ASED http://e-ASED.org
Animal Systematics, Evolution and Diversity

Anim. Syst. Evol. Divers. Vol. 37, No. 1: 84-87, January 2021
https://doi.org/10.5635/ASED.2021.37.1.093

Short communication

First Record of Marine Crane Fly *Dicranomyia* (*Idioglochina*) (Diptera: Limoniidae) in Korea

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ABSTRACT

The subgenus *Idioglochina* Alexander, 1921 belongs to the genus *Dicranomyia* Stephen, 1829 and has a special habitat unlike other congeners. The larval stage inhabits marine algae near the intertidal zones. The most distinctive characters are found in the antennae with inner face of flagellar segments extended to produce a serrate form. A total of 30 species of the subgenus *Idioglochina* are recorded with the distribution is restricted to the Pacific and Indian Ocean regions. In this study, the subgenus and its species *D.* (*I.*) *tokara* (Nobuchi, 1955) are newly added to the Korean fauna. This species was previously recorded in Japan as an endemic species, but it was collected from Jeju Island. A redescription, period of activity, habitat information, and photographs of diagnostic characters of the species are provided. The female ovipositor is photographed for the first time.

Keywords: Limoniinae, new record, Jeju Island, South Korea, taxonomy

INTRODUCTION

The subgenus *Idioglochina* Alexander, 1921 belongs to the genus *Dicranomyia* Stephen, 1829, which is distributed worldwide with 1,140 species and is one of the largest genus in the family Limoniidae (Podenas et al., 2019). Among the 24 subgenera of *Dicranomyia*, *Idioglochina* has a special habitat unlike other members of this genus. The larval stage inhabits marine algae near the intertidal zones. The most distinctive characters of the adult are found in the antennae, especially in males, flagellar segments with the ventral face extended to produce a serrate form. A total of 30 species belonging to *Idioglochina* are described and its distribution is restricted to the Pacific and Indian Ocean regions. In this study, we first report the subgenus *Idioglochina* and its described species *Dicranomyia* (*Idioglochina*) *tokara* (Nobuchi, 1955) in Jeju Island, Korea, which has been previously recorded in Tokara Islands, Japan.

Adults were collected either by using an insect net or an aspirator. Some specimens were preserved dry in envelopes in the field and were mounted, and other specimens were preserved in 80% ethanol for examining external morphology or 100% ethanol for using molecular data.

Terminology of adult morphological features generally follows that of Cumming and Wood (2017). General distribution of species is given according to Oosterbroek (2020).

SYSTEMATIC ACCOUNTS

Order Diptera Linnaeus, 1758
Family Limoniidae Speiser, 1909
Subfamily Limoniinae Speiser, 1909
Genus *Dicranomyia* Stephens, 1829

[1]*Subgenus *Dicranomyia* (*Idioglochina*) Alexander, 1921

Dicranomyia (*Idioglochina*) Alexander, 1921a: 207; Theischinger et al., 2020: 55.

Limonia (*Idioglochina*) Alexander, 1929: 243; Alexander, 1972: 791.

Type species: *Rhipidia tusitala* Alexander, 1921b, by original designation.

Korean name: [1]*바룻각다귀아속(신칭)

