

Records of *Dermestes* Linnaeus, 1758 (Coleoptera: Dermestidae) of forensic interest, from the province of Castilla, Piura (Peru)

Kepler ANDRADE-HERRERA¹ & Jiří HÁVA²

¹Department of Entomology, Research Center in Tropical Biology and Conservation (CINBIOTYC),
Cal. Nestor Martos Mza. E Lote. 16 A.H. Almirante Miguel Grau II Etapa Piura, Piura, Perú
e-mail: keplerah@gmail.com

²Department of Forest Protection and Entomology, Faculty of Forestry and Wood Sciences, Czech
University of Life Sciences. Kamýcká 129, CZ-165 00, Prague 6 - Suchbát, Czech Republic
e-mail: jh.dermestidae@volny.cz

Forensic, faunistics, Coleoptera, Dermestidae, *Dermestes*, Peru

Abstract. Due to the forensic importance of *Dermestes*, which allows to determine death times or post mortem interval and the lack of knowledge of this subfamily in a dry forest, this contribution is presented to provide the first records of *Dermestes* in the province of Castilla, in Piura, northern Peru. The material used was collected over the year 2017, in carcasses of guinea pigs in states of active decomposition, advanced and dry remains; 3 species were registered: *Dermestes ater*, *D. frischii* and *D. maculatus*, of which an illustrated key is included to differentiate them one from another.

Resumen. Debido a la importancia forense de *Dermestes*, que permite determinar tiempos de muerte o Intervalo post mortem; y a la falta de conocimiento de esta subfamilia en un bosque seco, es que se realiza esta contribución, cuyo objetivo es entregar los primeros registros de *Dermestes* en la provincia de Castilla, en Piura, al norte del Perú. El material usado fue colectado durante el año 2017, en carcasas de cobayos en estados de descomposición activa, avanzada y restos secos; registrándose 3 especies: *Dermestes ater*, *D. frischii* y *D. maculatus*, de las cuales se incluye una clave ilustrada para diferenciarlas.

INTRODUCTION

Dermestinae (Coleoptera: Dermestidae) is a group of coleoptera distributed worldwide. This subfamily was established by Latreille (1807) with *Dermestes* Linnaeus, 1758 as the type genus (Háva, 2015). This subfamily is important because of its ghoulish habits (Zanetti et al., 2015), which allow the recycling of corpses, which are the main food of larvae and adults (Charabidze et al., 2013) (Gines et al., 2015).

To date, 5 genera and 94 species of this subfamily have been known in the world (Háva, 2015) (Zahrádník & Háva, 2014), of which 7 species have been registered in Peru (Háva & Chaboo, 2015) (Ciro et al., 2008).

The Dermestinae subfamily is of major forensic importance (Almeida & Mise, 2009), especially species of the genus *Dermestes* (Charabidze et al., 2013), due to the fact that its presence on corpses in states of dry remains (Santos, 2014), allow to determine the times of death (Post mortem interval) (Sharma et al., 2015).

Data on this genus and its species, in a dry forest ecosystem such as the department of Piura in northern Peru, have not yet been known; for this reason, we made the present contribution, which aims at providing the first records of *Dermestes* of forensic interest in the province of Castilla, Piura (Peru).

MATERIAL AND METHODS

The material used in the present work was collected over the year 2017, in carcasses of guinea pigs in states of active and advanced decomposition (adults) and dry remains (larvae and adults), in the province of Castilla in Piura, northern Peru.

The taxonomic determination of the genus and species was implemented by using the works of Háva (2004), Háva & Kadej (2006), Ciro et al. (2008), Almeida & Mise (2009), Zahradník & Háva (2014) and Háva (2015). The material was assembled, labelled and deposited in the collection of the Research Center in Tropical Biology and Conservation (CINBIOTYC).

Due to the forensic importance of the genus, a key is included to differentiate the species present in the province of Castilla, Piura.

