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## The terrestrial mammals of Palestine: A preliminary checklist

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### Abstract

A preliminary checklist of the mammals of Palestine (West Bank and Gaza Strip) Governorates is presented based on records of mammal's species whose presence has been confirmed in Palestine's governorates as a result of extensive field expeditions, examination of fixed mammals collections, literature review, and personal communications from researchers. The paper reports 145 original data on the Palestinian mammal's fauna deriving from field observations.

The mammal's fauna of Palestine consist of (65) species belonging to (29) genera and (26) families. Species found in this study either globally or regionally distributed. Majority of species, fifty five species fall in the least concern category of the IUCN Red List Category. Four species found to be categorized as vulnerable, and six Species found to be categorized as near threatened accordingly.

**Keywords:** Wildlife; Terrestrial Mammals; Palestine.

### 1. Introduction

The biological diversity including the diversity of mammals in the Middle East was and still is of great interest for local and international faunal specialists. Being located as a terrestrial bridge between Europe, Asia, and Africa, this region has had a great interest and attention. The large varieties of habitats in Palestine in general, and the transitions between climatic regions within the country contribute to the diversity of reptile and amphibian species in the country, which is high relative to its area. Early in the 16th century, some European visitors observed and recorded mammals of historical Palestine during their pilgrimages visits to the Holy land [1]. The Author of the book (Survey of Western Palestine: the Fauna and Flora of Palestine), who visited the region estimated that 47% of the mammals in Israel are Palearctic, 43% Paleotropical and 10% endemic [2]. Bodenheimer estimated the Palearctic element (including the Saharo-Sindian, Irano-Turanian and Mediterranean) at 66% and the Paleotropical element at 12% [3, 4]. A good description of the mammals of Arabia was made by Harrison [5-7]. A pioneer Palestinian zoologist, Sana Attallah, studied small mammals of eastern Mediterranean region (Lebanon, Syria, Jordan, Israel and Palestine) [8]. One of the most comprehensive studies on mammals of Palestine, was made by Qumsiyeh, who stated that One hundred and ten species of mammals, either living now or extinct within historical times, are known from the fairly small area (approximately 70,000 km<sup>2</sup>) of the Holy Land which lies between 290 and 340 N and 340 and 380 E. [9].

Other valuable publications tackled various aspect of mammals in historical Palestine, were made by authors like Mendelssohn H; Yom-Tov, Y. and many others, or by reports and studies [10-20]. Generally speaking, studies on vertebrate biodiversity in the Palestine (West Bank and Gaza Strip), is limited compared to that in the nearby areas of Egypt, Jordan and Israel; Palestinian research in general still lags behind [21].

Over the past few years, the West Bank Governorates have witnessed environmental changes, including habitat modification due to political regime of Israel, agricultural development in the form of water abstraction, population increase, and herd grazing, which eventually affected the mammalian fauna of these areas. Due to the previously listed facts, all the animals inhabiting Palestine have been negatively affected by these problems. Significant declines in vertebrate biodiversity in Bethlehem governorate area noticed by [21].

The mammal's fauna of the West Bank governorates is rich in term of a number of species, but their distribution pattern is relatively poorly known. In fact, most of the taxa are known only in a limited number of localities. This paper is a pioneering step towards preparing a preliminary checklist of the mammals of the West Bank governorates. It also presents results of the recent fieldwork by the author, as well as the data available in the literature.

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**2. Material & Methods**

**2.1 Study site**

For an overall view of the distribution and habitat of the species, localities and/or coordinates of each record, Were allocated to one of the five major ecological regions as follow. a) The coastal zone, (Gaza Strip), which is a narrow strip extending at 0-100 m above sea level; the annual rainfall ( $\pm 300$  mm/year) which is b) The semi-coastal zone, which is a narrow strip extending at 100-300 m above sea level, in the North-Northwest corner, comprises of Jenin, Qalqilia and Tulkarem districts; the annual rainfall is ( $\pm 600$  mm/year). c) The central highlands, which is mountainous rock and hilly area rising up 1,027 m above sea level, includes the area from Jenin Southwards until Hebron district and receives annual rainfall around ( $\pm 400$  mm/year). d) The eastern slope zone, comprises of steep mountains with little rainfall ( $\pm 150-300$  mm/year) and represents the semi-desert climate, as a transitional area between Mediterranean and desert. e) The Jordan valley and lies 390 m below sea level receives annual rainfall ( $\pm 150$  mm/year) [10].



