

Synopsis of the genus *Atypophthalmus* Brunetti, 1911 (Diptera: Limoniidae) of Japan

Краткий обзор рода *Atypophthalmus* Brunetti, 1911 (Двукрылые: Limoniidae) Японии

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Abstract. Japanese species of the genus *Atypophthalmus* Brunetti, 1911 are revised. Two new species, *A. (A.) hymenophallus* Kato, **sp.n.** and *A. (A.) okinawensis* Kato, **sp.n.** are described. *A. (A.) multisetosus* Savchenko, 1983 is synonymized with *A. (A.) crinitus* (Alexander, 1924). Species previously recorded as *A. (Microlimonia) egressus* (Alexander, 1938) from Japan is treated as *A. (Microlimonia) jeju* Podenas et Podeniene, 2020. Images of the external appearance, wing, and male terminalia, distribution maps of and a key to the Japanese species are provided.

Abstract. Ревизованы виды комаров болотниц рода *Atypophthalmus* Brunetti, 1911 фауны Японии. Описаны два новых вида: *A. (A.) hymenophallus* Kato, **sp.n.** и *A. (A.) okinawensis* Kato, **sp.n.** Вид *A. (A.) multisetosus* Savchenko, 1983 синонимизирован с видом *A. (A.) crinitus* (Alexander, 1924). Приводимый ранее для Японии вид *A. (Microlimonia) egressus* (Alexander, 1938) переопределён как *A. (Microlimonia) jeju* Podenas et Podeniene, 2020. Приведены иллюстрации внешнего вида, крыльев, гениталий самцов, дана карта распространения видов в Японии и представлена определительная таблица видов рода *Atypophthalmus* Brunetti, 1911 фауны Японии.

Introduction

Atypophthalmus Brunetti, 1911 is a genus of the subfamily Limoniinae of Limoniidae and includes 51 species in the world except for the Nearctic Region (13 Palearctic, 1 Neotropic, 26 Afrotropic, 11 species in the Oriental, 8 Australasian / Oceanian species) [Oosterbroek, 2021]. This genus comprises two subgenera, *Atypophthalmus* (45 species) and *Microlimonia* Savchenko, 1976 (6 species).

Atypophthalmus was mainly treated as a subgenus of *Limonia* Meigen, 1803 in the classification by C.P. Alexander [1971], and then returned to genus by Savchenko, Krivolutsukaya [1976]. *Microlimonia* was originally established as a subgenus of *Dicranomyia* Stephens, 1829 comprising species which had been treated in the subgenus *Limonia* [Savchenko, Krivolut-

sukaya, 1976], and Starý [1981] transferred it to the genus *Atypophthalmus*. Some authors treated *Microlimonia* as genus [Savchenko et al., 1992; Sueyoshi et al., 2007; Krivosheina, 2009]. Recently, the inclusion of the subgenus in *Atypophthalmus* proposed by Starý [1981] is accepted [Kato, 2020; Podenas et al., 2020; Oosterbroek, 2021].

Immature stages of *Atypophthalmus* are known for living in fungi and under bark of decaying wood [Podenas et al., 2020] or slimy green algae in stagnant or flowing water [Alexander, 1920]. An adult of *A. (M.) omogoensis* (Alexander, 1954) was collected by sweeping sporophores of a fungus [Sueyoshi et al., 2007].

In Japan, eight species of *Atypophthalmus* have been recorded: *A. (A.) crinitus* (Alexander, 1924); *A. (A.) inustus*; *A. (A.) stylacanthus* (Alexander, 1971); *A. (A.) umbratus* (de Meijere, 1911); *A. (M.) egressus* (Alexander, 1938); *A. (M.) inelegans* (Alexander, 1924); *A. (M.) machidai* (Alexander, 1921); *A. (M.) omogoensis* [Nakamura, 2014; Kato, 2020; Oosterbroek, 2021]. In this paper, Japanese species of the genus are revised, including new species, correction of previous identification, and synonym. Images of the habitus, wing, male terminalia, distribution maps and a key to the species are provided.

Materials and Methods

Samples used in this study were mainly collected by insect nets and light traps (LT), and most of them were deposited in the Biosystematic Laboratory, Kyushu University, Japan (BLKU). Some paratypes of new species described in this study are preserved in the Private Collection of L.-P. Kolcsár (CKLP). In addition, specimens including types in the collection of the National Museum of Natural History, Smithsonian Institution, Washington D.C., USA (USNM) were examined. General descriptions were based on examining dried speci-

mens. For drawings and descriptions of male terminalia, they were heated in a solution of 10 % KOH for several minutes and then rinsed in 70 % ethanol with 3 % acetic acid for neutralization, and observed in glycerin. The treated terminalia were preserved in genitalia tubes filled with glycerin and the tubes were pinned with the associated specimens. Terminology mainly follows Cumming, Wood [2017] for general morphology and de Jong [2017] for wing venation and terminalia.

Taxonomy

Atypophthalmus Brunetti, 1911

Atypophthalmus Brunetti, 1911: 273.

Type species: *Atypophthalmus holopticus* Brunetti, 1911 (= *Dicranomyia umbrata* Meijere, 1911), by monotypy.

Description. Head with eye holoptic. Rostrum about as long as pedicel. Palpus 5-segmented. Antenna 14-segmented. Thorax with pleuron often with longitudinal dark stripe running from neck to base of abdomen. Wing with round to oval stigma, occasionally sparsely patterned. Sc ending before or at level of furcation of Rs; Rs weakly curved, more than half length of R_4 ; crossvein m-cu situated at or close to fork of M. Male terminalia with gonostylus one (subgen. *Microlimonia*) or two pairs (subgen. *Atypophthalmus*); (inner) gonostylus with basal lobe smaller than gonocoxite; rostral spine absent. Aedeagus bilobed at tip.

Remarks. As far as referring to original descriptions of the oriental species, some of the *Limonia* species were considered to be the members of *Atypophthalmus* according to the present classification, which is mainly based on that of Savchenko, Krivolutskaya [1976], where subgenera of *Limonia* were elevated to genus or moved to the other genera. Some species of *Limonia* were described without subgeneric assignments and Savchenko possibly couldn't examine the non-Palaearctic species to assign them to genus along his classification. These could cause the inclusion of *Atypophthalmus* species in *Limonia*. Re-arrangements of the species of *Limonia* to appropriate genera are needed, but are beyond the goals of this paper.

KEY TO JAPANESE SPECIES OF THE GENUS *ATYPOPTHALMUS*

1. Male terminalia with inner and outer gonostyli.....Subgenus *Atypophthalmus* 2
- Male terminalia with single gonostylus Subgenus *Microlimonia* 7
2. Wing marked with dark spot at origin of Rs and dark seams along cord and outer end of cell dm (Figs 1B, 6B); abdominal tergites 2–5 distinctly pale at anterior parts (Figs 1A, 6A) 3
- Wing without distinct marking as described above (Figs 2–5B); abdominal tergites not as above 4
3. Presutural area of mesonotum with three indistinct dark stripes, often obsolete; male terminalia with gonocoxite bearing dark round area covered with long setae on dorsal surface (Figs 1C–D); proctiger normal *A. (A.) crinitus*
- Presutural area of mesonotum with dark oval marking at middle of posterior half; male terminalia with gonocoxite smooth on dorsal surface (Figs. 6C, E); proctiger considerably complex in structure, bearing curved lobe on each lateral side (Figs 6C–D) *A. (A.) umbratus*
4. Wing with upper side of cell dm shorter than half length of cell m_{1+2} (Fig. 2B); male terminalia with outer gonostylus

- curved medially on distal part (Fig. 2C) *A. (A.) hymenophallus* sp.n.
- Wing with anterior side of cell dm longer than half length of cell m_{1+2} (Figs 3–5B); male terminalia with outer gonostylus almost straight, or weakly curved outward (Figs 3–5C) 5
5. Outer gonostylus without spine at inner surface (Fig. 3A); rostral prolongation of inner gonostylus bearing finger-shaped lobe near base of dorsal surface (Fig. 3E) *A. (A.) inustus*
- Outer gonostylus with spines at middle of inner surface (Figs. 4–5C); rostral prolongation of inner gonostylus not bifid, without finger-shaped lobe dorsally (Figs 4–5E) 6
6. Katepisternum entirely yellowish; medial spines of outer gonostylus forked at middle and closed to each other (Fig. 5F); narrow part of outer gonostylus distal to medial spines about twice as long as wide (Fig. 5C); basal lobe of inner gonostylus forked at distal 1/3 (Fig. 5E) *A. (A.) stylacanthus*
- Katepisternum infuscated on ventral part; male terminalia with black medial spines of outer gonostylus forked at basal 1/4 and distinctly separated with each other (Fig. 4F); narrow part of outer gonostylus distal to medial spines about three times as long as wide (Fig. 4C); basal lobe of inner gonostylus forked at distal 1/2 (Fig. 4E) *A. (A.) okinawensis* sp.n.
7. Wing with cell dm open by atrophy of first section of M_3 (Fig. 8B) *A. (M.) jeju*
- Wing with cell dm closed (Figs 7B, 9–10B) 8
8. Upper side of cell dm shorter than half length of cell m_{1+2} (Fig. 7B); each segment of basal sternites pale on posterior part *A. (M.) ineleigans*
- Upper side of cell dm longer than half length of cell m_{1+2} (Figs 9–10B); basal sternites not as above 9
9. Each segment of basal sternites pale at anterior and posterior ends; male terminalia with basal part of gonostylus bearing two small rounded lobes (Fig. 10C) *A. (M.) omogoensis*
- Basal sternites dark brown, sometimes slightly yellowish; male terminalia with basal part of gonostylus simple, without roundish lobe at base (Fig. 9C) *A. (M.) machidai*

Atypophthalmus (Atypophthalmus) crinitus (Alexander, 1924)

Figs 1A–H, 11A.

Limonia crinita Alexander, 1924: 1924b: 154. Type locality: Japan, Hokkaido, Hitaka-no-kuni, Shimokebo;

Atypophthalmus multisetosus Savchenko, 1983: 123. Type locality: Russia, Primorskiy kray, near Vladivostok **syn.n.**;

Atypophthalmus crinitus: Savchenko et al. [1992: 331];

Atypophthalmus multisetosus: Savchenko et al. [1992: 331];

Atypophthalmus (Atypophthalmus) crinitus: Nakamura [2014: 38]; Oosterbroek [2019];

Atypophthalmus (Atypophthalmus) multisetosus: Oosterbroek [2021].

Material. Japan: holotype: **Hokkaido:** ♂, Hitaka-no-kuni, Shimokebo, 13.VIII.1923, S. Kuwayama (USNM). Non-types: **Honsbu:** 1♂, Aomori, Nishimeya-mura, Kawatatai, Ōkawa-rindō Path, h ~ 300 m a.s.l., 8.IX.2014, D. Kato (BLKU); 1♀, Aomori, Hirosaki-shi, Ichinowatari-Washinosu, h ~ 205 m a.s.l., 13.VII.2013, D. Kato (BLKU); 1♂, Aomori, Towada-shi, Okuse, Tsutanuma-rindō Path, h ~ 460 m a.s.l., 8.VIII.2013, D. Kato (BLKU); 1♂, Nagano, Matsumoto-shi, Nagawa, Shirakaba-tōge Pass, h ~ 1610 m a.s.l., 22.VII.2016,

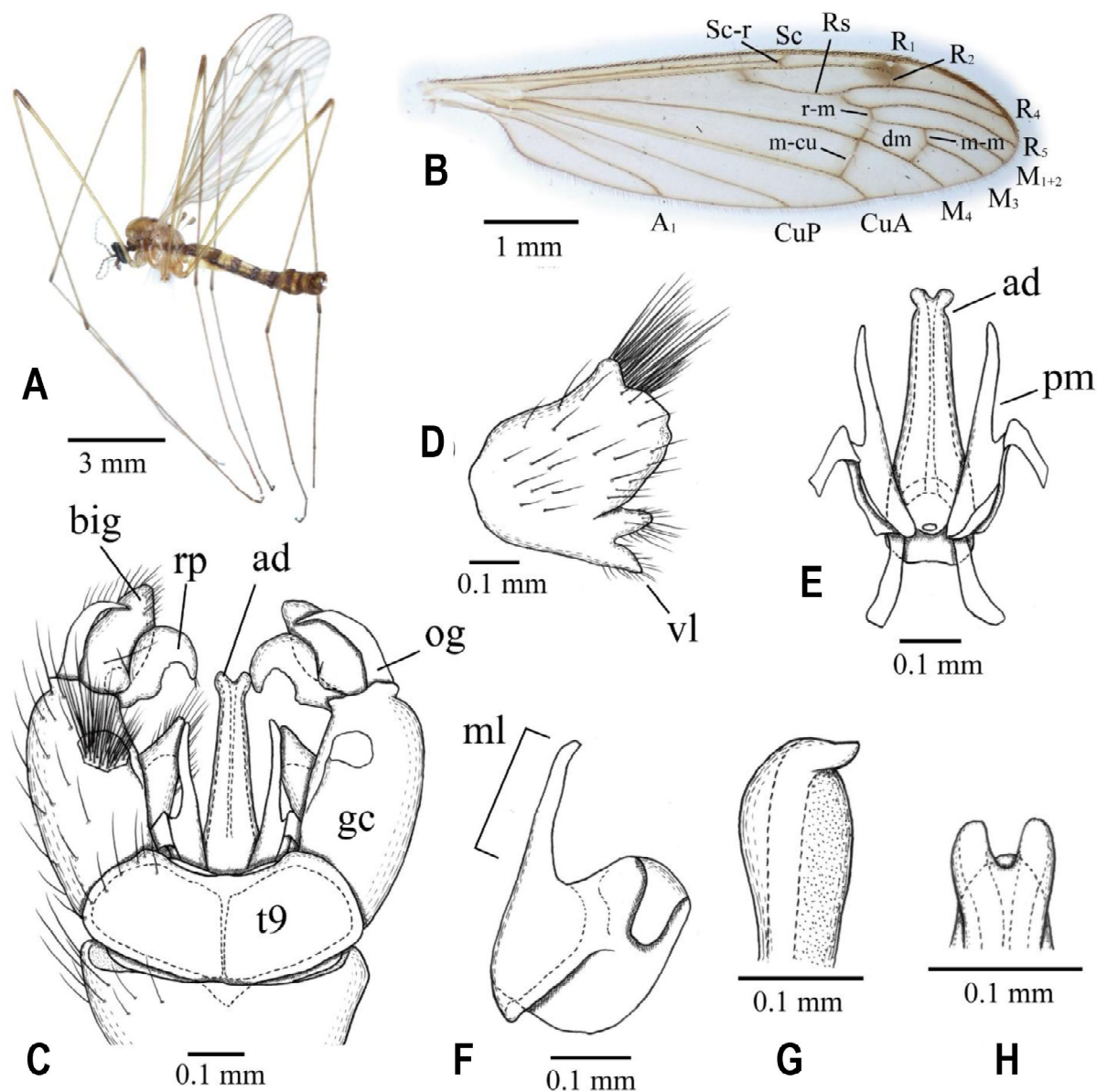


Fig. 1. *Atypophthalmus (Atypophthalmus) crinitus* (Alexander, 1924): A — habitus, lateral view; B — wing; C — male terminalia, dorsal view (after Kato [2020]); D — gonocoxite, lateral view; E — aedeagal complex, dorsal view; F — paramere, outer surface; G — aedeagus, lateral view (right = ventral); H — apical part of aedeagus, posterodorsal view. Abbreviations: ad — aedeagus; big — basal lobe of inner gonostylus; gc — gonocoxite; ml — mesal-apical lobe of paramere; og — outer gonostylus; pm — paramere; rp — rostral prolongation of inner gonostylus; t9 — tergite 9; vl — ventromesal lobe of gonocoxite.

