

A Taxonomic Study of the Gasterocercini Genus *Orochlesis* PASCOE (Coleoptera, Curculionidae, Cryptorhynchinae) in Japan

Naomichi TSUJI^{1), 2)} and Hiraku YOSHITAKE^{3)*}

¹⁾Entomological Laboratory, Graduate School of Bioresource and Bioenvironmental Sciences, Kyushu University, 744 Motooka, Nishi-ku, Fukuoka, 819–0395 Japan

²⁾The Kyushu University Museum, 6–10–1 Hakozaki, Higashi-ku, Fukuoka, 812–8581 Japan

³⁾Kyushu Okinawa Agricultural Research Center (Itoman residence), NARO, 820

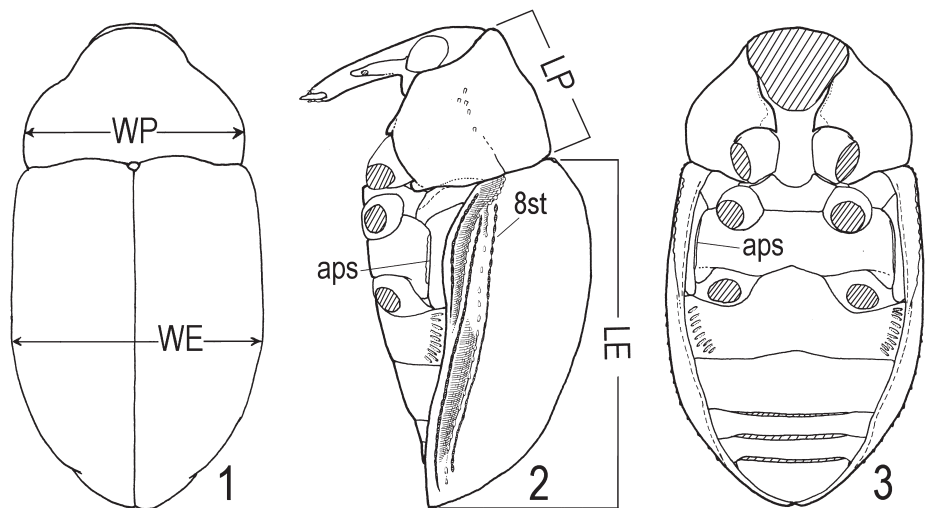
Makabe, Itoman, Okinawa, 901–0336 Japan

*Corresponding author

Abstract Japanese species of the curculionid genus *Orochlesis* PASCOE (Cryptorhynchinae, Gasterocercini) were taxonomically revised. Totally, eight species including six new species were recognized: *O. takaosana* KÔNO, 1932 (= *O. meshimensis* KÔNO, 1937, syn. nov.; Hokkaido, Honshu, Shikoku, and Kyushu; Akusekijima Is.), *O. amplicollis* MORIMOTO et MIYAKAWA, 1985 (the Izu Isls., Shikoku, Kyushu, and the northern Ryukyus), *O. morimotoi* sp. nov. (the central Ryukyus: Amami Isls.), *O. yambaruana* sp. nov. (the central Ryukyus: Okinawajima Is.), *O. bimaculata* sp. nov. (the southern Ryukyus: Sakishima Isls.; Amami-Ōshima Is.), *O. sakishimensis* sp. nov. (the southern Ryukyus: Sakishima Isls.), *O. simulata* sp. nov. (Honshu, Kyushu, and the Ryukyus), and *O. donana* sp. nov. (the southern Ryukyus: Yaeyama Isls.). A diagnosis is provided for the genus based on morphological characteristics of the Japanese species. The two previously known species are redescribed, and the six new species are described in detail including structures of elytra, fore femora, and male and female genitalia. A key to species, illustrations of diagnostic characteristics of each species, and a distributional map of Japanese *Orochlesis* are also provided. In addition, the lectotype of *O. takaosana* is designated.

Introduction

The genus *Orochlesis* PASCOE, 1871 belongs to the “*Rhynchodes* group” (LYAL, 1993) in the tribe Gasterocercini, subfamily Cryptorhynchinae and is characterized mainly by the short and straight rostrum, convex elytra, elongate 1st and 2nd ventrites, and femora grooved for reception of tibiae on all legs (PASCOE, 1871; ZIMMERMAN, 1936 a). Presently, this genus consists of 25 species from East Asia and Oceania (ZIMMERMAN, 1945), most of which are known from Southeast Asia and Oceania. From Northeast Asia, five *Orochlesis* species are known to occur in Japan, Korea, and Taiwan (MORIMOTO & MIYAKAWA, 1985): *O. annularis* PASCOE, 1871 (Oceania, Southeast Asia, and Taiwan), *O. antepagiata* HELLER, 1931 (Taiwan), *O. takaosana* KÔNO, 1932 (Honshu, Shikoku, Kyushu, and South Korea), *O. meshimensis* KÔNO, 1937 (Kyushu: the Danjo Isls.), and *O. amplicollis* MORIMOTO et MIYAKAWA, 1985 (the Izu Isls., Shikoku, Kyushu, and the northern Ryukyus). Over 30 years ago, however, MORIMOTO and MIYAKAWA (1985) pointed out the presence of four undescribed species of the genus in the Ryukyus, southwestern Japan, all of which are still waiting to be described. In addition, our preliminary study suggests that conventional taxonomic characters for *Orochlesis* species are inadequate to delimit Japanese species and a few more undescribed species occur in the Ryukyus. Therefore, a



Figs. 1–3. Habitus of *Orochlesis takaosana* KÔNO, excepting appendages. — 1, Dorsal, double-headed straight arrows indicate where the maximum width across pronotum (WP) and elytra (WE) were measured, respectively; 2, lateral, brackets indicate where the length of pronotum (LP) and elytra (LE) were measured, respectively; 3, ventral. Lettering: 8st, 8th stria; aps, anapleural suture. Scale: 1.00 mm.

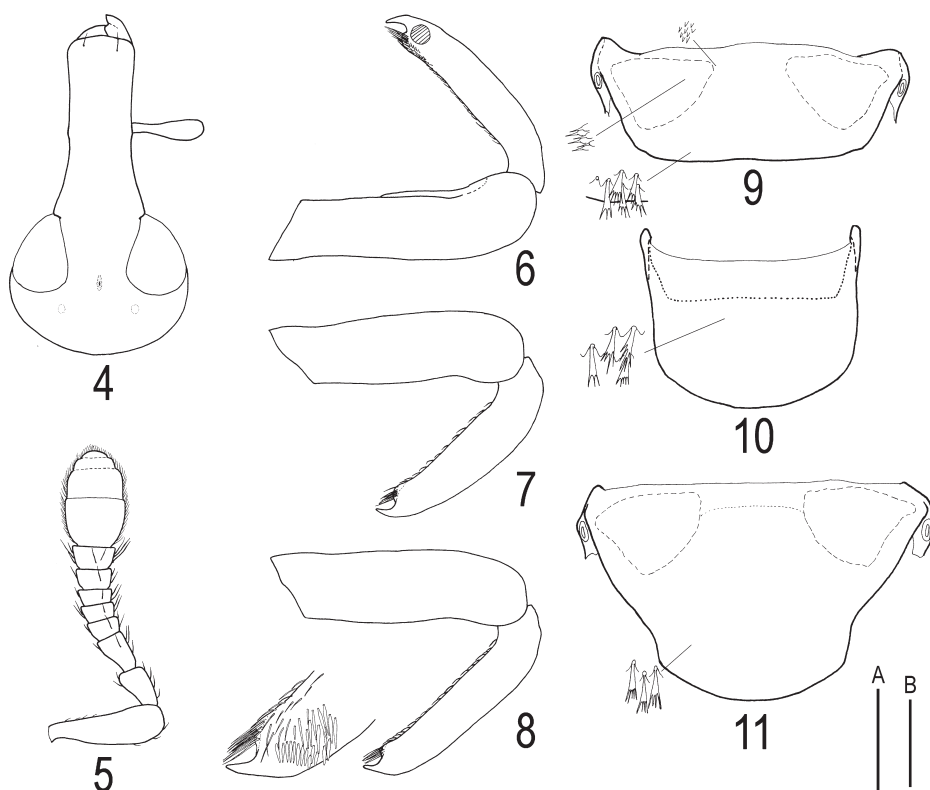
taxonomic study of *Orochlesis* is required to elucidate the Japanese fauna of the genus, based on detailed morphological observations on various body parts including male and female genitalia.