**Fig 1:** The map of the West Bank and Gaza Strip Governorates.

**2.2 The Mammals survey**

The study was carried out from April 2012-April 2016. A combination of literature and field surveys were used in order to compile information on mammalian fauna of Palestine. A review of very few literature records, available from the 15th until early 21th centuries was made. In this study we decided to make use of different available tools like, the use of simple and locally modified digital camera trapping which proved to be a useful method for direct assessment as well as for generating data on species. This tool has been very successful and widely used in wildlife ecology, inventory, population dynamics, species richness, population density, habitat use, activity pattern, behavioral ecology and even studies on animal damage [23-27]. Which are of importance for evaluation of conservation efforts [28, 29]. For most of the study period, we set foot-step camera traps opportunisticly across the study area at locations where mammal's species had recently been seen directly or by identifying remaining of mammal's species (scats, hairs, pugmarks). The other reason to set up our foot-step camera traps was the news of any incident between man and mammals in the selected sites within the West Bank and Gaza governorates. We set traps at each site for a minimum of

three nights. We set up three sites on a given night, with 100m to 1km between sites. Eleven sites were selected in six governorates (Hebron, Bethlehem, Ramallah, Nablus, Jenin and the Jordan Valley) which mean a 33 traps/year and 132 in total during the study period of four years. The recorded species were photographed for later identification and recognition using a set of literature. The species described were all resident and were mostly found throughout the study areas and the study time. Categorization of the species conservation status was made based on IUCN redlist [30].

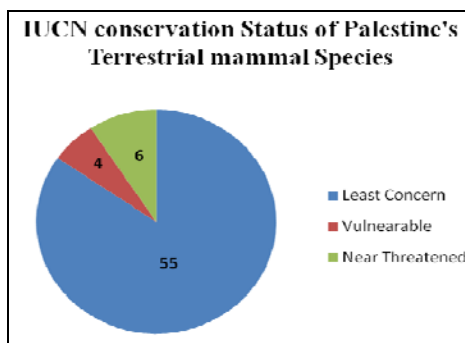
**3. Results & Discussion**

The study area (the West Bank and Gaza Strip Governorates) is mostly located in the Central highlands of Palestine, just above the Jordan valley, whereas natural forest, agricultural fields, and irrigated crops fields are found. The mammal's species of the West Bank Governorates were surveyed during a period of two years (2012– 2016). In the present paper, only species whose presence has been confirmed in Palestinian territory via extensive field expeditions, examination of collections, literature review, as well as through personal communications with regional mammalogists are listed.

We obtained a final list of 58 species in 26 families and 29 genera.(Fig.1), corresponding to 6 species of insectivores (3 shrews and 3 hedgehogs), and 18 Species of bats; 14 Species of carnivores ( 3 foxes; 3 cats; Jackal, Hyena; Mongoose; Polycat; Marten; Badger and Otter one representative each).(annex 1).

As for the dominant family/families, with highest number species, our finding showed that Colubridae family has the highest number of species as well as genera.

As far as the Species distribution, concern, all species found during this study are globally distributed, and no species found to be endemic to Palestine. The listed species of this study were categorized based on the IUCN red list category version (2015-4). The majority of the found species (55 Species) fall in the least concern category of the IUCN Red List Category [31]. Only four species found to be categorized as vulnerable, and another species 6 species found to be categorized as near threatened, as shown in (Fig.2) and (annex 1).



The species recorded were all resident and were mostly found throughout the year. The diversity of terrestrial and ecosystem in the study area encouraged the occurrence of the species. However, the increasing human impact on the existing environment in general and micro-habitats generally has threatened the main components of life. It is noticed that the populations of mammal's species are declining to an alarming level. The results of this preliminary survey recommend strongly the necessity of long-term survey of the whole biodiversity in Palestinian governorates.