Рис. 1. *Atypophthalmus (Atypophthalmus) crinitus* (Alexander, 1924): A — внешний вид, латерально; B — крыло; C — гениталии самца, дорсально (по Kato [2020]); D — гоноксит, латерально; E — структуры эдеагуса, дорсально; F — внешняя поверхность параметра; G — эдеагус, латерально (справа вентрально); H — вершина эдеагуса, дорсально сзади. Сокращения: ad — эдеагус; big — базальная доля внутреннего гоностыля; gc — гоноксит; ml — средино-вершинная доля параметра; og — внешний гоностиль; pm — параметр; rp — фронтальное удлинение внутреннего гоностыля; t9 — 9-й тергит; vl — средняя нижняя доля гоноксита.

D. Kato (BLKU); 1♂, Nagano, Matsumoto-shi, Nagawa, Sakai-gawa River, near bus stop Nagawakôgen-Iriguchi, h - 1340 m a.s.l., 22.VII.2016, D. Kato (BLKU); 1♂, Hiroshima, Hatsukaichi-shi, Yoshiwa, Yoshiwa Service Area, h - 640 m a.s.l., 1.IX.2015, D. Kato (LT / BLKU). **Kyushu:** 1♂, Fukuoka, Fukuoka-shi, Nishi-ku, Motooka, South of Ito Campus of Kyushu Univ., h - 40 m a.s.l., 6.VI.2015, D. Kato (BLKU); 2♀♀, idem, 13.VI.2015; 1♂, idem, 17.VI.2015; 2♂♂, Fukuoka, Fukuoka-shi, Sawara-ku, Magaribuchi, Mitsuse-tôge Pass,

h - 550 m a.s.l., 26.VI.2015, D. Kato (BLKU); 1♂, Fukuoka, Fukuoka-shi, Sawara-ku, Itaya, Mt. Sefuri-san, h - 970 m a.s.l., 26.VI.2015, D. Kato (BLKU); 1♀, Fukuoka, Miyawaka-shi, Shimo, Rikimaru Dam, h - 100m, 21.IX.2015, D. Kato (LT / BLKU); 1♀, Fukuoka, Soeda-machi, Hikosan, h - 630 m a.s.l., 21.IX.2015, D. Kato (LT / BLKU); 1♀, Ôita, Kokonoe-machi, Tano, h - 1050 m a.s.l., 28.VI.2015, D. Kato (BLKU); 1♂, Kagoshima, Minamisatsuma-shi, Kinpô-chô-Okudari, Mt. Kinpô-zan, h - 570 m a.s.l., 5.VI.2016, D. Kato (BLKU).

Description. *Male.* Body length: 4.5–5.1 mm. Wing length: 5.4–6.2 mm. Head gray to dark gray; rostrum and palpus pale brown to dark brown; antenna about three times as long as head, dark brown.

Thorax with notum yellowish ochreous to brown, often paler on postpronotum, interspace between scutal lobes, and base of scutellum; presutural area of mesonotum darkened at anterior end and lateral margin posterior to humeral region, with three indistinct dark stripes medially, often obsolete; scutal lobe often largely darkened on center; scutellum usually dark brown at caudal margin; mediotergite darkened on center or entire surface. Pleuron yellow to ochreous, with dark band on propleuron, anepisternum, and ventral parts of anepimeron and laterotergite. Wing (Fig. 1B) weakly tinged with brownish gray, stigma oval, dark brown; indistinctly dark spot at origin of Rs; weakly dark seams along cord and outer end of cell dm; cell dm long, anterior end longer than half length of cell m_{1+2} . Legs with coxae and trochanters pale whitish yellow to pale ochreous, base of fore coxa darkened; femora and tibiae yellow, narrowly darkened at tips; tarsi yellow, darkened distally. Halter dark brown, stem paler.

Abdomen yellow to ochreous, often more yellowish on sternites; distal halves of tergites 2 to 7 and each caudal 1/3 of sternites 2 to 7 dark brown, these dark bands on sternites sometimes indistinct. Male terminalia (Figs 1C–H) yellowish brown; tergite 9 roughly oval, broadly and shallowly concaved at posterior margin, anterior margin pointed at middle (Fig. 1C). Proctiger normal, sac-like membrane. Gonocoxite with dark rounded area bearing tuft of long setae (Fig. 1C), anterior margin of dark area produced dorsally (Fig. 1D); ventromesal lobe of gonocoxite furcated at middle (Fig. 1D), dorsal lobe straight, narrowed toward tip, ventral one somewhat stouter, weakly curved medially, blackened at tip, tips of ventromesal lobe ending slightly proximal to level of tip of gonocoxite (Fig. 1C). Outer gonostylus black, paler at base, sickle-shaped, weakly curved medially toward tip, slightly shorter than basal part of inner gonostylus, tip acute (Fig. 1C). Inner gonostylus with basal lobe oval in dorsal view, triangular with rounded corners in lateroventral view; rostral prolongation stout claw-shaped, black, about as long as basal lobe (Fig. 1C). Paramere with mesal-apical lobe long and slender, almost straight, about as long as remainder of paramere, darkened distally, tip subacute (Fig. 1F). Aedeagus cylindrical, slightly narrowed toward tip in dorsal view (Fig. 1E), tip bilobed (Fig. 1H) and bent ventrally, ventral margin of aedeagus before tip smooth (Fig. 1G).

Female. Body length: 4.8–7.0 mm. Wing length: 6.0–7.3 mm. Almost same as male except for terminalia. Ovipositor yellowish ochreous to ochreous; cercus reddish brown, about 2/3 as long as tergite 10, upcurved on distal half, acute at tip; sternite 8 squarish, slightly shorter than wide, roundly produced on center of posterior half; hypogynial valve reddish brown, darkened on basal 1/3, tip ending near level of middle of cercus.

Distribution. Japan (Hokkaido, Honshu, and Kyushu) (Fig. 11A), South Korea, and Russia (FE).

Remark. This species is considered to be almost morphologically identical with a Russian species, *A. (A.) multisetosus*, based on the original description and the drawing of the male terminalia, and is synonymized with the species. *A. crinitus* is somewhat similar to *A. (A.) umbratus* in terms of general coloration, but is differentiated from it by the following characters: presutural area of mesonotum without large oval darkening (with oval dark area at middle of posterior half in *A. umbratus*); dorsal surface of gonocoxite with

dark round area clothed with long setae (Fig. 1C) (simple in *A. umbratus* (Fig. 6C)); proctiger normal in shape, sac-like membrane (very complex, bearing pair of lateral arms in *A. umbratus* (Fig. 6C)).

Atypophthalmus (Atypophthalmus) hymenophallus
Kato, sp.n.

Figs 2A–H, 11B.

Material. **Japan:** holotype: *Kyushu*: ♂, Fukuoka, Itoshima-shi, Shimasakurai, Mt. Tenga-dake, h - 110 m a.s.l., 29.V.2015, D. Kato (BLKU); paratypes: *Honshu*: 1♂, Niigata, Tōkamachi-shi, Matsunoyama-Amamizukoshi, Mt. Amamizu-yama, h - 920 m a.s.l., 2.VIII.2019, D. Kato (BLKU); 3♂♂, Aichi, Seto-shi, Iwaya-chō, near Iwayadō Park, h - 300 m a.s.l., 4.V.2016, D. Kato (BLKU); 1♂, idem, 17.VII.2016, D. Kato (BLKU); 2♀♀, Yamaguchi, Iwakuni-shi, Nishiki-machi-Ōno, Mt. Shōjō-yama, h - 330 m a.s.l., 24.VII.2016, D. Kato (BLKU). *Shikoku*: 1♂, 2♀♀, Ehime, Matsuyama-shi, Shukuno-machi, rocky stream and waterfall, h - 240 m a.s.l., 3.V.2020, L.-P. Kolcsár (CKLP); 1♂, Ehime, Matsuyama-shi, Iwaidaninishi-machi, small ruderal stream, h - 125 m a.s.l., 18.IX.2021, L.-P. Kolcsár (CKLP); 1♂, Ehime, Matsuyama-shi, Jikiba-machi, Sugi forest, h - 180 m a.s.l., 5.VI.2021, L.-P. Kolcsár (CKLP). *Kyushu*: 1♂, same data as holotype, 21.VI.2015, 2♂♂, 9.VII.2015; 1♀, Fukuoka, Fukuoka-shi, Sawaraku, Itaya, Mt. Sefuri-san, h - 970 m a.s.l., 14.VIII.2015, D. Kato (BLKU); 1♂, Saga, Saga-shi, Fuji-machi-Seiya, Kase-gawa River near Hokuzan Dam, h - 320 m a.s.l., 23.VIII.2015, D. Kato (BLKU); 1♂, Kumamoto, Misato-machi, Samata, Samatano-yu Spa, h - 100 m a.s.l., 31.VII.2016, D. Kato (BLKU). *Nansei Islands, Yakushima Island*: 4♂♂, near Shiratanisui-kyō Valley, h - 600 m a.s.l., 25.IV.2018, D. Kato (BLKU); 1♀, Miyaura, near Sen-no-le, h - 20 m a.s.l., 25.IV.2018, D. Kato (BLKU); *Amamiōshima Island*: 1♂, Setouchi-chō, Shinokawa, Yakugachi-gawa River, h - 130 m a.s.l., 3.IV.2019, D. Kato (BLKU); *Tokunoshima Island*: 1♂, Amagi-chō, Tōbe, Mt. Minada-yama, h - 300 m a.s.l., 2.IV.2019, D. Kato (BLKU); *Okinawa-jima Island*: 1♀, Kunigami-son, Iji, h - 320 m a.s.l., 21.V.2016, D. Kato (BLKU); 1♂, idem, h - 330 m a.s.l., 4.VIII.2016; 1♂, Kunigami-son, Okuma, Okuma-gawa River, h - 290 m a.s.l., 17.V.2016, D. Kato (BLKU); 1♀, Nago-shi, Genka, Mt. Ubashi-yama, h - 100 m a.s.l., 12.III.2016, D. Kato (BLKU); 1♀, idem, h - 20 m a.s.l., 23.V.2016; 1♂, idem, h - 60 m a.s.l., 5.VIII.2016; 1♂, Nago-shi, Taira, Hanejiō-kawa, h - 70 m a.s.l., 22.V.2016, D. Kato (BLKU); *Iriomote Island*: 2♂♂, Taketomi-chō, Haeminaka-Haemi, h - 220 m a.s.l., 15.III.2016, D. Kato (BLKU); 1♂, Taketomi-chō, Komi, Maira-gawa River, h - 20 m a.s.l., 17.V.2016, D. Kato (BLKU).

Description. *Male.* Body length: 4.0–4.8 mm. Wing length: 4.6–6.1 mm. Head dark gray; rostrum and palpus pale brown to dark brown; antenna dark brown, about twice as long as head.

Thorax with notum yellowish ochreous to brown, often whitish on postpronotum, interspace between scutal lobes, and base of scutellum; presutural area of mesonotum darkened at anterior margin, with dark oval area at middle of posterior part, sometimes obsolete or narrowly extending anteriorly, lateral side of presutural area of mesonotum sometimes darkened posterior to humeral region; scutal lobe largely dark on center; scutellum dark brown at caudal margin. Pleuron dusky yellow, with dark band on propleuron, anepisternum, and ventral halves of anepimeron and laterotergite. Wing (Fig. 2B) weakly tinged with brownish gray, stigma round, dark brown, wing tip distal to level of middle of cell m_{1+2} sometimes slightly darker; cell dm short, anterior end shorter than half length of cell m_{1+2} . Legs with coxae and trochanters dusky yellow, base of fore coxa darkened; remainder of legs dark brown, bases of femora narrowly yellowish. Halter dark brown, base of stem paler.

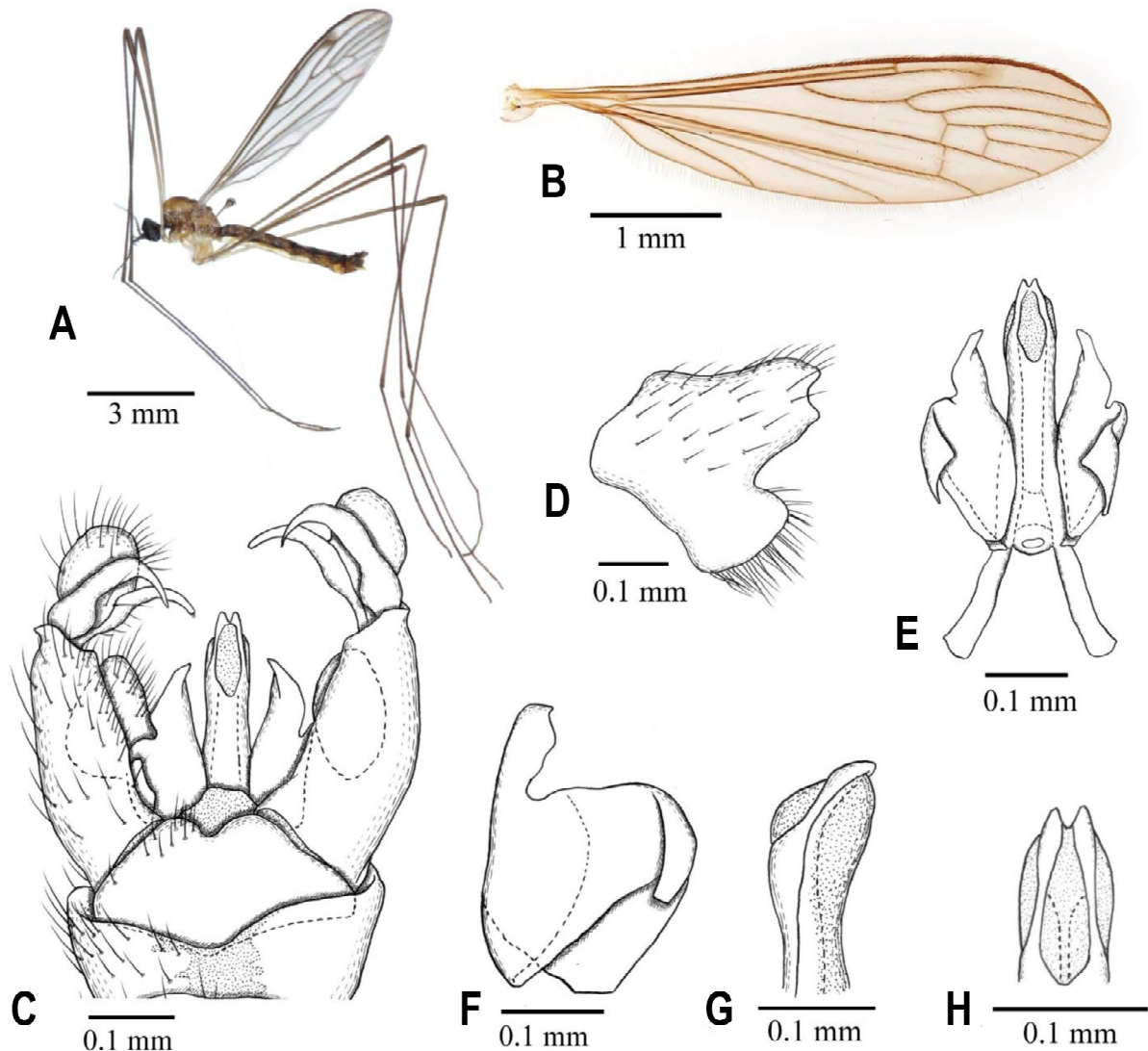


Fig. 2. *Atypophthalmus* (*Atypophthalmus*) *hymenophallus* sp.n.: A — habitus, lateral view; B — wing; C — male terminalia, dorsal view [by Kato 2020]; D — gonocoxite, lateral view; E — aedeagal complex, dorsal view; F — paramere, outer surface; G — aedeagus, lateral view (right = ventral); H — apical part of aedeagus, posterodorsal view.

