

Two Species of the Genus *Strumigenys* (Hymenoptera: Formicidae: Myrmicinae) New to Korea

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개미과 비늘개미속의 한국 미기록 2종 보고

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ABSTRACT: Two species of the genus *Strumigenys* Smith, 1860: *S. alecto* (Bolton, 2000) and *S. solifontis* Brown, 1949b, were recorded in Korea for the first time. Morphological characteristics of workers of these two species are described.

Key words: Formicidae, Myrmicinae, *Strumigenys alecto*, *Strumigenys solifontis*, Korea

초 록: 한국산 개미과 비늘개미속의 2미기록종인 *Strumigenys alecto*과 *Strumigenys solifontis*가 분포함을 보고한다. 2 종의 일개미에 대한 형질과 사진을 제공한다.

검색어: 개미과, 두마디개미아과, *Strumigenys alecto*, *Strumigenys solifontis*, 한국

Strumigenys is an exceptionally diverse genus of myrmicine ants with more than 840 described species, the majority of which occur in the tropics and subtropics (Bolton, 2000) where they, typically inhabit and forage in moist terrestrial microhabitats such as leaf litter, soil, or rotting wood (Creighton, 1937; Wilson, 1953). This genus is characterized by long linear mandibles with one to few spiniform teeth at the apices; the antennae show the typical pattern of six segments, with very small funicular segments II and III and a long, massive apical segment. All species in this genus possess some sort of spongiform appendages on at least the postpetiole, and all species have epinotal teeth, lamellae, or both (Brown, 1949b). *Strumigenys* species with long-mandibles are referred to as trap-jaw ants on account

of their mandibles' spring-loading mechanism which snaps shut by the touch of a suitable prey. Trap-jaw mechanisms have evolved in at least nine genera of three subfamilies of ants; however, the vast majority of trap-jaw ant species belong to the genus *Strumigenys* (Larabee and Suarez, 2014).

Many species previously placed in distinct genera owing to differences in jaw shape or antennal segments (Bolton, 2000) are now assigned to *Strumigenys* based on molecular evidence of shared ancestry (Ward et al., 2015). The taxonomy within the genus *Strumigenys* has been extensively investigated but is not universally agreed upon (Baroni Urbani and de Andrade, 2007). Comprehensive lists of taxonomic studies on *Strumigenys* were produced by Bolton (2000) and by Baroni Urbani and de Andrade (2007).

In the current study, *Strumigenys alecto* (Bolton) and *Strumigenys solifontis* Brown were recorded in Korea for the first time. Morphological characteristics of workers of these two species

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are described.

Materials and Methods

The specimens examined in this study were deposited at Sangji University, South Korea. Specimens were photographed using a Leica DMS 1000 microscope and an S8AP0 microscope (Leica Microsystem, Germany). Images were captured using Leica Application Suite v. 4.9 (Leica Microsystems) and Deltabio MOT Leica software v. 4.0 to produce multi-focus images. The terminology used to describe worker individuals followed Bolton (2003).

The following abbreviations for insect castes and provinces in which specimens were collected and examined were used: Q (queen), w (worker), TL (type locality), GB (Gyeongsangbuk-do), and GN (Gyeongsangnam-do).

Results

Taxonomic accounts

Family Formicidae Latreille, 1809 개미과

Formicariae Latreille, 1809: 124. Type-genus: *Formica* Linnaeus, 1758: 579.

Subfamily Myrmicinae Lepeletier de Saint-Fargeau, 1835 두마디개미아과

Genus *Strumigenys* Smith, 1860 비늘개미속

Type-species: *Strumigenys mandibularis* Smith, 1860: 72.

Labidogenys: Roger, 1862: 249. Type species: *Labidogenys lyroessa* Roger.

Pyramica Roger, 1862: 251. Type species: *Pyramica gundlachi* Roger.

Cephaloxys Smith, F. 1865: 76. Type-species: *Cephaloxys capitata* Smith.

Epitritus Emery, 1869a: 136. Type-species: *Epitritus argiolus* Emery

Trichoscapa Emery, 1869b: 24. Type-species: *Strumigenys (Trichoscapa) membranifera* Emery

Pentastruma Forel, 1912: 50. Type-species: *Pentastruma sauteri* Forel

Glomyromyrmex Wheeler, W.M. 1915: 487. Type-species:

Glomyromyrmex beebei Wheeler

Codiomyrmex Wheeler, W.M. 1916: 326. Type-species: *Codiomyrmex thaxteri* Wheeler

Tingimyrme Mann, 1926: 104. Type-species: *Strumigenys (Tingimyrme) mirabilis* Mann

Codioxenus Santschi, 1931: 278. Type-species: *Epitritus (Codioxenus) simulans* Santschi

Proscopomyrmex Patrizi, 1946: 294. Type-species: *Proscopomyrmex londianensis* Patrizi.