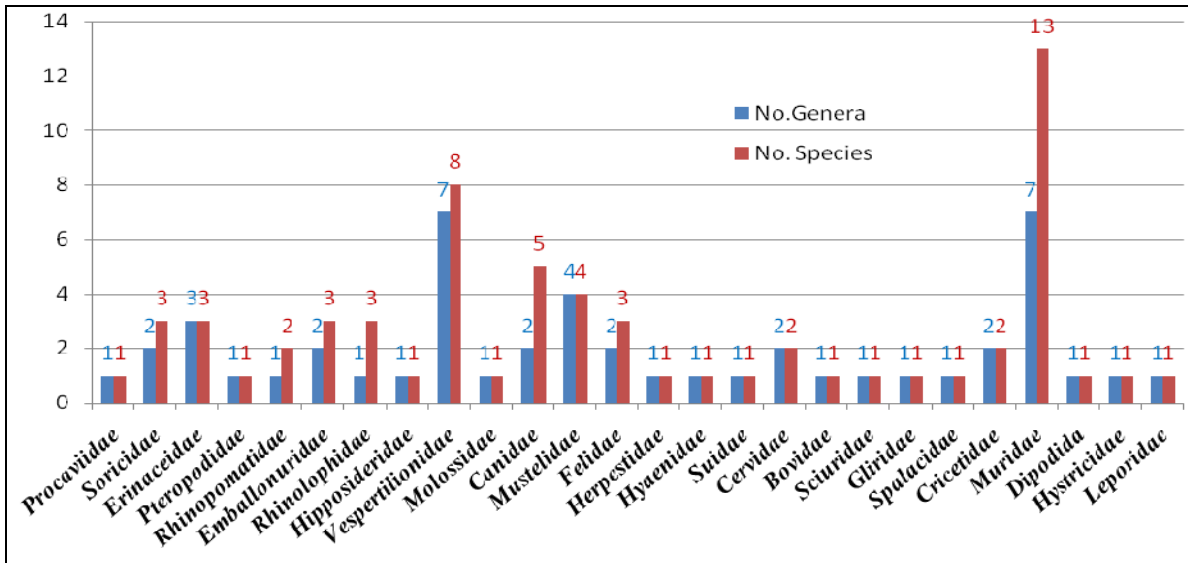


Fig 2: Distribution of Palestine's mammalian fauna Species in Families.

The distribution limits between different species are not well studied. The area of contact of all species lies within the area of contact of West Bank, and Gaza Strip governorates. The mammal's fauna distribution analysis showed that (52%) of species are distributed in all West Bank and Gaza strip governorates. The second major distribution appeared to be in Jericho governorate with almost (48%) of species, followed

by Jerusalem with (28%); then Gaza with (25%), followed by Jenin (18%), and other Governorates as shown in (Fig.3). The overall analysis of Palestine mammals showed some distribution exclusion for Jericho and Hebron governorate inn two species. The distribution patterns in term of species numbers are shown as in Figure 2. The remaining species were distributed as in Annex (1).