Рис. 2. *Atypophthalmus* (*Atypophthalmus*) *hymenophallus* sp.n.: A — внешний вид, латерально; B — крыло; C — гениталии самца, дорсально (по Kato [2020]); D — гоноксита, латерально; E — структуры эдеагуса, дорсально; F — внешняя поверхность параметра; G — эдеагус, латерально (справа вентрально); H — вершина эдеагуса, дорсально сзади.

Abdomen with tergites dark brown; sternites dusky yellow, often gradually darkened toward terminal segment, anterior part of each sternite sometimes weakly darker. Male terminalia (Figs 2C–H) dark brown; tergite 9 strongly narrowed posteriorly, middle of posterior margin produced into two rounded lobes separated by V-shaped notch, anterior margin weakly produced anteriorly at middle (Fig. 2C). Proctiger normal, sac-like membrane. Gonocoxite simple on dorsal surface, ventromesal lobe large, expanded posteroventrally into tongue-shaped lobe, tip ending slightly proximal to level of tip of gonocoxite (Figs 2C–D). Outer gonostylus black, sickle-shaped, curved medially on distal 1/3, as long as basal part of inner gonostylus, tip acute (Fig. 2C). Inner gonostylus with basal lobe short oval; rostral prolongation slender, weakly curved medially, slightly longer than basal lobe, subacute at tip (Fig. 2C). Paramere with mesal-apical

lobe relatively short and wide, about half length of remainder of paramere, outer margin weakly convex at middle (Fig. 2F). Aedeagus cylindrical, gradually narrowed on apical part to tip in dorsal view (Fig. 2E), widened on distal part in lateral view (Fig. 2G), dorsal surface of apical region with oval membranous area at middle (Figs 2E, G), tip weakly bilobed (Fig. 2H), ventral margin of aedeagus before tip smooth (Fig. 2G).

Female. Body length: 4.4–5.5 mm. Wing length: 5.1–6.7 mm. Almost same as male except for terminalia. Ovipositor brown to dark brown, often yellowish on sternite 8; cercus reddish brown, about 2/3 length of tergite 10, up-curved on distal part, acute at tip; sternite 8 squarish, middle of posterior part roundly convex; hypogynial valve reddish brown, darkened on basal 1/3–1/2, tip ending near level of middle of cercus.

Distribution. Japan (Honshu, Kyushu, and Nansei Islands) (Fig. 11B).

Remarks. In terms of general appearance and structure of male terminalia, this species is similar to an Indonesian species, *Limonia quantilla* Alexander, 1934, and a Philippine species, *Dicranomyia* (*D.*) *melanopleura* (Alexander, 1931), which probably belongs to *Atypophthalmus*, but is differentiated from them by the following characters: male tergite 9 bearing V-shaped notch at middle of caudal margin (Fig. 1C) (truncate at middle of caudal margin in *L. quantilla*); outer gonostylus curved medially on distal 1/3 (Fig. 1C) (on distal 1/5 in the two species); inner gonostylus with basal lobe as long as outer gonostylus (Fig. 1C) (much shorter than outer gonostylus in the two species).

Atypophthalmus (*Atypophthalmus*) *inustus*
(Meigen, 1818)

Figs 3 A–I, 11A.

Limnobia inusta Meigen, 1818: 135. Type locality: Not given (?near Stolberg [D]);

= *Limonia angustistria* Alexander, 1924: 1924a: 556. Type locality: Japan, Hokkaido, Asahikawa-shi, Kamuikotan;

Atypophthalmus inustus: Savchenko and Krivolutsкая [1976: 129]; Savchenko et al. [1992: 331]; Krivosheina [2011: 806];

Atypophthalmus (*Atypophthalmus*) *inustus*: Nakamura [2014: 38]; Oosterbroek [2021].

Material. **Japan:** holotype: **Hokkaido:** types of *Limonia angustistria* Alexander, 1924: ♂, Kamuikotan, 22.VIII.1922, T. Esaki (USNM); paratypes: 2♂♂, same data as holotype (USNM); 1♂, Jōzankei, 19.VIII.1922, T. Esaki (USNM); 1♂, Kamiokoppe, 27.VIII.1922, T. Esaki (ELKU). Non-types: **Sweden:** 1♂, Skane, Kullaberg, Ransvik-back, 21.VII.1953, Tjeder (USNM).

Description. **Male.** Body length: 4.0–4.8 mm. Wing length: 5.8–6.2 mm. Head ochereous gray; rostrum and palpus brown; antenna dark brown, about 2.5 times as long as head.

Thorax with notum yellowish ochereous, paler on postpronotum, slightly dark on anteppronotum; presutural area of mesonotum weakly dark at lateral margin posterior to humeral region, bearing weak dark median stripe, obliterated posteriorly; scutal lobe sometimes darkened. Pleuron dusky yellow, with dark band on propleuron, anepisternum, and ventral halves of anepimeron and laterotergite. Wing (Fig. 3B) tinged with yellowish brown, stigma round, dark brown; cell dm long, anterior end longer than half length of cell m_{1+2} . Legs with coxae and trochanters pale yellow; femora obscure yellow; tibiae and tarsi pale brown, terminal segments of tarsi darkened. Halter brown, knob dark brown, base of stem yellowish.

Abdomen with tergites dark brown, caudal margins of segments narrowly yellowish; sternites similarly marked, basal segments paler. Male terminalia (Figs 3C–I) ochereous; tergite 9 roughly fan-shaped, posterior margin arched, sometimes slightly notched at middle, anterior margin strongly angulated at middle (Fig. 3C). Proctiger normal, sac-like membrane. Gonocoxite simple on dorsal surface, ventromesal lobe stout finger-shaped, tip ending at level of tip of gonocoxite (Figs 3C–D). Outer gonostylus spindle-shaped, without spines, about as long as basal part of inner gonostylus, tip obtuse (Fig. 3C). Inner gonostylus with basal lobe bilobed in lateral view, forked near middle, ventral lobe broader (Fig. 3E); rostral prolongation darkened and sickle-shaped in dorsal view, about as long as basal lobe of inner gonostylus, basal half widened, with small finger-shaped lobe on dorsal side (Fig. 3E). Paramere with mesal-apical lobe slightly longer

than remainder of paramere, gradually narrow to distal part, distal 1/3 curved dorsally, subacute at tip (Fig. 3G). Aedeagus stout, narrowed at distal 1/3 in dorsal view (Fig. 3F), tip large, heart-shaped (Fig. 3I), directed posteroventrally, ventral margin of aedeagus before tip smooth (Fig. 3H).

Female. Not examined.

Distribution. Japan (Hokkaido) (Fig. 11A), Russia, and widespread in the Westpalearctic region.

Remarks. This species is somewhat similar to *A. (A.) stylacanthus* in coloration and structure of male terminalia, but is differentiated from it by the following characters: outer gonostylus without spine at inner margin near middle (Fig. 3C) (with spines at middle of inner margin in *A. stylacanthus* (Fig. 5C)); rostral prolongation of inner gonostylus with finger-shaped lobe on basa of dorsal margin (Fig. 3E) (without finger-shaped lobe on basa of dorsal margin in *A. stylacanthus* (Fig. 5E)); tip of aedeagus wide heart-shaped (Fig. 3I) (narrower in general, apical lobes much smaller in *A. stylacanthus* (Fig. 5J)).

Atypophthalmus (*Atypophthalmus*) *okinawensis*
Kato, sp.n.

Figs 4A–J, 11C.

Material. **Japan:** holotype: **Nansei Islands, Okinawa-jima Island:** 1♂, Okinawa, Kunigami-son, Hiji, near Ufugi Nature Museum, h - 10 m a.s.l., 12.III.2016, D. Kato (BLKU); paratypes: **Amamiōshima Island:** 1♂, Setouchi-chō, Agina, Mt. Yui-dake, 3.X.2013, D. Kato (BLKU); **Tokunoshima Island:** 1♂, Tokunoshima-chō, Todoroki, near Mt. Sasotsuji-dake, h - 200 m a.s.l., 2.IV.2019, D. Kato (BLKU).

Description. **Male.** Body length: 3.8–4.6 mm. Wing length: 4.1–5.0 mm. Head dark gray; rostrum pale ochereous to dark brown, palpus dark brown; antenna about 4.5 times as long as head, dark brown.

Thorax with notum dark brown, weakly paler on postpronotum, postero-outer corner of scutal lobe, and center of post sutural area of scutum. Pleuron dusky yellow, with dark band on propleuron, anepisternum, and ventral 2/3 of anepimeron and laterotergite; ventral part of katepisternum weakly infuscated. Wing (Fig. 4B) tinged with brownish gray, stigma round, dark brown; cell dm long, anterior end longer than half length of cell m_{1+2} . Legs with coxae and trochanters pale ochereous, base of fore coxa darkened; remainder of legs brown to dark brown, bases of femora narrowly yellowish. Halter dark brown, base of stem paler.

Abdomen dark brown; sternites 2 to 3 with small yellowish area near or at posterior end. Male terminalia (Figs 4C–J) dark brown; tergite 9 roughly oval, slightly arched at posterior margin, center of posterior margin slightly and narrowly bilobed, anterior margin weakly angulated at middle (Fig. 4C). Gonocoxite simple on dorsal surface, ventromesal lobe stout finger-shaped, tip ending at level of tip of gonocoxite (Figs 4C–D). Outer gonostylus roughly finger-shaped, weakly curved outward, about as long as basal part of inner gonostylus (Fig. 4C); middle of inner margin of outer gonostylus with bifid spine-like lobe, weakly constricted basally, forked at basal 1/4, distinctly separated each other (Fig. 4F); narrow part distal to spine-like lobe about three times as long as wide. Inner gonostylus with basal lobe bilobed in lateral view, forked at basal half, ventral lobe broader (Fig. 4E); rostral prolongation darkened and sickle-shaped, longer than basal lobe of inner gonostylus, basal half widened (Fig. 4E). Paramere with mesal-apical lobe darkened and relatively long, about half length of remainder of paramere, distal half curved dorsally, roundly widened just before tip (Fig. 4H). Aedeagus cylindrical, strongly narrowed on distal half in dorsal

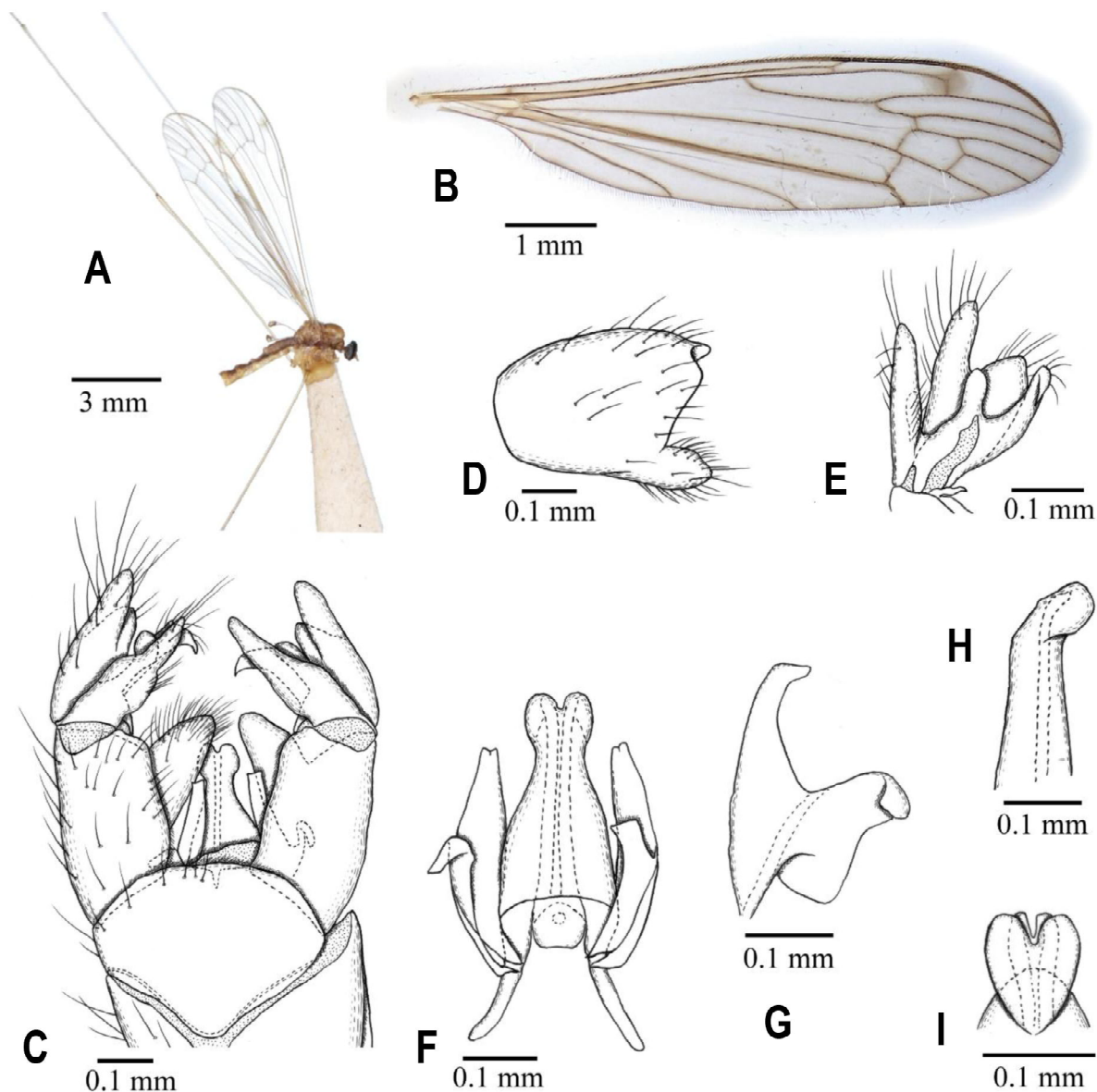


Fig. 3. *Atypophthalmus (Atypophthalmus) inustus* (Meigen, 1818): A — habitus, lateral view; B — wing; C — male terminalia, dorsal view; D — gonocoxite, lateral view; E — gonostyli, medial view; F — aedeagal complex, dorsal view; G — paramere, outer surface; H — aedeagus, lateral view (right = ventral); I — apical part of aedeagus, posterodorsal view.

Рис. 3. *Atypophthalmus (Atypophthalmus) inustus* (Meigen, 1818): A — внешний вид, латерально; B — крыло; C — гениталии самца, дорсально; D — гоноксита, латерально; E — гоностили, центрально; F — структуры эдеагуса, дорсально; G — внешняя поверхность параметра; H — эдеагус, латерально (справа вентрально); I — вершина эдеагуса, дорсально сзади.

view (Fig. 4G), tip bilobed (Fig. 4J) and bent ventrally, ventral surface before tip smoothly arched (Fig. 4I) or strongly produced.

Female. Body length: 4.3 mm. Wing length: 4.3 mm. Almost same as male except for terminalia and coloration of sternites. Sternites 2 to 8 dark brown, distal half of each segment weakly yellowish. Ovipositor dark brown, yellowish at lateral margin of tergite 8, tip of tergite 9, and whole sternite 8; cercus reddish brown, 1.2 times as long as tergite 10, upcurved on distal half, acute at tip; sternite 8 squarish, middle of posterior part roundly convex; hypogynial valve

reddish brown, darkened on basal half, tip ending near level of middle of cercus.