RESULTS

Subfamily: Dermestinae Latreille, 1807

Tribe: Dermestini Latreille, 1807

Genus: *Dermestes* Linnaeus, 1758

***Dermestes (Dermestes) ater* DeGeer, 1774**

Material examined: Piura Region: Province of Piura, Castilla District, Caserio Miraflores (5°10'0.51''S - 80°36'51.27''O), 32 msnm, VI-VIII-2017, 4 individuals, 7-10 mm length, K. Andrade [collector].

***Dermestes (Dermestinus) frischii* Kugellan, 1792**

Material examined: Piura Region: Province of Piura, Castilla District, Caserio Miraflores (5°10'0.51''S - 80°36'51.27''O), 32 msnm, VII-VIII-2017, 6 individuals, 6-10 mm length, K. Andrade [collector].

***Dermestes (Dermestinus) maculatus* DeGeer, 1774**

Material examined: Piura Region: Province of Piura, Castilla District, Caserio Miraflores (5°10'0.51''S - 80°36'51.27''O), 32 msnm, VI-VIII-2017, 10 individuals, 6-10 mm length, K. Andrade [collector].

KEY FOR DERMESTINAE SPECIES IN CASTILLA, PIURA

- 1 Presence of ocellus on the forehead..... other subfamilies
Absence of ocellus on the forehead..... Dermestinae Latreille, 1807 (2)
- 2 Compound eyes and present scutellum..... other tribes
Pro-sternal processes strongly reduced and not reaching between coxae.....
..... Dermestini: genus *Dermestes* Linnaeus, 1758 (3)
- 3 Final part of the serrated elytra, with a small terminal spine (Fig. 1); abdominal ventral part, with pattern of lateral dark spots, and in the lower end dark spot in the form of "inverted trapezoid" (Fig. 2); Approximate length: 6-10 mm *Dermestes maculatus* DeGeer, 1774
End of the entire elytron, without presence of terminal spine..... (4)
- 4 Abdominal ventral part, with pattern of dark spots in the middle zone (on each side of the midline of the body) and lateral (Fig. 3); Approximate length: 7-10 mm *Dermestes ater* DeGeer, 1774
Abdominal ventral part, with pattern of lateral dark spots, and in the lower end dark spot in the shape of "M" (Fig. 4); Approximate length: 6-10 mm *Dermestes frischii* Kugellan, 1792



Fig. 1. Apical part of elytra, with small terminal spines. *Dermestes maculatus*.



Figs. 2-4. Ventral view of abdomen: 2- *Dermestes maculatus*; 3- *Dermestes ater*; 4- *Dermestes frischii*.

DISCUSSION

The corpses represent a trophic and reproductive resource or a refuge for a variety of animals, such as insects, which are a representative component of the decomposition process (Zanetti et al., 2015), among them, coleoptera (Magaña, 2001), predominating among families, Dermestidae (Almeida & Mise, 2009).

The species of the genus *Dermestes* have forensic importance (Charabidze et al., 2013), because they feed on corpses in states of dry remains (Santos, 2014), they allow to determine death times (Post mortem interval) (Sharma et al., 2015), this has been proven on this study, in carcasses of guinea pigs in states of dry remains (larvae and adults) and active and advanced decomposition (adults), as indicated by Ciro et al. (2008).

For the north of Peru, three species of the *Dermestes* genus have been registered: Gines et al. (2015) registered on Chiclayo, in the department of Lambayeque, *Dermestes maculatus* and *Dermestes frischii*, and Sarmiento & Padilla (2014) they register *Dermestes* sp. and *Dermestes frischii* for Trujillo, in the department of La Libertad; which matches with the registers made on this work with respect to northern Peru, adding one more species: *Dermestes ater*. Even so, the species registered here offer the first report from the province of Castilla, in Piura.

CONCLUSION

Three species of the *Dermestes* genus were registered: *D. ater*, *D. frischii* and *D. maculatus*, in the province of Castilla, in Piura (Peru).