In this paper, we revise Japanese species of the genus *Orochlesis* taxonomically, redescribing two previously known species, describing six new species, and proposing a new synonymy. We provide clear diagnoses, an identification key, and a distributional map for all the Japanese species.

Material and Methods

This study was based on specimens preserved in the following institutions and private collections in Japan: Hokkaido University Museum, Sapporo (HUM); National Museum of Nature and Science, Tsukuba (NMNS); Kyushu University Museum, Fukuoka (KUM); Institute for Agro-Environmental Sciences, NARO, Tsukuba (NIAES); Laboratory of Entomology, Tokyo University of Agriculture, Atsugi (TUA); K. AKITA private collection, Tsu (KA); S. IMASAKA private collection, Kurume (SI); K. KIDO private collection, Ônojô (KKD); K. KANNÔ private collection, Komono (KKN); I. MATOBA private collection, Yuasa (IM); H. OHKI private collection, Yokohama (HO), and T. YORO private collection, Hakone (TY). All holotypes designated herein are deposited in KUM.

External structures were observed under an Olympus SZ60 stereoscopic microscope. Measurements were carried out with an ocular micrometer on the microscope. Measured values were recorded as numerical values according to scale and then calculated in millimeters. Measurements of various body parts are defined and abbreviated as follows (Figs. 1 & 2): TL = total length of body, calculated as LP + LE; LP = length of pronotum, measured from the anterior to posterior margins in lateral view; WP = maximum width across pronotum in dorsal view; LE = length of elytra, measured from the base



Figs. 4–11. Body parts of *Orochlesis takaosana* Kôno. — 4, Head, in dorsal view; 5, right antenna, in dorsal view; 6–8, left legs except trochanters and tarsi, in ventral view; 9–11, tergites. — 6, Fore femur and tibia; 7, middle femur and tibia; 8, hind femur and tibia, with enlarged tibial apex (lower left). — 9, Male 7th tergite; 10, male pygidium; 11, female pygidium. Scales: A, 0.50 mm for 4 & 6–8; B, 0.20 mm for 5 & 9–11.

before scutellum to apices of elytra in dorsal view; and WE = maximum width across elytra in dorsal view. The methods used in this study for genitalia observations were almost the same as those explained by MARUYAMA (2004) and YOSHIDA and HIROWATARI (2014), but the dissected genital organs were stained with Chlorazol Black E solution and examined under a Nikon Eclipse D400 optical microscope. Line drawings of body characteristics were made using the stereoscopic microscope fitted with an ocular grid and/or by tracing the photographs. Illustrations of terminalia were made using the optical microscope fitted with a Nikon Y-IDT drawing tube. Specimen photographs were taken using a Canon EOS Kiss X5 or a Sony α 7 R IV with a Canon MP-E 65 mm 1–5 $\times$ macro lens. Each image was assembled from a series of photographs with different focal planes using the CombineZP image stacking software (HADLEY, 2010), and then edited using the GIMP 2.8.22 software (GIMP Development Team, 2017). A distributional map was created with a shapefile downloaded from the Natural Earth project website by using the QGIS 2.8.3 (QGIS Development Team, 2015, 2017) and GIMP 2.8.22 softwares, based on the data of examined specimens in this study.

Verbatim label data indicated by double quotation marks (“ ”) are given for the holotypes and lectotype designated in this paper. In quotations, line breaks are indicated by a slash (/).

Plant nomenclature follows YONEKURA and KAJITA (2003–).

Taxonomy

Genus *Orochlesis* PASCOE, 1871

(Figs. 1–13, 19–24, 54–58 & 84–89)

Orochlesis PASCOE, 1871: 194 [establishment of the genus for three new spp. incl. *O. annularis*]; PASCOE, 1874: 40 [new New Guinean sp.]; LEA, 1913: 301 [= *Acacallis* PASCOE, 1883], 327 [= *Queenslandica* LEA, 1903; comment on the type species of *Orochlesis*] & 328 [new Australian sp.]; MARSHALL, 1921: 593 [new Samoan sp.]; HELLER, 1931: 104 [description of *O. antepagiata* from Taiwan]; KÔNO, 1932: 178 & pl. VI-fig. 8 [description of *O. "takaosanus"* from Japan]; HUSTACHE, 1936: 58 [cataloged; 10 spp.]; ZIMMERMAN, 1936 a: 3 [revision; 16 spp. incl. six new spp. from Australia, Fiji & Society Isls.]; ZIMMERMAN, 1936 b: 3 [four new Fijian spp.]; ZIMMERMAN, 1936 c: 46 [diagnosis; Society Isls.]; KÔNO, 1937: 129 [description of *O. meshimensis* from Japan]; ZIMMERMAN, 1938: 165 [new Solomon sp.]; ZIMMERMAN, 1939: 57 [new Fijian sp.]; ZIMMERMAN, 1945: 17 [checklist of *Orochlesis* spp.; new Javanese sp.; 24 spp.]; MORIMOTO, 1978: 131 [in key; Cryptorhynchina]; MORIMOTO & MIYAKAWA, 1985: 26-fig. 4 [distribution map of Japanese & Taiwanese spp.; occurrence of *O. annularis* in Taiwan] & 62 [description of *O. amplicollis* from Japan]; LYAL, 1993: 21 [*"Rhynchodes" group*]; ALONSO-ZARAZAGA & LYAL, 1999: 136 [cataloged; gender: feminine; Gasterocercini]; HONG *et al.*, 2000: 145 [synonymic list; *O. "takaosanus"* from Korea]; HONG *et al.*, 2011: 156 [in key] & 191 [diagnosis; Gasterocercini]; ALONSO-ZARAZAGA, 2013: 61 [designation of the type species: *O. annularis*].

See ZIMMERMAN (1936 a) and ALONSO-ZARAZAGA and LYAL (1999) for other synonymy.

Diagnosis. This genus belongs to the "*Rhynchodes* group" (LYAL, 1993) and is closely similar to *Strattis* PASCOE, 1883, *Nyphaeba* PASCOE, 1871, and *Sympedius* PASCOE, 1876, in having the following characteristics (LYAL, 1993; DEVI *et al.*, 2016; RIEDEL, 2017): 1st ventrite with striate area on each side; 7th tergite neither with granules nor microsetae in both sexes; female 8th sternite with plate elongate, extending to cover more than half the length; and male endophallus with large Y-shaped to sagittate sclerite in apical part. However, *Orochlesis* can be distinguished from the three genera by a combination of the following characteristics: elytra with 9th striae not reaching base (MORIMOTO, 1978); femora unarmed on all legs; and tibiae with outer margins simple on all legs.

Japanese *Orochlesis* species share the following characteristics.

