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Short communication

Cheyletid mites associated with stored rice in Iran; the first record of *Chelacheles strabismus* from Iran and a key for their identification

J. Hajizadeh[1&*], J. Noei[1], L. Salehi[1] and H. Ostovan[2]
1. Department of Plant Protection, College of Agricultural Sciences, University of Guilan, P.O. Box 41635-1314, Rasht, Iran, 2. Department of Entomology, Islamic Azad University, Fars Science & Research Branch, P.O. Box 73715-181, Marvdasht, Iran.
*Corresponding author, E-mail: hajizadeh@guilan.ac.ir

چکیده

طی سال‌های ۱۳۸۶-۱۳۸۵ بررسی در خصوص شناسایی کنه‌های انباری برنج در استان گیلان انجام شد. در این بررسی شش گونه از کنه‌های خانواده‌ی Cheyletidae (Acari: Prostigmata) شامل *Cheletomorpha lepidopterorum*، *Acaropsellina sollers*، *Chelacheles strabismus*، *Cheyletus eruditus*، *Cheyletus carnifex* و *Cheyletus malaccensis* جمع‌آوری و شناسایی شدند. گونه‌ی *Chelacheles strabismus* Baker برای اولین‌بار از ایران گزارش می‌شود. کلیدی برای شناسایی گونه‌های کنه‌های خانواده Cheyletidae موجود در انبارهای برنج ارائه شده است.

The cosmopolitan mite family of Cheyletidae includes more than 360 predacious and parasitic species in 73 genera (Bochkov & Fain, 2001). Predacious species occur on plants, soil and stored products, as well as in vertebrate nests where they feed on mites or small insects (Volgin, 1987; Gerson *et al.*, 1999; Gerson *et al.*, 2003). Bochkov *et al*. (2005) reviewed the Iranian Cheyletidae and included a key to 18 genera and 28 species. Herein we report six species of cheyletid mites associated with stored rice in Guilan province, Iran, including the first report of *Chelacheles strabismus* Baker from Iran. A key for their identification is provided.

During summer season of 2005-2006 stored rice and decayed rice bran were collected from different cities of Guilan province. Mites were collected by placing stored rice and decayed rice bran (1 to 2 Kg per funnel) into a modified Berlese/Tullgren funnel or by examining the stored products under a dissecting microscope. The collected mites were cleared in lactophenol, mounted in Hoyer's medium on microscopic slides and examined under a Vanox phase contrast microscope. Voucher material for each species preserved as slide-mounted specimens, is deposited in the Department of Plant Protection, College of Agricultural Sciences, University of Guilan, Iran. The entire material was collected by the second author from stored rice and decayed rice bran in Guilan province. All measurements are given in micrometers (μm).

The identification key and related explanations for six cheyletid species are as follow:

Key to the species of cheyletid mites associated with stored rice in Guilan province

1. Eyes present..... 2
- Eyes absent .....(*Cheyletus* Latreille) 4
2. Dorsum of idiosoma without distinct separate shields, legs II and III separated by about body width ..... *Chelacheles strabismus* Baker
- Dorsum of idiosoma with distinct separate shields, legs II and III separated by less than body width 3
3. Humeral setae rod-like, barbed, subequal in length with lateral setae; hysteronotal shield with 6-7 pairs of setae; legs I longer than body..... *Cheletomorpha lepidopterorum* (Shaw)
- Humeral setae filiform, longer then lateral setae; hysteronotal shield with 5- pairs of setae; legs I shorter than body.....*Acaropsellina sollers* (Kuzin)
4. Dorsal shield with median setae; peritremes U-shaped; hysteronotal shield with one pair of median setae..... *Cheyletus carnifex* (Zachvatkin)
- Dorsal shield without median setae; peritremes M-shaped; hysteronotal shield without median setae..... 5
5. Femur IV with two setae; propodonotal shield less than 1.5 times longer than hysteronotal shield; length of seta *d2* less than distance between propodonotal and hysteronotal shields.....
.....*Cheyletus eruditus* (Schrank)
- Femur IV with one seta; propodonotal shield 1.5 times or longer than hysteronotal shield; length of seta *d2* almost subequal with distance between propodonotal and hysteronotal shields.....*Cheyletus malaccensis* Oudemans

***Cheletomorpha lepidopterorum* (Shaw)**

Material examined – 2 ♀, August 23, 2005, Sowmaehsara; 14 ♀, November 20, 2005, Masal; 5 ♀, July 1, 2005, Rasht; 5 ♀, July 1, 2005, Rasht (Kuchesfahan); 1 ♀, July 1, 2005, Rasht (Jafarabad); 4 ♀, September 21, 2006, Rudsar.

