

# Genus *Conwentzia* (Neuroptera: Coniopterygidae: Coniopteryginae) New to Korea

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## 가루풀잠자리과 미기록속 및 미기록종 *Conwentzia pineticola* [풀잠자리목: 가루풀잠자리아과]의 보고

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**ABSTRACT:** *Conwentzia* is a newly recorded genus in Korea, based on *C. pineticola*. A brief description, photos of adult and male genitalia, and 16S rRNA and COI sequences of the species are provided.

**Key words:** Coniopteryginae, *Conwentzia pineticola*, New record, Korean fauna

**조 록:** *Conwentzia*와 *C. pineticola*를 한국 미기록속 및 미기록종으로 보고한다. 본 종의 성충에 대한 간략한 기재와 성충 사진 및 생식기 사진과 함께, 16S rRNA 와 COI 염기서열을 제공한다.

**검색어:** 가루풀잠자리과, 소나무뒷날개가루풀잠자리, 미기록속, 미기록종

Coniopterygids or, more commonly, dustywings are the pygmies of the order Neuroptera, apparently because of their small size. Coniopterygidae is a family of about 560 described species in 23 genera (Sziráki, 2011). They feed on small sized arthropods such as mites, aphids and scale insects. This family is surely monophyletic, and the last major revisionary work was the monograph by Meinander (1972) on the world genera. Since then, there have been world catalogs of the species (Meinander, 1990; Sziráki, 2011).

In Asia, both China and Japan have multiple species of Coniopterygidae described while only one species, *Semidalis aleyrodiformis* has been recorded from Korea (Lee et al., 2010).

In this study, we collected another coniopterygid, *Conwentzia pineticola*, a species of the genus *Conwentzia* belonging to the subfamily Coniopteryginae. The genus and the species are both new to Korea. The genus *Conwentzia* includes about 14 species in the world (Sziráki, 2011). This group is one of the characteristic groups of the subfamily in that their hind wings are conspicuously reduced than those of other genera. Here we provide taxonomic information including a brief description, photos of adult and male genitalia, and COI and 16S rRNA sequences based on *C. pineticola* in Korea.

### Materials and Methods

We used light trap for collecting and most of the samples were preserved in >95% ethanol. In viewing its characteristics, the sample was soaked in glycerol and examined through a

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stereo light microscope (Olympus SZX 16, Tokyo, Japan), often with an imaging facility. The specimens were examined and deposited in the insect collection room of the Department of Plant Medicine at Chungbuk National University, Cheongju, Korea.

Genomic DNA was extracted using this DNeasy Tissue kit (Qiagen, Hilden, Germany) and PCR amplification was conducted using the primer sets following Folmer et al. (1994) and Haring and Aspöck (2004) with 35 cycles (95°C 30 s, 50°C for 40 s, and 72°C for 45 s). For each PCR amplification condition, pre-denaturation at 95°C 15 min and final polymerization at 72°C for 5 min. The PCR product was purified using QIAquick Gel Extraction Kit (Qiagen, Hilden, Germany).

The COI barcode sequences and 16S rRNA sequences were aligned and compared using Geneious 5.59 (<http://www.geneious.com>, Kearsse et al., 2012).

The abbreviations used in the Material examined are CB for Chungbuk Province and CN for Chungnam Province.

## Systematic accounts

Family Coniopterygidae Burmeister, 1839  
Subfamily Coniopteryginae Burmeister, 1839  
Tribe Conwentzini Enderlein, 1905

### Genus *Conwentzia* Enderlein, 1905

*Conwentzia* Enderlein, 1905, Bericht des Westpreussischen Botanischen-Zoologischen Vereins 26/27: 10. Type species: *Conwentzia pineticola* Enderlein, 1905.

**Diagnosis.** Head capsule wider dorsoventrally than antero-posteriorly on lateral view. Frons unsclerotized between antennae but ventrally hardly sclerotized. Thorax with indistinct shoulder spots. Forewing about two and a half times as long as broad; membrane unspotted; some longitudinal veins covered with very short hairs; marginal fringe very short or absent. Hind wing significantly reduced, except *C. barretti* (Banks) with developed hind wings; venation of fully developed wing similar to forewing. Abdomen slightly sclerotized; wax glands present on most tergites and lateral sternites but absent from 8th segment in male and 6-7 tergites in female.

### *Conwentzia pineticola* Enderlein, 1905 소나무뿔날개가루 폴잡자리(신칭) (Figs. 1-3)

*Conwentzia pineticola* Enderlein, 1905, Bericht des Westpreussischen Botanischen-Zoologischen Vereins 26/27: 10. Type locality: Germany, Berlin.

*Conwentzia hageni* Banks, 1906: 82.

*Coniopteryx reticulata* Tullgren, 1906: 14.

*Conwentzia angulata* Navas, 1914: 16.

*Conwentzia axillata* Navas, 1914: 16.

*Conwentzia cryptoneurus* Bagnall, 1915: 192.