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eISSN 2234-8190

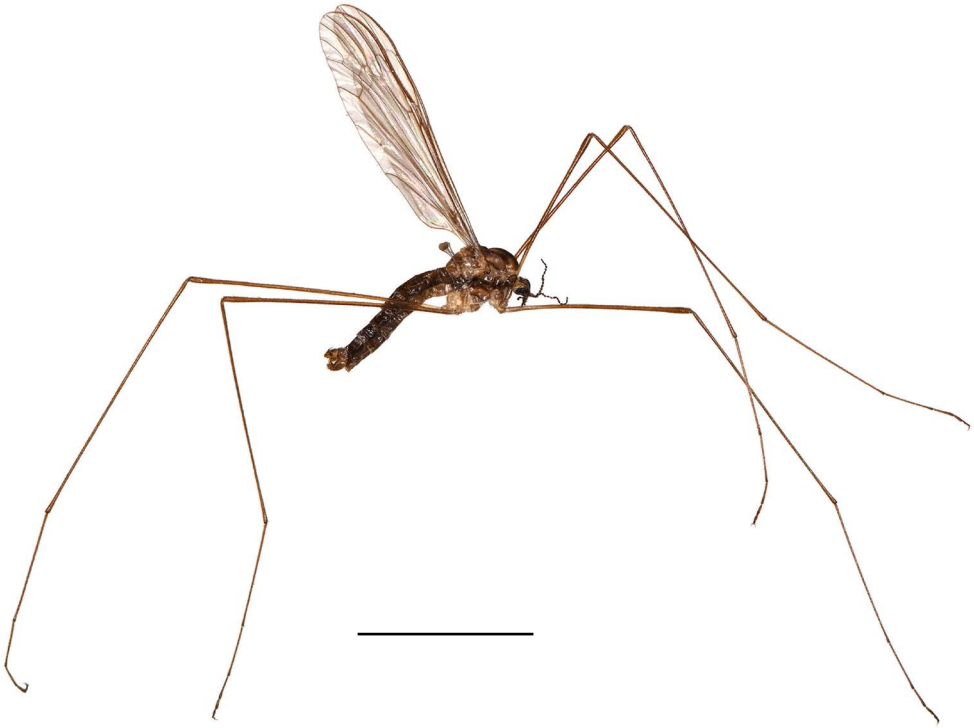

Fig. 1. Habitus of adult, male. Scale bar = 5 mm.

Diagnosis. Antennae 14 or 15-segmented; flagellum serrate or pectinate with extended inner face, periphery of each flagellomeres surrounded by spinous setae. Vein Sc ending before origin of Rs; R_1 indistinct, R_1 and R_2 transverse; cell r_1 large; discal medial cell often closed, but in some species open. Anal angle developed. Tarsal claw with additional tooth.

[1]**Dicranomyia* (*Idioglochina*) *tokara* (Nobuchi, 1955) (Figs. 1–3)

Limonia (*Dicranomyia*) *tokara* Nobuchi, 1955: 360–362.
Limonia (*Idioglochina*) *tokara* Alexander, 1972: 791.

Material examined. Paratype, male (wing, legs and genitalia slide-mounted), Japan: Ryukyu I., Nakanoshima, Tokara, VI-10, 1953, S. Ueno (United States National Museum); Non-types, 9 males, 6 females (in ethanol), 3 males, 2 females (pinned), Korea: Jeju-do: Jeju-si, Gujwa-eup, Gimnyeong-ri, Gimnyeong beach, 33°33′30.4″N, 126°45′37.3″E, 21 May 2020, coll. Kim J, Lim C (Korea University); 1 female (pinned), Jeju-si, Jocheon-eup, Hamdeok-ri, Hamdeok beach, 33°32′39.3″N, 126°40′05.1″E, 21 May 2020, coll. Kim J, Lim C (Korea University).

Redescription. Adult, male (n = 12), female (n = 9). General coloration brown to dark brown. *Dimensions*. Body (Fig. 1) length of male 4.7–5.7 mm, female 6.0–7.5 mm. Antenna (Fig. 2A) 1.0–1.3 mm long in male, 1.1–1.2 mm in female. Wing (Fig. 2B–E) length of male 6.0–8.0 mm, female 6.2–7.9 mm. Length of halter 0.8–1.0 mm. Male femur I: 3.7–5.2 mm long, II: 4.9–6.0 mm, III: 5.0–6.6 mm, tibia I: 5.0–6.1 mm, II: 4.4–5.8 mm, III: 5.5–6.7 mm, tarsus I: 4.7–5.7 mm, II: 3.8–4.7 mm, III: 4.2–5.0 mm. Female femur I: 3.7–4.7 mm long, II: 3.8–5.8 mm, III: 4.5–6.3 mm, tibia I: 3.0–5.7 mm, II: 3.3–5.1 mm, III: 3.9–6.7 mm, tarsus I: 3.4–5.1 mm, II: 3.3–4.2 mm, III: 3.3–4.8 mm. *Head*. Dark brown, vertex with small protuberance. Antenna brown, 14-segmented; inner face of flagellum slightly serrated, each flagellomeres surrounded by six spinous setae, distal segment less extended, oval. *Thorax*. Pleuron with longitudinal dark brown stripe; bottom half of katepisternum dark brown. Wing subhyaline, uniformly tinged with pale brown, unpatterned; veins brown. Venation: Sc short, ending before base of Rs, sc-r missing; R_1 indistinct, R_2 beyond tip of R_1; discal medial cell opened by atrophy of cross vein m-m. Coxae and trochanters pale. Leg segments entirely brown. Tarsal claw (Fig. 2F, G) longer in male, with single subbasal spine in both sexes. *Abdomen*. Abdominal segments dark brown, center of non-sclerotized part black. Posterior magin of ninth tergite slightly concave with small blunt projection. Male genitalia (Fig. 2H) brown; gonocoxite with ovoid

