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Key to the Bat Fleas of Mongolia

Ingo Scheffler
University of Potsdam, ingo.scheffler@uni-potsdam.de

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Key to the bat fleas of Mongolia[1]

I. Scheffler

Abstract

Fleas of the family Ischnopsyllidae belong to the common bat ectoparasites. The current taxonomic status of these insects in Mongolia includes seven species for which we provide a determination key.

Keywords: ectoparasites, Ischnopsyllidae, chiroptera, taxonomy, Mongolia

Introduction

Previous comprehensive publications on the Mongolian flea fauna (SMITH 1967, 1987; KIEFER et al. 1984) and more recent studies of bat parasites (DOLCH et al. 2007, SCHEFFLER et al. 2010, 2012) reported the presence of several bat fleas (Ischnopsyllidae) from Mongolia. Members of this family are easily separated from other Siphonaptera by their preoral genal comb, composed of two broad flattened spines. Accurate species determination of bat fleas requires the use of different resources (IOFF & SKALON 1954, HOPKINS & ROTHSCHILD 1956; SKALON 1989) and some expertise. To study the Mongolian species, we adapted a key restricted to the area of Mongolia. Identifying bat fleas in the field is not possible. The best medium to preserve collected specimens is 70 % ethanol. The fleas in our studies were bleached in 10 % KOH (12-24h at 18° C), neutralized with a vinegar water solution, dehydrated with ethanol baths of increasing concentrations, short stored in xylene and embedded in Canada balsam for microscopy analysis.

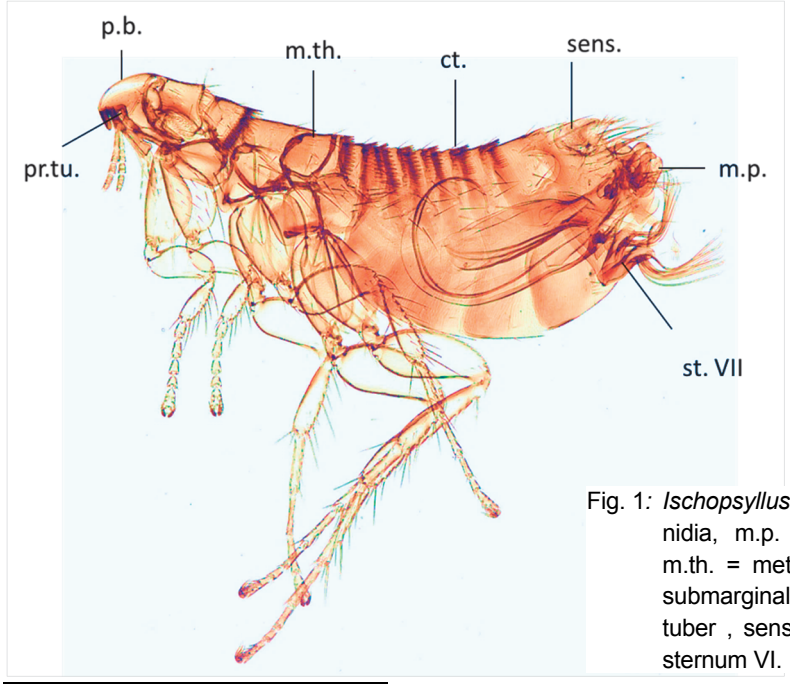


Fig. 1*: Ischopsyllus needhami* ♂: ct. = ctenidia, m.p. = movable process, m.th. = meta thorax, p.b. = pale submarginal band, pr.tu.= preoral tuber , sens. = sensilum, st.VII = sternum VI.

[1] Results of the Mongolian-German Biological expeditions since 1962, No. 340.