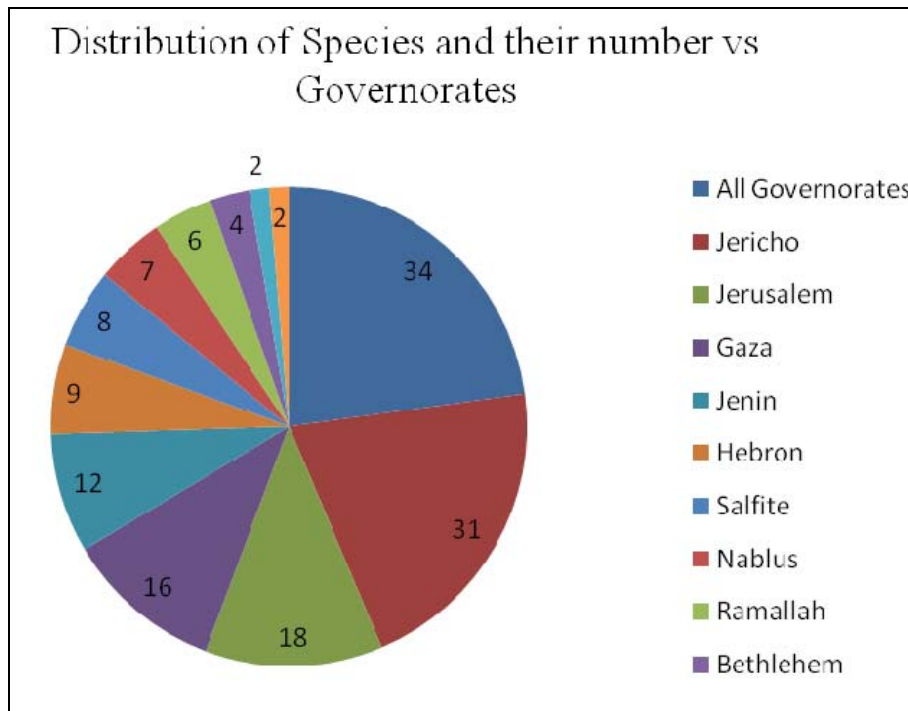


Fig 3: Distribution of Species and their number In the West Bank and Gaza Strip Governorates

Finally, this checklist is an attempt to prepare a comprehensive compilation of published information on the mammal's fauna in Palestine. Doubtless, material already collected and deposited in some museums, universities and other institutions locally or regionally could provide more information and add other taxa to the list, and it is certainly necessary to carry on with studies of Palestine's mammal's

fauna that will help to elucidate the limits of the distribution and the taxonomy of many of the species listed. Palestine's territory is vast and diverse, and has many areas, whose mammal's fauna has not been inventoried. Having this basic knowledge is crucial in order to recommend and adopt proper actions for the conservation and/or management of Palestine's natural resources.