Distribution. Japan (Nansei Islands) (Fig. 11C).

Remarks. This species is similar to *A. (A.) stylacanthus*, but is differentiated from it by the following characters: katapisternum infuscated on ventral part (not infuscated in *A. stylacanthus*); spine-like lobe near middle of outer gonostylus forked at basal 1/4, distinctly separated each other (Fig. 4F) (forked at distal half, bifid part close to each other in *A. stylacanthus* (Fig. 5F)); narrow part distal to spine-like lobe about three times as long as wide (about twice as long as

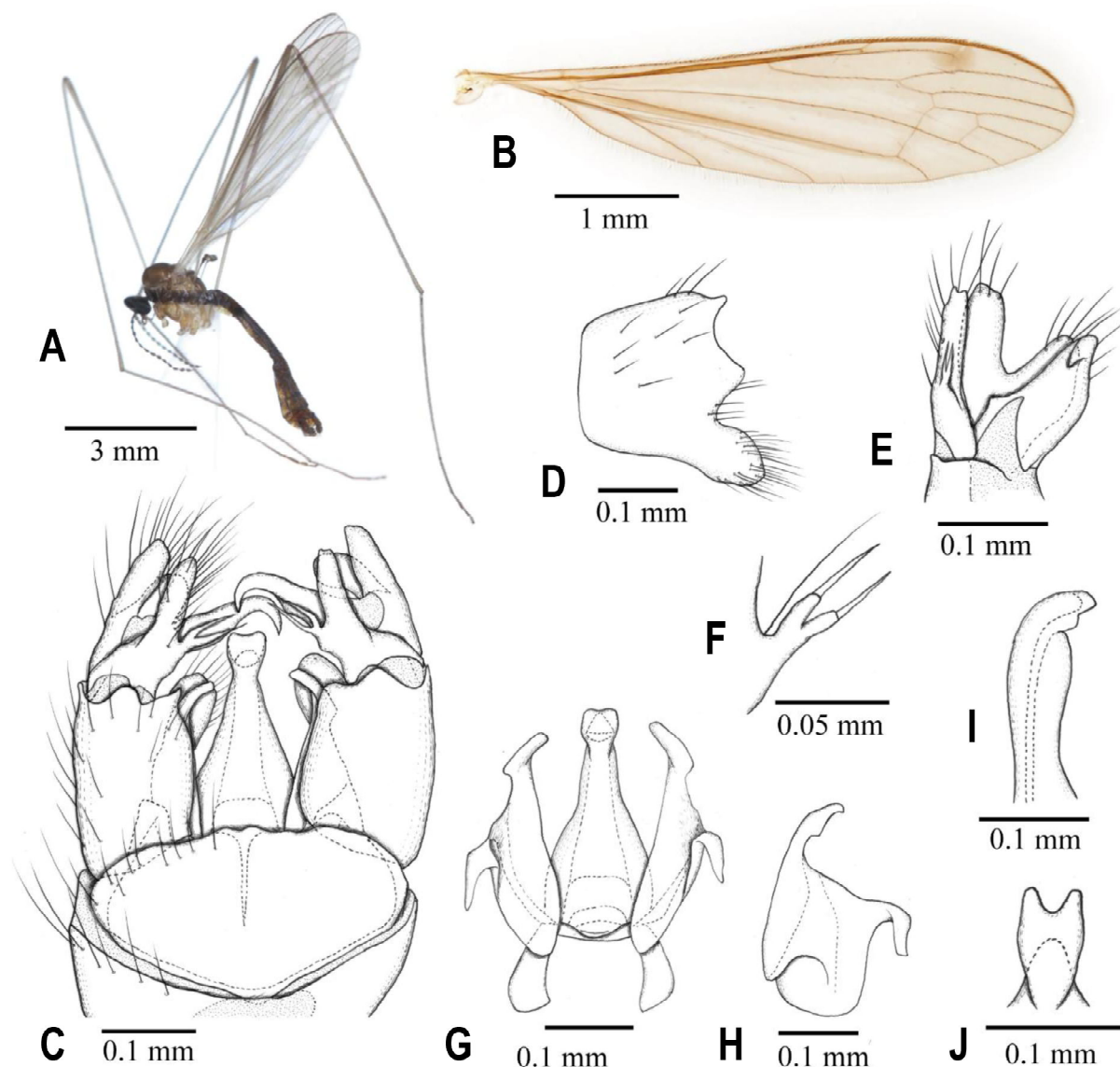


Fig. 4. *Atypophthalmus* (*Atypophthalmus*) *okinawensis* sp.n.: A — habitus, lateral view; B — wing; C — male terminalia, dorsal view; D — gonocoxite, lateral view; E — gonostyli, medial view; F — medial lobe of outer gonostylus; G — aedeagal complex, dorsal view; H — paramere, outer surface; I — aedeagus, lateral view (right = ventral); J — apical part of aedeagus, posterodorsal view.

Рис. 4. *Atypophthalmus* (*Atypophthalmus*) *okinawensis* sp.n.: A — внешний вид, латерально; B — крыло; C — гениталии самца, дорсально; D — гонококсит, латерально; E — гоностили, центрально; F — срединная доля внешнего гоностиля; G — структуры эдеагуса, дорсально; H — внешняя поверхность парамера; I — эдеагус, латерально (справа вентрально); J — вершина эдеагуса, дорсально сзади.

wide in *A. stylacanthus*); basal lobe of inner gonostylus bilobed in lateral view, forked at basal half (Fig. 4E) (forked at distal 1/3 in *A. stylacanthus* (Fig. 5E)).

Atypophthalmus (*Atypophthalmus*) *stylacanthus*
(Alexander, 1971)

Figs 5A–J, 11C.

Limonia (*Atypophthalmus*) *stylacantha* Alexander, 1971: 10. Type locality: Japan, Honshu, Niigata, Tainai-shi, Kurokawa;

Atypophthalmus stylacantha: Savchenko et al. [1992: 331];

Atypophthalmus (*Atypophthalmus*) *stylacantha*: Nakamura [2014: 38];

Atypophthalmus (*Atypophthalmus*) *stylacanthus*: Oosterbroek [2021].

Material. Japan: holotype: *Honsbu*: ♂, Echigo, Kurokawa, 2.VII.1955, Baba (USNM). Non-types: *Honsbu*: 1♂, Aomori, Hirosaki-shi, Ichinowatari-Yamashita, h ~ 173 m a.s.l., 25.VII.2014, D. Kato (LT / BLKU); 2♀♀, Aomori, Azigasawa-machi, Hitotsumori-machi, Sanai-zawa River, h ~ 100 m a.s.l., 26.VII.2014, D. Kato (BLKU); 1♂, 1♀, idem, 2.VIII.2015; 1♂, Aomori, Nishimeya-mura, Kawaratai, Ōkawa-rindō Path, h ~ 300 m a.s.l., 27.VI.2014, D. Kato (BLKU); 1♂, 1♀, idem, 2.VIII.2014; 1♀, idem, 8.IX.2014; 1♂, Aomori, Nakadomari-machi, Ōsawanai, Ōsawanai-tameike Pond, h ~ 35 m a.s.l., 19.VI.2014, D. Kato (BLKU); 1♂, Aomori, Towada-shi, Okuse,

Tsutanuma-rindô Path, h - 460 m a.s.l., 5.VII.2014, D. Kato (BLKU). **Kyushu:** 1♂, Fukuoka, Fukuoka-shi, Nishi-ku, Motoooka, South of Ito Campus of Kyushu Univ., h - 40 m a.s.l., 25.V.2015, D. Kato (BLKU); 1♂, Ōita, Kokonoe-machi, Tano, h - 1050 m a.s.l., 28.VI.2015, D. Kato (BLKU).

Description. Male. Body length: 3.6–4.6 mm. Wing length: 4.3–5.2 mm. Head dark gray; rostrum pale ochereous to dark brown, palpus dark brown; antenna about four times as long as head, dark brown.

Thorax with notum yellowish ochereous to brown, usually whitish on postpronotum and middle of post sutural area of scutum; presutural area of mesonotum often dark at lateral margin posterior to humeral region, with three dark stripes, middle one lying on whole length of presutural area, lateral one on posterior half and often fused with middle one; scutal lobe largely dark on center or almost whole surface; scutellum

dark brown, often paler basally; postnotum brown to dark brown, sometimes yellowish laterally. Pleuron whitish yellow to yellow, with dark band on propleuron, anepisternum, and ventral halves of anepimeron and laterotergite. Wing (Fig. 5B) tinged with brownish gray, stigma round, dark brown; cell dm long, anterior end longer than half length of cell m_{1+2} . Legs with coxae and trochanters pale yellow to pale ochereous, base of fore coxa darkened; remainder of legs brown to dark brown, bases of femora narrowly yellowish. Halter dark brown, base of stem paler.

Abdomen with tergites dark brown; sternites whitish or dusky yellow, anterior margins of segments 2 to 7 darkened, these dark areas wider on posterior segments, occupying 1/8 to 1/4 length of segment on sternite 2 and 2/3 to 1/2 length of segment on sternite 7. Male terminalia (Figs 5C–J) dark brown; tergite 9 roughly oval, almost straight at posterior margin,

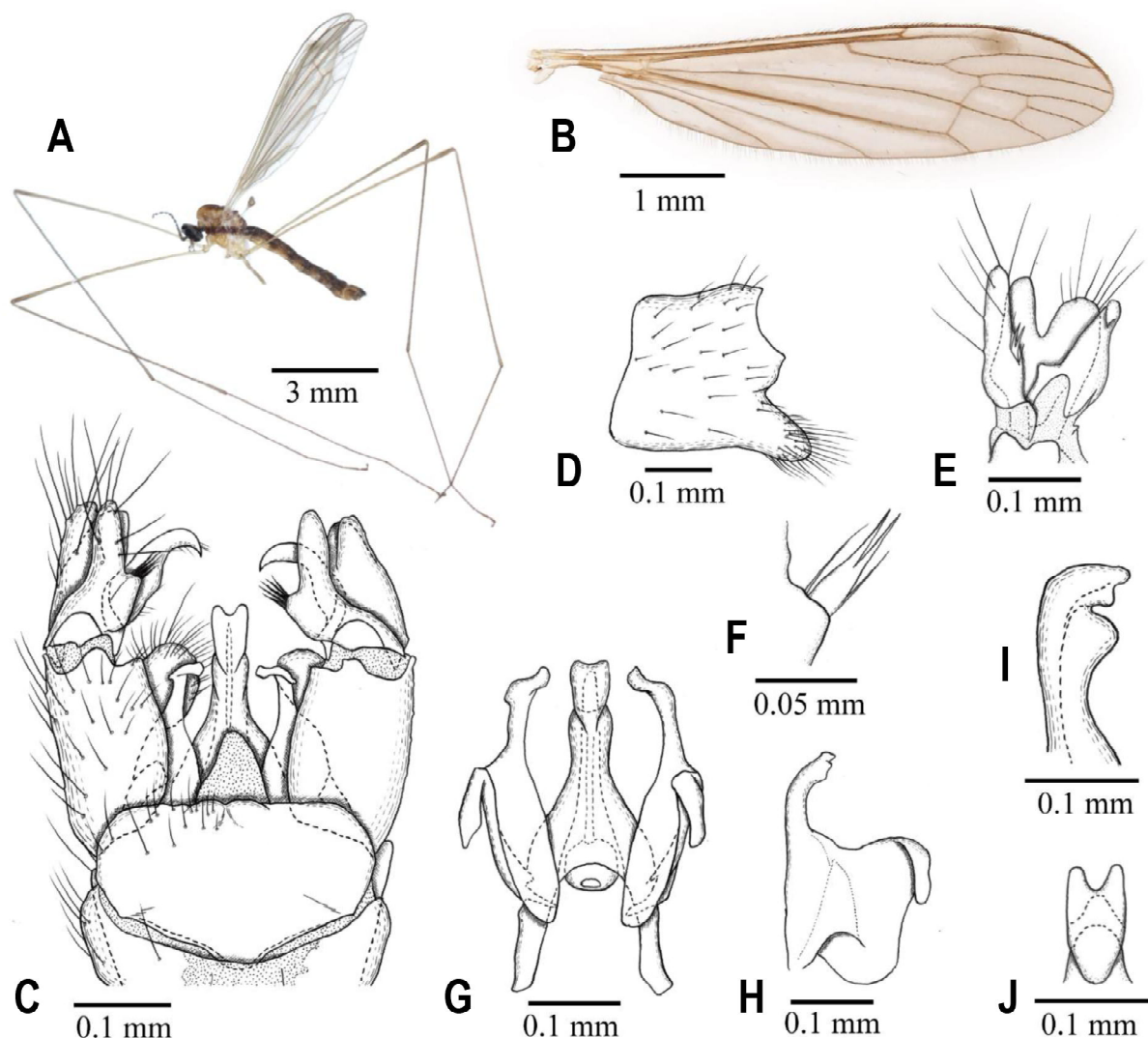


Fig. 5. *Atypophthalmus* (*Atypophthalmus*) *stylacanthus* (Alexander, 1971): A — habitus, lateral view; B — wing; C — male terminalia, dorsal view; D — gonocoxite, lateral view; E — gonostyli, medial view; F — medial lobe of outer gonostylus; G — aedeagal complex, dorsal view; H — paramere, outer surface; I — aedeagus, lateral view (right = ventral); J — apical part of aedeagus, posterodorsal view.

Рис. 5. *Atypophthalmus* (*Atypophthalmus*) *stylacanthus* (Alexander, 1971): A — внешний вид, латерально; B — крыло; C — гениталии самца, дорзально; D — гонококсит, латерально; E — гоностили, центрально; F — срединная доля внешнего гоностилия; G — структуры эдеагуса, дорзально; H — внешняя поверхность парамера; I — эдеагус, латерально (справа вентрально); J — вершина эдеагуса, дорзально сзади.

center of posterior margin slightly and narrowly bilobed, anterior margin weakly angulated at middle (Fig. 5C). Gonocoxite simple on dorsal surface, ventromesal lobe stout finger-shaped, tip ending at level of tip of gonocoxite (Figs 5C–D). Outer gonostylus roughly finger-shaped, curved outward, about as long as basal part of inner gonostylus (Fig. 5C); middle of inner margin of outer gonostylus with short projection bearing blade-shaped lobe, narrowed and bifid on distal half, bifid part close to each other (Fig. 5F); narrow part distal to spine-like lobe about twice as long as wide. Inner gonostylus with basal lobe bilobed in lateral view, forked at distal 1/3, ventral lobe broader (Fig. 5E); rostral prolongation darkened and sickle-shaped, longer than basal lobe of inner gonostylus, basal half widened (Figs 5C, E). Paramere with mesal-apical lobe darkened and relatively long, slightly shorter than remainder of paramere, distal half curved dorsally, roundly widened just before tip (Fig. 5H). Aedeagus cylindrical, strongly narrowed on distal half in dorsal view (Fig. 5G), tip bilobed (Fig. 5J) and bent ventrally, ventral surface before tip strongly and roundly produced (Fig. 5I).

Female. Body length: 4.4–4.8 mm. Wing length: 4.8–5.0 mm. Almost same as male except for terminalia and coloration of sternites. Dark bands at anterior ends of sternites narrower and more indistinct, not widened on distal segments as in male. Ovipositor ochreous to brown, yellow on sternite 8, lateral margin of tergite 8 sometimes yellowish; cercus reddish brown, upcurved on distal half, about 2/3 length of tergite 10; sternite 8 squarish, middle of posterior half roundly convex; hypogynial valve reddish brown, darkened on basal half, tip ending near level of middle of cercus.

Distribution. Japan (Honshu, Kyushu) (Fig. 11C) and Russia (FE).

