

## Mites Associated with the Red Palm Weevil, *Rhynchophorus ferrugineus* Oliver in Saudi Arabia with a Description of a New Species

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### ABSTRACT

The red palm weevil (RPW) *Rhynchophorus ferrugineus* Oliver is an economically important pest of palm in Al-Hassa (Eastern Province of Saudi Arabia). The RPW was noted associated with mites during May – June 2009. Three mite species were found. One of which *Aegyptus alhassa* n. sp. (Gamasida, Trachyuropodidae) as a parasite collected from eggs, larvae, pupae cocoons and under the elytron of insect adult was described. The second mite species *Sejus* sp. may feed on fungi or organic debris, while the acarid hypopial stage may feed on dead insects.

**Key Words:** *Rhynchophorus ferrugineus*, Mite, *Aegyptus alhassa*, n. sp., *Sejus* sp., Acarid hypopus, Al-hssa, Saudi Arabia

### INTRODUCTION

The red palm weevil *Rhynchophorus ferrugineus* Oliver is an important pest of palm in many parts of the world (Faleiro *et al.*, 2002). The RPW damage symptoms are recognized by the presence of tunnels in the trunk, oozing of thick yellow to brown fluid from the tree and the appearance of chewed-up plant tissue and around openings in the trunk (Kaakeh *et al.*, 2001).

The occurrence of this pest in the Middle East was firstly reported from United Arab Emirates in 1985, followed by the Kingdom of Saudi Arabia, Al-Qatef in 1987. The Species, *Trichouropoda patavina*, *Iphidosoma* sp., *Hypoaspis sardoa* Berlese, *Parasitus zaheri* Hafeze & Nasr, *Scutacarus* sp., *Histiostoma* sp. (El-Sharabasy, 2010) and *Fuscuoropoda marginata* (Koch), *Aegyptus rhynchophorus* El Beshlawy & Allam and the fly insect *Ceratitis capitata* Weid were recorded associated with the weevils wastes (El Beshlawy and Allam, 2007). Uropodidae is a cosmopolitan large family consisting of fungivorous, insect associations and occasionally predators (Krantz, 1978). Many uropodids occur commonly in litter, detritus, soil, moss, rotting wood and nests of insects (Petrova *et al.*, 2004). Uropodid mites are considered to be scavengers (Moser *et al.*, 2005).

In this study, mites associated with the RPW as natural enemies were surveyed in Al-Hassa, Saudi Arabia.

### MATERIALS AND METHODS

Eggs, larvae, pupae and adults of RPW were collected from trunks of infested palm trees in Al-Hassa (Eastern Province of Saudi Arabia) during May-June 2009. Specimens were placed in separated sterilized jars with sugarcane as diet at 37±2° C and

70±5 RH. Mites associated with the RPW individuals were observed under the elytron, on the surface of pupae cocoons and eggs were separated and photographed for morphological studies (Figs. 1-3).

### RESULTS AND DISCUSSION

The Acari was represented by three families: Uropodidae, Sejidae and Acaridae. Table (1) shows that the *Aegyptus alhassa* (Uropodidae) n. sp. was noted as parasite on RPW. *Sejus* sp. (Sejidae) was found in humus and litter. Also, hypopial stage of acarid mite was noted.

*Aegyptus alhassa* was found as a parasite on the eggs, pupae cocoons and under the elytron of RPW adult (Figs.1- 3).

#### *Aegyptus alhassa* sp. nov.

**Female:** Body brownish, 67.5 µm long. (Fig. 4).

**Gnathosoma:** Tectum with one apex serrate (Fig.4a). Chelicerae with a sclerotized node behind base of movable chela, a curved process resting on the fixed digit with 5 teeth subequal in length, movable digit with 4 teeth. Laciniae flanked by a pair of smooth paralaciniae; first and third hypostomal setae simple, second and forth short.

Table (1): Mites associated with the red palm weevil *Rhynchophorus ferrugineus* on date palm cultivars at Al-Hassa

Families	Species	Remarks
Uropodidae	<i>Aegyptus alhassa</i>	Parasite
Sejidae	<i>Sejus</i> sp.	In humus and litter
Acaridae	Hypopial stage	Moving stages may feed on fungus or dead tissue



Fig. (1): *Aegyptus alhassa* n. sp. under the elytron (2X).

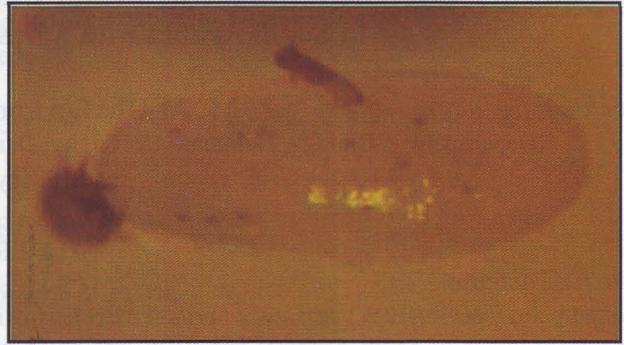


Fig. (2): *Aegyptus alhassa* n. sp. on egg (4X).



Fig. (3): *Aegyptus alhassa* n. sp. on pupae cocoons (1.5X).