**Annex 1:** A checklist of the Terrestrial Mammals of Palestine (West Bank and Gaza Strip) Governorates.

No	English name	Family	Latin name	Local distribution	Global distributions	IUCN Red List Category
1	Hyrax	Procaviidae	<i>Procapra capensis</i>	All governorates, excluding Gaza	Sub-Saharan Africa & Northeast Africa. Arabian Peninsula, mainly in the west, and to Lebanon, Jordan, and Israel.	Least Concern
2	Bicolored white-toothed shrew	Soricidae	<i>Crocidura leucodon</i>	Jerusalem,	Albania; Armenia; Austria; Bulgaria; France; Germany; Iran; Iraq; Israel; Italy; Lebanon; Moldova; Russian Federation; Switzerland; Syria; Turkey; Ukraine	Least Concern
3	Lesser-white-toothed shrew	Soricidae	<i>Crocidura suaveolens</i>	Bethlehem, Jerusalem, Ramallah, Tulkarem, Jericho	Europe and western Asia, from northwestern France, through the Balkan peninsula, and extending south through Turkey to Israel, Syria.	Least Concern
4	Svi's dwarf shrew	Soricidae	<i>Suncus etruscus</i>	Jerusalem, Jericho.	Afghanistan; Albania; Algeria; Bahrain; Bulgaria; China; Egypt; Ethiopia; France; Greece; India; Iran; Iraq; Israel; Italy; Jordan; Lebanon; Libya; Malaysia; Pakistan; Syria; Turkey; Yemen	Least Concern
5	Eastern European Hedgehog	Erinaceidae	<i>Erinaceus concolor</i>	All Governorates	Asia Minor to Israel, Syria, Lebanon, northern Iraq and northwestern Iran; Greece (Rhodes), Anatolian Turkey, Israel, Syria and Lebanon.	Least Concern
6	Long-eared Hedgehog	Erinaceidae	<i>Hemiechinus auritus</i>	Gaza, Bethlehem, Qalqilya, Tulkarem.	Eastern Mediterranean region, through southwest Asia to western Pakistan; and from eastern Ukraine through Mongolia (Gobi desert), to China (Xinjiang).	Least Concern
7	Desert Hedgehog	Erinaceidae	<i>Paraechinus aethiopicus</i>	Jericho, Gaza	Algeria; Bahrain; Egypt; Ethiopia; Iran; Iraq; Israel; Jordan; Kuwait; Morocco; Oman; Qatar; Saudi Arabia; Syrian; United Arab Emirates; Yemen	Least Concern
8	Egyptian fruit bat	Pteropodidae	<i>Rousettus aegyptiacus</i>	Jerusalem, Jericho, Gaza.	Afghanistan; Albania; Algeria; Bahrain; Bulgaria; China; Egypt; Ethiopia; France; Greece; India; Iran; Iraq; Israel; Italy; Jordan; Lebanon; Libya; Malaysia; Pakistan; Syria; Turkey; Yemen	Least Concern
9	Small mouse tailed bat	Rhinopomatidae	<i>Rhinopoma hardwickei</i>	Jericho	Central and northern Africa through Arabia and southern Asia from Morocco to India north to Israel, Palestine, Jordan Iraq and Afghanistan and south to Kenya.	Least Concern
10	Large mouse tailed bat	Rhinopomatidae	<i>Rhinopoma microphyllum</i>	Jerusalem, Jericho.	From northern Africa through southwest Asia to Afghanistan, Pakistan and India; Israel; Jordan	Least Concern
11	Naked-rumped bat	Emballonuridae	<i>Taphozous nudiventris</i>	Jericho	From Morocco, across northern Africa to Egypt. Turkey, Iraq; Israel; Jordan; Syria.	Least Concern
12	Egyptian slit faced bat	Emballonuridae	<i>Nycteris thebaica</i>	Jericho	Sub-Saharan Africa; Morocco, Libya, Egypt, Israel; Jordan.	Least Concern
13	Naked-bellied tomb bat	Emballonuridae	<i>Taphozous nudiventris</i>	Jenin	From Morocco, across northern Africa to Egypt. Turkey, Iraq; Israel; Jordan; Syria	Least Concern
14	Peter's horseshoe bat	Rhinolophidae	<i>Rhinolophus blasii</i>	Hebron, Bethlehem, Jerusalem, Jenin	Syria, Lebanon, Jordan, Israel, the Balkan peninsula, northeastern South Africa and the Congo, through south Malawi, to East African.	Least Concern
15	Mediterranean horseshoe bat	Rhinolophidae	<i>Rhinolophus euryale</i>	Jerusalem	Southern Europe, north-west Africa, Jordan; Lebanon; Syria; Tunisia; Israel.	Near Threatened
16	Mehelyi's horseshoe bat	Rhinolophidae	<i>Rhinolophus mehelyi</i>	Jerusalem	Jordan; Libya; Macedonia; Moldova; Portugal; Russian Federation; Serbia; Spain; Syria; Tunisia; Turkey; Israel.	Least Concern
17	Trident leaf-nosed bat	Hipposideridae	<i>Asellia tridens</i>	Jerusalem, Jericho	Arabian peninsula and the Middle East, to Afghanistan and Pakistan. Israel, Syria	Least Concern
18	Barbastelle	Vespertilionidae	<i>Barbastella barbastellus</i>	Jericho	Central and southern Europe; Israel, Syria	Near Threatened
19	Botta's serotine	Vespertilionidae	<i>Eptesicus</i>	Jericho	Eastern Mediterranean around margins	Least Concern