Korean name: [1]*옆검은바룻각다귀(신칭)

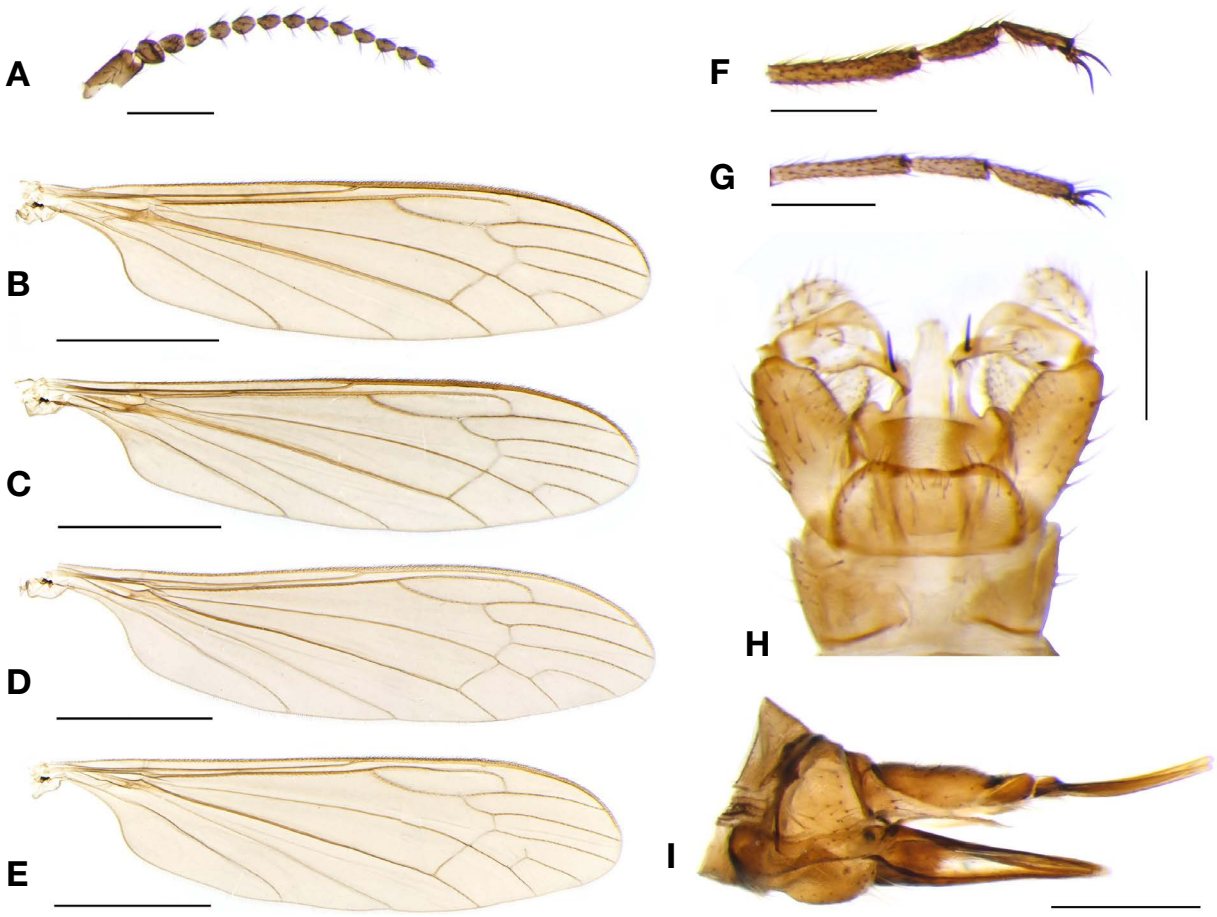

Fig. 2. *Dicranomyia* (*Idioglochina*) *tokara*. A, Antenna; B–E, Wing (variations of venation); F, Tarsal claw (male); G, Tarsal claw (female); H, Male genitalia; I, Ovipositor. Scale bars: A, F–I = 0.3 mm, B–E = 2 mm.