Remarks. See remarks of *A. (A.) okinawensis* sp.n. for comparison to similar species.

Atypophthalmus (Atypophthalmus) umbratus
(de Meijere, 1911)

Figs 6A–J, 11C.

Dicranomyia umbrata de Meijere, 1911: 25. Type locality: Indonesia, Batavia (= Djakarta); Alexander [1920: 820];

Limonia (Atypophthalmus) umbratus: Alexander [1967b: 280];

Atypophthalmus umbratus: Savchenko et al. [1992: 331];

Atypophthalmus (Atypophthalmus) umbratus: Kato [2020: 18]; Oosterbroek [2021].

Description. **Male.** Body length: 5.8 mm. Wing length: 6.2 mm. Head ochreous gray; rostrum dark ochreous; palpus dark brown; antenna about 2.5 times as long as head, dark brown.

Thorax with pronotum brown, lateral margin and center of antepnotum darkened, postpronotum whitish; presutural area of mesonotum ochreous, darkened on lateral side posterior to humeral region, bearing dark oval marking situated at middle of posterior half; post sutural area of scutum dark brown, grayish on center, outer margin of scutal lobe brownish; scutellum dark grayish brown, anterior corner paler; mediotergite grayish brown, yellowish at anterior corner and posterior part, with dark central line at posterior end. Pleuron dusky yellow, with wide dark stripe on propleuron, anepisternum, ventral 2/3 of anepimeron, and ventral half of laterotergite. Wing (Fig. 6B) tinged with brownish gray, stigma oval, dark brown, bearing tiny dark spots at crossvein sc_r and origin of Rs , and weakly darker seams along cord and outer end of cell dm ; cell dm with anterior end longer than half length of cell m_{1+2} . Legs with coxae and trochanters pale

dusky yellow, base of fore coxa darkened; femora brown, gradually yellowish basally, each femur with indistinct dark subapical band at tip; tibiae and tarsi brown, tips of tibiae narrowly and weakly darkened. Halter dark brown, base of stem yellowish.

Abdomen with tergites dark brown, each anterior 1/4 to 1/3 of tergites 2 to 5 yellowish; sternites dusky yellow, each caudal 1/3 of sternites 2 to 6 weakly darker. Male terminalia (Figs 6C–J) dark brown, tergite 9 oval, weakly arched at caudal margin, almost straight at anterior margin (Fig. 6C). Proctiger considerably complex (Figs 6C–D), middle part with two flat lobes dorsally in lateral view, base of lateral side projecting posteriorly into curved arm, distal part curved dorsally and rounded at tip. Gonocoxite normal on dorsal surface (Fig. 6C), ventromesal lobe furcated near base (Fig. 6E), dorsal lobe much smaller and curled, tip directed ventrally (Fig. 6F), ventral one dilated distally, bearing black band of abundant microscopic setae on distal part of medial surface (Fig. 6G), tip of ventromesal lobe extending beyond level of tip of gonocoxite (Fig. 6E). Outer gonostylus black, paler at base, sickle-shaped, weakly curved, about as long as basal lobe of inner gonostylus, subacute at tip (Fig. 6C). Inner gonostylus with basal lobe narrowed and curved medially on apical part, bearing small round lobe near base of dorsal surface (Fig. 6C); rostral prolongation slender, long boot-shaped, slightly shorter than basal lobe of inner gonostylus (Fig. 6C). Paramere (Figs 6H–I) with mesal-apical lobe blackened, short blade-shaped, weakly produced at dorsal margin near base, about 1/3 as long as remainder of paramere. Aedeagus stout, widely surrounded by parameral sheath, this sheath strongly extending ventrally near middle of aedeagus, apical part (Fig. 6J) narrowed in dorsal view, tip bilobed and truncated, bent ventrally.

Female. Body length: 6.3 mm. Wing length: 6.5 mm. Almost same as male except for terminalia. Ovipositor dark brown, sternite 8 grayish; cercus reddish brown, about as long as tergite 10, upcurved on distal half, acute at tip; sternite 8 squarish, middle of posterior half roundly convex, each side of convex part with black spot; hypogynial valve reddish brown, basal half of hypogynial valve darkened, tip ending at level of middle of cercus.

Distribution. Japan (Honshu and Kyushu) (Fig. 11C), Netherlands, Spain, Egypt, Israel, Taiwan, India, Indonesia, Malaysia, Thailand, Egypt, Brazil, Cuba, Mexico, Peru, Kenya, Madagascar, Mauritius, South Africa, and Hawaiian Is. Its distribution is presumably expanded by transportations of commerce [Alexander, 1967b].

Remarks. See remarks in *A. crinitus* for comparison to similar species.

Atypophthalmus (Microlimonia) inelegans
(Alexander, 1924)

Figs 7A–H, 11D.

Limonia inelegans Alexander, 1924: 1924b: 156. Type locality: Japan, Honshu, Tochigi, Chūzenji;

Limonia (Limonia) inelegans: Alexander [1955: 278];

Microlimonia inelegans: Savchenko et al. [1992: 366];

Dicranomyia (Microlimonia) inelegans: Savchenko et Krivolutskaia [1976: 148];

Atypophthalmus (Microlimonia) inelegans: Nakamura [2014: 38]; Oosterbroek [2021].

Material. **Japan:** holotype: **Honshu:** ♀, Shimotsuke-no-kuni, Chūzenji, h ~ 4170 feet, 22.VII.1923, T. Esaki (USNM); paratype: **Hokkaido:** 1♀, Jozankei, h ~ 1000 ft., 16.VIII.1923,

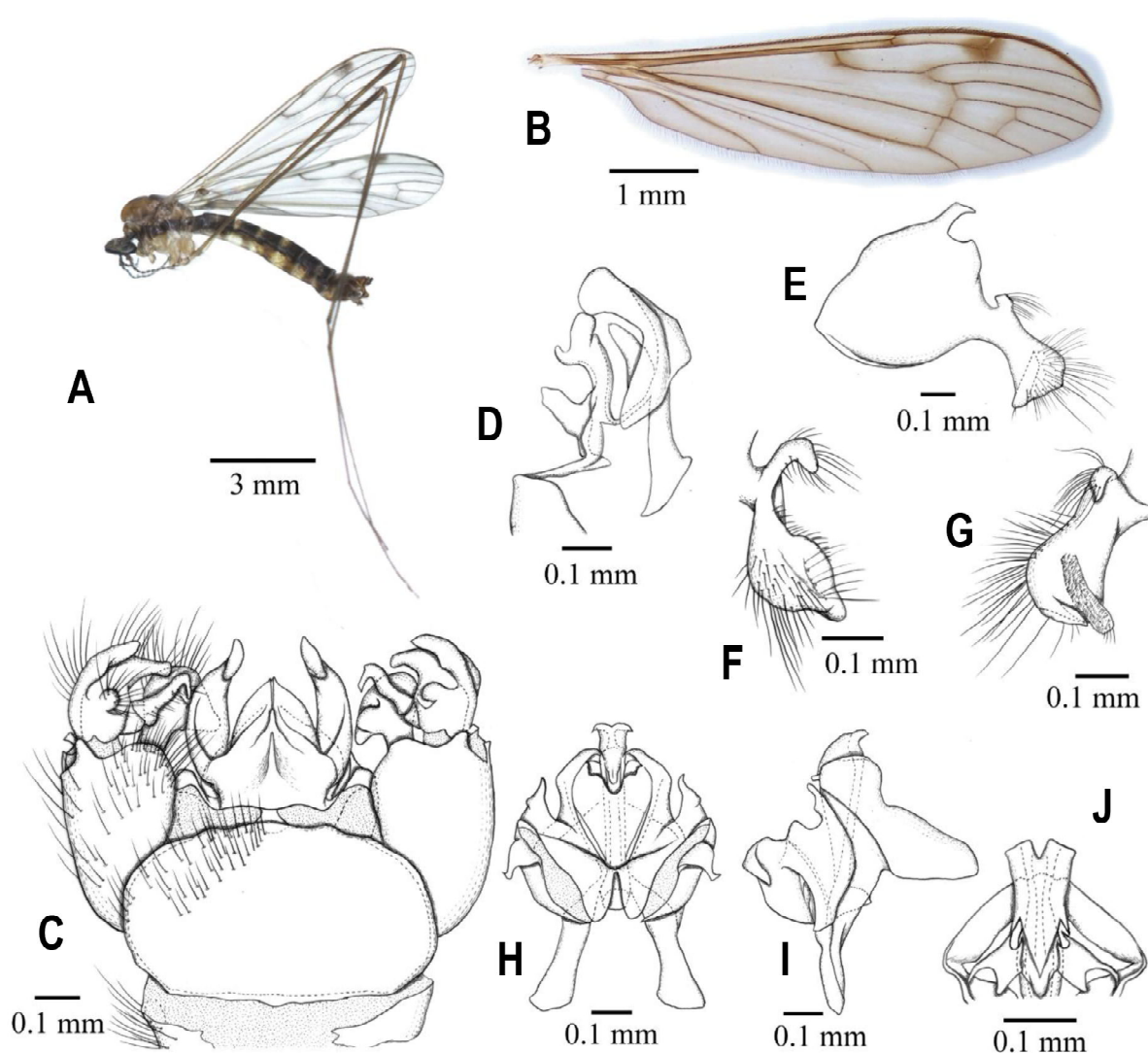


Fig. 6. *Atypophthalmus* (*Atypophthalmus*) *umbratus* (de Meijere, 1911): A — habitus, lateral view; B — wing; C — male terminalia, dorsal view; D — proctiger, lateral view (right = ventral); E — gonocoxite, lateral view; F — ventromesal lobe of gonocoxite, posterior view; G — same, medial view; H — aedeagal complex, dorsal view; I — same, lateral view (right = ventral); J — apical part of aedeagus, posterodorsal view.

Рис. 6. *Atypophthalmus* (*Atypophthalmus*) *umbratus* (de Meijere, 1911): A — внешний вид, латерально; B — крыло; C — гениталии самца, дорсально; D — проктигер, латерально (справа вентрально); E — гонококсит, латерально; F — средняя нижняя доля гонококсита сзади; G — то же, посередине; H — структуры эдеагуса, дорсально; I — то же, латерально справа снизу; J — вершина эдеагуса, дорсально сзади.

T. Esaki (USNM). Non-types: **Honsbu:** 1♂, 2♀♀, Aomori, Hirosaki-shi, Ichinowatari-Washinosu, h ~ 205 m a.s.l., 19.VII.2013, D. Kato (BLKU); 1♂, 1♀, Aomori, Azigasawa-machi, Hitotsumori-machi, Sanai-zawa River, h ~ 100 m a.s.l., 26.VII.2014, D. Kato (BLKU); 1♂, 1♀, Aomori, Towada-shi, Okuse, near Sarukura Spa, h ~ 850 m a.s.l., 5.VIII.2013, D. Kato (BLKU); 2♂♂, 1♀, idem, 3.VIII.2015; 2♂♂, 1♀, Aomori, Towada-shi, Okuse, Tsutanuma-rindô Path, h ~ 460 m a.s.l., 28.VII.2014, D. Kato (BLKU); 1♂, idem, 3.VIII.2014; 1♂, Aomori, Nishimeya-mura, Kawaratai, Ôkawa-rindô Path, h ~ 300 m a.s.l., 6.VIII.2013, D. Kato (BLKU); 1♂, idem, 27.VI.2014; 2♂♂, Aomori, Hachinohe-shi, Ôkubo, Kanafukizasa Cold Spa, h ~ 85 m a.s.l., 4.VIII.2013, D. Kato (BLKU); 4♂♂ 3♀♀, Iwate, Hachimantai-shi, Hosono, Appi Highland, h ~ 520 m a.s.l., 3.VIII.2013, D. Kato (BLKU); 1♂, Iwate, Hachimantai-shi, near Tôshichi Spa, h ~ 1340 m a.s.l., 5.VIII.2015, D. Kato

(BLKU); 2♂♂ 1♀, Iwate, Takizawa-mura, Ukai-Rin-an, around Harukoyachi Bog, 4.VIII.2013, D. Kato (BLKU); 1♂, Iwate, Zyogi, near Sendai, 1.VIII.1927, S. T. Issiki (USNM); 1♂, Echigo (Niigata), Kurokawa, 14.VI.1955, K. Baba (USNM); 1♀, Nagano, Kiso-machi, Fukushima, Komanoyu Spa, h ~ 960 m a.s.l., 21.VII.2016, D. Kato (BLKU); 2♂♂, Nagano, Matsumoto-shi, Nagawa, Shirakaba-tôge Pass, h ~ 1610 m a.s.l., 22.VII.2016, D. Kato (BLKU); 2♂♂, Nagano, Matsumoto-shi, Nagawa, Sakai-gawa River, near bus stop Nagawakôgen-Iriguchi, h ~ 1340 m a.s.l., 22.VII.2016, D. Kato (BLKU); 1♂, Gifu, Ontake, 31.VII.1960, Mishima (USNM); 2♂♂, Gifu, Nakatsugawa-shi, Kashimo, Nishimata-dani Valley, h ~ 800 m a.s.l., 7.VIII.2015, D. Kato (BLKU); 1♂, Aichi, Shitara-chô, Tamine, Mt. Takanosu-yama, h ~ 980 m a.s.l., 17.VIII.2013, D. Kato (BLKU); 1♀, Okayama, Maniwa-shi, Hiruzen-Shimotokuyama, h ~ 780 m a.s.l., 11.VIII.2015, D. Kato

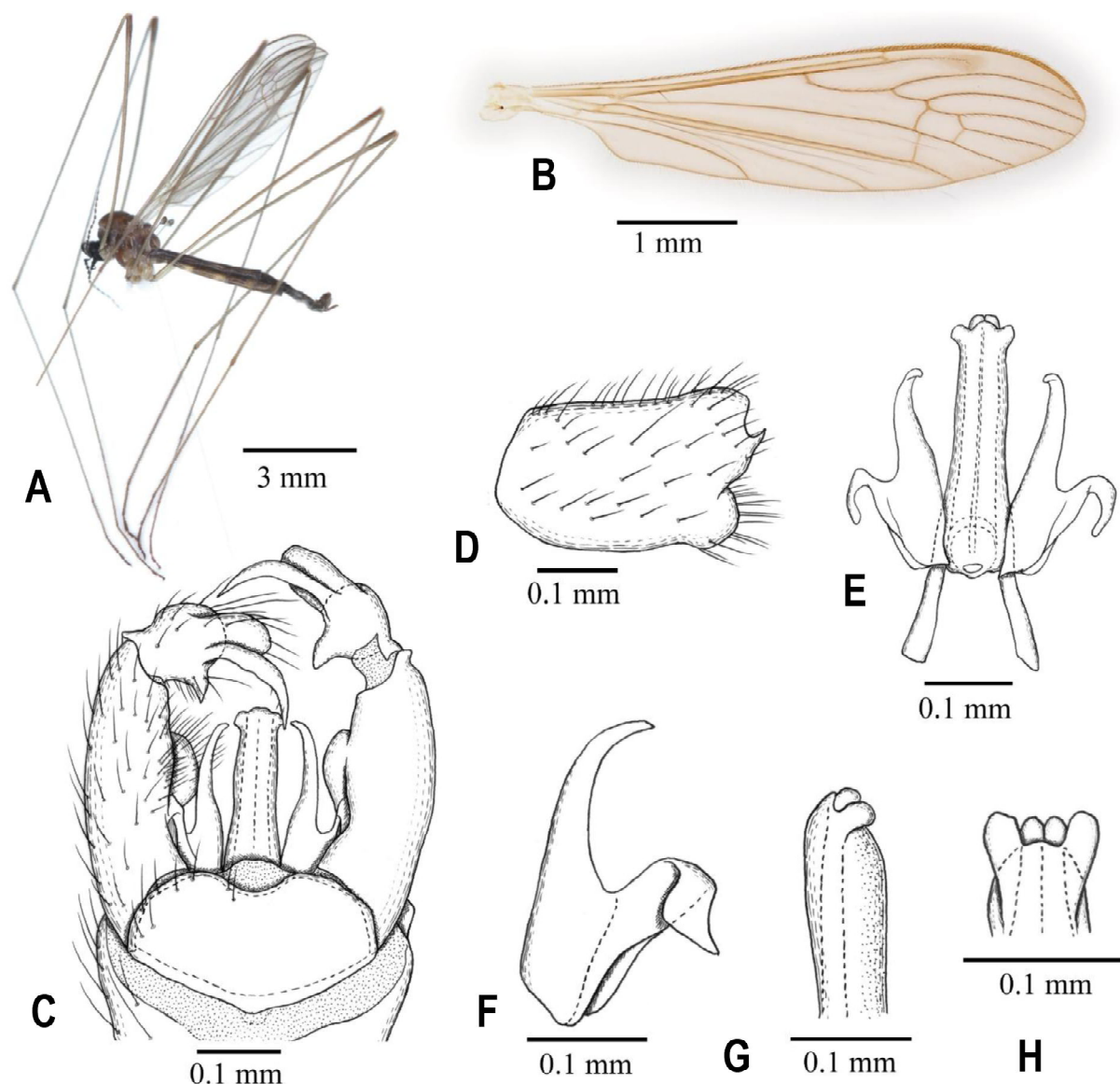


Fig. 7. *Atypophthalmus (Microlimonia) inelegans* (Alexander, 1924): A — habitus, lateral view; B — wing; C — male terminalia, dorsal view; D — gonocoxite, lateral view; E — aedeagal complex, dorsal view; F — paramere, outer surface; G — aedeagus, lateral view (right = ventral); H — apical part of aedeagus, posterodorsal view.