			bottae		of Arabian peninsula to Iraq, Iran and southern Caucasus. Israel; Jordan	
20	Serotine	Vespertilionidae	Eptesicus serotinus	Jerusalem	From Portugal eastwards to Turkey, and is marginal to North Africa. Syria; Israel; Lebanon.	Least Concern
21	Long winged bat	Vespertilionidae	Miniopterus schreibersi	Jericho	Not assessed.	Not assessed
22	Lesser mouse-eared bat	Vespertilionidae	Myotis blythii	Jerusalem, Jericho	From Asia Minor, the Caucasus region and from Palestine to Kashmir. Mediterranean Europe and western Anatolia.	Least Concern
23	Hemprich's long-eared bat	Vespertilionidae	Otonycteria hemprichi	Jerusalem, Jericho	Not assessed.	Not assessed
24	Gray long-eared bat	Vespertilionidae	Plecotus austriacus	All governorates	From south England to Moldova and the Black Sea Coast southwards to the Mediterranean coast. Syria; Israel; Lebanon.	Least Concern
25	European free-tailed bat	Vespertilionidae	Tadarida teniotis	All governorates	Extends into the Indomalayan region. from Portugal, Spain eastwards through southern Europe to the Balkans. Iraq; Israel.	Least Concern
26	Kuhl's Pipistrelle bat	Molossidae	Pipistrellus kuhlii	Gaza, Jenin	Africa, Europe and Asia. Syria; Israel; Lebanon.	Least Concern
27	Goled jackal	Canidae	Canis aureus	All governorates	North and north-east Africa; Arabian Peninsula ; Europe. Central Asia, Entire Indian subcontinent. Turkey, Syria, Iraq, Iran, Israel, Jordan	Least Concern
28	Wolf	Canidae	Canis lupus	Jericho, Hebron, Salfite, Gaza	North America; Europe, and Asia. Iraq; Israel; Jordan.	Least Concern
29	Afghan fox	Canidae	Vulpes cana	Jericho	Afghanistan; Egypt; Israel; Jordan; Oman; Pakistan; Saudi Arabia; Turkmenistan; United Arab Emirates; Yemen	Least Concern
30	Red fox	Canidae	Vulpes vulpes	Jerich, Ramallah, Jerusalem, Jenin	North Africa, Central America, Asiatic steppes, Japan; Jordan; Kazakhstan; Korea, Kyrgyzstan; Latvia; Lebanon; Libya; Israel.	Least Concern
31	Ruppelli's fox	Canidae	Vulpes ruppellii	Hebron, Jerusalem, Ramallah, Salfite, Bethlehem, Nablus, Jenin	Afghanistan; Algeria; Chad; Djibouti; Egypt; Ethiopia; Iran; Iraq; Israel; Jordan; Libya; Mali; Mauritania; Morocco; Niger; Oman; Pakistan; Saudi Arabia; Somalia; Sudan; Syria; Tunisia; United Arab Emirates; Western Sahara; Yemen	Least Concern
32	Common otter	Mustelidae	Lutra lutra	Jericho, Jenin	Europe, Asia and Africa. Syria, Iraq, Iran, Israel, Jordan	Near Threatened
33	Eurasian badger	Mustelidae	Meles meles	All governorates, excluding Jericho	Afghanistan; Austria; Belgium; Bosnia and Herzegovina; Finland; France; Germany; Greece; Hungary; Iran; Iraq; Ireland; Israel; Italy; Russian Federation; Serbia; Slovakia; Slovenia; Spain; Sweden; Switzerland; Ukraine; United Kingdom.	Least Concern
34	Stone marten	Mustelidae	Martes foina	Jericho, Jerusalem, Gaza, Hebron, Jenin	Central and southern Europe, the Middle East, and central Asia. Iran; Iraq; Israel; Italy; Jordan; Kazakhstan; Switzerland; Syria	Least Concern
35	Marbled polycat	Mustelidae	Vormela peregusna	Jenin	Afghanistan; Armenia ; Azerbaijan; Bulgaria; China; Greece; Iran, Iraq; Israel; Kazakhstan; Lebanon; Macedonia; Mongolia; Pakistan; Romania; Russian Federation; Syria; Turkey; Turkmenistan; Ukraine; Uzbekistan	Vulnerable
36	Red lynx	Felidae	Caracal caracal	Jericho, Jerusalem, Hebron	Afghanistan; Algeria; Angola ; Botswana; Burkina Faso; Cameroon; Egypt; Eritrea; Ethiopia; India; Iran; Iraq; Israel; Jordan; Kazakhstan; Kuwait; Lebanon; Morocco; Syria; Tunisia;	Least Concern

