

# First Report of *Ommatissus lybicus* Bergevin (Hemiptera: Tropiduchidae) in Tunisia

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## ABSTRACT

*Ommatissus lybicus* Bergevin was encountered for the first time in 2010 on date palm (*Phoenix dactylifera*: Deglet Nour variety) in the Tamerza oasis, Tunisia. Then, it was recorded in different areas of the Djerid oasis such as Chbika, Tozeur, Hezwa and Nafta. Some morphological and biological aspects of this insect are described in this paper.

**Keywords:** date palm, dubas bug, oasis

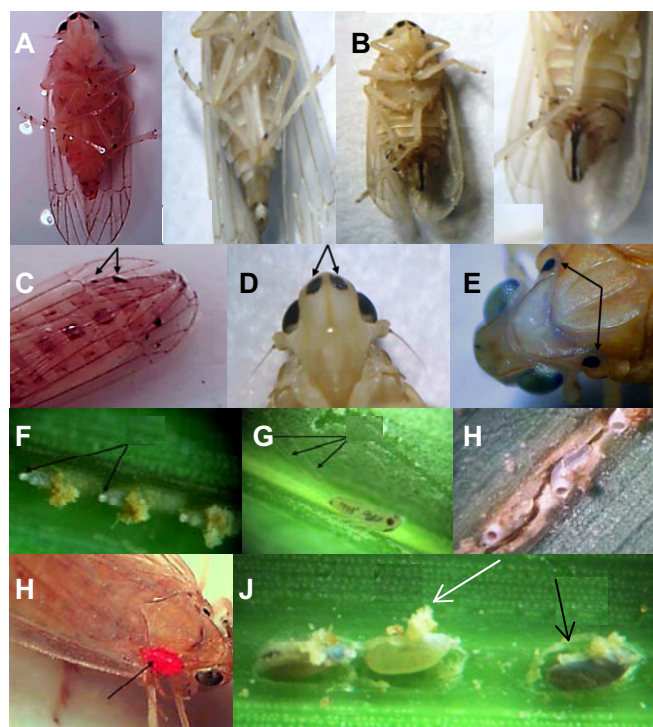
*Ommatissus lybicus* Bergevin, also known as the dubas bug, is a plant hopper belonging to the order Hemiptera and family Tropiduchidae. It is a serious pest of date palm (*Phoenix dactylifera*) and has not been recorded as reproducing and developing on any other host plant.

The adult of the dubas bug is pale yellowish or yellow earth. The female measures 4.5-6.0 mm long while the male measures 3.4-4.0 mm. The female body has 8 black spots, 2 on the frons (Fig. 1D), 2 laterally on the pronotum (Fig. 1E), 2 on each of the 7<sup>th</sup> and 8<sup>th</sup> abdominal segments (Fig. 1C). The male has the same distribution of black spots, but not on the 7<sup>th</sup> and 8<sup>th</sup> abdominal segments. The abdomen is more tapered (Fig. 1A) than in females which have a saw-like part in their abdomen (Fig. 1B), and the wings extend further beyond the tip of the abdomen than in females.

The eggs of the dubas bug are oval-shaped, elongated, 0.5-0.8 mm in length, and 0.25 mm in diameter. The color of the egg changes from light yellow to yellowish-orange as the egg develops. The anterior part of the egg is modified into a lid-like structure that is connected to the rest of the egg in the form of a suture (Fig. 1F).

The dubas bug has five nymphal instars (Elwan and Al-Tamiemi 1999). The body length of nymphal instars ranged from 1 to 3.48 mm, body width from 0.45 to 1.46 mm, light yellow when newly emerged (1<sup>st</sup> instar) and with 4 pairs of dark lines on the dorsal side, caudal filament length from 2.5 to 3.42 mm. Eyes are compound and red colored. The number of white waxy caudal filaments was the most reliable characteristic to differentiate the nymphal instars (Fig. 1G). The mite morphological characteristics were described based on at least 10 specimens from each development stage or sex collected in Tunisian oases.