Рис. 7. *Atypophthalmus (Microlimonia) inelegans* (Alexander, 1924): А — внешний вид, латерально; В — крыло; С — гениталии самца, дорзально; D — гонококсит, латерально; E — структуры эдеагуста, дорзально; F — внешняя поверхность парамера; G — эдеагус, латерально (справа вентрально); H — вершина эдеагуса, дорзально сзади.

(BLKU); 1♀, Hiroshima, Hatsukaichi-shi, Yoshiwa, Mt. Misakayama, h ~ 1070 m a.s.l., 2.IX.2015, D. Kato (BLKU); 1♂, Yamaguchi, Iwakuni-shi, Nishiki-machi-Ōno, Mt. Shōjō-yama, h ~ 330 m a.s.l., 24.VII.2016, D. Kato (BLKU). **Shikoku:** 1♂, Ehime, Mt. Ogawamine, h ~ 700 m a.s.l., 1.VIII.1953, H. Ide (USNM); 1♂, 2♀♀, Tokushima, Miyoshi-shi, Higashiiya-Ochiai, near Matsugawa Dam, h ~ 900 m a.s.l., 10.VIII.2015, D. Kato (BLKU). **Kyushu:** 1♂, 1♀, Fukuoka, Itoshima-shi, Shimasakurai, Mt. Tenga-dake, h ~ 110 m a.s.l., 21.VII.2015, D. Kato (BLKU); 1♂, idem, 2.VII.2015; 2♂♂, 1♀, idem, 15.VIII.2015; 1♂, idem, 24.IX.2015; 1♀, Fukuoka, Fukuoka-shi, Nishi-ku, Motooka, South of Ito Campus of Kyushu Univ., h ~ 40 m a.s.l., 27.IV.2015, D. Kato (BLKU); 2♂♂, idem, 25.V.2015; 1♂, 1♀, idem, 13.VI.2015; 1♂, idem, 11.IX.2015; 1♂, Fukuoka,

Fukuoka-shi, Sawara-ku, Itaya, Mt. Sefuri-san, h ~ 970 m a.s.l., 3.VII.2015, D. Kato (BLKU); 1♀, idem, 24.VII.2015; 1♂, 1♀, idem, 30.VII.2015 (LT); 1♂, Nagasaki, Gotō-shi, Fukuejima Is., Tomie-machi-Nagamine, h ~ 97 m a.s.l., 5.VIII.2016, T. Mishima (BLKU); 1♂, Ōita, Kokonoe-machi, Tano, h ~ 1050 m a.s.l., 26.VI.2016, D. Kato (BLKU); 1♂, Kumamoto, Yatsushiro-shi, Izumi-machi-Momiki, h ~ 700 m a.s.l., 22.IX.2015, D. Kato (BLKU); 1♂, idem, h ~ 1440 m a.s.l., 31.VII.2016; 2♂♂, Kagoshima, Kirishima-shi, Makizono-chō, Takachiho, near Maruo Spa, h ~ 700 m a.s.l., 5.VI.2016, D. Kato (BLKU).

Description. Male. Body length: 4.3–5.2 mm. Wing length: 4.6–5.6 mm. Head blackish gray; rostrum and palpus dark

brown; antenna about three times as long as head, dark brown.

Thorax with notum dark brown, often yellowish on postpronotum and presutural area of mesonotum near lateral end of postpronotum; presutural area of mesonotum black at anterior end and lateral margin posterior to humeral region. Pleuron brown to dark brown, metapleuron and dorsal half of katepisternum sometimes weakly paler. Wing (Fig. 7B) tinged with gray, stigma round, dark brown; cell dm closed and small, anterior end shorter than half length of cell m_{1+2} . Legs with coxae and trochanters pale dusky yellow to brown, base of fore coxa darkened; remainder of legs brown to dark brown, bases of femora narrowly yellowish. Halter dark brown, base of stem paler.

Abdomen dark brown, each distal 1/3 to 1/2 of sternites 2 to 7 pale yellow, these paler bands often obsolete on distal segments, sometimes narrowly dark at caudal margins; tergites sometimes weakly pale at caudal margins. Male terminalia (Figs 7C–H) dark brown; tergite 9 roughly oval, posterior margin shallowly and roundly concaved at middle and roundly convex laterally, anterior margin weakly produced at middle (Fig. 7C). Gonocoxite simple on dorsal surface, ventromesal lobe small and rounded, tip ending far before tip of gonocoxite (Figs 7C–D). Gonostylus with basal lobe roundish, bearing tongue-shaped lobe on dorsal surface, ventromedial region with black acute lobe (Fig. 7C); rostral prolongation slender sickle-shaped, weakly curved, about 1.5 times as long as basal lobe of gonostylus (Fig. 7C). Paramere with mesal-apical lobe large sickle-shaped, longer than remainder of paramere, weakly curved dorsomedially, tip pointed (Fig. 7F). Aedeagus cylindrical, almost same width in whole length in dorsal view (Fig. 7E), tip quadrifurcated (Fig. 7H), ventral surface smooth (Fig. 7G).

Female. Body length: 5.1–6.0 mm. Wing length: 4.8–5.8 mm. Almost same as male except for terminalia and coloration of abdomen. Abdominal segments more distinctly pale at caudal margins especially on distal segments. Ovipositor brown to dark brown, often yellowish on anterior and lateral sides of sternite 8; cercus reddish brown, about 4/5 length of tergite 10, upcurved on distal half, acute at tip; sternite 8 squarish, middle of posterior half roundly convex; hypogynial valve reddish brown, blackened at basal half, tip ending near level of middle of cercus.

Distribution. Japan (Hokkaido, Honshu, Shikoku and Kyushu) (Fig. 11D), Kuril islands, China, Taiwan, and Russia (FE).

Remarks. This species is easily distinguished from the other species of the subgenus by the following characters: cell dm small, anterior side shorter than half length of cell m_{1+2} ; abdominal sternites pale at posterior sides.

Atypophthalmus (Microlimonia) jeju

Podenas et Podeniene, 2020

Figs 8A–H, 11E.

Atypophthalmus (Microlimonia) jeju Podenas et Podeniene, 2020. Type locality: South Korea, Jeju-do, Dongbaekdongsan Ramsar wetland;

Atypophthalmus (Microlimonia) egressus: Kato [2020: 19] (nec. Alexander [1938: 468]);

Atypophthalmus (Atypophthalmus) jeju: Oosterbroek [2021].

Material. Japan: Non-types: **Honshu:** 1♀, Niigata, Tōkamachi-shi, Matsunoyama-Amamizukoshi, Mt. Amamizuyama, h ~ 920 m a.s.l., 8.IX.2019, D. Kato (BLKU); 1♀, Niigata, Tōkamachi-shi, Matsunoyama, Echigo-Matsunoyama Museum

of Natural Science «Kyororo», h ~ 310 m a.s.l., 25.VIII.2019, D. Kato (BLKU); 1♂, idem, 4.VI.2020; **Nansei Islands, Amamiōshima Island:** 1♂, Setouchi-chō, Agina, east of Aginagawa River, h ~ 300 m a.s.l., 3.IV.2019, D. Kato (BLKU); 2♂♂, Yamato-son, Yuwangama, h ~ 250 m a.s.l., 31.III.2019, D. Kato (BLKU); **Tokunoshima Island:** 1♂, Amagi-chō, Tōbe, Mt. Minada-yama, h ~ 300 m a.s.l., 2.IV.2019, D. Kato (BLKU); 1♀, Isen-chō, Nakayama, near Isenchubu Dam, h ~ 150 m a.s.l., 1.IV.2019, D. Kato (BLKU); 1♂, Tokunoshima-chō, Kametsu, near trailhead of Mt. Inokawa-dake, h ~ 300 m a.s.l., 1.IV.2019, D. Kato (BLKU).

Description. **Male.** Body length: 3.3–5.1 mm. Wing length: 3.7–6.0 mm. Head blackish gray; rostrum and palpus pale brown to dark brown; antenna about twice as long as head, dark brown.

Thorax with anteppronotum brown, postpronotum often whitish; mesonotum dusky yellow to brown, middle of post sutural area of scutum and anterior corner of mediotergite often paler; presutural area of mesonotum usually darkened at anterior end and lateral margin posterior to humeral region, occasionally bearing central dark stripe on posterior half; scutal lobe largely darkened on center; scutellum often darker distally. Pleuron whitish yellow to ochereous with dark band on propleuron, anepisternum, and ventral halves of anepimeron and laterotergite; ventral part of katepisternum sometimes weakly infuscated. Wing (Fig. 8B) tinged with gray, stigma round, dark brown; cell dm open by atrophy of base of M_3 . Legs with coxae and trochanters whitish yellow to ochereous, base of fore coxa darkened; remainder of legs ochereous, bases of femora narrowly paler. Halter dark brown, base of stem paler.

Abdomen with tergites dark brown; sternites yellow to yellowish brown, darker on distal segments. Male terminalia (Figs 8C–H) brown; tergite 9 roughly oval, arched at posterior margin, center of posterior margin slightly trilobate, center of anterior margin roundly produced (Fig. 8C). Gonocoxite simple on dorsal surface, ventromesal lobe large and stout, swollen at middle of mesial surface, tip extending beyond level of apex of gonocoxite (Figs 8C–D). Gonostylus with basal lobe bilobed, dorsal lobe much smaller than ventral one (Fig. 8C); rostral prolongation slender, strongly curved, pointed at tip, distal end at level of tip of basal part or slightly proximal to it (Fig. 8C). Paramere with mesal-apical lobe darkened and very small, blade-shaped, shorter than 1/5 length of paramere, weakly curved dorsally, tip pointed (Fig. 8F). Aedeagus cylindrical, narrowed toward tip in dorsal view (Fig. 8E), tip bilobed (Fig. 8H) and bent ventrally, ventral surface before tip smooth (Fig. 8G).

Female. Body length: 4.1–5.7 mm. Wing length: 4.2–6.2 mm. Almost same as male except for terminalia. Ovipositor pale yellow to ochereous, often more yellowish on sternite 8; cercus reddish brown, about 4/5 as long as tergite 10, upcurved on distal half, acute at tip; sternite 8 squarish, middle of posterior half roundly convex; hypogynial valve reddish brown, basal half darkened, tip ending near level of middle of cercus.

Distribution. Japan (Honshu, Kyushu, and Nansei Islands) (Fig. 11E), and South Korea.

Remarks. This species resembles a Chinese species, *A. (M.) egressus* (Alexander, 1938), but is differentiated from it by the following characters: basal lobe of gonostylus bilobed, dorsal lobe smaller (Fig. 8C) (trilobed, dorsal lobe smallest, ventral two almost same in size in *A. egressus*); gonostylus with rostral prolongation shorter, distal end at level of tip of basal lobe or proximal to it (Fig. 8C)

(longer, distal end slightly beyond tip of basal lobe in *A. egressus*).

Atypophthalmus (Microlimonia) machidai
(Alexander, 1921)

Figs 9A–H, 11F.

Dicranomyia machidai Alexander, 1921: 113. Type locality: Japan, Honshu, Tokyo, Nakano;

Limonia machidai: Alexander [1924a: 556];

Limonia (Limonia) machidai: Alexander [1930: 508]; Alexander [1931a: 339]; Alexander [1953a: 77]; Alexander [1953b: 157];

Dicranomyia (Microlimonia) machidai: Savchenko et Krivolutsкая [1976: 149];

Microlimonia machidai: Savchenko et al. [1992: 366]; Krivosheina [2009: 135];

Atypophthalmus (Microlimonia) machidai: Nakamura [2014: 38]; Oosterbroek [2021].