					Turkey; United Arab Emirates; Yemen.	
37	Wild cat	Felidae	Felis silvestris	Jericho, Jerusalem, Hebron, Gaza	Afghanistan; Algeria; Angola ; Botswana; Burkina Faso; Cameroon; Egypt; Eritrea; Ethiopia; India; Iran; Iraq; Israel; Jordan; Kazakhstan; Kuwait; Lebanon; Morocco; Syria; Tunisia; Turkey; United Arab Emirates; Yemen	Least Concern
38	Jungle cat	Felidae	Felis chaus	Jericho, Jerusalem, Ramallah, Nablus	Afghanistan; Azerbaijan; Bangladesh; Cambodia; China; Egypt; Georgia; India; Iran; Iraq; Israel; Jordan; Kazakhstan; Lebanon; Russian Federation; Sri Lanka; Syria; Thailand; Turkey; Viet Nam	Least Concern
39	Egyptian mongoose	Herpestidae	Herpestes ichneumon	Gaza, Jericho, Jenin	Sub-Saharan Africa, from Senegal & Gambia to East Africa. Iberian Peninsula in southern and central Portugal. Syria, Iraq, Iran, Israel, Jordan	Least Concern
40	Striped hyena	Hyaenidae	Hyaena hyaena	All governorates, excluding Gaza	Africa, Arabian Peninsula, Turkey, Syria, Iraq, Iran Israel, Jordan.	Near Threatened
41	Wild boar	Suidae	Sus scrofa	Jericho, Ramallah, Nablus, Jenin Tulakerm, Salfite, Qalqilya	Afghanistan; Albania; Algeria; Armenia ; Austria; Azerbaijan; Bangladesh; Bulgaria; Cambodia; China; Croatia; Cyprus; Finland; France (Corsica); Georgia; Germany; Greece; Hong Kong; Hungary; India; Iran; Iraq; Israel; Japan; Jordan; Kazakhstan; Korea, Lebanon; Moldova; Pakistan; Ukraine.	Least Concern
42	Ibex	Cervidae	Capra ibex	Jericho	Israel, Jordan, Saudi Arabia, Oman, Egypt	Least Concern
43	Dorcas gazelle	Cervidae	Gazella dorcas	Jericho, Bethlehm, Hebron	Algeria; Burkina Faso; Chad; Djibouti; Egypt; Eritrea; Ethiopia; Israel; Jordan; Libya; Mali; Mauritania; Morocco; Niger; Somalia; Sudan; Syrian Arab Republic; Tunisia; Western Sahara; Yemen	Vulnerable
44	Mountain gazelle	Bovidae	Gazella gazella	All governorates, excluding Hebron, Gaza	Israel; Oman; Saudi Arabia; United Arab Emirates; Yemen	Vulnerable
45	Persian Squirrel	Sciuridae	Sciurus anomalus	Salfite, Nablus	Armenia; Azerbaijan; Georgia; Greece; Iran; Iraq; Israel; Jordan; Lebanon; Syria; Turkey	Least Concern
46	Forest dormouse	Gliridae	Eliomys quercinus	Jericho	Afghanistan; Armenia; China; Georgia; India; Iran; Iraq; Israel; Jordan; Nepal; Pakistan; Saudi Arabia; Sri Lanka; Turkey; Yemen	Near Threatened
47	Blind mole rate	Spalacidae	Spalax leucodon	All governorates, excluding Jericho	Bosnia; Bulgaria; Greece; Hungary; Macedonia; Moldova; Montenegro; Romania; Serbia; Turkey; Ukraine	Least Concern
48	Gray hamster	Cricetidae	Cricetulus migratorius	Salfite, Nablus	Afghanistan; Azerbaijan; Bulgaria; China; India; Iran; Iraq; Israel; Jordan; Kazakhstan; Lebanon; Moldova; Mongolia; Pakistan; Romania; Russian Federation; Syrian Arab Republic; Turkey; Ukraine	Least Concern
49	Günther's Vole	Cricetidae	Microtus guetheri	Ramallah, Salfite, Qalqilya	Georgia; Greece (East Aegean Is., Kriti); Iraq; Israel; Jordan; Lebanon; Serbia (Kosovo, Serbia); Syria; Turkey	Least Concern
50	Pygmy gerbil	Muridae	Gerbillus henleyi	Hebron	Algeria; Burkina Faso; Chad; Egypt; Israel; Jordan; Libya; Mali; Mauritania; Morocco; Niger; Oman; Saudi Arabia; Senegal; Sudan; Tunisia; Yemen	Least Concern
51	Egyptian gerbil	Muridae	Gerbillus Peramidum	Gaza, Jericho	Chad; Egypt; Mali; Niger; Sudan	Least Concern
52	Wagner's gerbil	Muridae	Gerbillus dasyurus	All governorates	Egypt; Iraq; Israel; Jordan; Lebanon; Oman; Saudi Arabia; Syria; Turkey; United Arab Emirates; Yemen	Least Concern