Integument predominantly dark reddish to dark brown, apical half of rostrum, antennae, ventrites, and tarsi reddish to dark reddish brown, mostly imbricate with recumbent ovate to orbicular scales; rostrum densely covered with small subrecumbent to suberect scales on dorsal surface from base to level of antennal insertions but often subglabrous medially, then with sparse minute scales or glabrous apically, and bearing pair of minute slender setae at apex; scutellum, sides of 1st ventrite, femoral sulci, and basal 2/3 of posterior surface of hind femora glabrous; tibiae along inner margins and tarsi densely to closely covered with narrow to hair-like scales. Head with frons between eyes with small median fovea; postocular area with pair of weak projections. Rostrum (Figs. 2 & 4) flat, much shorter than pronotum, as wide as or a little narrower than interocular distance at middle, and in profile rather thick, faintly curved and not attenuate apically. Each mandible with large internal tooth. Antennae (Fig. 5) inserted near middle of rostrum (male) or a little behind middle (female), with scape much shorter than funicle; funicle with 1st and 2nd segments subconical, subequal in length; 3rd to 7th funicular segments wider than long, each shorter than 2nd; club segmented, with 1st segment relatively large. Prothorax (Fig. 2) carinate basally on both sides before humeri and in profile less convex dorsally. Elytra (Figs. 1 & 2) ovate to subovate and a little wider than pronotum, dorsally widely convex medially in subbasal part, smooth, not tuberculate, with subapical calli less-developed; 1st intervals basally weakly wrinkled or granulate, and forming continuous surface with other inter-

vals; 9th intervals more or less granulate-costate along entire length; granulate-costae of 9th intervals more strongly convex from before middle to subapical calli; 10th intervals more or less granulate-costate on basal half; granulate-costae of 10th intervals more strongly convex from behind humeri to before middle; 9th striae not reaching elytral bases. Hind wings more or less developed (Figs. 19–24), differing according to species. Sterna (Fig. 3) with mesosternal receptacle transversely subhexagonal, with apical margin shallowly emarginate, and deeply concave; metasternum flattened, not foveate; anapleural suture (Figs. 2 & 3) distinct and densely covered with small plumose scales. Venter (Fig. 3) with 1st ventrite costate on each side; 2nd longer than 3rd and 4th combined; 5th transverse-subtrapezoidal. Legs (Figs. 6–8) flattened, with femora edentate; fore femora each bisulcate for reception of both tibia and tarsus (Figs. 12 & 13) whereas mid and hind femora sulcate for reception of tibiae; tibiae each with less-developed premucro; fore tibiae each costate on inner surface and uni- to bicarinate along outer margin; mid- and hind tibiae with outer margins simple, gently curved basally; tarsi with 1st segment almost as long as 2nd and 3rd combined. Terminalia with 7th tergite and pygidium (Figs. 9–11) neither with granules nor microsetae in both sexes; female 8th tergite serrate apically (Fig. 84); male aedeagal body (Figs. 54 & 55) much shorter than its apodemes, flattened dorso-ventrally, weakly sclerotized dorsally, and with apex flanked by a few minute setae; endophallus with Y-shaped (Fig. 81) to sagittate (Fig. 54) plate sclerite in apical part, and bearing tubular transfer apparatus; tegmen (Fig. 57) with well-developed parameres and moderately long apodeme; male 9th sternite (Fig. 58) much shorter than aedeagus, with apical arms narrow, short, widely divergent, and lacking basal sclerotized flange; female 8th sternite (Fig. 85) with plate elongate, extending to cover more than half the length; styli (Fig. 86) much shorter than coxite; bursa copulatrix unarmed; spermathecal duct inserted at various portions between oviduct to subbasal part of bursa copulatrix, differing according to species (Figs. 87–89); spermatheca comma- to C-shaped; spermathecal gland short.

Distribution. Japan; Australia, Fiji, French Polynesia (the Society Isls.), Indonesia (West Java, Sulawesi, the Maluccas (Bacan Is. and the Aru Isls.), and West Papua), Korea, Malaysia (Penang Is.), Taiwan, Papua New Guinea (Salwatty Is. and Yule Is.), the Philippines (Luzon), Samoa, and the Solomon Isls. (ZIMMERMAN, 1945; ALONSO-ZARAZAGA & LYAL, 1999; HONG *et al.*, 2011).

Orochlesis takaosana KÔNO, 1932

[Japanese name: Takao-maru-kuchikakushi-zômushi]

(Figs. 1–11, 23, 25–30, 54–60, 84–87 & 90–93)

Orochlesis takaosanus KÔNO, 1932: 178 & pl. VI-fig. 8 [type locality: “Berg Takao”]; HUSTACHE, 1936: 58 [cataloged; “Japon”]; ZIMMERMAN, 1936 a: 5, 18 [listed; “Honshu, Japan”; redescription]; ZIMMERMAN, 1945: 19 [listed; “Honshu, Japan”]; MORIMOTO, 1984: 335 & pl. 66-fig. 5 [diagnosis; Honshu, Shikoku & Kyushu]; MORIMOTO & MIYAKAWA, 1985: 26-fig. 4 [in distributional map]; MORIMOTO, 1989: 522 [cataloged; Honshu, Shikoku & Kyushu]; HONG *et al.*, 2000: 145 [new record from South Korea; “Jeju Isl.”] & 285-fig. 214 [habitus]; IMASAKA, 2002: 62 [Mt. Unzendake, Nagasaki]; HONG *et al.*, 2011: 191 [diagnosis & additional records from South Korea; “South, Is. Jejudo and Is. Ulreungdo”], 275-fig. 126 [habitus] & 286-fig. 126 [male aedeagus].

Orochlesis takaosana: KOJIMA & MORIMOTO, 2004: 117 [cataloged; “Japan (incl. Tsushima), Korea (Cheju I.)”]; HORI & MATOBA, 2005: 86 & fig. 19 [Hokkaido; habitus]; STÜBEN & ALONSO-ZARAZAGA, 2013: 242 [cataloged; “A: JA SC”]; ALONSO-ZARAZAGA *et al.*, 2017: 470 [cataloged; “A: JA SC”].

Orochlesis meshimensis KÔNO, 1937: 129 [type locality: “Insel Meshima (Ins. Danjo)”]; ZIMMERMAN, 1945: 19 [listed, “Meshima (Danjo), Japan.”]; MORIMOTO, 1984: 335 & pl. 66-fig. 4 [diagnosis; Danjo Isls. (Meshima Is.) & the Ryukyus (Akusekijima Is.)]; MORIMOTO & MIYAKAWA, 1985: 26-fig. 4 [in distributional map]; MORIMOTO, 1989: 522 [cataloged; Kyushu, Danjo Isls. & Tokara Isls. (Akusekijima Is.)]; SASAKI *et al.*, 2002: 280 [cataloged; Tokara Isls. (Akusekijima Is.), Kyushu, Danjo Isls.]; KOJIMA & MORIMOTO, 2004: 117 [cataloged; “Japan (incl. Danjo Isls., Ryukyus)”]; STÜBEN & ALONSO-ZARAZAGA, 2013: 242 [cataloged; “A: JA”]; ALONSO-ZARAZAGA *et al.*, 2017: 470 [cataloged; “A: JA”]. — *Syn. nov.*

Diagnosis. This species is similar in maculation to *Orochlesis simulata* and *O. sakishimensis*, but can be distinguished from any other Japanese congeners by a combination of the following characteristics: 1st to 8th elytral intervals not granulate; fore femora each with receptacle for tarsus hardly raised along outer margin; male endophallus with tubular transfer apparatus relatively short; and female spermatheca with duct inserted at subapical part of bursa copulatrix.

Redescription. Male. Measurements ($n = 10$; in mm): TL 3.26–4.45 (mean 3.91); LP 0.95–1.33 (1.17); WP 1.49–2.05 (1.80); LE 2.31–3.15 (2.74); WE 1.72–2.34 (2.05).

Body (Figs. 25–30) mostly imbricate with ovate to orbicular scales, scatteredly mingled with subrecumbent oblanceolate ones. Rostrum covered with scales on basal 1/3, narrowly squamous on both sides along upper margins of antennal scrobes but sparsely squamous or subglabrous medially to level of antennal insertions, then glabrous apically. Head covered with light-colored small scales on posterior portion; frons between eyes covered with light-colored and dark suberect scales; postocular areas fringed with darker general scales. Pronotum with large transverse dark squamous area on disc along basal margin, which is sometimes divided into pair of smaller patches; remaining part covered with yellowish white to pale brown scales. Elytra mainly covered with yellowish white to pale brown scales but with the following three dark patches of general scales: 1) obscure rhomboidal patch on subbasal part, which is fringed posteriorly with pair of oblique bands of light-colored scales; 2) pair of large lateral patches behind humeri; and 3) short transverse band on subapical part between 3rd intervals; each interval with row of oblanceolate scales; 1st intervals basally densely covered with slenderer scales. Metasternum densely covered with general scales. Venter partially closely covered with general scales; scales of 1st ventrite become smaller and sparser on sublateral parts toward glabrous areas on both sides; 3rd and 4th ventrites each with two to three transverse rows of general scales on middle.