Remarks – The prey species associated with *C. lepidopterorum* were *Acarus siro* Linnaeus, *Aleuroglyphus ovatus* (Troupeau), *Suidasia nesbitti* Hughes, *Tyrophagus putrescentiae* (Schrank), *Chortoglyphus arcuatus* (Troupeau), *Glycyphagus destructor* (Schrank) and *G. privatus* Oudemans.

***Acaropsellina sollers* (Kuzin)**

Material examined – 1 ♀ and 1 ♂, September 21, 2006, Rudsar.

Remarks – The prey species associated with *A. sollers* was *G. destructor*.

***Chelacheles strabismus* Baker, 1958**

Material examined – 38 ♀, November 12, 2005, Anzali.

Remarks – Female body length 490 and width 150. Gnathosoma length 95. Peritremes arch-shaped with 7 pairs of impunctate segments. Dorsal setae of palpal femur serrate, length 37. Palpal claw with 3 teeth. Comb-like seta of palpal tarsus with 8 tines. Idiosoma length 360, four times longer than gnathosoma. Idiosoma length/width ratio almost 3: 1. Distance between bases of setae *2b* and *3b* more than body width. Propodonotum and hysteronotum have 7 pairs of setae. Propodonotal setae rod-like and serrate, length 15-20. Setae *c2* serrate, longer than other propodonotal setae, length 32. Hysteronotal setae rod-like and serrate. Setae *d2* length 32, almost with twice longer than hysteronotal setae. Setae *e1* and *e2* situated at the same level. Specimens examined have good match with other descriptions for the female of *C. strabismus* (Volgin, 1987; Bochkov & OConnor, 2004). The prey species associated with *C. strabismus* were *A. siro*, *A. ovatus*, *S. nesbitti*, *T. putrescentiae*, *C. arcuatus* and *G. destructor*. This is the first record of *C. strabismus* in Iran and third record of it in the world.

***Cheyletus eruditus* (Schrank)**

Material examined – 6 ♀, November 20, 2005, Masal; 9 ♀, August 23, 2005, Sowmaehsara; 1 ♀, November 12, 2005, Anzali.

Remarks – The prey species associated with *C. eruditus* were *A. siro*, *A. ovatus*, *S. nesbitti*, *T. putrescentiae*, *C. arcuatus* and *G. destructor*.

***Cheyletus carnifex* Zachvatkin**

Material examined – 1 ♀, August 23, 2005, Sowmaehsara; 1 ♀, November 12, 2005, Anzali.

Remarks – The prey species associated with *C. carnifex* were *A. siro*, *A. ovatus*, *S. nesbitti*, *T. putrescentiae*, *C. arcuatus* and *G. destructor*.

***Cheyletus malaccensis* Oudemans**

Material examined – 6 ♀, July 1, 2005, Rasht; 1 ♀, July 1, 2005, Rasht (Khomam); 5 ♀, July 1, 2005, Rasht (Jurkooyeh); 5 ♀, July 1, 2005, Rasht (Kuchesfahan); 13 ♀ and 3 ♂, November 20, 2005, Masal; 3 ♀ and 2 ♂, November 10, 2005, Rezvanshahr; 4 ♀, August 30,

2005, Astaneh; 17 ♀, November 12, 2005, Anzali; 2 ♀, July 1, 2005, Rasht (Jafarabad); 19 ♀, August 23, 2005, Sowmaehsara; 8 ♀, August 24, 2005, Fuman.

Remarks – The *C. malaccensis* was the most abundant species in Guilan province and its associated prey species were *A. siro*, *A. ovatus*, *S. nesbitti*, *C. arcuatus* and *G. destructor*.

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