

**TWO NEW RECORDS OF INQUILINE WASP OF THE
GENUS *SAPHONECRUS* DALLA TORRE & KIEFFER,
1910 FROM TURKEY, THEIR ASSOCIATED GALLS AND
HOSTS (HYMENOPTERA: CYNIPIDAE: SYNERGINI)**

Yusuf Katılmış* and Suat Kıyak**

* Pamukkale University, Faculty of Arts and Sciences, Department of Biology, Kınıklı Campus, Denizli, TURKEY. E-mail: ykatilmis@pau.edu.tr

** Gazi University, Faculty of Arts and Sciences, Department of Biology, 06500 Teknikokullar, Ankara, TURKEY.

[Katılmış, Y. & Kıyak, S. 2012. Two new records of inquiline wasp of the genus *Saphonecrus* Dalla Torre & Kieffer, 1910 (Hymenoptera: Cynipidae: Synergini) from Turkey, their associated galls and hosts. *Munis Entomology & Zoology*, 7 (2): 1141-1144]

ABSTRACT: In this study, we reared inquilines *Saphonecrus connatus* (Hartig, 1840) and *Saphonecrus haimi* (Mayr, 1873) on laboratory condition. These species is new record for Turkey Fauna on genus and species levels. We provide details on geographical distribution, their developed galls and hosts. We also give the collecting time of the galls and emerging time of the adult wasps.

KEY WORDS: *Saphonecrus*, Cynipidae, inquilines, New record, *Quercus*, Turkey.

Studies about gall wasps and inquiline wasps in Turkey are scarce. Recently Katılmış & Kıyak (2008) listed 81 gall inducing wasps (Hymenoptera: Cynipidae) with a new genus record from Turkey. Two new oak gall species were identified from Turkey (*Andricus askewi* Melika & Stone, 2001; *Andricus megalucidus* Melika et al., 2004a). The other gall inducing wasps on oaks and herbs were recorded as new to Turkey (Katılmış & Kıyak, 2009a,b; Kıyak & Katılmış, 2010; Katılmış & Kıyak, 2011a,b) and one inquiline (*Synergus pallicornis* Hartig, 1843) in a checklist from Turkey was given (Katılmış & Kıyak, 2008).

The tribe Synergini (Hymenoptera; Cynipidae) is belongs to inquiline group in the Cynipidae family. The cynipid inquilines have lost the ability of gall inducing, but they are also phytophagous insects, as the gall wasps. These inquilines larvae can grow inside gall-chamber and can usually cause the death of the gall-inducer larvae. They can also place and feed in the outer tissues of the gall. Thus situated if the number of inquilines is high, they can cause death of the gall-inducer wasps (Ronquist, 1999; Csóka et al., 2004). They can also affect the gall inducer negatively (Wiebes-Rijks & Shorthouse, 1992). However, inquiline larvae do not behave like parasitoids (Evans, 1965; Shorthouse, 1973; Shorthouse, 1980; Wiebes-Rijks, 1980) but compete for the food source and/or space (Pujade-Villar et al., 2003).

13 species of *Saphonecrus* were described from Holarctic until now: 4 species from North America: *S. brevicornis* (Ashmead, 1896); *S. brevis* Weld, 1926; *S. favanus* Weld, 1944 and *S. gemmariae* (Ashmead, 1885); 5 species from the Western Palaearctic, particularly from Europe: *S. barbotini* Pujade-Villar & Nieves-Aldrey, 1985; *S. connatus* (Hartig, 1840); *S. haimi* (Mayr, 1872); *S. lusitanicus* (Tavares, 1902) and *S. undulatus* (Mayr, 1872); recently 4 new species from China: *S. chaodongzhui* Melika et al., 2004b; *S. naiquanlini* Melika et al., 2004b; *S. flavitibilis* Wang et al., 2010 and *S. tianmushanus* Wang et al., 2010.

Pujade-Villar & Nieves-Aldrey (1990) showed that the biology of *Saphonecrus* species can be divided into three groups. The first group (*S. connatus*) includes species with one annual generation and associated with galls on deciduous oaks of

the subgenus *Leptobalanus*, section *Quercus*; the second group (*S. haimi* and *S. undulatus*), also univoltine, associated with galls on oaks from the subgenus *Leptobalanus*, section *Cerris*; and finally the third group, with some Mediterranean species, with bivoltine life cycles, associated with galls on evergreen oaks (*S. lusitanicus* and *S. barbotini*).