Rostrum (Fig. 4) closely punctate from base to just behind middle; punctures become smaller and sparser on apical half of dorsal surface; sides narrowing apically from base to basal 1/3, slightly expanded above antennal insertions, and then slightly widened apically; antennal club (Fig. 5) with 1st segment nearly as long as remaining segments combined.

Prothorax much wider than long, WP/LP 1.48–1.62 (mean 1.54); sides subparallel in basal 1/3, widest at base to basal 1/4, then strongly arcuately convergent to subapical constriction; dorso-lateral parts more or less granulate from middle to behind subapical constriction.

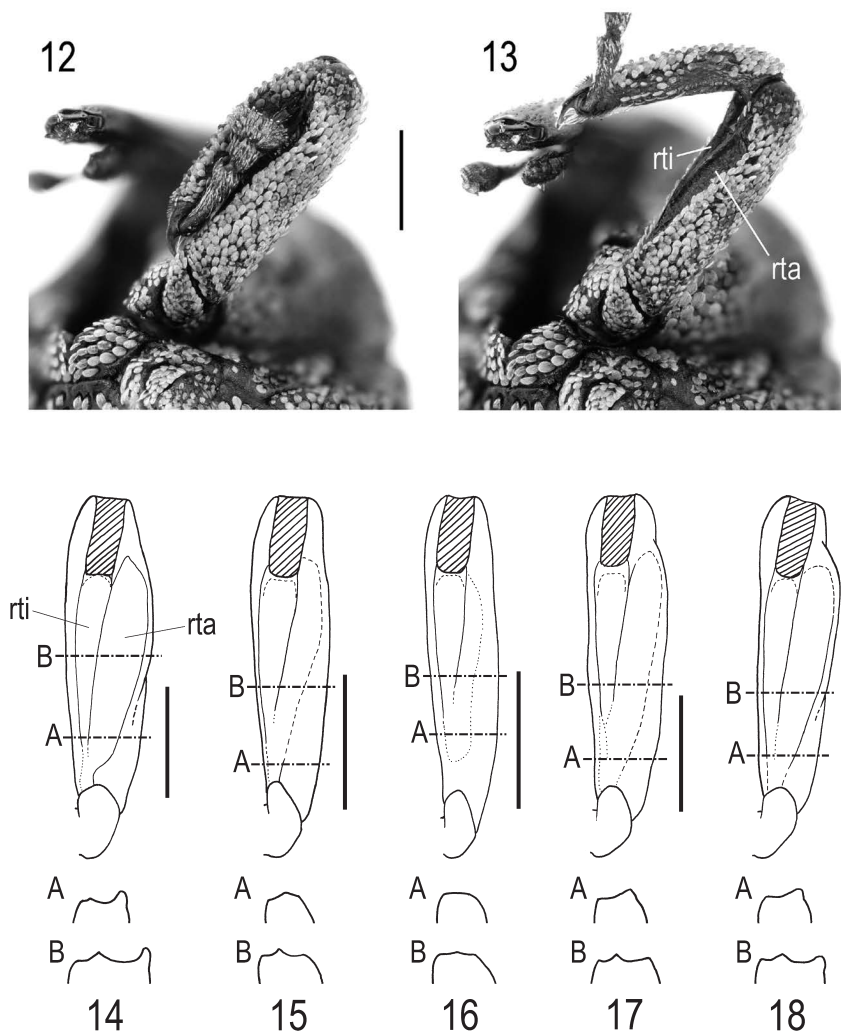
Scutellum small, suboval, and being on the same plane as or slightly more prominent dorsally than elytral bases.

Elytra subovate, LE/WE 1.27–1.39 (mean 1.33), dorsally moderately convex in subbasal part; sides slightly expanded at humeri, faintly widened to behind middle, then gently arcuately convergent to subapical calli; 1st to 8th intervals smooth and flat; 9th intervals moderately granulate-costate at humeri and weakly granulate-costate along almost entire length, faintly more prominent than 8th due to granulate-costae; 10th intervals moderately granulate-costate, being at the same height as or slightly more prominent than 9th from behind humeri to before middle; granulate-costae of 9th and 10th intervals subconfluent with each other at humeri. Hind wings (Fig. 23) fully developed.

Mesosternal receptacle slightly convex ventrally along mid-line, being on the same plane as metasternum (Fig. 2).

Legs (Figs. 6–8) relatively short and robust; fore femora each with receptacle for tibia as wide as that for tarsus; receptacle for tarsi shallowly concave, slightly raised basally along outer margins; hind femora slightly widened from base to middle; fore tibiae unicarinate along outer margin.

Genitalia as illustrated (Figs. 54–60). Aedeagal body approximately 1.5 times as long as wide, subparallel-sided or slightly expanded to subapical part, then rapidly convergent apically, sometimes



Figs. 12–18. Left fore legs of *Orochlesis* spp. — 12–13 & 17, *O. simulata* sp. nov., 14, *O. sakishimensis*, sp. nov.; 15, *O. bimaculata*, sp. nov.; 16, *O. morimotoi*, sp. nov.; 18, *O. donana* sp. nov. — 12, Left fore leg in repose; 13, ditto, opened. — 14–18. Undersides of left fore femora and trochanters with schematic cross sections of femoral surfaces at two dotdash lines (A & B). Lettering: rti, receptacle for tibiae; rta, receptacle for tarsi. Scales: 0.50 mm.

faintly produced at middle of apex, and in profile gently curved ventrally; endophallus (Figs. 54, 59 & 60) spinulate basally, with sagittate sclerite in apical part and short tubular transfer apparatus in sub-basal part, which tapers apically and bears small lateral projections at both extremities.

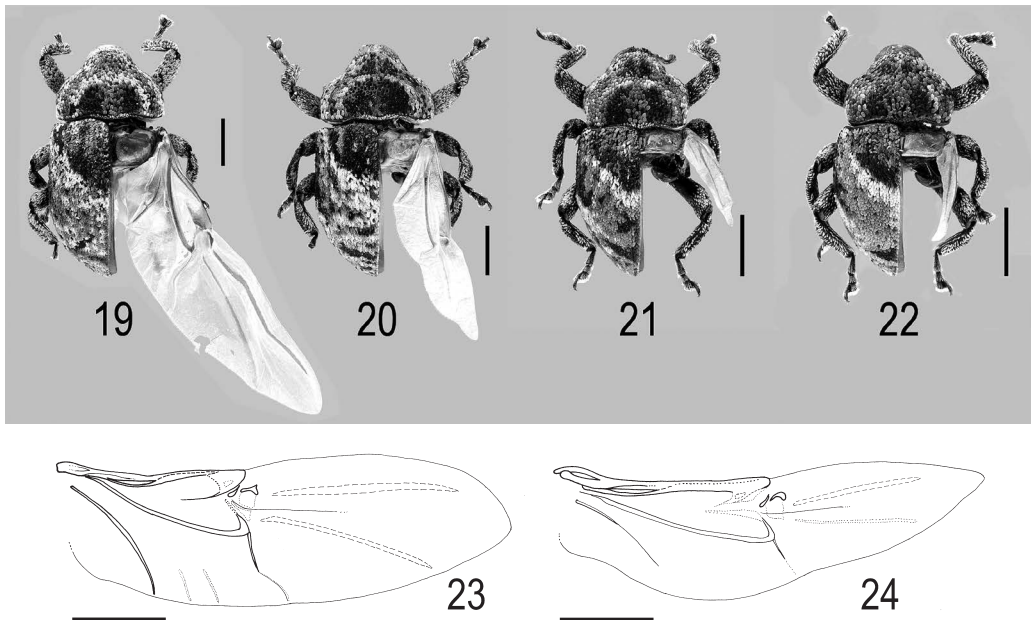
F e m a l e. Measurements ($n = 11$; in mm): TL 2.73–5.58 (lectotype 3.62; mean 3.97); LP 0.77–1.76 (1.08; 4.42); WP 1.27–2.57 (1.61; 1.82); LE 1.96–3.82 (2.54; 2.77); WE 1.45–2.90 (1.91; 2.08); WP/LP 1.46–1.66 (1.49; 1.52); LE/WE 1.31–1.39 (1.32; 1.33). Similar to males, but rostrum slightly slenderer, more minutely and sparsely punctate on apical half.