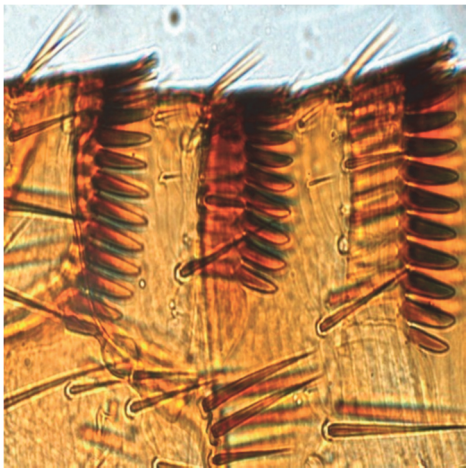


Fig. 2a: *I. hexactenus* ctenidia

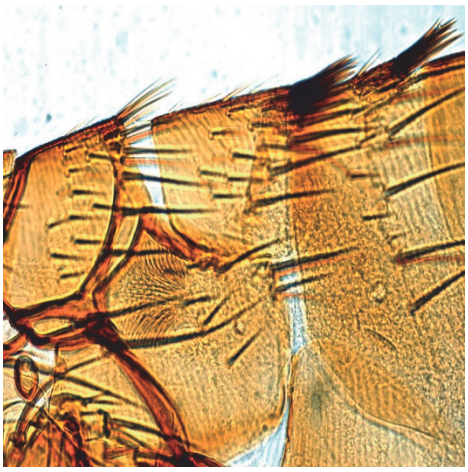


Fig. 2b: *M. trisellis* “false combs”

Fig. 3a: *M. trisellis*, head

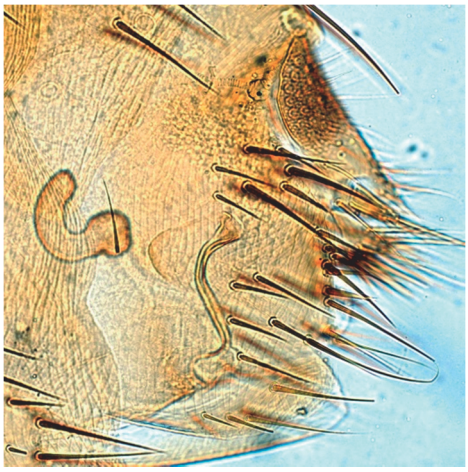


Fig. 3b: *M. trisellis*, ♀ abdomen

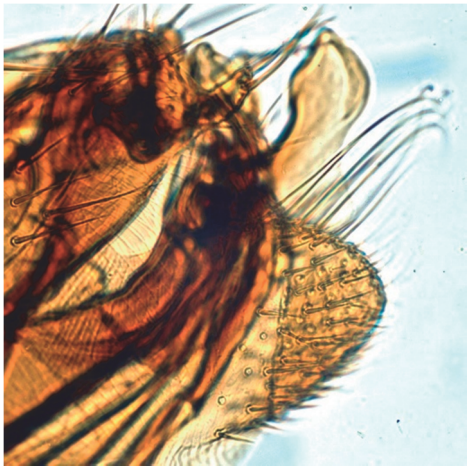


Fig. 3c: *M. trisellis*, ♂ abdomen

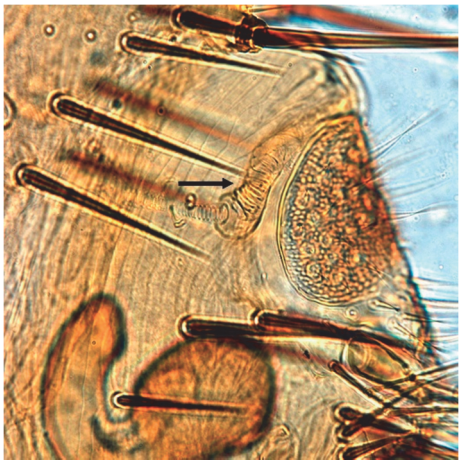


Fig. 4a: *I. hexactenus* ♀ spiracle of t.VII (→).

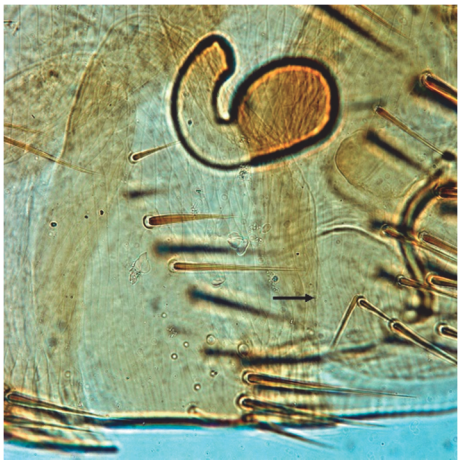


Fig. 4b: *I. hexactenus* ♀ st.VII posterior part (→).

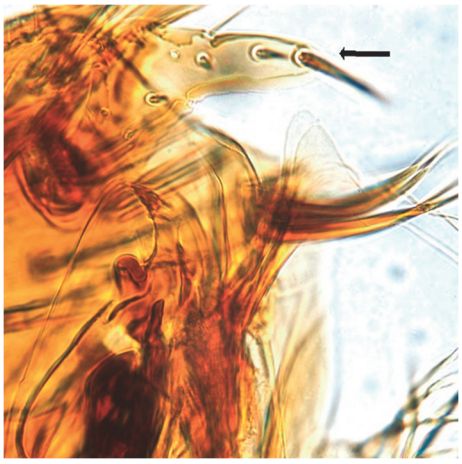


Fig. 4c: *I. hexactenus* ♂, movable process (top).

