Two New Records of *Andaspis* Armored Scales (Hemiptera: Diaspididae) from Korea

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Andaspis 속(노린재목: 각지벌레과)의 한국미기록 2종에 대한 보고

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ABSTRACT: Two species of the genus *Andaspis*, *Andaspis crawii* (Cockerell) and *Andaspis kashicola* (Takahashi) are newly recorded in the Korean fauna of armored scales (Diaspididae). A key to species of *Andaspis*, illustrative photographs and information on the distribution and hosts of each species, are also provided to identify the specimens of *Andaspis* collected in Korea.

Key words: *Andaspis crawii*, *Andaspis kashicola*, New Records, Diaspididae, Korea

초 록: *Andaspis* 속의 *Andaspis crawii* (Cockerell)와 *Andaspis kashicola* (Takahashi) 2종을 처음으로 국내분포로 보고하고, 한국산 *Andaspis* 속의 종 동정에 필요한 검색표, 사진자료, 분포 및 기주 정보를 함께 기재하였다.

검색어: *Andaspis crawii*, *Andaspis kashicola*, 미기록종, 각지벌레과, 한국

The genus *Andaspis* was named by MacGillivray (1921) and is comprised of 47 species worldwide (Miller *et al.*, 2010). It is closely related to the genus *Lepidosaphes*, which also have oyster shell shaped scale covers; some of its species were formerly placed in *Lepidosaphes*. However, the genus *Andaspis* differs from that genus primarily by the shape and position of the median lobes of the pygidium. These are usually exceptionally large, placed close together, with the inner edges short, diverging to the long oblique outer margins, with small gland spines between them (Williams and Watson, 1988). Knowledge of the Korean fauna of the armored scales (Diaspididae) began in 1928 with the publication of Machida and Aoyama (cited from the publication of Paik (2000)); so far, seventy two species have

been documented (Paik, 1978; Paik, 2000; Kwon *et al.*, 2003, Kwon *et al.*, 2005; Suh and Hodges, 2007), but the genus of *Andaspis* has not been reported yet in Korea.

In the present work, the following two species of the genus of *Andaspis* are newly reported from the Republic of Korea: *Andaspis crawii* (Cockerell) and *Andaspis kashicola* (Takahashi). The *Andaspis* species collected during this survey do not have a club-shaped parapsis arising from the middle basal part of median lobe, but rather a transverse sclerosis at the base of the median lobe or a unique shape of a lateral parapsis of the median lobe. Also, only a few number of hosts were recorded for these species. Specimens of *A. crawii* live beneath the epidermis along the midrib, of the underside of the leaves of the collected hosts (Fig. 1: A). The other species, *A. kashicola* was collected on the underside of the leaves of its hosts (Fig. 1: C). Although the leaves of *Castanopsis cuspidata* were heavily infested with *A. crawii*, the scale did not seem to be causing serious damage to

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the tree (personal observation of Suh in 2008 and 2009).

A key to the Korean species of the genus *Andaspis*, information on the distribution and hosts of each species, and photographs of habitus and slide mounted adult female are provided. An asterisk(*) is used to indicate a new host or distribution records. All the specimens of this study are deposited in the Collection of Yeongnam Regional Office, National Plant Quarantine Service in Busan, Korea.

Genus *Andaspis* MacGillivray, 1921 안다스피스과 지벌레속(신칭)

Andaspis MacGillivray, 1921. Type species: *Mytilaspis flava* var. *hawaiiensis* Maskell.

Diagnosis: *Andaspis* with median lobes prominent and close together, with small gland spines between; the inner edges short,

diverging to long oblique outer margins. The ventral paraphyses on the median lobes are variously shaped, often transverse and sometimes in addition, a club-shaped paraphysis arises from the basal angle or from the middle basal part of lobe. Second lobes usually reduced to points or lacking. Marginal macroducts enlarged, number 4-6 (Williams and Watson, 1988).

Key to species of *Andaspis* from Korea (slide mounted adult female)

1. Pygidial marginal macroducts numbering 5 on each side (Fig. 1: E). Without submedian dorsal ducts on the pygidium *A. crawii* (Cockerell) (Fig. 1: A-B, D-F)
- 1b. Pygidial marginal macroducts numbering 6 on each side (Fig. 1: H). With submedian dorsal ducts on the pygidium *A. kashicola* (Takahashi) (Fig. 1: C, G-I)

Fig. 1. A~B. *Andaspis crawii* (Cockerell), female and egg living beneath the epidermis on the underside of the leaf of *Castanopsis*; C. *A. kashicola* (Takahashi), female cover on the underside of the leaf of *Quercus*; D~F. *A. crawii* (Cockerell); G~I. *A. kashicola* (Takahashi).

