevent soil erosion and restoration of what was destroyed by the remnants of settlements.
- 3) To prevent overgrazing and which has devastating effects on the environment of some species.
- 4) Establishment of educational centers to raise the awareness of the population to the importance of biodiversity and the need to preserve the environment.
- 5) To demand that local and international institutions face the danger of the settlements and their waste and the damage caused to the environment by all its components.

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