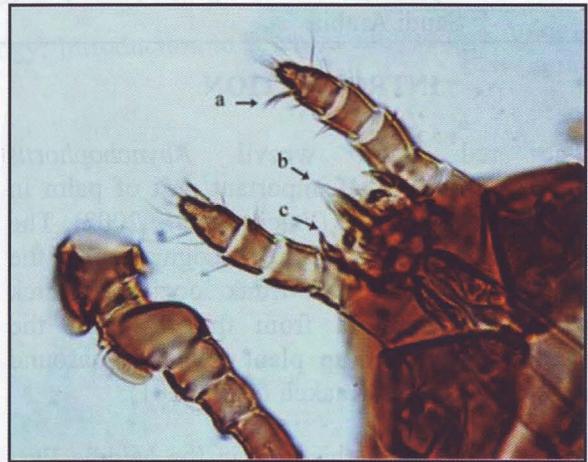


Fig. (4a): Gnathosoma ventral view of female *Aegyptus alhassa* n. sp. (100X)  
a: Apotele of palp b: Tectum c: Paralacinia.

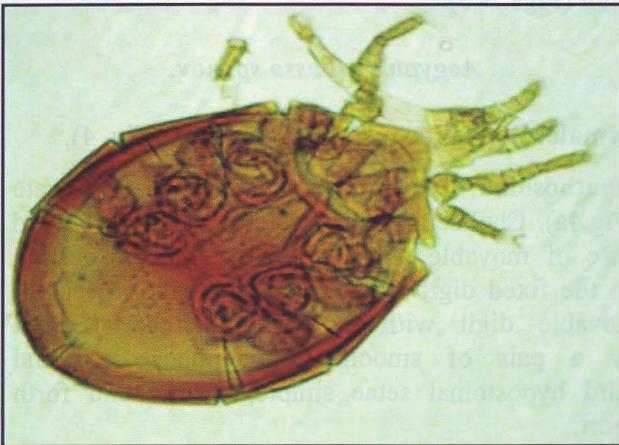


Fig. 4(b): Ventral view of female genital plate (10X).

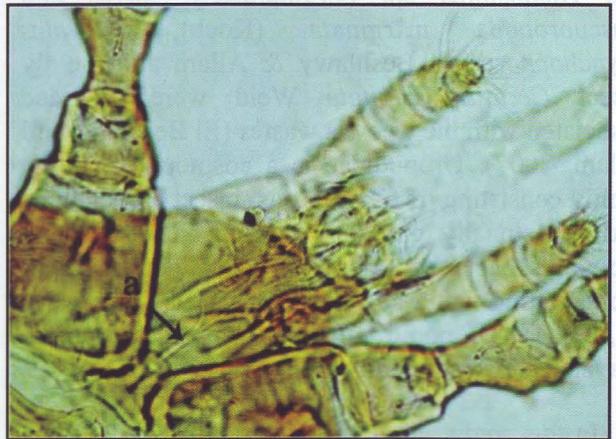


Fig. 4(c): Anterior margin of ventral view of female *Aegyptus alhassa* n. sp. (100X)  
a: the Tritosternum with three pilose

Remarks	Species	Families
Female	<i>Aegyptus alhassa</i>	Uropodidae
In humans and litter	<i>Sejus</i> sp.	Sejidae
Moving stages may feed on fungus or dead tissue	Hypopial stage	Acaridae

Eggs, larvae, pupae and adults of RPW were collected from trunks of infested palm trees in Al-Hassa (Eastern Province of Saudi Arabia) during May-June 2008. Specimens were placed in separated sterilized jars with sucrose as diet at 37±2° C and



**Idiosoma:** Dorsal shield entire, setae on dorsum pectinate. Genital plate reaching anteriorly base of tritosternum, anterior margin narrowly rounded, the posterior trapezoidal (Fig.4b). It resembles *Aegyptus rhynchophorus* (El Beshlawy and Allam, 2007). A pair of lanceolate setae on posterior margin of dorsal shield. Lateral margin of the body with shallow striation like fastoons; 3 pairs of simple genital setae present. Tritosternum with three pilose lacinea (Fig.4c). Ventral shield with 10 pairs of simple setae. Peritreme uniconvolutated, the inner margin of middle limb zigzag shape and without a medial projecting extension (Fig.4d).

**Male:**

**Body brownish**, length 60 µm (Fig. 5).

**Gnathosoma:** As in female except in having arthrodistal brush on the anterior second segment of chelicera (Fig.5a). Dorsal shield entire, ornamented; centrodorsal shield separated posteriorly from lateral shield. Posterior margin of the dorsal shield with a pair of long biramous whip-like setae with pectinate apexes (Fig.5b). Anterior margin of body with shallow striations like festoons; it resembles *A. rhynchophorus* (El Beshlawy and Allam).

Fovae pedalis present; tritosternum as in female; circular genital aperture on level between coxae III covered with a smooth shield (Fig. 5c).

Legs I and IV longer than legs II and III; trochanter and femur of leg I, femora of legs II, III and IV each with a longitudinal crest.

Members of this species were found on eggs, larvae, pupae and under elytra of adult. The mite can be transferred through the organic fertilizers mixed with soil near the base of the palm tree. This new uropodid mite is a facultative parasite.

***Sejus* sp.**

It may feed on fungi or organic debris.

**Female:**

**Gnathosoma:** Fixed and movable digits of chelicerae with several teeth, apotele of palpal tarsus with two tines. Hypostoma with 3 pairs of setae in a subtriangular.

**Idiosoma:** Dorsum with several shields (six) plus two marginal plates, ornamented. Posterior margin of body with festoons. Dorsum with several setae, pectinate, epigynial shield large and not covering

sternal shield. Genital pore round. Tritosternal shield with two pilose. Tarsus of leg I without apotele, with two claws. Legs II, III and IV with apotele and two claws (Fig.6).

**3.3 Hypopial stage**

Acari hypopus was noted on the weevil (Fig. 7) (Samsinak, 1965).

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