MATERIALS AND METHODS

The oak galls were collected in different localities from Afyon, Denizli, Kütahya provinces. The collected galls were put in jar bags which are one liter capacity and covered with tulle. We also recorded localities and collected time. The specimens were carried on laboratory condition and checked emerging of adult wasps every week. The emerged inquiline subsequently killed in alcohol. We also recorded the emerged time of the inquiline wasps. The emerged adults were dried, fixated on cards (5-10mm in dimension) and pinned. The inquilines identified according to the literature sources (Dalla Torre & Kieffer, 1910; Pujade-Villar & Nieves-Aldrey, 1990; Nieves-Aldrey, 2001; Pujade-Villar et al., 2003). The specimens are deposited in the Zoology Museum of Gazi University.

RESULTS

***Saphonecrus connatus* (Hartig, 1840)**

Material Examined: KÜTAHYA province, Simav, between Simav-Demirciköy 2.km, 39°05'N, 28°57'E, 818m, collecting time of galls: 01.03.2009, galls: *Andricus conglomeratus*, host: *Quercus frainetto*, emerging time of adults: 21.04.2009, 3♀♀; DENİZLİ province, Honaz, above Aydınlar village, 37°43'N, 29°23'E, 1033m, collecting time of galls: 03.03.2009, galls: *Andricus megalucidus*, host: *Quercus infectoria*, emerging time of adults: 18.05.2009, 2♀♀.

***Saphonecrus haimi* (Mayr, 1873)**

Material Examined: AFYON province, Sultandağı, above Dereçine town, 38°28'N, 31°14'E, 1148m, collecting time of galls: 19.05.2009, galls: *Chilaspis nitida*, host: *Quercus cerris*, emerging time of adults: 04.06.2009, 3♂♂.

DISCUSSION

Distributions of *Saphonecrus conatus* and *Saphonecrus haimi* are under investigated by taxonomists. Recent studies showed that *S. connatus* inhabited in Andorra, Austria, Denmark, France, Germany, Great Britain, Hungary, Italy, Poland, Portugal, Spain, Sweden (Nieves-Aldrey, 2001; Pujade-Villar et al., 2003). Thus, it was estimated that *S. connatus* distributed throughout Western Palearctic region of the world (Pujade-Villar et al., 2003). *S. haimi* was recorded from Iran at the first time (Sadeghi et al., 2006), and it is known that this species is inhabited in Algeria, Austria, France, Hungary, Iran and Israel (Pujade-Villar et al., 2003; Sadeghi et al., 2006). In this study, we presented new locations of *Saphonecrus* species which are recorded from Turkey at the first time. *S. conatus* and *S. haimi* are also new record on genus level in Turkey. We estimate that number of inquiline species will increase with reared rose and oak galls in Turkey.

S. connatus were recorded from some *Andricus* species and galls of *Aphelonix cerricola* (Giraud, 1859), *Callirhytis glandium* (Giraud, 1859), *Cynips*

quercusfolii (Linnaeus, 1758), *Neuruterus anthracinus* (Curtis, 1838) and *N. quercusbaccarum* (Linnaeus, 1758) (Pujade-Villar et al., 2003). We recorded this species the galls of *A. conglomeratus* (Giraud, 1859) and *A. megalucidus* Melika, Stone, Sadeghi et Pujade-Villar, 2004 on *Quercus frainetto* and *Quercus infectoria* from Turkey. *S. haimi* were recorded galls of *Chilaspis nitida* (Giraud, 1882), some *Neuroterus* galls and also a gall midge, *Janetia cerris* (Kollar, 1850) (Diptera: Cecidomyiidae) (Pujade-Villar et al. 2003). We recorded this species the galls of *Chilaspis nitida* on *Quercus cerris* from Turkey.

ACKNOWLEDGEMENTS

We thank Dr. George MELIKA for helping to assure the literature. We thank to Gazi University Scientific Research Project Unit (Project No: BAP-05/2007-40) and Pamukkale University Scientific Research Project Unit (Project No: 2010BSP016) for financial support of this work.