Terminalia as illustrated (Figs. 84–87 & 90–93). Spermatheca (Figs. 90–93) comma-shaped, with

cornu short, apically gradually attenuate but not incurved at apex; collum obliquely convex downward; ramus less-marked; insertions of duct and gland moderately distant; duct inserted at subapical part of bursa copulatrix (Fig. 87).

Type material examined. Lectotype of *O. takaosana*, female (here designated): “Takao Musas- / hi Japan 6. / may. 1912. H. / Takabayashi.” (typed on a yellow card); “*Orochlesis / takaosanus / Kôno / Type*” (handwritten on a red card, partially typed); “SYNTYPE / The label attached by / OHARA and HIRONAGA / 2006 / 0000000961 / Sys. Ent / Hokkaido Univ. / Japan [SEHU]” (typed on a white card with a red longitudinal stripe) (HUM). Paralectotype: 1 female, Mt. Takaosan, Tokyo, 6.V.1912, H. TAKABAYASHI (NMNS); 1 female (lost by the first author), same data (NMNS). Holotype of *O. meshimensis*, male: “[Danjo Islands] / Meshima / 20.v.1935 / Hiroshi Hori” (typed on a white card); “*Orochlesis / meshimensis / Kôno / Type*” (handwritten on a red card) (HUM).

Non-type material examined. Japan: Honshu. [Aomori] 1 ex., Kodomari, Nakadomari-machi, 26.VII.1977, A. ABE (KUM); 1 male, same locality, 22.IV.2002, A. ABE, on *Tilia japonica* (KUM). [Miyagi] 1 ex., Dakeyama, alt. 500 m, Izumi-ku, Fukuoka, Sendai-shi, 7.VIII.2013, H. YOSHITAKE & N. NAKAHARA (NIAES); 1 ex., Gassan-ike Pond, Kamiyashiki, Aoba-ku, Sendai-shi, 28.VIII.2012, H. YOSHITAKE (NIAES). [Fukushima] 1 ex., Hinoemata-mura, 11.VI.1994, H. OHKI (HO). [Tochigi] 1 ex., Dorobu, Nikko-shi, 15.VI.2008, K. TAKAHASHI (KUM). [Saitama] 1 ex., Hiki Hills Natural Park, Higashimatsuyama-shi, 6–7.VII.1987, A. NISHIYAMA (KUM); 1 ex., Kanao, Yorii-machi, 26.IV.1985, S. MIYAKAWA (KUM); 1 ex., same locality, 13.IX.1985, S. MIYAKAWA (KUM); 1 ex., Sawabe, Minano-machi, 1.VI.1984, S. MIYAKAWA (KUM); 5 exs., Narao, Minano-machi, 12.VII.1985, S. MIYAKAWA (KUM); 1 male & 1 female, same locality, 27.VII.1984, S. MIYAKAWA (KUM); 8 exs., same locality, 21.IX.1984, S. MIYAKAWA (KUM). [Chiba] 1 ex., Mt. Kiyosumiyama, Ôtaki-machi, 9.VI.1963, K. MORIMOTO (KUM); 1 ex., same locality, 9.VI.1963, K. MORIMOTO (KUM); 1 ex., Mineoka, Kamogawa-shi, 4.VI.1978, J. OKUMA (KUM). [Tokyo] 3 exs., Akasaka Imperial Gardens, Minato-ku, 27.II.2004, S. NOMURA (KUM); 1 ex., Komaba Campus of the University of Tokyo, Meguro-ku, 6.VII.2007, H. YOSHITAKE, on dead branch of *Prunus × yedoensis* (NIAES); 1 ex., same locality, 18.V.2007, H. YOSHITAKE, on dead branch of *Prunus × yedoensis* (NIAES); 1 ex., Ogikubo, Suginami-ku, 24.V.1951, S. HISAMATSU (KUM); 1 ex., Suginami-ku, VIII.1949, K. KAWASHIMA (KUM); 1 ex., Jindaiji, Chôfu-shi, 19.II.1950, M. TAKAHASHI (KUM); 2 exs., Yomiuri Land, Inagi-shi, 17.V.1974, S. MIYAKAWA (KUM); 1 ex., same locality, 8.V.1975, S. MIYAKAWA (KUM); 1 ex., Ishida, Hino-shi, 4.IX.1985, S. SAITÔ (KUM); 6 exs., Mejirodai, Hachioji-shi, 5.V.1975, S. MIYAKAWA (KUM); 1 ex., Mt. Takaosan, Hachioji-shi, 29.IV.1973, S. MIYAKAWA (KUM); 2 males & 1 female, Hikage-sawa, Takao, Hachioji-shi, 24.IX.1973, S. MIYAKAWA (KUM). [Kanagawa] 1 ex., Okagami, Kawasaki-shi, 23.IX.1991, S. NIRASAWA (NIAES); 2 exs., Totsuka-ku, Yokohama-shi, 25.IV.1976, S. MIYAKAWA (KUM); 6 exs., Nôkendô site, Kanazawa-ku, Yokohama-shi, 10.VIII.1980, S. MIYAKAWA (KUM); 2 exs., same locality, 6.VII.1980, S. MIYAKAWA (KUM); 2 exs., same locality, 13.VII.1980, S. MIYAKAWA (KUM); 2 exs., same locality, 20.VII.1980, S. MIYAKAWA (KUM); 6 exs., same locality, 4.IX.1980, S. MIYAKAWA (KUM); 4 exs., Nagasawa-Mt. Fujisan, Yokosuka-shi, 3.V.1982, S. MIYAKAWA (KUM); 3 exs., same locality, 5.V.1983, S. MIYAKAWA (KUM); 4 exs., same locality, 9.V.1982, S. MIYAKAWA (KUM); 3 exs., Mt. Takeyama, Yokosuka-shi, 26.IV.1981, S. MIYAKAWA (KUM); 1 ex., Cape Kannonzaki, Yokosuka-shi, 10.VI.1981, S. MIYAKAWA (KUM); 1 ex., Mt. Ôyama, Hinata-rindô Forestry Road, Isehara-shi, 26.IX.1985, S. MIYAKAWA (KUM); 2 exs., same locality, 10.X.1990, S. MIYAKAWA (KUM); 1 ex., Mt. Takatorisan, 26.VI.1981, S. MIYAKAWA (KUM); 4 exs., same locality, 5.V.1982, S. MIYAKAWA (KUM). [Niigata] 1 ex., Murakami-shi, 13.XI.1958, K. BABA (KUM). [Toyama] 3 exs., Sanko, Uozu-shi, 9.V.1997, T. MIKAGE (KUM). [Shizuoka] 2 exs., Toi, Izu-shi, 10.V.1980, J. OKUMA (KUM); 2 exs., Ônabe-rindô Forestry Road, Kawazu-chô, 20.VII.1977, J. OKUMA (KUM); 1 ex., Yu-



Figs. 19–24. Interspecific variation in the degree of hind wing development in *Orochlesis* spp. from Japan. — 19–22, Dorsal habitus without right elytra; 23–24, right hind wings. — 19, *O. simulata* sp. nov., from Okinawajima Is. in the central Ryukyus; 20, *O. donana* sp. nov., from Yonagunijima Is. in the southern Ryukyus; 21, *O. amplicollis* MORIMOTO et MIYAKAWA, from Izu-Ōshima Is. in the Izu Isls.; 22, ditto, from Nakanoshima Is., the Tokara Isls. in the northern Ryukyus; 23, *O. takaosana* KÔNO, from Mie Pref. 24, *O. donana* sp. nov., from Yonagunijima Is. in the southern Ryukyus. Scales: 1.00 mm.