Smithistruma Brown, 1948: 104. Type-species: *Cephaloxys capitata* Smith.

Weberistruma Brown, 1948: 106. Type-species: *Strumigenys (Cephaloxys) leptothrix* Brown.

Wessonistruma Brown, 1948: 106. Type-species: *Strumigenys pergandei* Brown.

Serrastruma Brown, 1948: 107. Type-species: *Strumigenys simoni* Brown.

Neostruma Brown, 1948: 111. Type-species: *Strumigenys crassicornis* Brown.

Dorisdridis Brown, 1948: 116. Type-species: *Strumigenys (Codiomyrmex) nitens* Brown.

Miccostruma Brown, 1948: 123. Type-species: *Epitritus mandibularis* Brown.

Eneria Donisthorpe, 1948: 598. Type-species: *Eneria excisa* Donisthorpe.

Quadristruma Brown, 1949a: 47. Type-species: *Epitritus emmae* Brown.

Kyidris Brown, 1949b: 3. Type-species: *Kyidris mutica* Brown.

Chelystruma Brown, 1950: 32. Type-species: *Glomyromyrmex (Chelystruma) lilloana* Brown.

Polyhomoa Azuma, 1950: 36. Type-species: *Polyhomoa itoi* Azuma

Borgmeierita Brown, 1953: 23. Type-species: *Codiomyrmex excisus* Brown.

Platystruma Brown, 1953: 112. Type-species: *Strumigenys (Cephaloxys) depressiceps* Brown.

Gymnomyrmex Borgmeier, 1954: 279. Type-species: *Gymnomyrmex splendens* Borgmeier

Dysedrognathus Taylor, 1968: 132. Type-species: *Dysedrognathus extemenus* Taylor

Asketogenys Brown, 1972: 23. Type-species: *Asketogenys*

acubecca Brown.

Cladarogenys Brown, 1976: 33. Type-species: *Cladarogenys lasia* Brown.

Diagnosis. Head triangular, antennae 6-segmented, antennal club 2-segmented. Compound eyes located at the lower margin of the antennal scrobes. Mandibles linear and tipped with apical fork or triangular and armed with numerous denticles. Propodeum armed with spines or teeth. Petiole 2-segmented. Spongiform tissue attached to at least some portion of the petiole. Hairs appearing flagellate or spatulate on at least some portion of the head or body.

Strumigenys alecto (Bolton, 2000) (Fig. 1) 가느달톱
니비늘개미(신칭)

Pyramica alecto Bolton, 2000: 429 (w.) TL: Japan.

Worker. In full-face view, the dorsolateral margins of the head with sparse, very short, straight laterally projecting hairs; two to three hairs project from the antennal scrobe margin and four to six from the occipital lobe margin. Antennal scape with fine apically-directed narrowly spatulate hairs only, without long simple hairs. In lateral view, the pronotal dorsum with sparse, short standing hairs present from immediately in frontal view of the highest point of the vertex to the occipital margin, and with very few dorsolaterally. Compound eyes with 4 ommatidia in the longest row. Lateral pronotum not sharply marginate; on the anterior half, the dorsum is rounded broadly and evenly into the sides, posteriorly more narrowly rounded to bluntly angular. Hairs on pronotum sparse, short, and stubby; mesonotum with three to four pairs of short erect simple hairs. Petiole, postpetiole, and first gastral tergite with standing hairs. Propodeum smooth, except for some weak punctulate sculpture above the level of the propodeal spiracle. Propodeum armed with a pair

