

First record of *Pachycrepoideus vindemmiae* (Rondani, 1875) (Hymenoptera, Pteromalidae) from Malta

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Members of the hymenopterous family Pteromalidae exhibit a large variety of life-histories ranging from solitary and gregarious species, ectoparasitoids and endoparasitoids, koinobionts and idiobionts, primary and secondary parasitoids and even predators. Most species are parasitoids of the larvae and pupae of holometabolous insects including Diptera, Coleoptera, Hymenoptera, Lepidoptera and Siphonaptera often attacking hosts concealed in plant tissue, such as wood-borers, stem- and leaf-miners, gall-formers and others. Other species prey on the eggs of various insects whereas a few pteromalids are obligate hyperparasitoids, attacking aphelinids and aphidiine braconids parasitizing aphids.

The family currently accommodates over 3,500 described species in 588 genera placed in 31 subfamilies (NOYES, 2016). A pteromalid wasp that emerged from puparia of *Drosophila* spp. proved to be a new record for the Maltese Islands. Some information on the species follows.

Pachycrepoideus vindemmiae (Rondani, 1875)

Material examined: Malta, Zejtun, 13.x.2013, 11 ♀♀, collected from decaying house organic matter infested with *Drosophila* spp., leg. D. Mifsud. Material is deposited in the private collections of David Mifsud (Malta) and Richard Askew (France).

Notes: *Pachycrepoideus vindemmiae* is a solitary, generalist primary and secondary ectoparasitoid of many dipteran groups (ROSSI STACCONI *et al.*, 2013) including the families Anthomyiidae, Calliphoridae, Drosophilidae, Muscidae, Sarcophagidae, Tachinidae and Tephritidae. Hence, the species has been used as a means of biological control for pest species (PICKENS *et al.*, 1975; THOMPSON & HAGEN, 1999). It is cosmopolitan in distribution.

The above record of *P. vindemmiae* from Malta emerged from puparia of *Drosophila* spp. In fact, most likely they emerged from *Drosophila busckii* (Cocquillet, 1901) and/or *D. buzzatii* (Patterson and Wheeler, 1942) and/or *D. hydei* (Sturtevant, 1921). These were the most abundant fruitflies in the decaying house organic sample in Zejtun. Other fruitflies which also emerged from the mentioned sample included *Drosophila simulans* (Sturtevant, 1919), *Scaptomyza pallida* (Zetterstedt, 1847) and *Zaprionus indianus* Gupta, 1970 but these were represented by single captures (EBEJER, 2015).

Pachycrepoides vindemmiae, like other pteromalids follows Hamilton's model of sex ratio such that parents generally produce more females than males (LUCK *et al.*, 1999) since reproduction is arrhenotokous (males are derived from unfertilised eggs) and there is gregarious development of siblings due to host distribution (HAMILTON, 1967). Thus, mated females will produce mostly females while unmated females will produce only males (CHEN *et al.*, 2015).

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REFERENCES

- CHEN, W., HE, Z., JI, X.L., TANG, S.T. & HU, H.Y. (2015). Hyperparasitism in a generalist ectoparasitic pupal parasitoid, *Pachycrepoideus vindemmiae* (Hymenoptera: Pteromalidae), on its own conspecifics: When the lack of resource lead to cannibalism. *PLoS ONE*, 10(4): e0124305. <http://doi.org/10.1371/journal.pone.0124305>.
- EBEJER, M.J. (2015) A short note on additional records of fruitfly (Diptera, Drosophilidae) from Malta. *Bulletin of the Entomological Society of Malta*, 7: 143.
- HAMILTON, W.D. (1967). Extraordinary Sex Ratios. *Science*, 156 (3774): 477–488. <http://doi.org/10.1126/science.156.3774.477>.
- LUCK, R.F., NUNNEY, L., & STOUTHAMER, R. (1999) Sex ratio and quality in the culturing of parasitic hymenoptera: a genetic and evolutionary perspective (Pp. 653–671). In: BELLOWS, T.S. & FISHER, T.W. [eds.], *Handbook of Biological Control: Principles and Applications*. Academic Press, San Diego, New York. 1046 pp.
- NOYES, J.S. (2016) Universal Chalcidoidea Database. World Wide Web electronic publication. <http://www.nhm.ac.uk/chalcidoids> (accessed January 2016).
- PICKENS, L.G., MILLER, R.W. & CENTALA, M.M. (1975) Biology, population dynamics, and host finding efficiency of *Pachycrepoideus vindemmiae* in a box stall and a poultry house. *Environmental Entomology*, 4: 975–979.
- ROSSI STACCONI, M.V., GRASSI, A., DALTON, D.T., MILLER, B., OUANTAR, M., LONI, A., IORIATTI, C., WALTON, V.M. & ANFORA, G. (2013) First field records of *Pachycrepoideus vindemmiae* (Rondani) (Hymenoptera Pteromalidae) as a parasitoid of *Drosophila suzukii* in European and Oregon small fruit production areas. *Entomologia*, 1(1), 11–16.
- THOMPSON, S.N. & HAGEN, K.S. (1999) Nutrition of entomophagous insects and other arthropods (Pp. 594–651). In: BELLOWS, T.S. & FISHER, T.W. [eds.], *Handbook of Biological Control: Principles and Applications*. Academic Press, San Diego, New York. 1046 pp.

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