gano, Kawazu-chô, 21.VII.1986, S. MIYAKAWA (KUM); 1 ex., Kadono, Matsuzaki-chô, 12.V.1980, J. OKUMA (KUM); 2 exs., Iwata-shi, 2.V.2010, J. AOKI (KUM); 1 ex., same locality, 3.V.2010, J. AOKI (KUM); 1 ex., Misakubo, Hamamatsu-shi, 14.VII.1954, K. KOJIMA (KUM). [Mie] 2 exs., Ochi-chô, Suzuka-shi, 20.VII.2010, N. TSUJI (KUM); 3 females & 5 exs., Hirakura, Misugi-mura, 29.IV.1997, K. AKITA, emerged from dead branches of *Zanthoxylum ailanthoides* (KUM); 1 ex., Takachaya, Tsu-shi, 20.VI.2000, K. AKITA (KUM). [Hyôgo] 1 ex., Takarazuka-shi, 27.III.1950, S. SHIBANAI (KUM). [Hiroshima] 1 ex., Hattabara Dam, Sera-chô, 22.VII.1997, S. NAKAMURA (KUM). Shikoku. [Tokushima] 1 ex., Mt. Ôtakiyama, Mima-shi, 11.V.1996, K. KUME (KUM). [Kôchi] 1 ex., Mt. Sasayama, Sukumo-shi, 29.VII.1953, K. MORIMOTO (KUM). Kyushu. [Fukuoka] 1 ex., Mt. Hikosan, Soeda-machi, 14.VII.1956, H. KAMIYA (KUM); 1 ex., same locality, 14.VII.1958, K. MORIMOTO (KUM); 1 ex., same locality, 27.V.1961, Y. KIMURA (KUM); 1 ex., same locality, 29.V.1961, Y. KIMURA (KUM); 1 ex., Mt. Hômanzan, Dazaifu-shi, 11.V.1975, H. IRIE (KUM); 1 ex., Mt. Shakadake, Yabe-mura, 29.V.1977, S. KIMOTO (KUM). [Nagasaki] 1 ex., Mt. Mitake, Kamiagata-chô, Tsushima Is., 13.VI.2002, T. KURIHARA (KUM); 1 ex., Mt. Ariakeyama, Izuhara-machi, Tsushima Is., 28.VII.1973, T. TAKAHASHI (KUM); 1 ex., Mt. Gokaharadake, Takaki-chô, 8.VII.1987, S. IMASAKA (SI); 3 exs., Kamikoba, Shimabara-shi, 29.VII.1976, S. IMASAKA (KUM); 1 ex., Mt. Unzendake, 6.VI.1977, S. IMASAKA (SI); 1 ex., Meshima Is., Danjo Isls., 6.VIII.1972, M. NODA (KUM); 1 ex., same locality, 13.VI.1978, A. MORI (KUM); 1 ex., same locality, 29.VI.1978, M. MOGI (KUM); 1 male, same locality, 3.V.1982, J. ONAGAMITSU (KUM); 2 exs., same locality, 12.IX.1986, M. EJIMA (KUM); 1 ex., same

locality, 23.V.1989, M. EJIMA (KUM); 1 ex., same locality, 24.V.1989, M. EJIMA (KUM); 1 ex., same locality, 25.V.1989, M. EJIMA (KUM); 1 ex., same locality, 14.VIII.2000, Y. TSUTSUMIUCHI (NIAES). [Kumamoto] 1 ex., Naidaijin-rindô Forestry Road, Yamato-chô, 9.VI.2013, N. TSUJI (KUM); 1 ex., Mt. Shiragadake, Ue-mura, 22.VII.2002, T. MIKAGE (KUM). [Ôita] 1 ex., Oike-enchi, Shônai-chô, 5.VI.2004, H. YOSHITAKE (NIAES). South Korea. [Gangwon-do] 1 ex., Osaeg-ri, Seo-myeon, Yangyang-gun, 4–6.VII.1984, T. SENO (KUM).

Distribution. Japan: Hokkaido, Honshu, Shikoku and Kyushu (incl. Tsushima Is. and Meshima Is.), and the Ryukyus (Tokara Isls.: Akusekijima Is.) (?); South Korea (incl. Jejudo Is. (?) & Ulreungdo Is.).

Biology. Adults of this species were collected from dead branches of various broad-leaved trees such as *Tilia japonica* (Malvaceae; Shinanoki, in Japanese) and *Prunus* × *yedoensis* (Rosaceae; Someiyoshino, in Japanese).

Remarks. KÔNO (1937) described *Orochlesis meshimensis* based on the holotype (Figs. 28–30) collected from Meshima Is. in the Danjo Isls. and mentioned that it can be distinguishable from *O. takaosana* by differences in the scaly maculation and pronotum width. However, our revision of these species based on many specimens from various localities from Honshu to Kyushu including Meshima Is. revealed that both features mentioned by KÔNO (1937) cannot be the distinguishing characters of *O. meshimensis*. The specimens from Meshima Is. usually possess the small patches of black scales on the pronotal and elytral bases, but the patches sometimes become as large as those in the specimens of *O. takaosana* from the other localities. Also, the shape of pronotum is variable individually both in *O. meshimensis* and *O. takaosana*. Based on these observations, we synonymized *O. meshimensis* with *O. takaosana*. HONG *et al.* (2000) recorded “*Orochlesis takaosanus*” from Jejudo Is., South Korea, with a habitus image of the voucher specimen. Judging from the body maculation of the specimen, however, it seems to belong to the species *O. simulata* and in need of revision for the taxonomic identity. The distributional record of *Orochlesis meshimensis* (= *O. takaosana*) from Akusekijima Is., the Tokara Isls is questionable, since the locality is far apart from the main distribution range of *O. takaosana* (see the chapter “Discussion” for further detail).

Orochlesis sakishimensis sp. nov.

[Japanese name: Sakishima-maru-kuchikakushi-zômushi]

(Figs. 14, 31–33, 37, 61–63 & 94)

Orochlesis sp. 4: MORIMOTO & MIYAKAWA, 1985: 26-fig. 4 [partly in distributional map].

Diagnosis. *Orochlesis sakishimensis* is closely similar to *O. bimaculata* distributed mainly in the same localities, but can be clearly distinguished from it by the following characteristics: 1) fore femora each with receptacle for tarsus strongly raised along outer margin; 2) 3rd and 4th ventrites subglabrous, except each with transverse row of sparse scales. This species is also similar in maculation to three Japanese congeners, *O. takaosana*, *O. simulata* and *O. donana*, but can be easily distinguished from them by the elytra with small granules on 7th to 10th intervals.

Description. Male. Measurements (n = 12; in mm): TL 2.26–4.70 (holotype 4.46; mean 3.85); LP 0.65–1.40 (1.31; 1.13); WP 1.10–2.25 (2.19; 1.86); LE 1.61–3.30 (3.15; 2.72); WE 1.27–2.55 (2.41; 2.11).

Body (Figs. 31–33) mostly imbricate with ovate to orbicular scales, scatteredly mingled with subrecumbent oblanceolate ones. Rostrum covered with scales from base to level of antennal insertions but sometimes with narrow subglabrous area medially, then glabrous apically. Head covered with yellowish white to brown scales. Pronotum with pair of dark squamous areas on disc along basal

margin; remaining part covered with yellowish white to pale brown scales; apical margin furnished with suberect oblanceolate scales laterally, which are arranged in clear rows. Elytra mainly covered with yellowish white to pale brown scales but with the following two dark patches of general scales: 1) large obtriangular patch along basal margins between 6th intervals, which is fringed posteriorly with subrescent band of light-colored scales and 2) obscure subrectangular patch between subapical calli; each interval with row of oval scales; 1st intervals bearing several slenderer scales basally. Metasternum densely covered with general scales. Venter partially closely covered with general scales; scales of 1st ventrite become smaller and sparser on sublateral parts toward glabrous areas on both sides; 3rd and 4th ventrites each with transverse row of sparse orbicular to oblanceolate scales on middle (Fig. 37).