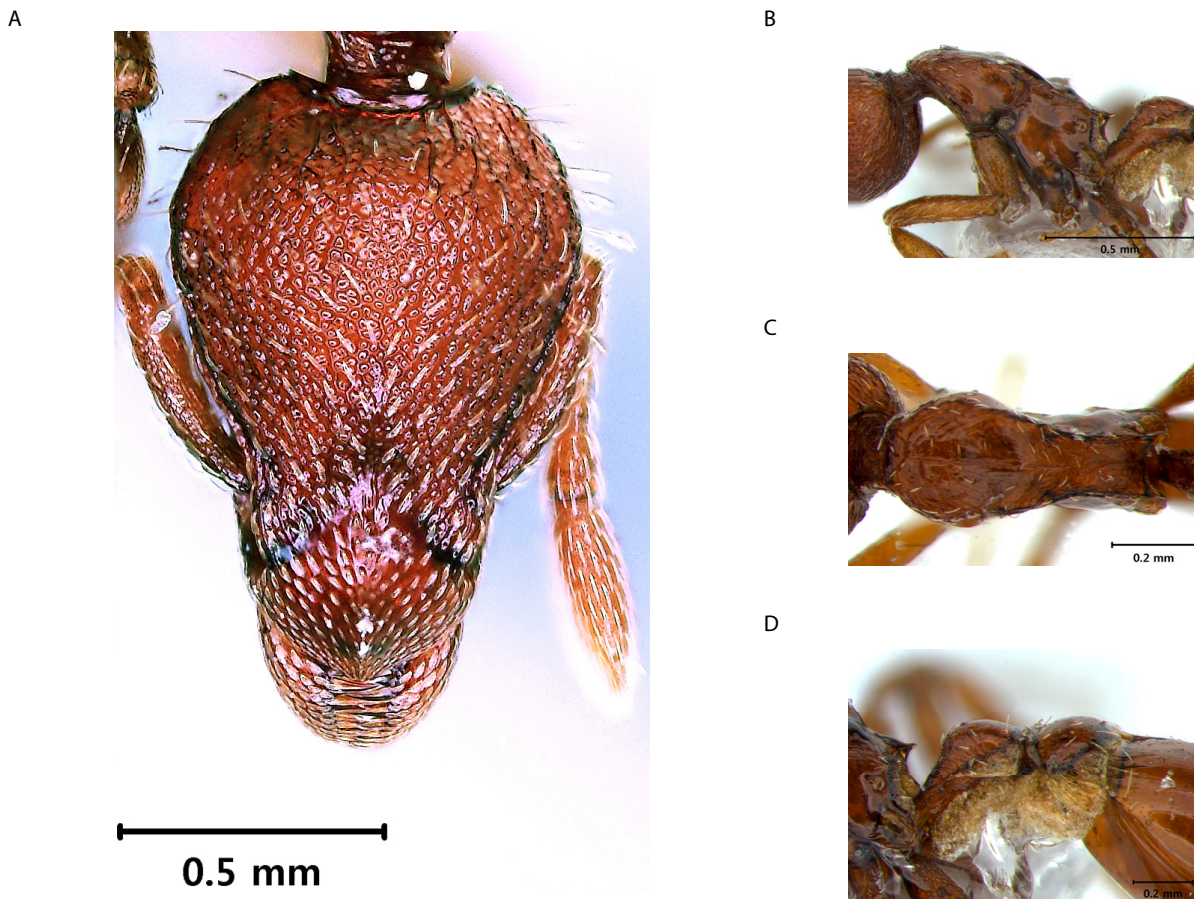


Fig. 1. *Strumigenys alecto* (Bolton). A: frontal view of the head; B: lateral view of the thorax; C: dorsal view of the thorax; D: lateral view of the petiole.

of short triangular teeth with lamellae; no triangular or spiniform propodeal lobes at the base of the declivity. Middle and hind tibiae with projecting suberect to subdecumbent straight simple hairs. In lateral view, petiole node with a short, near-vertical anterior face. In lateral view, spongiform lobe of petiole elongate, extended anteriorly almost to the level of the anterior node. Postpetiole distinctly broader than long on the dorsum; smooth and shining.

Material examined: [Korea] 6w, Geojehuyang, GN, 12. VI.2019. (SW Yoon & DO Shin).

Distribution: Korea (new record), Japan.

Strumigenys solifontis Brown, 1949b (Fig. 2) 긴허리 비늘개미(신칭)

Strumigenys (Strumigenys) solifontis Brown, 1949b: 18

(w.Q.) TL: Japan.

Worker. Body length 3.15 mm. Head longer than in *S. lewisi*, also slightly less convex above and generally more dorsoventrally depressed. Antennae longer and slender; antennal scape 0.50 mm, funicular segments 0.64 mm. Compound eyes less convex. Mandibles longer and slightly more robust. The preapical tooth is long and acute. Trunk very slender, with dorsal profile from lateral view broadly and rather strongly concave from the summit of the convexly raised promesonotum to the propodeal teeth and much more concave. Long erect hairs on the alitrunk more numerous, in five to six pairs, varying in length; the long pair gracing the humeri stiff and not attenuated. Entire dorsal alitrunk finely and densely punctate to reticulate-punctate except for anterior half of propodeal dorsum which is usually smooth. Lamella on propodeal declivity becoming broader basally, its posterior margin distinctly convex on the lower half. Spongiform appendages on petiole and postpetiole;