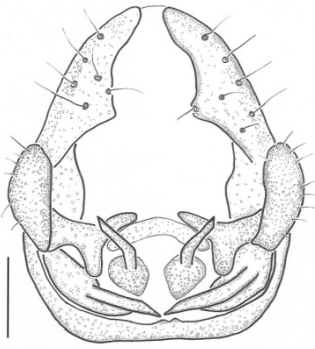
**Description.** Adult (Figs. 1, 2). Head capsule blackish; vertex with a small swelling above antennae; frons and vertex covered with short hairs; clypeus with long hairs. Eyes of male larger and more bulging than those of female. Antennae pale dark brown; antenna of male 32-36 segmented; scape and pedicel slightly swollen, a little bit longer than broad; flagellum about as broad as long basally, about one and a half times as long as broad apically. Flagellum thicker in male, about one and a half



Fig. 1. Lateral view of the adult of *Conwentzia pineticola*.



Fig. 2. Wings of *Conwentzia pineticola*. Scale bar = 1 mm.



**Fig. 3.** Caudal view of the male genitalia of *Conwentzia pineticola*. Scale bar = 0.1 mm.

times as broad as in female. Thorax dark brown. Legs dark fuscous. Forewing greyish. Hind wing much more reduced than forewing in size; length of forewing 3.5-3.9 mm; length of hind wing 0.8-1.3 mm.

Male genitalia (Fig. 3). Outer process of ectoprocts tapering towards apex. Abdomen, abdominal styli tip tapered, slightly hooked; 9th sternite smaller than 10th on ventral view. tips of paramere postero-dorsally diverged, tips sharp.

**Material examined.** 1 male: Chungbuk National University, Gaeshin-dong, Cheongju-si, CB, Jun. 6, 2008, coll. S.K. Kim; 1 female: ditto, CB, Sep. 29, 2013, coll. S.K. Kim; 1 male: Chujeong-ri, Nangseong-myeon, Cheongwon-gun, CB, May 31, 2014, coll. S.K. Kim; 1 female: Uam-san[Mt], Sangdang-gu, Cheongju-si, CB, May 30, 2014, coll. S.K. Kim; 2 females: Bangsan-ri, Daesul-myeon, Yesan-gun, CN, Apr. 22, 2015, coll. S.K. Kim; 1 female: Worak-san[Mt], Worak-ri, Deoksan-myeon, Jecheon-si, CB, May 21, 2015, coll. S.K. Kim.

**Distribution.**

The species is widely distributed throughout the Ethiopian, Oriental and Australian regions, and also occurring in the southern parts of the Palaearctic region, including Korea (Central).

**COI and 16S rDNA sequences**

The following mtDNA sequences are obtained from the sample we collected. In addition to the COI barcode sequence, we provide the 16S rDNA sequence because recent molecular works on Coniopterygidae often applied 16S rDNA either alone or with other genes (Grimaldi et al., 2013; Wang and Liu, 2007; Winterton et al., 2010).

**COI region (658 bp)**

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AGTTTTATATTTTTTATTTCGGAATTTGAGCAGCTA
TATTAGGAACATCCCTTAGAATTTAATTTCGAGCCG
AATTAGGAAACCCGGGATCTTTAATTGGAGATGATC
AAATTTATAATGTAATTGTGACAGCTCATGCTTTTAT
TATAATTTTTTTTGGCTGTTATACCAATTTAATTGGG
GGGTTTGAAATTGATTAGTTCCTTAATGCTAGGA
GCCCCGATATAGCATTTCCCTCGTATAAATAATATA
AGATTTTGATTATTACCCCTCTCTAACATTATTAT
TAATAAGTTCATTAGTAGAAAGAGGATCAGGAACA
GGATGAACAGTTTATCCTCCTTTATCCTCTAATATTG
CCCATTCTGGAAGTTCAGTTGATTTAGCTATTTTTAG
ATTACATTTAGCAGGGGCTTCATCAATTTTAGGAGC
TATTAATTTTATTACAACTGTAATTAATATACGACCC
ATAGGAATAACTTTAGAGCGAATACCCCTATTTGTAT
GGTCTGTTGTAATTACCGCTTTTTTATTACTTTTATCT
TTACCGGTATTGGCCGAGCAATTACTATATTATTAA
CAGATCGAAATTTAATACTTCTTTTTTTGACCCCGC
CGGAGGGGGGGATCCAATTTTATATCAACATTTATT
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**16S rRNA region (506 bp)**

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TTTTGAGTATAATTTAAAGTCTGACCTGCCCACT
GAATTTATTTAAAGGGCCGAGTATTTGACTGTGCT
AAGGTAGCATAATCACTTGTTTTTAAATTGAAAAC
AGAATGAATGGTTTGATAAAAAATAAGCTGTCTCTA
TTAAAAAATTATAAAAAATTTAAAATTTTAGTTAAAA
TGCTAAAATTTATATAAAAGACGAGAAGACCCATA
GATCTTTATAATTGTTTTTAATAAAATTTATTTTTT
AAAAATTTTTTACAAAAATAATTATTGAATTGGGG
CGATTAATAAATTTAATAAACTTTTTTATATTTAAA
TACTAATTAGTATAAATTTGATCCATTATTATGATTA
TTTGATTAAGTTACCTTGGGGATAACAGCGTAATTT
TTGGGGAGTTCATATCTATAAAAAAGATTACGACC
TCGATGTTGAATTAAGTTAATTTTAGGAGTAGAAA
TTAAAATTTTAGTCTGTTTCGACTATTTAACTT
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