Material. **Japan:** holotype: **Honsbu:** ♂, Nakano, 28.V.1920, H. Machida (USNM); paratypes: 1♂, Tokyo, Shibuya, near Komaba, 30.VI.1920, J. Machida (USNM); 1♂, idem, 29.VI.1920 (USNM). Non-types: **Hokkaido:** 1♂, near Lake Toya, 18.VIII.1925, S. Kuwayama (USNM); 1♂, Sapporo, 18.VIII.1922, T. Esaki (USNM); 1♂, Sapporo, 15.IX.1935, I. Okada (USNM); 1♂, Sarabuto, 8.VIII.1923, S. Kuwayama (USNM). **Honsbu:** 1♀, Aomori, Towada-shi, Okuse, Tsutanumarindō Path, h ~ 460 m a.s.l., 5.VII.2014, D. Kato (BLKU); 3♂♂, idem, 30.VIII.2014; 1♂, idem, 19.IX.2014; 1♂, Aomori, Nishimeya-mura, Kawaratai, Ōkawa-rindō Path, h ~ 300 m a.s.l., 18.VI.2013, D. Kato (BLKU); 1♂, idem, 6.VIII.2013; 1♀, idem, 14.VIII.2013; 3♂♂, idem, 1.IX.2013; 1♀, idem, 18.IX.2014; 1♂, idem, 4.X.2014; 1♂, Aomori, Nishimeya-mura, Kawaratai, The Shirakami Natural Science Park, Hirosaki Univ, h ~ 255 m a.s.l., 21.VI.2013, D. Kato (BLKU); 2♂♂, Aomori, Hirosaki-shi, Koguriyama, Inekari-sawa River, h ~ 170 m a.s.l., 11.VIII.2013, D. Kato (BLKU); 2♀♀, Aomori, Hirosaki-shi, Ichinowatari-Washinosu, h ~ 205 m a.s.l., 13.VIII.2013, D. Kato (BLKU); 1♀, Yamagata, Sakata-shi, Kusatsu, Yunodai Spa, h ~

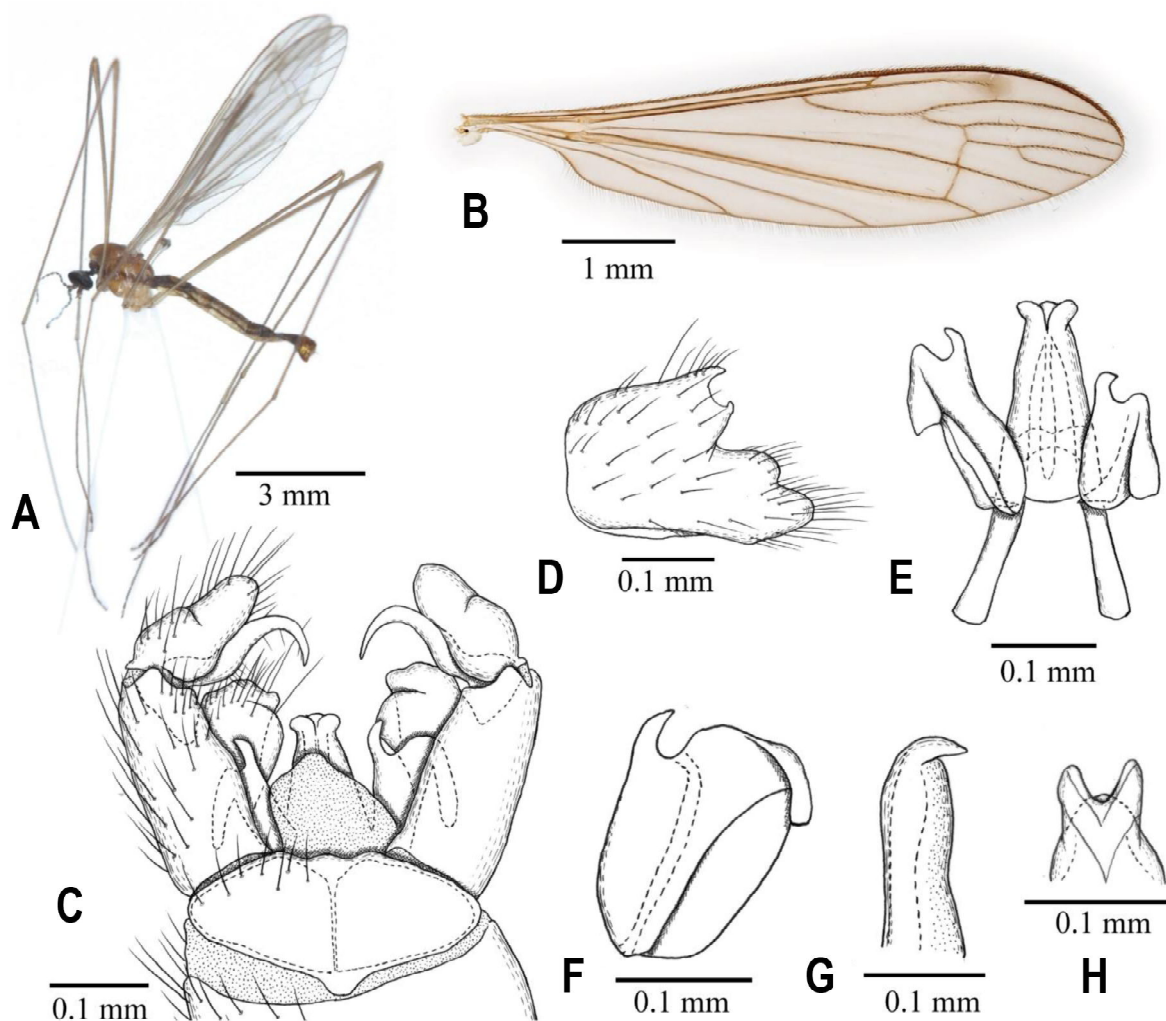


Fig. 8. *Atypophthalmus (Microlimonia) jeju* Podenas et Podeniene, 2020: A — habitus, lateral view; B — wing; C — male terminalia, dorsal view; D — gonocoxite, lateral view; E — aedeagal complex, dorsal view; F — paramere, outer surface; G — aedeagus, lateral view (right = ventral); H — apical part of aedeagus, posterodorsal view.

Рис. 8. *Atypophthalmus (Microlimonia) jeju* Podenas et Podeniene, 2020: A — внешний вид, латерально; B — крыло; C — гениталии самца, дорзально; D — гоноксит, латерально; E — структуры эдеагуса, дорзально; F — внешняя поверхность парамера; G — эдеагус, латерально (справа вентрально); H — вершина эдеагуса, дорзально сзади.

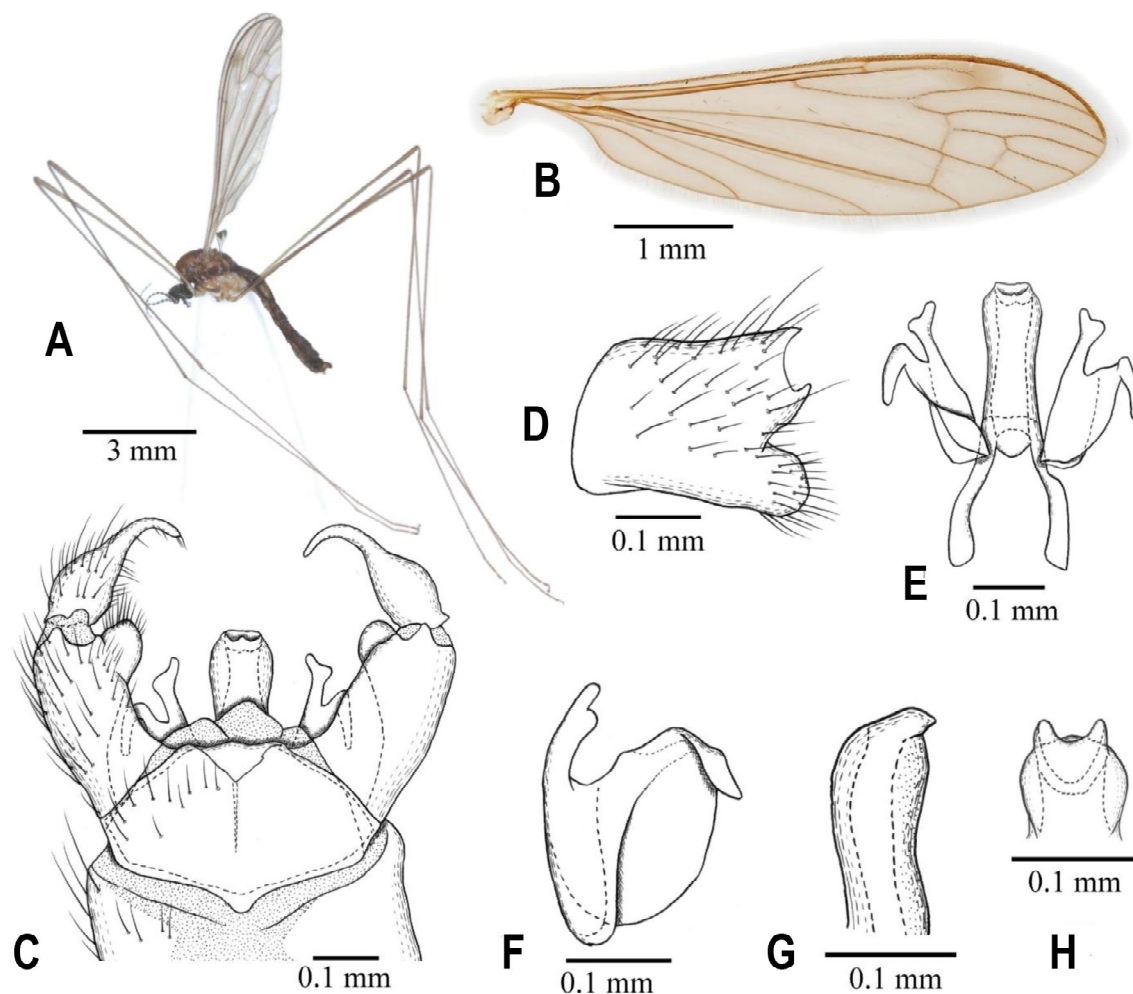


Fig. 9. *Atypophthalmus* (*Microlimonia*) *machidai* (Alexander, 1921): A — habitus, lateral view; B — wing; C — male terminalia, dorsal view; D — gonocoxite, lateral view; E — aedeagal complex, dorsal view; F — paramere, outer surface; G — aedeagus, lateral view (right = ventral); H — apical part of aedeagus, posterodorsal view.

Рис. 9. *Atypophthalmus* (*Microlimonia*) *machidai* (Alexander, 1921): A — внешний вид, латерально; B — крыло; C — гениталии самца, дорзально; D — гоноксит, латерально; E — структуры эдеагуса, дорзально; F — внешняя поверхность парамера; G — эдеагус, латерально (справа вентрально); H — вершина эдеагуса, дорзально сзади.

475 m a.s.l., 18.IX.2014, D. Kato (BLKU); 1♂, Tochigi, Yumoto, h ~ 5820 feet, 23.VII.1923, T. Esaki (USNM); 1♂, Nagano, Alps, Mt. Shirouma, 8.VIII.1931, Machida, Nakamura (USNM); 1♂, Nagano, Jan. Alps, Norikuradake, 26.VII.1929, J. Machida (USNM); 1♂, Nagano, Kawakami-mura, Hisawa, Yade-gawa River, h ~ 1300 m a.s.l., 14.VIII.2016, D. Kato (BLKU); 1♀, Nagano, Kiso-machi, Fukushima, Komanoyu Spa, h ~ 960 m a.s.l., 21.VII.2016, D. Kato (BLKU); 1♂, Gifu, Ontake, 21.VII.1959, Mishima (USNM); 1♂, idem, 6–10.VII.1934, H. Ise; 1♂, Aichi, Seto-shi, Iwaya-chō, near Iwayadō Park, h ~ 300 m a.s.l., 4.V.2016, D. Kato (BLKU); 3♂♂, idem, 17.VII.2016; 1♂, Shiga, Otsu, near Kyoto, ?X.1915, N. Aunandale (USNM); 1♂, Ōsaka, Mino, 14.IX.1956, T. Mishima (USNM); 1♀, Tottori, Yazu-chō, Mt. Ōgino-sen, h ~ 900 m a.s.l., 17.IX.2014, D. Kato (BLKU); 1♀, Tottori, Kurayoshi-shi, Sekigane-chō-Nozoe, Mt. Karasuga-sen, h ~ 1000 m a.s.l., 11.VIII.2015, D. Kato (BLKU); 1♂, Okayama, Maniwa-shi, Hiruzen-Shimotokuyama, h ~ 780 m a.s.l., 11.VIII.2015, D. Kato (BLKU); 1♂, Hiroshima, Hatsukaichi-shi, Yoshiwa, Mt. Misaka-yama, h ~ 1070 m a.s.l., 2.IX.2015, D. Kato (BLKU); 1♂, Yamaguchi, Iwakuni-shi,

Nishiki-machi-Ōno, Mt. Shōjō-yama, h ~ 330 m a.s.l., 2.IX.2015, D. Kato (BLKU); 1♂, idem, 2.V.2016. **Shikoku:** 1♂, Ehime, Omogokei, 28.IX.1952, T. Yano (USNM); 1♂, idem, h ~ 800 m a.s.l., 14.VII.1952, Ishihara; 1♂, idem, 20.X.1952, Kusunoki; 1♂, Ehime, Omogo Valley, 2.VI.1953, Edashige (USNM); 1♂, Ehime, Matsuyama, Ondadani, h ~ 1000 m a.s.l., 8.V.1956, H. Kusunoki (USNM); 1♂, Tokushima, Miyoshi-shi, Ikeda-chō-Matsuo, 10.VIII.2015, D. Kato (BLKU); 1♂, Kōchi, Nisigawa, near Yanase, h ~ 600 m a.s.l., 4.V.1951, Issiki-Ito (USNM); 1♂, idem, h ~ 500 m, 5.V.1951. **Kyushu:** 1♂, Fukuoka, Soeda-machi, Ochiai, near Otokoiwa, h ~ 560 m a.s.l., 2.VII.2016, T. Mishima (BLKU); 1♂, Fukuoka, Fukuoka-shi, Nishi-ku, Motooka, South of Ito Campus of Kyushu Univ., h ~ 40 m a.s.l., 4.IV.2015, D. Kato (BLKU); 1♂, 1♀, idem, 22.IV.2015; 1♂, Fukuoka, Fukuoka-shi, Sawara-ku, Itaya, Mt. Sefuri-san, h ~ 970 m a.s.l., 10.VI.2015, D. Kato (BLKU); 1♂, idem, 17.VII.2015; 1♂, idem, 24.VII.2015; 1♂, idem, 30.VII.2015; 2♂♂, idem, 5.IX.2015; 1♂, idem, 15.IX.2015; 1♂, idem, 7.IX.2016 (LT); 1♂, Fukuoka, Miyawaka-shi, Inunaki, Mt. Inunaki-san, h ~ 300 m a.s.l., 5.V.2015, D. Kato (BLKU); 1♂, 1♀, Fukuoka, Miyako-machi, Saigawa-Hobashira, Notōge Pass,

h ~ 740 m a.s.l., 21.IX.2015, D. Kato (BLKU); 1♀, idem, 14.VII.2016; 1♀, Fukuoka, Miyawaka-shi, Shimo, Rikimaru Dam, h ~ 100 m a.s.l., 21.IX.2015, D. Kato (LT / BLKU); 2♂♂, Fukuoka, Hisayama-machi, Ino, Ino Dam, h ~ 230 m a.s.l.; 1♂, Saga, Tara-chō, Tara, Mt. Tara-dake, h ~ 540 m a.s.l., 10.VII.2016, D. Kato (BLKU); 1♂, Nagasaki, Unzen, ?V.1926, E. Suenson (USNM); 1♂, Ōita, Taketa-shi, Aka-gawa River, h ~ 1140 m a.s.l., 10.IX.2016, T. Mishima (BLKU); 4♂♂, 1♀, Kumamoto, Yatsushiro-shi, Izumi-machi-Momiki, h ~ 700 m a.s.l., 22.IX.2015, D. Kato (BLKU); 1♂, 1♀, idem, h ~ 1440 m a.s.l., 31.VII.2016; 1♂, Kumamoto, Misato-machi, Samata, Samatano-yu Spa, h ~ 100 m a.s.l., 11.V.2016, D. Kato (BLKU). **Nansei Islands, Yakushima Island:** 2♂♂, Kosugidani, h ~ 2500 ft., 29.IV.1929, S. Issiki (USNM); 3♂♂, near Shiratanisui-kyō Valley, h ~ 600 m a.s.l., 25.IV.2018, D. Kato (BLKU); 1♂, unnamed stream near Mt. Mae-dake, h ~ 625 m a.s.l., 26.IV.2018, D. Kato (BLKU); 1♀, Miyanoura, near Senno-ke, h ~ 20 m a.s.l., 25.IV.2018, D. Kato (BLKU).

Description. Male. Body length: 4.0–6.7 mm. Wing length: 4.8–7.0 mm. Head blackish gray; rostrum and palpus dark brown; antenna about 2.5 times as long as head, dark brown.

Thorax with antepnotum dark brown, postpronotum dusky yellow; mesonotum brown to dark brown, usually pale on caudal margin of scutal lobe, middle of post sutural area of scutum, and base of scutellum; presutural area of mesonotum sometimes yellowish, widely dark on anterior end and lateral margin posterior to humeral region, sometimes with dark wide stripe at middle, constricted on middle part. Pleuron dusky yellow to ochreous, with dark band on propleuron, anepisternum, and each ventral 2/3 of anepimeron and laterotergite; katapisternum darkened on ventral half. Wing (Fig. 9B) tinged with brownish gray, stigma round, dark brown; cell dm closed and long, anterior end longer than half length of cell m_{1+2} . Legs with coxae and trochanters dusky yellow to ochreous, base of fore coxa darkened; remainder of legs brown to dark brown, bases of femora narrowly yellowish. Halter dark brown, base of stem paler.

