

# ***Rattus rattus* Parasites of El-Kala National Park (Algeria)**

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## **Abstract**

This study was conducted at the National Park of El Kala (Algeria) which has a mosaic of habitats, and located in north-eastern Algeria. This rich landscape induces another one; it is the ecological biodiversity of the park. We are interested in a particular species of mammal that is the Black Rat (*Rattus rattus*) and specifically in identifying different species of parasites that her little body homes and vehicles. The Black Rat's skin is very noisy. We identified mites (*Dermanyssus bacoti*), ticks (*Ixodes ricinus*), fleas (*Nosopsyllus fasciatus* and *Xenopsylla chiopis*), lice (*Poluplax sp*) and sandflies (*Flebotomus sp.*).

**Keywords:** Black Rat, ectoparasites, tick, flea, Algeria.

## **1. Introduction**

The Muridae family is the most diversified at globe level, including more than 700 species and 120 kinds amongst *Rattus* which accounts 50 species [8]. South – eastern Asian originally species has become cosmopolitan through times. In fact, from the Far East, the black Rat has conquered all the continents following Man everywhere [6]. At the National Park El Kala (North – east of Algeria) we identified *Rattus rattus* (relying on morphological, craniological and caryological approaches). The rodent *Rattus rattus* (Linnaeus, 1958) is a devastating species, reported as resistant to plague *Yersinia pestis*, and also a vector of several pathogens.

The black rat (*Rattus rattus*) which is a small unit of the biological system is a very rich and diverse synopsis. Indeed, this micro-ecosystem supports the installation and development of a mosaic parasite, which exists, co-evolves, multiplies and spreads even in the ecosystem. The parasite is bad for the host; it can only harm his life, and whatever its form is horizontal or vertical parasitism.

The black rat is observed at the park in urban, sub-urban nature reserve, the forest ... etc. We used rat traps that were placed in different environments to capture it. After capture we identified the species according to body size of individuals recovered alive (performed by the method of Chapelier), Then, we collected all suspected parasites kinds of the species.

## 2. Material and Methods:

Forty three black Rats (twenty five males and eighteen females) captured during the year 2011 in different biotopes of El Kala National Park, whose geographical coordinates are 36° 43' N. to 36° 57' N. and of 7° 43' E. to 8° 37' E. The park extends on a 78 400 hectares surface [5].

Rat traps were put randomly in different biotopes (cork forests, alder forest, scrubland...etc.) where daily visits were planned.

As soon as captured, samples were cleaned of parasites (direct collecting method). Collected parasites were conserved in alcohol 70 % and identified at Pasteur Institute of Algeria (vectorial systems ecology service) according to identification keys.

## 3. Results :

Identified parasites are either insects (fleas, lice or phlebotomes) or acarides (ticks or mites), with the majority of fleas (*Xenopsylla cheopis*).

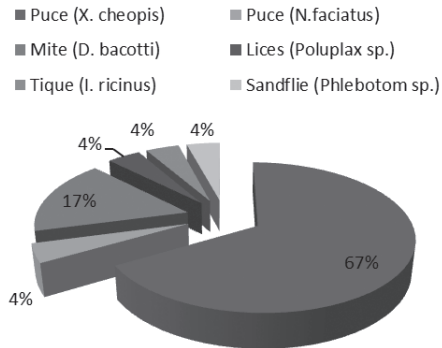


Fig 1. majority of ectoparasites.