ACKNOWLEDGEMENTS. The authors are indebted to Eduardo Avalos Palacios for the translation of the manuscript into the English language.

REFERENCES

- ALMEIDA L. M. & MISE K. M. 2009: Diagnosis and key of the main families and species of South American Coleoptera of forensic importance. *Revista Brasileira de Entomologia* 53(2): 227-244.
- CHARABIDZE D., COLARD T., VINCENT B., PASQUERAULT T. & HEDOUIN V. 2013: Involvement of larder beetles (Coleoptera: Dermestidae) on human cadavers: a review of 81 forensic cases. *International Journal of Legal Medicine* 128(6): 1021-1030. <https://doi.org/10.1007/s00414-013-0945-1>
- CIRO W., ANTEPARRA M. & HERMANN A. 2008: Dermestidae (Coleoptera) en el Perú: revisión y nuevos registros. *Revista Peruana de Biología* 15(1): 1520.
- GINES E., ALCÁNTARA M., CALDERÓN C., INFANTE C. & VILLACORTA M. 2015: Entomofauna de interés forense asociada a restos cadavéricos de cerdos (*Sus scrofa* L.), expuestos a condiciones de campo en Lambayeque - Perú. *Revista Peruana de Entomología* 50(1): 1-11.
- HÁVA J. 2004: World keys to the genera and subgenera of Dermestidae (Coleoptera), with descriptions, nomenclature and distributional records. *Acta Musei Nationalis Pragae, Series B, Natural History*, 60(3-4): 149-164.
- HÁVA J. 2015: *World Catalogue of Insects. Volume 13. Dermestidae (Coleoptera)*. (Brill, Ed.). Leiden/Boston, 419 pp.
- HÁVA J. & CHABOO C. S. 2015: Beetles (Coleoptera) of Peru: A Survey of the Families. Nosodendridae Erichson, 1846 (Derodontoidea), Dermestidae Latreille, 1804, Bostrichidae Latreille, 1802 (Bostrichoidea). *Journal of the Kansas Entomological Society* 88(3): 404-407. <https://doi.org/10.2317/kent-88-03-404-407.1>
- HÁVA J. & KADEJ M. 2006: New data on the occurrence of Dermestidae (Coleoptera) from Hispaniola. Part 1. genus *Dermestes*. *Polish Journal of Entomology* 75: 375-377.
- MAGAÑA C. 2001: La entomología forense y su aplicación a la medicina legal. Data de muerte. *Boletín de la Sociedad Entomología Aragonesa* 7(28): 49-57.
- SANTOS W. 2014: Papel dos besouros (Insecta, Coleoptera) na Entomologia Forense. *Revista Brasileira de Criminalística* 3(2): 36-40.
- SARMIENTO V. & PADILLA S. 2014: Sucesión entomológica asociada a procesos de descomposición en cadáveres de *Oryctolagus cuniculus* en condiciones de campo, Trujillo, La Libertad, 2014. *Sciendo* 17(1): 134-140.
- SHARMA R., KUMAR R. & GAUR J. 2015: Various methods for the estimation of the post mortem interval from Calliphoridae: A review. *Egyptian Journal of Forensic Sciences* 5(1): 1-12. <https://doi.org/10.1016/j.ejfs.2013.04.002>
- ZAHRADNÍK P. & HÁVA J. 2014: Catalogue of the world genera and subgenera of the superfamilies Derodontoidea and Bostrichoidea (Coleoptera: Derodontiformia, Bostrichiformia). *Zootaxa* 3754(4): 301-352.
- ZANETTI N. I., VISCIARELLI E. C. & CENTENO N. D. 2015: Trophic roles of scavenger beetles in relation to decomposition stages and seasons. *Revista Brasileira de Entomologia* 59: 132-137. <https://doi.org/10.1016/j.rbe.2015.03.009>

Published: 28. 11. 2018