Fig. 5a: *I. hexactenus*, ♂crochet (← top) and st. VII.

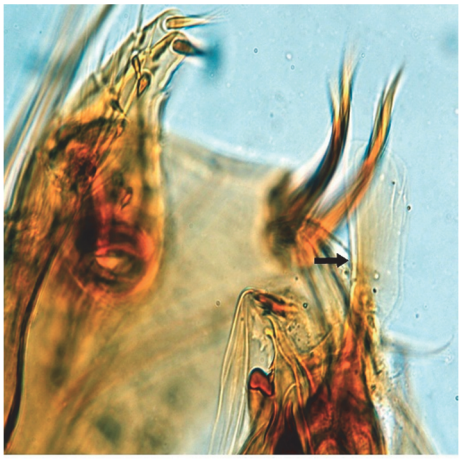
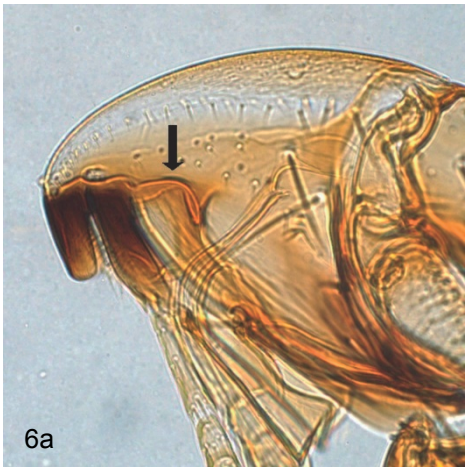
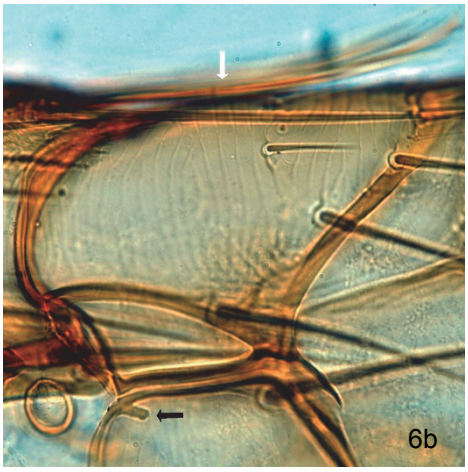


Fig. 5b: *I. petropolitanus* ♂ crochet (→) and movable process.

Fig. 5c: *I. petropolitanus* ♂ st. VIII.





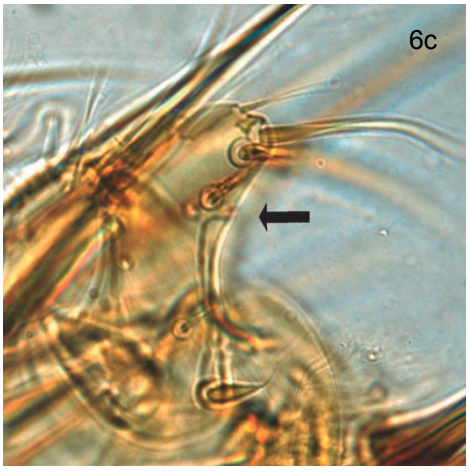


Fig. 6a: *I comans* head, preoral tuber (→).

Fig. 6b: *I comans* mesonotum and mesonotum with squamulum (←).

Fig. 6c: *I. comans* ♂, movable process.

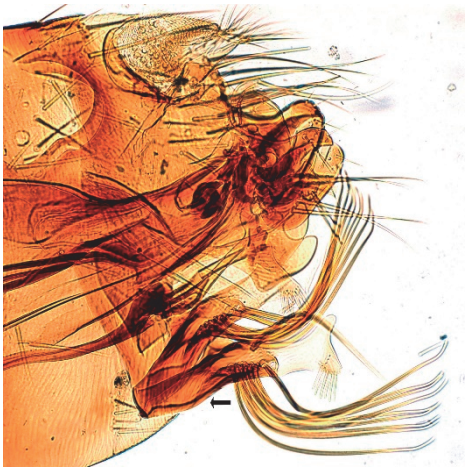


Fig. 7a: *I. needhami* ♂, abdomen st.VII (←).

