

**Spread, Hosts and Damage of Field Mouse (Short-tailed) in AL-Jabal Al-Akhder – Libya. Hinton's vol *Microtus guentheri* Hinton's Family Cricetidae Order Rodentia**

انتشار وعوائل وأضرار فأر الحقل (قصير الذيل) في الجبل الأخضر - ليبيا *Microtus guentheri* (هينتون) عائلة الفأريات (Cricetidae) رتبة القوارض

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**Abstract:**

Through a field survey of several sites in the area of the Al-Jabal Al-Akhder forests in winter and spring, fields of wheat, barley and oats crops in spring, as well as irrigated fields of crops in summer, from Shahhat area in the east to tokra area in the west, south and North in the Al-Jabal Al-Akhder region. It turned out that the phenomenon of death of branches of forest trees is an example of carob trees (*Ceratonia siliqua* L. *Arbutus unedo* L. And *Pistacia atlantica* L.) Caused by feeding the short-tailed field mouse *Microtus guentheri* Hinton's (Social mouse) on the branches bark of tree and may attack branches at a height of more than five meters. traces of the loan have found tree branches in forests and they lead to the death of branches as well as traces of its feeding in wheat and barley fields in the form of patches devoid of vegetation and full of holes, which reach 12 holes in forests but

exceed them in agricultural lands. this mouse is aggressive, panicked, fast-moving and has local vital enemies, the most important of which are owls and snakes.

**Key words:** *Field mouse: Microtus guentheri*, Hinton's vol - Al-Jabal Al-Akhder-Libya

الملخص

من خلال مسح ميداني لعدة مواقع في منطقة غابات الجبل الأخضر خلال فصلي الشتاء والربيع 2022-2023، شملت حقول محاصيل القمح والشعير والشوفان في فصل الربيع، وكذلك حقول المحاصيل المروية في فصل الصيف، من منطقة شحات شرقاً إلى منطقة توكرة غرباً، وكذلك جنوباً وشمالاً في منطقة الجبل الأخضر. تبين أن ظاهرة موت أغصان الأشجار الحرجية مثال على ذلك أشجار الخروب *Ceratonia siliqua* L والبطم - *Arbotus uned* L. وأشجار الشماري *Pistacia atlantica* L - بسبب تغذية فأر الحقل: *Microtus guentheri* Hinton's 1926 (الفأر الاجتماعي - قصير الذيل) على لحاء أغصان الأشجار وقد يهاجم الأغصان على ارتفاع أكثر من خمسة أمتار. وقد وجدت آثار تغذية للفأر على قلف أغصان الأشجار في الغابات وهي تؤدي إلى موت الأغصان وكذلك آثار تغذيته في حقول القمح والشعير على شكل بقع خالية من النباتات وملئمة بالثقوب والتي تصل إلى 12 حفرة في الغابات ولكنها تتعداها في الأراضي الزراعية. هذا الفأر عدواني ومذعور وسريع الحركة وله أعداء حيوية محلية أهمها البوم والثعابين.

لكلمات المفتاحية: فأر الحقل: *Microtus guentheri* Hinton's 1926 - الجبل

الأخضر-ليبيا

### Introduction :

The name field mouse refers to all small-sized rodents that are widespread in natural and agricultural environments, and have adapted to wildlife. this designation includes a large number of species that differ among themselves morphologically, biologically and behaviorally. it is known that the most important field mice that are widespread in Mediterranean basin region are generally Circetidae rodent: belonging to the genus *Microtus* 1. It was recorded in Syria in 1827, which indicates that it is endemic in these areas and not an intruder 2. the same source stated that this mouse has attacked houses in the Bekaa region in Lebanon and may fear the spread of epidemics among the population and livestock herds. The field mouse, or the social mouse as some call it, is a rodent mammal widespread in Europe, Asia and Africa, where in Syria this species causes damage to crops of more than 70% at times, these damages are manifested by storing large quantities of whole

ears inside pits under the soil surface 3 and 4 stated that this species causes significant economic damage to field crops and pastoral areas in Lebanon, Palestine and Turkey. 5 reported that about 60 species of them found in North America, Europe and northern Asia belong to the genus *Microtus*. In Al-Jabal Al-Akhder-Libya, where Hinton recorded its existence in 1926 6 in the area of al-Marj and west of Shahat, as well as mentioned in the area of tokra. mentioned also in Wadi al-kuf area 7, also mentioned by among the Libyan mammals 8. It is widespread in forests, where it caused damage to branches by removing the bark, in fields of wheat, barley, vegetables and damages the crop. It appeared in the Green Mountain area starting from tokra in the west to the Shahhat area in the East and from the Sidi Hamri area in the south to the wasita area in the north along the Green Mountain area where it appeared at the beginning of November in the forest areas along the road and in the fields of wheat and barley in the spring and then moved to the areas of irrigated crops with the beginning of summer 9 and 10 stated that the Cyrenaica mouse is the only remaining representative found in Africa and its classification from the Cricetidae family was debated and it was found that among the remaining social species are the two brothers. *M. guentheria* and *M. mustersi* it is widespread along the Mediterranean coast and in southwest Asia. The study indicated that the ancestor of these two species (*Microtus*) had spread in the coastal strip of Africa and had been isolated ecologically in the East Coast-Libya (Cyrenaica) over the previous ages, which led to the stimulation of the formation of other species and *M* has adapted. *mustersi* combined with the dry conditions of his region and benefited *M. guentheria* from Cyrenaica's temperate climate added that this species may be at risk of extinction. Most rodents their populations reaching high numbers within a short time (prolific) These species are agriculturally important, they cause great amount of damages to agricultural products 11, 12,13. *Microtus* cause great damage not only to grassland vegetation 14 but also to agricultural crops15, 16, 17 ,18. agricultural activity is a major source of income, attention must be given to understanding the ecology of these species and the various ways in which they are helpful or harmful to the environment 10.