REFERENCES

- Csóka, G. Y., Stone, G. N. & Melika, G. 2004. Ecology and Evolution of gall-inducing Cynipidae. A., Schaefer, C. W., Withers, T. M. (eds.), Biology pp. In: Raman, 569-636.
- Dalla-Torre, K. W. & Kieffer, J. J. 1910. Cynipidae, Verlag von R. Friedlander und Sohn, Berlin, 891 pp.
- Evans, D. 1965. The life history and immature stages of *Synergus pacificus* McCracken and Egbert (Hymenoptera: Cynipidae). The Canadian Entomology, 97: 185-188.
- Katılmış, Y. & Kiyak, S. 2008. Checklist of Cynipidae of Turkey, with a New Genus Record. Journal of Natural History, 42 (31-32): 2161-2167.
- Katılmış, Y. & Kiyak, S. 2009a. The oak gallwasp *Aphelonyx persica*: a new record from Turkey, with some new host records. Phytoparasitica, 37: 95-97.
- Katılmış, Y. & Kiyak, S. 2009b. Oak gallwasp Genus *Andricus* (Hymenoptera, Cynipidae) – new records from Turkey. Zoology in the Middle East, 48: 108-110.
- Katılmış, Y. & Kiyak, S. 2011a. New records of herb gallwasps (Hymenoptera, Cynipidae, Aylacini) from Turkey. North-Western Journal of Zoology, 7 (1): 17-19.
- Katılmış, Y. & Kiyak, S. 2011b. Herb gallwasp *Neaylax salviae* (Giraud, 1859) (Hymenoptera, Aylacini) – new record from Turkey. Turkish Journal of Zoology, 35 (3): 707-710.
- Kiyak, S. & Katılmış, Y. 2010. Oak gallwasp *Dryocosmus mayri* (Hymenoptera, Cynipidae) - new record from Turkey. Journal of the Entomological Research Society, 12 (1): 67-70.
- Melika, G. & Stone, G. N. 2001. A new species of cynipid gall wasp from Turkey (Hymenoptera: Cynipidae). Folia Entomologica Hungarica, 62: 127-131.
- Melika, G., Stone, G. N., Sadeghi, S. E. & Pujade-Villar, J. 2004a. New species of cynipid gallwasps from Iran and Turkey (Hymenoptera: Cynipidae: Cynipini). Acta Zoologica Academiae Scientiarum Hungaricae, 50 (2): 139-151.
- Melika, G., Acs, Z. & Bechtold, M. 2004b. New species of Cynipid Inquilines from China (Hymenoptera: Cynipidae: Synergini). Acta Zoologica Academiae Scientiarum Hungaricae, 50 (4): 319-336.
- Nieves-Aldrey, J. L. 2001. Fauna Iberica Hymenoptera Cynipidae, Museo Nacional de Ciencias Naturales Consejo Superior de Investigaciones Científicas, Madrid, 636 pp.
- Pujade-Villar, J. & Nieves-Aldrey, J. L. 1990. Revisión de las especies europeas del género *Saphonecrus* Dalla Torre & Kieffer, 1910 (Hymenoptera: Cynipidae: Cynipinae). Butlletí de l'Institutió Catalana d' Història Natural, 58: 45-55.

- Pujade-Villar, J., Melika, G., Ros-Farré, P., Ács, Z. & Csóka, G. Y.** 2003. Cynipid inquiline wasp of Hungary, with taxonomic notes on the Western Palaearctic fauna (Hymenoptera: Cynipidae, Cynipinae, Synergini). *Folia Entomologica Hungarica*, 64: 121-170.
- Ronquist, F.** 1999. Phylogeny, classification and evolution of the Cynipoidea. *Zoologica Scripta*, 28 (1-2): 139-164.
- Sadeghi, S. E., Melika, G., Pujade-Villar, J., Péntzes, Zs., Ács, Z., Bechtold, M., Assareh, M., Tavakoli, H. M., Yarmand, H., Askary, H., Stone, G. N., Azizkhani, E., Zargarán, M. R., Aligolizade, D., Barimani H., & Dordaei A. A.** 2006. Oak cynipid gall inquilines of Iran (Hym.: Cynipidae: Synergini), with description of new species. *Journal of Entomological Society of Iran*, 25 (2): 15-50.
- Shorthouse, J. D.** 1973. The insect community associated with rose galls of *Diplolepis polita* (Cynipidae, Hymenoptera). *Quaestiones Entomologicae*, 9: 55-98.
- Shorthouse, J. D.** 1980. Modification of galls of *Diplolepis polita* by the inquiline *Periclistus pirata*. *Bulletin de la Societe Botanique de France*, 127: 79-84.
- Wang, Y., Chen, X., Pujade-Villar, J., Wu, H., & He, J.** 2010. The genus *Saphonecrus* Dalla Torre et Kieffer, 1910 (Hymenoptera: Cynipidae) in China, with descriptions of two new species. *Biologia*, 65 (6): 1034-1039.
- Wiebes-Rijks, A. A.** 1980. The identity of the gall-wasp causing stunted acorns (Hymenoptera, Cynipidae). *Netherlands Journal of Zoology*, 30 (2): 243-253.
- Wiebes-Rijks, A. A. & Shorthouse, J. D.** 1992. Ecological relationships of insects inhabiting cynipid galls. In: Shorthouse, J. D. & Rohfritsch, O. (eds), *Biology of insect-induced galls*. Oxford University Press, New York, 238-257.