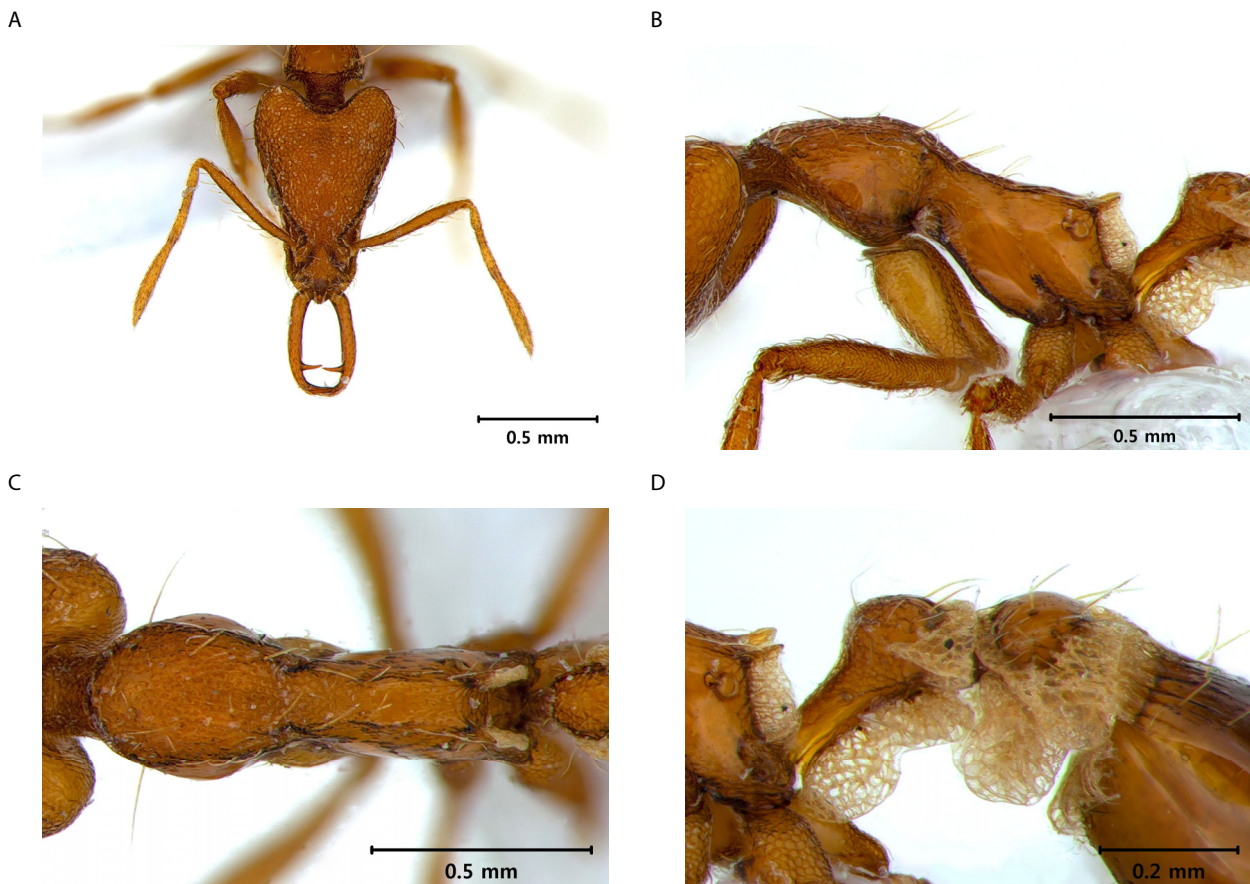


Fig. 2. *Strumigenys solifontis* Brown. A: frontal view of the head; B: lateral view of the thorax; C: dorsal view of the thorax; D: lateral view of the petiole.

the lateral lobes on the petiole reaching only halfway or slightly higher on the sides of the node. With petiole in profile, the lateral spongiform lobe terminates at about the mid-length of the node, not reaching the anterior face of the node. Postpetiole slightly broader than in *S. lewisi*, about half as broad as long. Petiolar node finely and densely punctate to reticulate-punctate; postpetiole smooth. Erect hairs on first gastral tergite not restricted to a transverse row near base and another near apex. Basigastral costulae distinct on first gastral tergite.

Material examined. [Korea] 13w, Mancheondong, Daegu, GB, 23.IX.2016. (DP Lyu & DO Shin); 2Q, 25w, Hyeongje-bong, Daegu, GB, 27.VIII.2018. (SW Yoon & DO Shin); 5Q, 25w, Milyang, KN, 01.VI.2018. (SW Yoon & DO Shin); 2Q, 20w, Jangcheok valley, Kimhae, KN, 01.VI.2018. (SW Yoon & DO Shin); 7Q, 30w, Naechol autocamp, Geoje, KN, 16.VII.2018. (SW Yoon & DO Shin)

Distribution. Korea (new record), Taiwan, Japan.

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신동오 : 푸른개미연구소, 소장; 시료준비 및 분석

모든 저자는 원고를 읽고 투고에 동의하였음

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