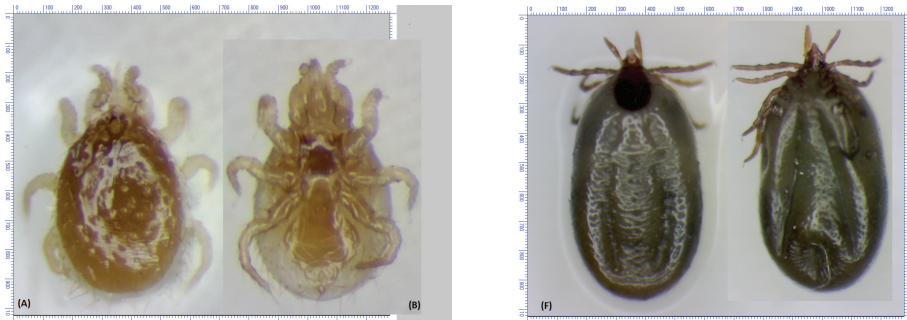
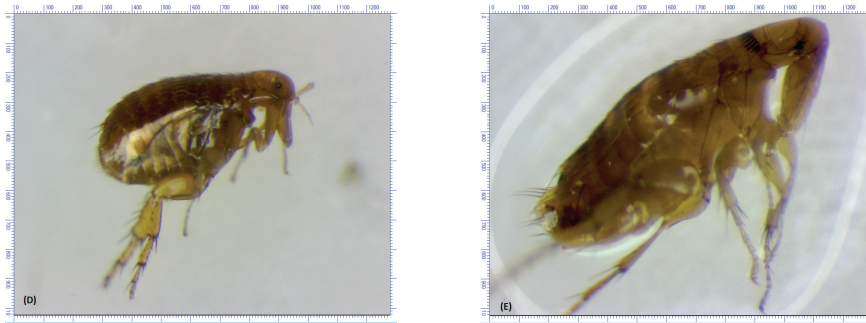
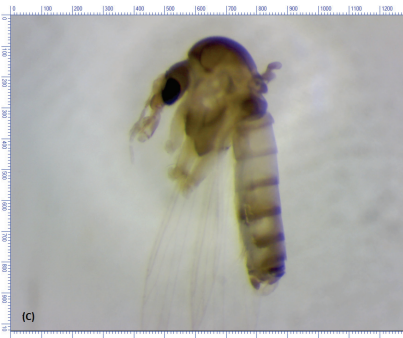


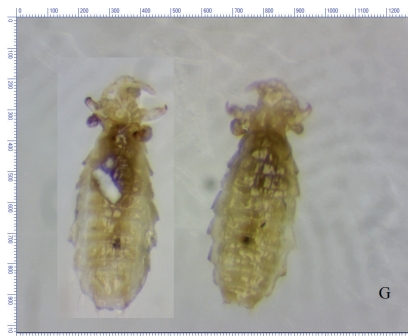
Fig 2. Aacarids : A et B Mite: *Dermanyssus bacoti* (A : dorsal side, B ventral side) ; F Tick : *Ixodes ricinus* (adult female)



**Fig 3.** Flea : D : *Xenopsylla cheopis* (female); E : *Nosopsylla* sp. (male)



**Fig 4.** C : Lice: *Flebotomus* sp.



**Fig 5.** G: lice (*Poloplax* sp)

#### 4. Discussion

These parasites are hematophagous arthropods that live on several domestic and wild animals. These parasites are themselves carriers of very harmful diseases [7]. Ticks are considered as vectors of pathogens (Bacterial, viral, parasitarian) the most important all over the world after mosquitoes. They can transmit several pathogen organisms like *Borrelia*, *Rickettsia*, *Bartonella*, *Coxiella*, *Ehrlichia*, et *Anaplasma*. Fleas and louses can also transmit some pathogens like *Bartonella*, *Rickettsia* and especially *Yersinia* for fleas.

In Algeria, a small number published works were realized on the role of pathogen, the biodiversity and the dynamic of ticks, fleas, none on louses of different mammals. The study done by Bitam *et al.* on [1] and [2], allowed the detection of *Rickettsia* by PCR, on fleas, on different ticks species (*Rhipicephalus sanguineus*, *Hyalomma marginatum*, *Rhipicephalus turanicus*) and on fleas (*Ctenocephalides canis*, *Xenopsylla cheopis*) from different mammals. In Bitam *et al.* [3] and [4] allowed the detection by PCR *Yersinia*, on fleas *Xenopsylla cheopis* captured on anthropile mammals, and *Bartonella* on puces *Xenopsylla cheopis*, *Archeopsylla erinacei* and *Leptopsylla segnis* collected on insectivores as well as rodents.

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