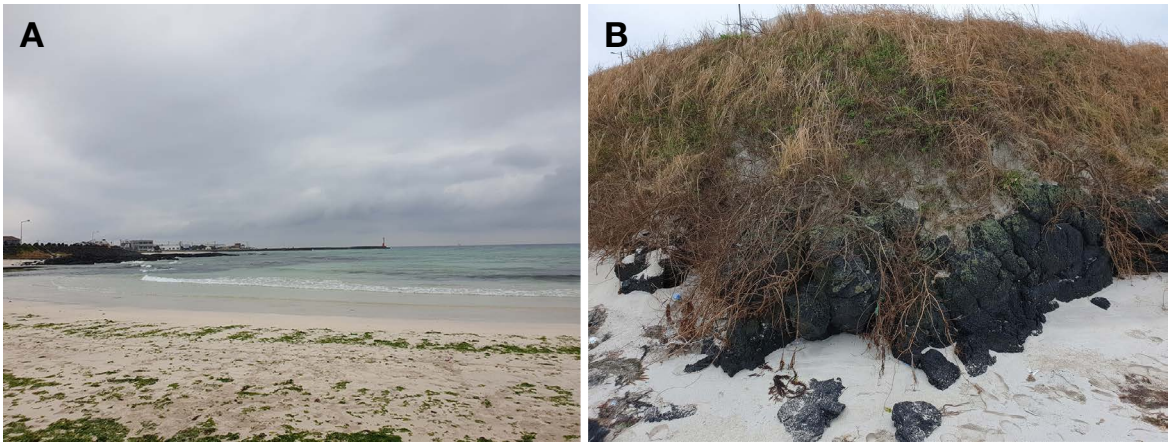

Fig. 3. Habitats of *Dicranomyia* (*Idioglochina*) *tokara*. General view of habitat (A) and actual sampling site near seashore where adults were resting (B).

large ventro-mesal lobe; outer gonostylus distinctly arched, pointed apex; inner gonostylus oval with small subbasal lobe on dorsal surface, rostral prolongation armed with single straight black spine at middle; paramere wide and waved at

base, rod-shaped distal part about half length of remainder of paramere, tip round; aedeagus with tip bifid. Ovipositor (Fig. 2I) brown; cercus slightly curved upwards; hypovalva as long as half of cercus and straight, wedge-shaped.

Distribution. Species was known only from the Tokara Islands, Japan. Newly recorded from Jeju Island, Korea.

Period of activity. According to Nobuchi (1955) and Kato et al. (2016), adults are known to be active from early June through late July in Japan and we observed in Korea that this species was active in late May.

Habitat. Tidal zone of rocky seashore with marine algae. Adults hang on vegetation near shore to rest (Fig. 3).

Remarks. In the male genitalia, *D.* (*I.*) *tokara* is similar to *D.* (*Dicranomyia*) *boniniana* Alexander, 1972 known in Japan, but can be distinguished by the spine on the rostral prolongation of inner gonostylus. *Dicranomyia* (*I.*) *tokara* has a single black spine, while *D.* (*D.*) *boniniana* has two spines, one black spine and another reduced spine at its base. Male genitalia of some Korean specimens are slightly different from that in the original description of the species known in Japan. In some Korean specimens, the paramere has a waved caudal margin in the base of rod-shaped part, which has a flat margin in the paratype. The venation has many variations in the location of cross vein m-cu such as before (Fig. 2B), at (Fig. 2C) or occasionally beyond fork of M (Fig. 2D). Spur vein in M_3 can be observed in some Korean specimens (Fig. 2E). Nobuchi (1955) only reported cases of the cross vein located before and at fork of M. This species has slightly serrated antennae, which is not the same to the typical antennae of *Idioglochina*. From these observations, a further study is needed regarding species level taxonomy and classification of this marine crane fly group.

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CONFLICTS OF INTEREST

No potential conflict of interest relevant to this article was reported.

ACKNOWLEDGMENTS

Our warmest thanks to Changseob Lim (Korea University, Korea) for his help during field trip in Jeju Island, Korea. We are grateful for Dr. Sigitas Podenas (Nature Research Centre, Lithuania) for helpful comments on this study, for Dr. Daichi Kato (Echigo-Matsunoyama Museum of Natural Sciences, Japan) for the photographs of the paratype. This work was supported by a grant from the National Institute of Biological Resources (NIBR), funded by the Ministry of Environment (MOE) of the Republic of Korea (NIBR202002205).

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Received December 7, 2020
Revised January 13, 2021
Accepted January 14, 2021