Rostrum closely punctate from base to just behind middle; punctures become smaller and sparser on apical half of dorsal surface; sides narrowing apically from base to basal 1/3 and then subparallel apically; antennal club with 1st segment nearly as long as remaining segments combined.

Prothorax much wider than long, WP/LP 1.57–1.78 (holotype 1.67; mean 1.65); sides slightly widened from base to widest point at basal 1/4, and then strongly arcuately convergent to subapical constriction; dorso-lateral parts more or less granulate from middle to apex.

Scutellum small, suboval, and being on the same plane as elytral bases.

Elytra subovate, LE/WE 1.26–1.36 (holotype 1.31; mean 1.29), dorsally strongly convex in sub-basal part; sides slightly expanded at humeri, slightly widened to middle, and then gently arcuately convergent to subapical calli; 1st to 8th intervals flat; posterior parts of 7th and 8th intervals each bearing scattered small granules in row; sometimes posterior parts of 5th intervals also granulate; 9th intervals strongly granulate-costate at humeri, granulate before humeri to behind middle and then granulate-costate to subapical part, more prominent than 8th due to granulate-costae; 10th intervals strongly granulate-costate, being more prominent than 9th from before humeri to behind middle; granulate-costae of 9th and 10th intervals almost confluent with each other at humeri. Hind wings fully developed.

Mesosternal receptacle slightly convex ventrally along mid-line, being on the same plane as metasternum.

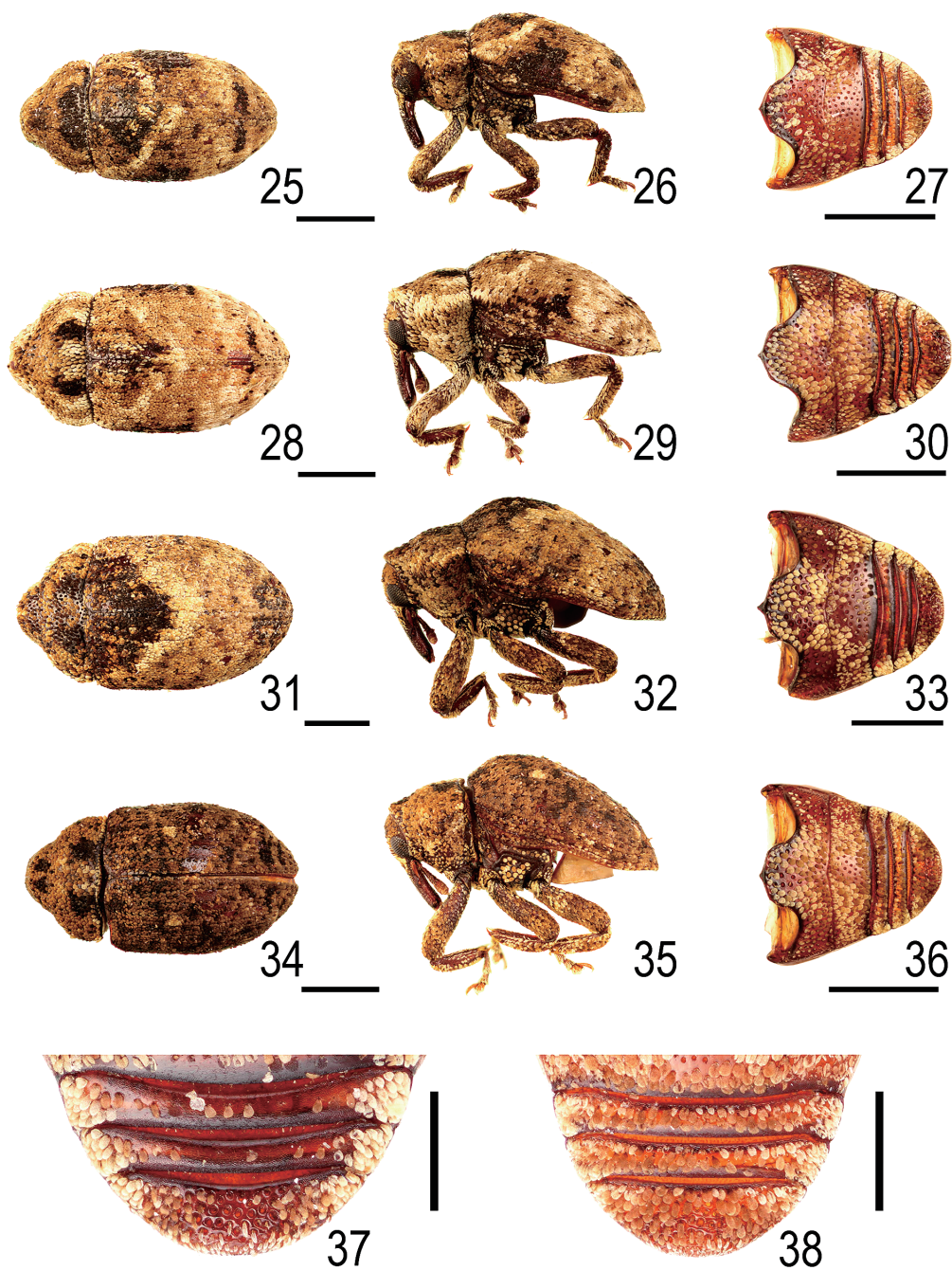
Legs relatively short and robust; fore femora (Fig. 14) each with narrower receptacle for tibia than that for tarsus; receptacle for tarsi strongly raised along outer margins; hind femora weakly expanded near base, slightly tapering apically; fore tibiae bicarinate along outer margins.

Aedeagus (Figs. 61–63) with aedeagal body approximately 1.5 times as long as wide, with sides weakly arcuate from base to subapical part, then rapidly convergent apically, sometimes faintly produced at middle of apex, and in profile gently curved ventrally; endophallus (Fig. 61) spinulate basally, with sagittate sclerite in apical part and short tubular transfer apparatus in subbasal part, which tapers apically and bears small lateral projections at both extremities.