### **Search area:**

Al-Jabal Al-Akhder area is located in the north-east of Libya, which is called Cyrenaica, and the area is located between the latitude and longitude lines: 21.6660725, 32.4032332 and the height of the Green Mountain is 1000 m. The search area Located tokra area in the west to the shehat area in the East and from the Sidi Al-Hamri area in the south to the wasita area in the north along the Al-Jabal Al-Akhder area-Libya, where there are natural forest areas, fields of wheat and barley crops, vegetable farms under irrigated agriculture system.

### **The search problem**

Is the short-tailed social field mouse widespread in the Al-Jabal Al-Akhder region a pest that must be eradicated or an endangered species that must be preserved? Is it an invasive or endemic pest?

### **Materials and methods:**

Conducting periodic field visits over a year 2022–2023 to forest areas in winter, grain crop fields in spring and vegetable farms under the irrigated system in summer, where his presence was monitored at the beginning of November in forest areas along the road and in wheat and barley fields in spring, then moved to irrigated farming areas with the beginning of summer, the effects of nutrition on forest trees were recorded, as well as detected the size of the colony using smoking pump for bees hive, also recording observations and identifying living rooms And storage rooms.

### **Results and discussion**

The Arabic name is the field mouse, or the short-tailed mountain mouse. The local name in Libya is the amputee mouse or bobtail mouse due to its short cutting tail.

**Description and behavior:** small mouse with a total length of about 13 cm, characterized by a short, amputated tail 3 cm long, and the general color is bright brown on the back, turning to light at the abdomen, to catch it the adhesive for rodents was used in front of the pits, Figure (1). It is fast-moving, scared and runs away very quickly and was noted for some ferocity after being put in a cage. Prefers somewhat moist soil, at winter it inhabits forest, in spring fields of wheat and barley, and in summer it moves to irrigated plantations area.

### Hosts, nutrition and damage:

for forests, it lends tree bark at very high altitudes, sometimes up to five meters, and traces of the loan have been found on the bark of branches of carob trees *Ceratonia siliqua* L. (Figure2) In the fields of wheat and barley it feeds on cereals, it lends the stem at a height of 4 cm from the ground and drags it to the hole where it is stored in the depths. The affects was seen in the fields in the form of patches devoid of vegetation and full of pits Figure 3). It also feeds on vegetables, and its dwelling consists of multiple pits connected by corridors, and one of these openings is used for entry and exit, and traces of feces are seen, and a tunnel extends from it with several other external holes for survival, and in the tunnel there is a room for storing supplies where the materials stored in it can be identified and there are no traces of feces in front of it. The number of openings of a single-family dwelling reaches from 4-12 openings, and there may be a colony with more than a hundred openings on an area of 16 m<sup>2</sup>, for example, in the sunken area of the meadow. And the drilling holes are slightly inclined.



Figure (1): The short-tailed vole, the Al-Marj area





Shape (2) symptoms of infection on the branches and trees of Al-Jabal Al-Akhder Forest



Shape(3) symptoms of infection and form of holes in wheat and barley field crops.

### Natural enemies:

Birds Of Prey and Owls have been observed in the research area (especially the drowning area in the meadow) hovering in the sky in abundance in the area of Mouse presence, as well as foxes and snakes, and it is noted that this mouse prefers moist soil areas and there is a prevailing local belief that the appearance of this mouse in large numbers is a year or more after the occurrence of a heavy rainy season. For example, in the al-Marj area, the rainfall rates in 1995 were 412 ml and in 1996 it was 426 ml (al-Marj Meteorological station), two years before it spread in Al-Jabal Al-Akhder area in 1997.

### Recommendations

1-combating one of the following ways to reduce the periods of outbursts.

- A) - preservation of natural enemies (birds of prey, owls, snakes)
- B) - it can be combated with any of the rodenticides and the control depends on surprise by mastering the first campaign of control due to the nature of its wild life. They may be infectious pesticides (baits or scatters to move them with his feet and lick them when cleaning their limbs)

C) – deep tillage of crop and vegetable fields. As for the forests, it is possible to use specialized baits for mice.

D) – it is possible to use chimneys for drilling after blocking the outlets, but you need safety precautions. 2–developing a program for a research study that includes several axes on more information about its environment, food preferences, reproduction, periods of eruption and determining its types.

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