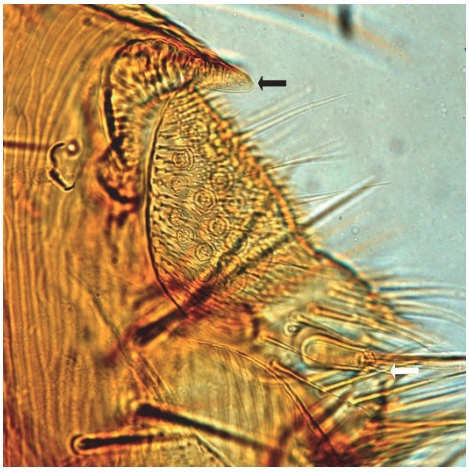


Fig. 7b: *I. needhami* ♀, spiracle of t.VIII (←, top) and anal stylet (white ←).

Key to the bat fleas of Mongolia

1. Abdomen with ctenidia (series of stout spines arranged in a row) on terga (fig. 2a), pale submarginal band of the frons small, its posterior margin faint 2

1* Abdomen with “false combs” (comb like arrangements of thickened bristles) on terga (fig. 2b), pale submarginal band of the frons broad, its posterior margin sharply defined (fig. 3a): ***Mydopsylla trisellis*** JORDAN, 1929 (fig. 3a-c). Typical host: *Myotis gracilis*, sometimes on *M. petax*

2. With 6 ctenidia on thorax and abdomen ……. 3

2* With 8 ctenidia on thorax and abdomen ……... 4

3. Spiracle of t. VIII in female elongated (fig. 4a), posterior part of st.VII slightly convex (fig. 4b). Crochet (an appendage of the male genital apparatus) triangular extended (fig. 5a), top of st.VIII more broadly, movable process posterior longer (fig 4c): ***Ischnopsyllus hexactenus*** (KOLENATI, 1856). On different hosts of the genera *Plecotus*, *Eptesicus,* and *Myotis*.

3* Spiracle of t. VIII in female shorter, posterior part of st.VII straight, crochet not broadening toward the apex (fig. 5b), top of st.VIII smaller (Fig. 5c), movable process posterior shorter (fig. 5b): ***Ischnopsyllus petropolitanus*** WAGNER, 1898. Host relationship unknown, in our collection only one specimen ex *Myotis “mystacinus*”.

4. Preoral tuber slender (fig. 6a), metasternum with squamulum (fig. 6b), long bristles on the posterior mesonotum, movable process of the male in fig. 6c.: ***Ischnopsyllus comans*** JORDAN & ROTHSCHILD, 1921. Distribution: China, Korea and Russian Far East (HOPKINS & ROTHSCHILD, 1956), with single captures on different bat species (*Hypsugo savii*, *Nyctalus noctula*). In our collection ex *Myotis “mystacinus*”.

4* all structures different ……..…… 5

5. Male: long and stout bent bristles on st.VIII (fig. 7a); female: spiracle of t.VIII large, anal stylet as in fig. 7b: ***Ischnopsyllus needhami*** HSÜ, 1935. Exclusive host in Mongolia: *Vespertilio sinensis.*

5* structures different ……..…….. 6

6. Ctenidia of metanotum with > 40 spines (fig. 8a); male: movable process large and triangular (fig. 8c), female: anal stylet only twice as long as wide (fig. 8b): ***Ischnopsyllus obscurus*** (WAGNER, 1898). Main host in Eurasia: *Vespertilio murinus*, in Mongolia in lower abundance also on *Eptesicus nilssonii*.

6* Ctenidia of metanotum with distinctly fewer less spines, male: sensilium with a long ventral appendix, movable process of the clasper as in fig. 9c, female: anal stylet slender (four times as long as broad), many bristles on st.VII (fig. 9a, b): ***Ischnopsyllus elongatus*** (CURTIS, 1832). Host: *Nyctalus noctula*.

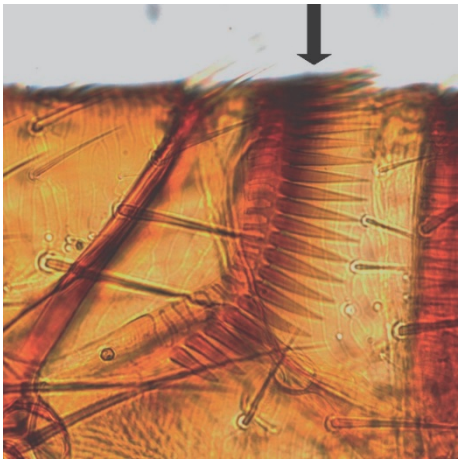


Fig. 8a: *I obscurus*: Spines on the metanotum.