This insect has two distinct generations per year which vary in timing and duration depending on temperature conditions (Elwan and Al-Tamiemi 1999). At the end of each generation the female lays its eggs. It excavates small holes in the tissue of date palm leaves. The female then lays an egg in each hole. The top part or cap of the egg is almost flush with the external surface of the leaf and it is the only exposed part of the egg. The eggs remain dormant for about 3 months and when embryonic development is completed the fully formed first stage nymph hatches out of the egg by pushing against the egg cap (Hassoun 2003). When they hatch, the resulting nymphs continue living on the fronds of



**Fig. 1** (A) Male of dubas bug (left), genitalia of male (right). (B) Female of dubas bug (left), ovipositor of female (right). (C) Black spots on 7<sup>th</sup> and 8<sup>th</sup> abdominal segment. (D) Black spots on frons. (E) Black spots on pronotum. (F) Eggs before hatching; Cap of the egg (arrows). (G) Dubas bug larva; Caudal white filaments (arrows). (H) Damage caused by the egg laying activities of the dubas bug. (I) Predator (mite) feeding on adult dubas bug. (J) Non-parasited egg of dubas bug (white arrow), black parasited egg of dubas bug (black arrow).

the same palm. Nymphs go through five growth stages before moving on to adults, which feed during a short period in the same manner as that of larvae, they mate and females lay their eggs on date palm. After oviposition, adults of dubas bug begin to disappear and there remain only eggs that will give the members of the next generation

(Elwan and Al-Tamiemi 1999). The longevity of females and males and the period required to complete larval development varies according to generation and climatic conditions, especially temperature (Dowson 1936).

In 1979, El Haidari (1981) observed eggs and adults of this pest in Bahrain in date palm. *O. lybicus* was observed for the first time in Sudan in 1981 by El Haidari (1982). The dubas bug is widely distributed in Iraq, Iran, Yemen, UAE, Jordan, Oman, Saudi Arabia, Pakistan, Palestine and other date palm-growing areas in the Middle East and North Africa (Egypt and Libya) (El-Haidari 1982; Bitaw and Ben-Saad 1990).

In Tunisia, we observed *O. lybicus* for the first time in date palm (var. 'Deglet Nour') during July 2010 in Tamerza (34°00'N, 9°00'E). This insect was later encountered in other locations of the Djerid oasis such as Chbika, Tozeur, Hezwa and Nafta on the same variety. This insect prefers shade and high humidity and therefore invades palm trees planted on the narrow spaces such as farms in the mountains and valleys (Elwan and Al-Tamiemi 1999). In Tunisia the dubas bug has been recorded mainly in oases characterized by a high relative humidity (RH) (located near water sources) and excessive shading (high density of planting). Similar conditions were reported by (Hassoun 2003) as optimal conditions for the development of the dubas bug.

*O. lybicus* causes serious economic damage to date palms in Iraq and the Arab States of the Gulf (Dowson 1936; Hassoun 2003). Adults and nymphs feed on the sap of phloem vessels of date palm leaves (Elwan and Al-Tamiemi 1999). This feeding results in excretion of excess sugars, amino acids, and minerals in the form of a sweet-salty viscous liquid called honeydew which covers date palm leaves (Alfieri 1934). Dust will stick to the honeydew and a black fungi known as black sooty mold (caused by a range of fungi such as: *Cladosporium*, *Aureobasidium*, *Antennariella*, *Limacinula*, *Scorias*, and *Capnodium*) will grow on it (Hassoun 2003). Depending on the size of the population of the dubas bug, the damage caused by the feeding of this insect can vary. Low to moderate populations are tolerated well by date palm trees but high populations could result in high sap drainage, and the associated accumulation of honeydew, dust, and sooty mold may affect normal life processes such as photosynthesis and respiration (Hassoun 2003). This eventually leads to yellowing and premature death of af-

ected leaves, especially lower leaves and could result in the reduction in the yield of palms and a lowering of the grade of the crop. Honeydew drops by the pest on the fruit making the fruit unpalatable (Hassoun 2003) Damage to date palms could also result from the egg-laying activity of the female dubas bug. Female lays eggs by inserting them into the palm frond causing the necrosis or the death of tissue surrounding eggs (Elwan and Al-Tamiemi 1999).

In Tunisia only leaf necroses caused by the egg laying activities of the adults have been observed (Fig. 1H) with no significant economic losses due to low insect population. This may be due to a balance between the pest and its natural enemies. Indeed, eggs parasitized by *Oligisita* spp. (Hymenoptera, Trichogrammatidae) have been frequently observed in different farms in the Djerid oasis (Fig. 1J). This oophagous parasitoid and several predators such as: *Anystis agilis* Banks, *Coccinella septempunctata* L. and *Chrysoperla carnea* Steph have been reported on the dubas bug (Viggiani 1971; Hassoun 2003).

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