Abdomen dark brown, sternites pale yellow on segment 1 and each anterior and posterior ends of segments 2–4, these yellowish areas wider on basal segments and sometimes indistinct, posterior margins of sternites 5–7 sometimes paler. Male terminalia (Figs 9C–H) dark brown; tergite 9 roughly oval, weakly arched at posterior margin, center of posterior margin slightly trilobate, middle of anterior margin produced in short length (Fig. 9C). Gonocoxite simple on dorsal surface, ventromesal lobe stout finger-shaped, tip reaching at level of tip of gonocoxite (Figs 9C, D). Gonostylus slender beak-shaped, gradually narrow toward tip, distal part curved medially (Fig. 9C). Paramere with mesal-apical lobe dark, about half as long as remainder of paramere, tip wide and roundly bilobed, weakly curved dorsally (Figs 9E–F). Aedeagus cylindrical, distal half slightly widened in dorsal view (Fig. 9E), tip rounded, with pair of short lobes directed ventrally (Fig. 9H), ventral surface of aedeagus smooth (Fig. 9G).

Female. Body length: 4.7–6.2 mm. Wing length: 5.3–7.8 mm. Almost same as male except for terminalia and coloration of abdominal sternites. Pale bands at anterior and posterior ends of sternites often more distinct especially on distal segments. Ovipositor brown to dark brown, yellowish on sternite 8 and sometimes weakly so on distal part of tergite 10; cercus reddish brown, about 4/5 as long as tergite 10, upcurved on distal half, acute at tip; sternite 8 squarish, middle of posterior part roundly convex; hypogynial valve reddish brown, darkened on basal part, tip ending near level of middle of cercus.

Distribution. Japan (Hokkaido, Honshu, Shikoku, and Kyushu) (Fig. 11F), Kuril islands, China, Russia, and widespread in Europe.

Remarks. This species is similar to *Limonia amblymera* Alexander, 1967, which probably belongs to *Atypophthalmus*, in terms of general appearance and structure of male terminalia, but is distinguished from it by the following characters: abdominal sternites bicolorous on basal segments (light yellow in *L. amblymera*); gonostylus strongly curved on distal part (Fig. 9C) (almost straight in *L. amblymera*), mesal-apical lobe of paramere bilobed at tip (Figs 9E–F) (roundly widened in *L. amblymera*).

Atypophthalmus (Microlimonia) omogoensis
(Alexander, 1954)

Figs 10A–H, 11E.

Limonia (Limonia) omogoensis Alexander, 1954: 283. Type locality: Japan, Shikoku, Ehime, Kumakōgen-chō, Omogo-kei Valley; Alexander [1953a: 78];

Microlimonia omogoensis: Savchenko et al. [1992: 366]; Sueyoshi et al. [2007: 251];

Atypophthalmus (Microlimonia) omogoensis: Nakamura [2014: 38]; Oosterbroek [2021].

Material. Japan: *holotype*: **Shikoku**: ♂, Omogokei, h ~ 800 m a.s.l., 14.VII.1952, Ishihara (USNM). *Non-types*: **Honshu**: 1♂, Aomori, Towada-shi, Okuse, Tsutanuma-rindō Path, h ~ 460 m a.s.l., 5.VIII.2013, D. Kato (BLKU); **Kyushu**: 4♂♂, Ōita, Kokonoe-machi, Tano, h ~ 1050 m a.s.l., 28.VI.2015, D. Kato (BLKU).

Description. Male. Body length: 4.4–4.8 mm. Wing length: 5.3–5.8 mm. Head blackish gray; rostrum and palpus dark brown; antenna about three times as long as head, dark brown.

Thorax with pronotum dark brown, postpronotum sometimes yellowish; mesonotum ochreous to brown; presutural area of mesonotum dark at anterior end and lateral margin posterior to humeral region, sometimes with weakly darker central stripe on whole length of presutural area; scutal lobe largely dark brown on center or almost entirely so; scutellum and mediotergite often entirely dark brown. Pleuron ochreous, with dark stripe on propleuron, anepisternum, anepimeron, and laterotergite; dorsal sides of anepimeron and laterotergite often yellowish, ventral end of katapisternum weakly darker. Wing (Fig. 10B) tinged with brownish gray, stigma round, dark brown; cell dm closed and large, anterior end longer than half length of cell m_{1+2} . Legs with coxae and trochanters pale dusky yellow to ochreous, base of fore coxa darkened; remainder of legs brown to dark brown, bases of femora narrowly yellowish. Halter dark brown, base of stem paler.

Abdomen dark brown, basal sternites sometimes slightly yellowish. Male terminalia (Figs 10C–H) dark brown; tergite 9 roughly rhombic, posterior margin slightly rounded, pointed at middle in small size, middle of anterior margin pointed and weakly produced (Fig. 10C). Gonocoxite simple on dorsal surface; ventromesal lobe long, rounded at tip, extending beyond tip of gonocoxite, middle of medial surface with small rounded lobe (Fig. 10C). Gonostylus with basal lobe oval, bearing two round lobes near base dorsally, dorsal one smaller; rostral prolongation long and slender, about twice as long as basal lobe of gonostylus, gradually curved medially (Fig. 10C). Paramere with mesal-apical lobe weakly darkened and small, shorter than 1/6 length of remainder of paramere, weakly curved dorsally, tip pointed (Figs 10E–F). Aedeagus cylindrical, distal half slightly narrow in dorsal view (Fig. 10E), tip bilobed and bent ventrally (Fig. 10H), ventral surface of aedeagus smooth (Fig. 10G).

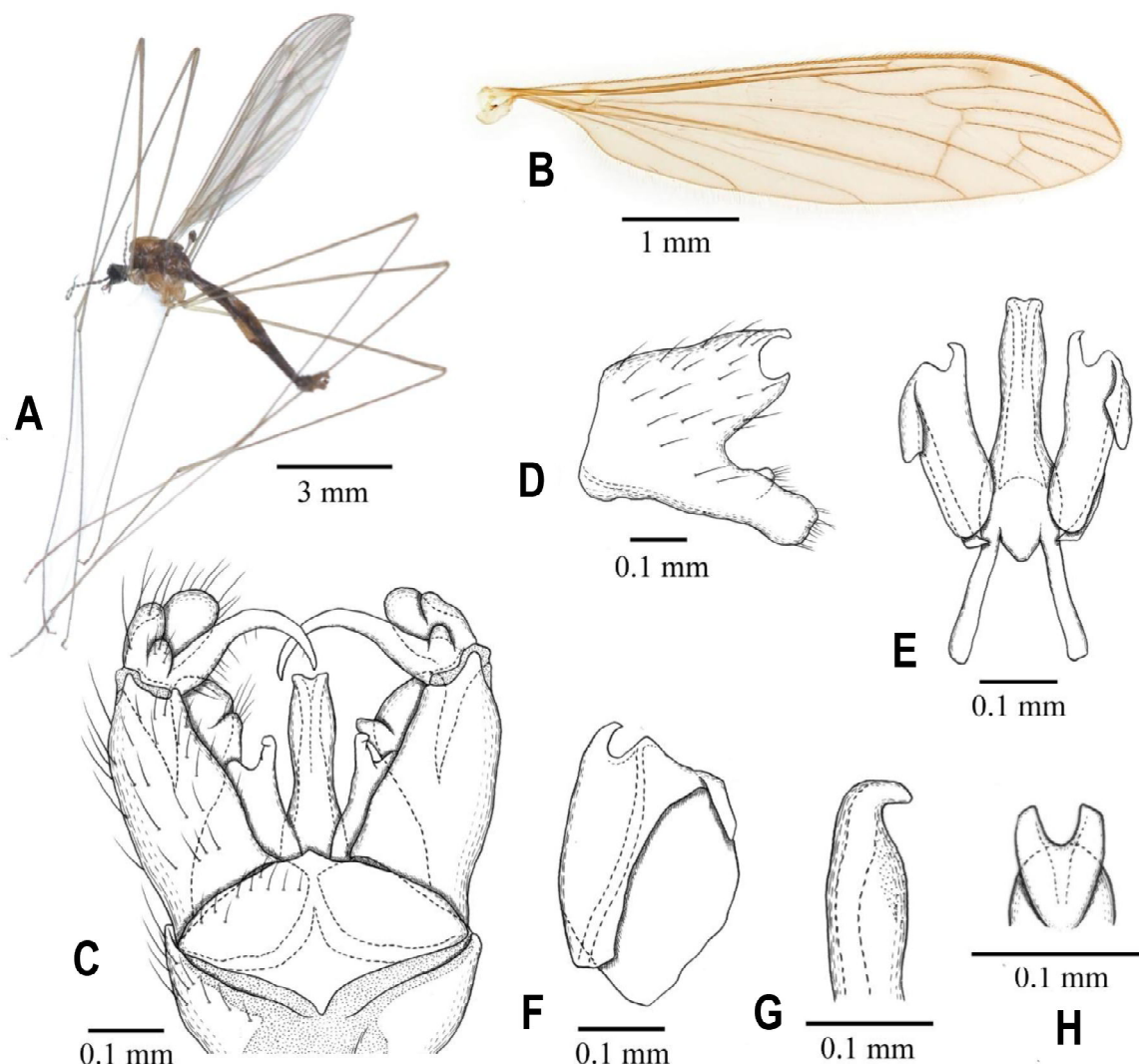


Fig. 10. *Atypophthalmus* (*Microlimonia*) *omogoensis* (Alexander, 1954): A — habitus, lateral view; B — wing; C — male terminalia, dorsal view; D — gonocoxite, lateral view; E — aedeagal complex, dorsal view; F — paramere, outer surface; G — aedeagus, lateral view (right = ventral); H — apical part of aedeagus, posterodorsal view.

Рис. 10. *Atypophthalmus* (*Microlimonia*) *omogoensis* (Alexander, 1954): A — внешний вид, латерально; B — крыло; C — гениталии самца, дорзально; D — гоноксцит, латерально; E — структуры эдеагуса, дорзально; F — внешняя поверхность парамера; G — эдеагус, латерально (справа вентрально); H — вершина эдеагуса, дорзально сзади.

Female. Unknown.

Distribution. Japan (Honshu, Shikoku, and Kyushu) (Fig. 11E) and Russia (FE).

Remarks. This species is similar to a Chinese species, *A. (M.) bicorniger* (Alexander, 1932) in terms of the coloration and structure of male terminalia, but is differentiated from it by the following characters: male terminalia with basal part of gonostylus bearing two roundish lobes near base (Fig. 10C) (without lobe in *A. bicorniger*); mesal-apical lobe of paramere shorter than 1/6 length of remainder of paramere (Fig. 10F) (about as long as remainder of paramere in *A. bicorniger*).

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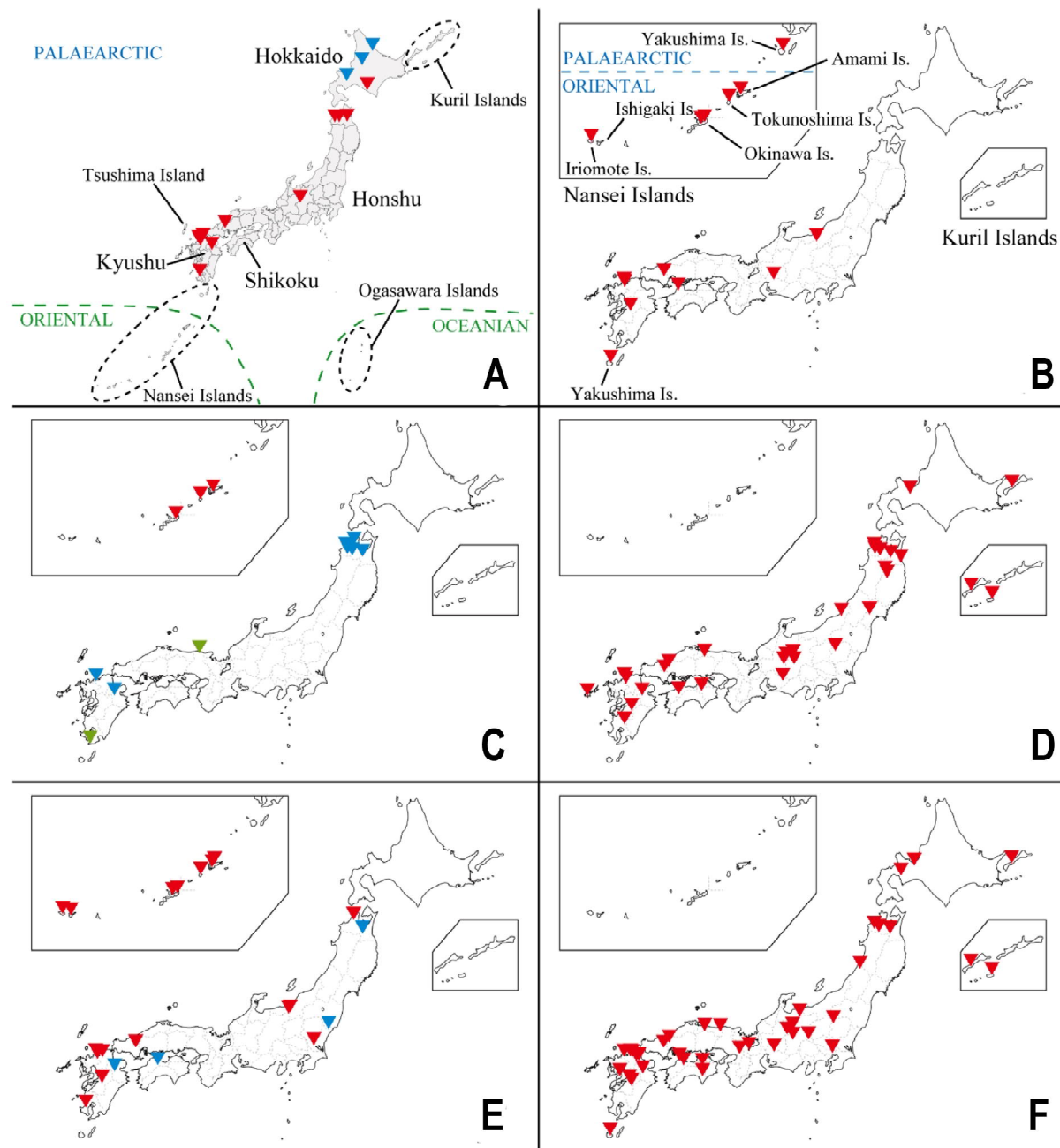


Fig. 11. Distribution maps of Japanese *Atyrophthalmus* spp. (data in the previous papers are included): A — *A. (A.) crinitus* (red), *A. (A.) inustus* (blue); B — *A. (A.) hymenophallus* sp.n.; C — *A. (A.) okinawensis* sp.n. (red), *A. (A.) stylacanthus* (blue), *A. (A.) umbratus* (green); D — *A. (M.) inelegans*; E — *A. (M.) jeju* (red), *A. (M.) omogoensis* (blue); F — *A. (M.) machidai*.

Рис. 11. Карта распространения видов *Atyrophthalmus* spp. в Японии (с учётом данных предыдущих публикаций): A — *A. (A.) crinitus* (красный), *A. (A.) inustus* (синий); B — *A. (A.) hymenophallus* sp.n.; C — *A. (A.) okinawensis* sp.n. (красный), *A. (A.) stylacanthus* (синий), *A. (A.) umbratus* (зелёный); D — *A. (M.) inelegans*; E — *A. (M.) jeju* (красный), *A. (M.) omogoensis* (синий); F — *A. (M.) machidai*.

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