

Short communication

New records of the genus and species *Regenpolipus madrasensis* (Acari: Heterostigmata: Podapolipidae), the ectoparasite of carabid beetles from Iran

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چکیده

پس از جمع‌آوری تعدادی سوسک با نام علمی *Anthia sexguttata* (Fab.) (Col.; Carabidae) در اطراف شهرستان تایباد واقع در استان خراسان رضوی، کلنی کنه‌های پارازیت خانواده‌ی Podapolipidae (Acari; Heterostigmata) که زیر بالپوش‌های یکی از سوسک‌های میزبان بود، به نام *Regenpolipus madrasensis* Husband & Ramaraju, 2006 شناسایی شد. این جنس و گونه برای اولین بار از ایران گزارش می‌شود.

Mites of the family Podapolipidae are highly specialized ecto- and endoparasites of different insect orders including Blattaria, Hymenoptera, Orthoptera, Hemiptera and particularly Coleoptera (Husband, 2000). Among 30 genera of the family, the following four genera exclusively parasitize ground beetles of the family Carabidae: *Eutarsopolipus* Berlese, 1913 (55 species); *Dorsipes* Regenfuss, 1968 (18 species); *Regenpolipus* Husband, 1986 (5 species) and *Ovacarus* Stannard & Vaishampayan, 1971 (3 species). Only the genus *Ovacarus* is the endoparasite of the ground beetles and settles in their reproductive tracts. The other three genera are ectoparasites under the elytra of carabid beetles.

The mites of the genera *Eutarsopolipus*, *Dorsipes* and *Ovacarus* have been previously recorded from Iran (Hajiqanbar *et al.*, 2007). During a collecting trip, the second author, discovered a large colony of podapolipid mites under the elytra of a giant carabid beetle (ca. 4 cm long) (*Anthia sexguttata* (Fabricius)) in a Manna (*Tamarix* sp.) grove, in the vicinity of Taibad, Khorasan-e Razawi province on 30 April 2008. The specimens are deposited in the Acarological Collection, Department of Entomology, Faculty of Agriculture, Tarbiat Modares University, Tehran, Iran.

The mites were later identified as *Regenpolipus madrasensis* Husband & Ramaraju, 2006 which is a new record for the arthropod fauna of Iran. All instars of the mite including egg, larval female, male and adult female were found on tergites (under elytra) of the carabid beetle host. It is also the second report of the *R. madrasensis* in the world, as it was originally described from Madras (India) on the same carabid species, *A. sexguttata*.

Currently, the genus *Regenpolipus* consists of five described species. Husband (1986) erected the genus with the type species *R. namibius* collected on *Thermophilum decemguttatum* (Fab.) in South Africa. After the description of *R. madrasensis*, Husband *et al.* (2006) included two more species: *R. anthiae*, on *Anthia* sp., and *R. capensis*, on *Th. decemguttatum* from Botswana and South Africa, respectively. The latest described species *R. hexastichus* Husband, 2007 was collected from Kenya and associated with the carabid species of *Anthia hexastichum* Gerstaecker.

In 2005, Lorenz treated *Thermophilum* as a subgenus of *Anthia* (Shpeley, personal communication) and based on the available records in addition to recent findings in Iran, it is believed that the mites of the genus *Regenpolipus* are specialized on the carabid genus of *Anthia*. The beetles of the genus *Anthia* are large, flightless, ground dwelling, predaceous and predominantly diurnal insects and distributed across North Africa, Middle East and India. (Husband *et al.*, 2006).

The genus *Regenpolipus* is readily distinguished from other genera parasitizing carabid beetles by the following features:

Male – Bearing three pairs of legs (in contrast to *Ovacarus* and *Dorsipes* with four pairs of legs); genital capsule middorsal (in contrast to *Eutarsopolipus* with posterior genital capsule).

Adult female – Setae l' , v' and v'' on tibiae II and III not spine-like (spine-like in *Ovacarus*); femur I without seta (with seta in *Dorsipes* and *Eutarsopolipus*).

Larval female – Setae sc_2 thin, longer than distance between setae sc_2 (in contrast to *Ovacarus* with setae sc_2 thick, shorter than distance between setae sc_2); femur I without seta (with seta in *Dorsipes* and *Eutarsopolipus*).

The species *R. madrasensis* can be identified by combination of the characters below: all instars bearing two setae on genua II and III each (*R. hexastichus* with one and *R. namibius* with no seta on each genua II and III); larval and adult females prodorsal setae v_1 not microseta (v_1 microseta in *R. capensis*). Larval and adult females of *R. madrasensis* have coxal setae $3b$ almost two times longer in *R. anthiae*. Adult females of *R. madrasensis* also differ from *R. anthiae* by shorter setae d and v_1 (longer in *R. anthiae*).

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References

- Hajiqanbar, H., Husband, R. W., Kamali, K., Saboori, A. & Kamali, H.** (2007) *Ovacarus longisetosus*, n. sp. (Acari: Podapolipidae) from *Amara (Paracelia) saxicola* Zimm. (Coleoptera: Carabidae) and new records of *Coccipolipus*, *Dorsipes*, *Eutarsopolipus* and *Tarsopolipus* from Iran. *International Journal of Acarology* 33, 241-244.
- Husband, R. W.** (1986) New taxa of Podapolipidae (Acarina) from S. African Coleoptera: result of the Namaqualand-Namibia expedition of the King Leopold III foundation for the exploration and protection of nature (1980). *Bulletin De L'institut Royal Des Sciences Naturelles De Belgique* 56, 5-14.
- Husband, R. W.** (2000) Two new species of *Dorsipes* (Acari: Podapolipidae) from *Tefflus zebulianus reichardi* Zimm. (Coleoptera: Carabidae) from the Democratic Republic of Congo including a key to *Dorsipes* species. *Annals of the Entomological Society of America* 93, 7-14.
- Husband, R. W.** (2007) *Regenpolipus hexastichus* n. sp. (Acari: Podapolipidae), parasite of *Anthia hexastichum* Gerstaecker (Coleoptera: Carabidae) from Kenya. *International Journal of Acarology* 33, 327-332.
- Husband, R. W., Camerik, A. M. & Stals, R.** (2006) Two new species of *Regenpolipus* and distribution of *Eutarsopolipus lukoschusi* and *Regenpolipus* species (Acari: Podapolipidae), ectoparasite of *Thermophilum decemguttatum* and *Anthia* species (Coleoptera: Carabidae) in South Africa, Botswana and Namibia. *International Journal of Acarology* 32, 361-370.
- Husband, R. W. & Ramaraju, K.** (2006) A new species of *Regenpolipus* (Acari: Podapolipidae) from *Anthia sexguttata* (Coleoptera: Carabidae) from Southern India and a pictorial key to genera of Podapolipidae from Carabidae. *International Journal of Acarology* 32, 153-161.

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