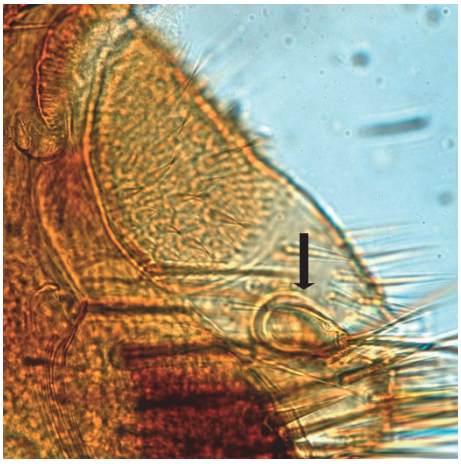


Fig. 8b*: I. obscurus*: ♀, anal stylet (→).

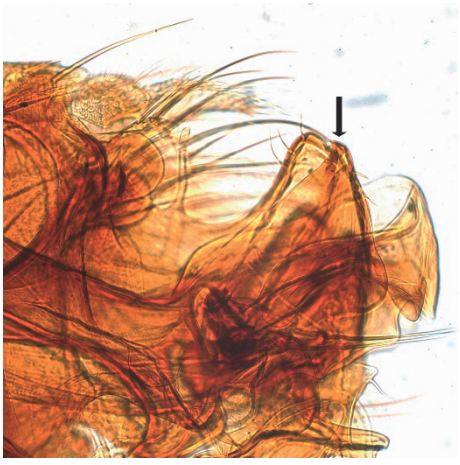


Fig. 8c: *I. obscurus* ♂, movable process (→).

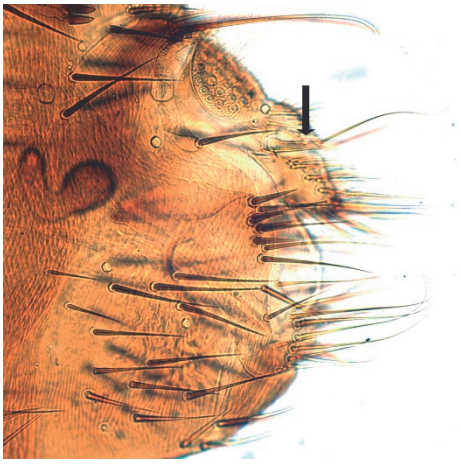


Fig. 9a: *I. elongatus* ♀ abdomen.

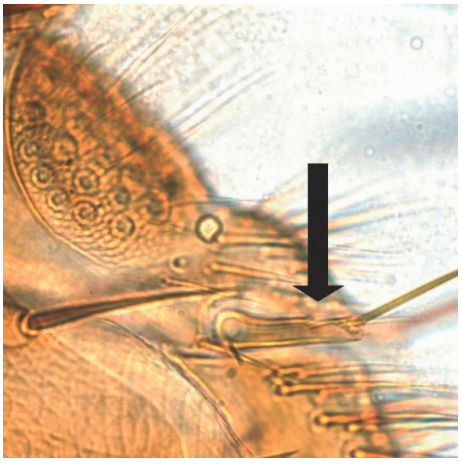


Fig. 9b: *I. elongatus* ♀ anal stylet (→).

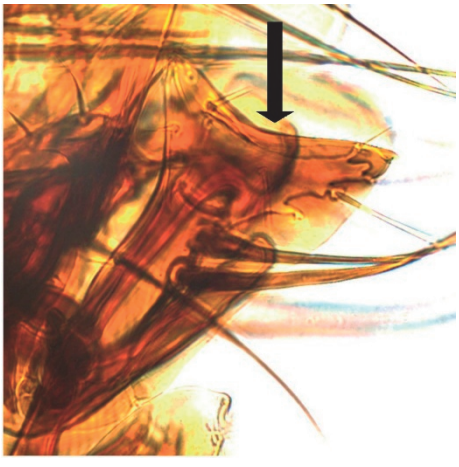


Fig. 9c: *I. elongatus* ♂, movable process (→).

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Address:

Dr. Ingo Scheffler
University of Potsdam
Institute of Biochemistry and Biology
Department of Zoology
Karl-Liebknecht-Straße 24-25, Potsdam-Golm
D-14476 (Germany)

e-mail: ingo.scheffler@uni-potsdam.de