Andaspis crawii (Cockerell, 1896) 안다스피스깅지벌레 (신칭)

Synonymy. *Mytilaspis crawii* Cockerell, 1896 [Japan: on *Elaeagnus* sp.]. *Andaspis crawii*; Rao and Ferris, 1952.

Diagnosis. Adult female much elongated and very slender, the abdomen only slightly lobed laterally. Median pygidial lobes of a distinctive form, triangular in form, and having a transverse sclerosis at the base of median.

Material examined. Korea. Jeju-do: Harye-ri, Namwon-eup, Seogwipo-si, 19 adult females, on *Castanopsis cuspidata*, 12-iv-2007 (S.J. Suh). Jeollanam-do: Wando Arboretum, 10 adult females, on *Castanopsis cuspidata*, 17-vi-2008 (S.J. Suh).

Hosts. Elaeagnaceae: *Elaeagnus* sp.; Fagaceae: *Castanopsis cuspidata*, *Castanopsis kusanoi*, *Castanopsis* sp., *Castanopsis uraiana*; Malvaceae: *Pterospermum javanicum*.

Distribution. *Korea, Japan, Taiwan and Indonesia.

Andaspis kashicola (Takahashi, 1957) 종가시안다스피스깅지벌레(신칭)

Synonymy. *Lepidosaphes kashicola* Takahashi, 1957 [Japan: on *Quercus glauca*]. *Andaspis kashicola*; Takagi, 1960.

Diagnosis. Recognized by the presence of a transverse sclerosis at the base of median lobe and having submedian dorsal ducts on the pygidium.

Material examined. Korea. Jeju-do: Napeup-ri, Awol-eup, Jeju-si, 6 adult females, on *Quercus glauca*, 23-vii-2008 (S.J. Suh). Gyeongsangbuk-do: Sangyeok-dong, Buk-gu, Daegu-si, 1 adult female, on *Quercus myrsinifolia*, 18-iv-2009 (S.J. Suh).

Hosts. Betulaceae: *Alnus incana*, *Alnus* sp.; Fabaceae: *Cytisus scoparius*; Fagaceae: *Castanea crenata*, *Castanopsis cuspidata*, *Quercus acuta*, *Quercus acutissima*, *Quercus glauca*, **Quercus myrsinifolia*, *Quercus phillyraeoides*, *Quercus salicina*, *Quercus serrata*; Pinaceae: *Abies firma*; Platanaceae: *Platanus orientalis*; Styracaceae: *Styrax japonica*.

Distribution. *Korea and Japan.

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Literature Cited

- Cockerell, T.D.A. 1896. Some coccidae found by Mr. Alex Craw in the course of his quarantine work at San Francisco. United States Department of Agriculture, Division of Entomology, Technical Series 4: 42-46.
- MacGillivray, A.D. 1921. The Coccidae. 502 pp. Urbana, Ill. Scarab Co.
- Kwon, G.M., M.J. Han and Y.H. Lee. 2003. The genus *Aulacaspis* Cockerell, 1893 (Sternorrhyncha, Diaspididae) in Korea. Kor. J. Appl. Entomol. 42(1): 15-20.
- Kwon, G.M., M.J. Han and D.R. Choi. 2005. Scale insects (Sternorrhyncha) occurring on flowering plants in Korea. Kor. J. Appl. Entomol. 44(1): 51-59.
- Miller, D.R., Y. Ben-Dov and G.A.C. Gibson. 2010. ScaleNet(web-page) <http://www.sel.barc.usda.gov/scalenet/scalenet.htm>. Accessed 15 January 2011.
- Paik, W.H. 1978. Illustrated Flora and Fauna of Korea, vol. 22, Insecta (VI), Coccoidea. 481 pp. Ministry of Education.
- Paik, J.C. 2000. Economic Insects of Korea 6, Homoptera (Coccinea). Insecta Koreana Suppl. 13. 193 pp. National Institute of Agricultural Science and Technology.
- Rao, V.P. and G.F. Ferris. 1952. The genus *Andaspis* MacGillivray (Insecta: Homoptera: Coccoidea). (Contrib. No. 77). Microentomology 17: 17-32.
- Suh, S.J. and G.S. Hodges. 2007. Identification of armored scales (Hemiptera: Diaspididae) on bamboos in Korea. J. Asia Pac. Entomol. 10(1): 1-3.
- Takahashi, R. 1957. Some Japanese species of Diaspididae (Coccoidea, Homoptera). Transact. Shikoku Entomol. Soc. 5: 104-111.
- Takagi, S. 1960. A contribution to the knowledge of the Diaspidini of Japan (Homoptera: Coccoidea) Pt. 1. Insecta Matsumurana 23: 67-100.
- Williams, D.J. and G.W. Watson. 1988. The Scale Insects of the Tropical South Pacific Region. Pt. 1. The Armoured Scales (Diaspididae). 290 pp. CAB International Institute of Entomology, London.