53	Boxton's jird	Muridae	Meriones sacramenti	Gaza	Egypt and Israel	Vulnerable
54	Tristram's jird	Muridae	Meriones tristrami	Gaza, Hebron	Armenia; Azerbaijan; Georgia; Iran; Iraq; Israel; Jordan; Lebanon; Syria; Turkey	Least Concern
55	Common spiny mouse	Muridae	Acomys cahirinus	All governorates, excluding Gaza	Djibouti; Egypt (Sinai); Eritrea; Ethiopia; Libya; Mauritania; Morocco; Sudan; Western Sahara	Least Concern
56	Broad toothed mouse	Muridae	Apodemus mystacinus	Salfite, Nablus, Jenin	Georgia; Greece (East Aegean Is., Kriti); Iraq; Israel; Jordan; Lebanon; ; Serbia; Syria; Turkey	Least Concern
57	Wood mouse	Muridae	Apodemus flavicollis	Salfite, Nablus, Jenin	Austria; Bosnia ; Bulgaria; Croatia; Denmark; Finland; France; Germany; Greece; Hungary; Iran; Israel; Italy; Jordan; Lebanon; Luxembourg; Macedonia; Moldova; Norway; Poland; Romania; Russian Federation; Spain; Sweden; Switzerland; Syria; Turkey; Ukraine; United Kingdom	Least Concern
58	Short tailed mouse	Muridae	Mus macedonicus	All governorates, excluding Gaza	Armenia ; Azerbaijan; Bulgaria; Georgia; Greece; Iran; Israel; Jordan; Lebanon; Macedonia, ex-Yugoslav; Syria; Turkey	Least Concern
59	House mouse	Muridae	Mus musculus	All governorates	Austria; Belgium;France; Germany; Greece; Hungary; Indonesia; Iran; Moldova;New Guinea; Tunisia; Turkey; Ukraine; United Kingdom; Viet Nam	Least Concern
60	Short tailed bandicoot rat	Muridae	Nesokia indica	Jericho	Afghanistan; Armenia; China; Georgia; India; Iran; Iraq; Israel; Jordan; Nepal; Pakistan; Saudi Arabia; Sri Lanka; Turkey; Yemen	Least Concern
61	Norway rat	Muridae	Rattus norvegicus	All governorates	Afghanistan; Armenia; China; Georgia; India; Iran; Iraq; Israel; Jordan; Nepal; Pakistan; Saudi Arabia; Sri Lanka; Turkey; Yemen	Least Concern
62	Ship rat	Muridae	Rattus rattus	All governorates	Austria; Belgium;France; Germany; Greece; Hungary; Indonesia; Iran; Moldova;New Guinea; Tunisia; Turkey; Ukraine; United Kingdom; Viet Nam	Least Concern
63	Lesser egyptian jerboa	Dipodida	Jaculus jaculus	Jericho, Gaza	Afghanistan; Armenia; China; Georgia; India; Iran; Iraq; Israel; Jordan; Nepal; Pakistan; Saudi Arabia; Sri Lanka; Turkey; Yemen	Least Concern
64	Old world porcupine	Hystriidae	Hystrix indica	All governorates	Afghanistan; Armenia; China; Georgia; India; Iran; Iraq; Israel; Jordan; Nepal; Pakistan; Saudi Arabia; Sri Lanka; Turkey; Yemen	Least Concern
65	Cape hare	Leporidae	Lepus capensis	All governorates	Algeria; Bahrain; Cyprus; Egypt; Ethiopia; India; Iran; Iraq; Israel; Italy (Sardegna); Jordan; Lebanon; Oman; Pakistan; Qatar; Saudi Arabia; South Africa; Syria; Yemen.	Least Concern

#### 4. Conclusion

The study findings have led to conclude that any of the studied locations can be utilized by mammals Species, as normal habitat, if the important threatening factors can be overcome by increasing and diversifying the population of plantations, which is in agreement with many regional and international studies.

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