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Editorial Open Access

Remarks on the Taxonomy of Terrestrial Parasitengona (Acari: Prostigmata)

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Editorial

Terrestrial Parasitengona are so beautiful and large mites, and includes superfamilies Amphotrombioidea, Allotanaupodoidea, Calyptostomatoidea, Chyzeroidea, Erythraeoidea, Tanaupodoidea, Trombiculoidea, Trombidioidea and Yurebilloidea [1].These mites are parasites in their larval stage and predators in their post-larval stages on a variety of arthropods, among which are important pest species [2,3].

They have seven stages in their life cycle including egg, prelarva, larva, protonymph, deutonymph, tritonymph and adult which prelarva, protonymph and tritonymph are calyptostatic instars and larva, deutonymph and adult are active instars. Heteromorphic larva is completely different from post-larval forms and it makes difficulty in their taxonomy because larva and post-larval stages may be described as separate species. Most species were described based on post-larval forms by early workers whereas many species were described based on larva in recent decades because chaetotaxy of larva is more reliable than hypertichous post-larval forms. Also, some species were described based on both larval and post-larval forms. In some cases, researches reared them in the laboratory and obtained other active stages e.g., Zhang and Saboori [4], Wohltmann [5], Mąkol and Sevsay [6,7]. But experimental rearing for some species may be difficult or impossible especially when you don't know what they eat or larval host is not known and larva was collected before attaching to a host.

Molecular study helped to solve this problem because DNA barcoding of larva of a species has the same pattern of its post-larval forms. Stålstedt et al. [8] used 28S sequence data and experimental rearing for three species of Erythraeus (Erythraeidae) and found synonyms for E. phalangoides (De Geer, 1778), E. cinereus (Dugès, 1834), and E. regalis (C.L. Koch, 1837). It is a good progress to solve this kind of problem in taxonomy of terrestrial Parasitengona.

Another problem is characters, which were used in separation of species as well as mistake in the descriptions. In some cases characters which considered with taxonomic value (because different numbers were counted for each species mistakenly) are unique in all species of a genus, for example, number of normal setae on leg segments of all species of Leptus (Erythraeidae) are constant with − 1 seta as range only for tarsi. Southcott [9,10,11] probably knew it and for this reason he did not consider them for comparison of species or for the key to species. It is possible to be confirmed after studying about 250 type species of Leptus in different parts of the world, which needs fund and time. In addition, metric and meristic data are not sufficient for separation of species for some genera. Shape of scutum in some species of Leptus is different but their measurements are in the same range and cannot show their differences or number of setae between coxae II-III ranged from 5 to 36 in different specimens collected around a city. It is not clear that it is a range for one species or different species were collected when other characters have overlap. For shape of scutum, geometric morphometric study may solve this problem and for range of number of setae, a molecular study can help.

As a conclusion, a combination of different methods is needed to solve problems in the taxonomy of these mites:

1. During sampling some specimens were put in absolute alcohol for molecular study.
2. Type specimens should be studied and when needed, a redescription for each species was presented.
3. During sampling some specimens were collected alive for experimental rearing.
4. Good mounting, precise description and drawing to use geometric morphometric method and to avoid making new mistakes in the descriptions.
5. Resampling of known species for molecular study is recommended. For two first cases and to preserve biodiversity, the governments should fund taxonomists.

References

1. Zhang ZQ, Fan QH, Pesic V, Smit H, Bochkov AV, et al. (2011) Order Trombidiformes Reuter, 1909. In: Zhang ZQ (ed.) Animal biodiversity: an outline of higher-level classification and survey of taxonomic richness. Zootaxa 3148: 129-138.
2. Robaux P (1974) Recherches sur le developpment et la biologie des acariens 'Thrombidiidae'. Memoires du Museum National d'Histoire Naturelle (Serie A Zoologie) 85: 1-186.
3. Welbourn WC (1983) Potential use of trombidioid and erythraeoid mites as biological control agents of insect pests. In: Hoy MA, Cunningham GL, Knutson L (eds.) Biological control of pests by mites, University of California Press/ANR Publishing Co., Oakland, pp: 89-107.
4. Zhang ZQ, Saboori A (1996) Descriptions of larva, deutonymph and adult of Trombidium southcotti sp. nov. (Acari: Trombidiidae) from Iran. Syst Appl Acarol 1: 157-165.
5. Wohltmann A (2010) Notes on the taxonomy and biology of Smarididae (Acari: Prostigmata: Parasitengona). Annales Zoologici 60: 355-381.
6. Mąkol J, Sevsay S (2011) Notes on the genus Dolichothrombium (Acari: Prostigmata: Trombidiidae) with description of a new species. Zootaxa 2971: 1-16.
7. Mąkol J, Sevsay S (2015) Abalakeus Southcott, 1994 is a junior synonym of "plume-footed" Eatoniana Cambridge, 1898 (Trombidiformes, Erythraeidae)-evidence from experimental rearing. Zootaxa 3918: 092–112.
8. Stålstedt J, Wohltmann A, Bergsten J, Mąkol J (2016) Towards resolving the double classification in Erythraeus (Actinotrichida: Erythraeidae). Organisms Diversity & Evolution, pp: 1-30.

9. Southcott RV (1991) Descriptions of larval Leptus (Acarina: Erythraeidae) ectoparasitic on Australian Diptera, and two earlier described Australian larvae. Invertebrate Taxonomy 5: 717-763.

10. Southcott RV (1992) Revision of the larvae of Leptus Latreille (Acarina, Erythraeidae) of Europe and North America, with descriptions of post-larval instars. Zool J Linn Soc 105: 1-153.

11. Southcott RV (1999) Larvae of Leptus (Acarina: Erythraeidae), free-living or ectoparasitic on arachnids and lower insects of Australia and Papua New Guinea, with descriptions of reared post-larval instars. Zool J Linn Soc 127: 113-276.