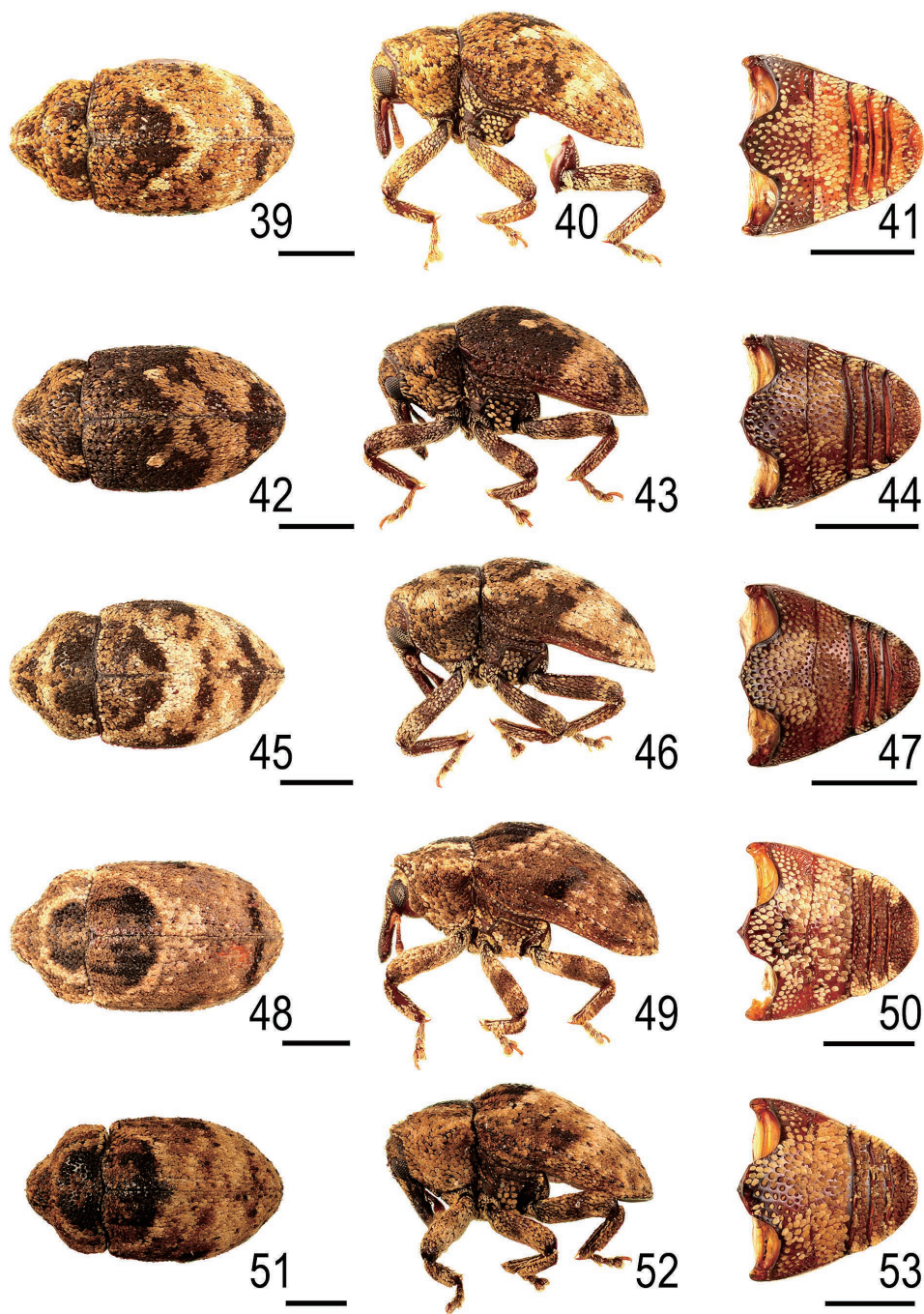
F e m a l e. Measurements ($n = 12$; in mm): TL 2.55–4.66 (mean 3.92); LP 0.75–1.36 (1.16); WP 1.20–2.16 (1.86); LE 1.80–3.30 (2.76); WE 1.41–2.56 (2.13); WP/LP 1.55–1.66 (1.61); LE/WE 1.26–1.34 (1.29). Similar to males, but rostrum slightly slenderer, more minutely and sparsely punctate from level of antennal insertions to apex, with sides slightly expanded above antennal insertions.

Spermatheca (Fig. 94) C-shaped, with cornu short, apically gradually attenuate but not incurved at apex; collum obliquely convex downward; ramus less-marked; insertions of duct and gland moderately distant; duct inserted at subapical part of bursa copulatrix.

Type material. Holotype: male (KUM), “Shirahama, Iri. / Ryukyu Is. / 31 Aug. – 5 Sep. / 1969 / H. Makiyama leg” (typed on a white card); “HOLOTYPE / *Orochlesis* / *sakishimensis* / Tsuji et Yoshitake, 2020” (typed on a red card). Paratypes. Japan: the Ryukyus. [Miyakojima Is.] 1 male, Ōnosan

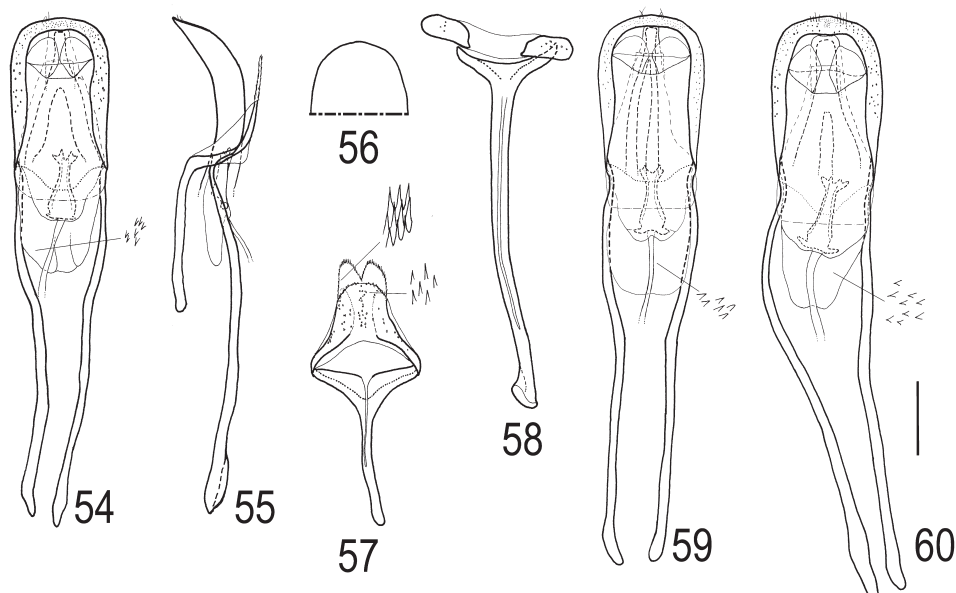


Figs. 25–38. *Orochlesis* spp. from Japan, males. — 25–27, *O. takaosana* KÔNO, from Mt. Takaosan, Tokyo; 28–30, *O. meshimensis* KÔNO, holotype; 31–33 & 37, *O. sakishimensis* sp. nov., holotype; 34–36 & 38, *O. bimaculata* sp. nov., holotype. — 25, 28, 31 & 34, Dorsal habitus; 26, 29, 32 & 35, lateral habitus; 27, 30, 33 & 36, ventrites; 37 & 38, 3rd to 5th ventrites, enlarged. Scales: 1.00 mm.



Figs. 39–53. *Orochlesis* spp. from Japan, males. — 39–41, *O. morimotoi* sp. nov., holotype; 42–44, *O. yambaruana* sp. nov., holotype; 45–47, *O. amplicollis* MORIMOTO et MIYAKAWA, from Izu-Ōshima Is. in the Izu Isls.; 48–50, *O. simulata* sp. nov., holotype; 51–53, *O. donana* sp. nov., holotype. — 39, 42, 45, 48 & 51, Dorsal habitus; 40, 43, 46, 49 & 52, lateral habitus; 41, 44, 47, 50 & 53, ventrites. Scales: 1.00 mm.

[sic! = Ônosanrin], 6–7.VII.2015, T. YOSHIDA (KUM); 2 exs., Agarinakasoe, Hirara, 12.VI.1977, H. IRIE (KUM); 1 ex., Hirara, 13.VII.1968, H. M. (KUM); 11 exs., same locality, 17–23.VIII.1969, H. MAKIHARA (KUM); 1 ex., same locality, 2.VII.1977, collector unknown (KUM); 1 ex., Uipyâyama-is-eki, Gusukube, 28.II.2015, H. YOSHITAKE (NIAES). [Ishigakijima Is.] 1 ex., 3.VII.1963, T. NAGAYOSHI (KUM); 1 ex., 29.IV.1973, K. KUROSU (KUM); 1 ex., 25.II.1962, K. IHA (KUM); 1 ex., 22.V.1962, K. KOJIMA (KUM); 1 ex., 24.VII.1962, Y. HAMA (KUM); 1 ex., 14.V.1984, K. IHA (KUM); 2 exs., Hirakubo, 14.VI.1974, T. MIKAGE (KUM); 1 ex., Ôzato, 9.VI.1977, J. OKUMA (KUM); 2 exs., same locality, 27.V.2006, H. OHKI (HO); 4 exs., Yoshino, 10.IV.2006, T. MIKAGE (KUM); 1 ex., Yonehara, 10.VI.1977, J. OKUMA (KUM); 1 ex., same locality, 16.IV.1981, K. BABA (KUM); 1 ex., same locality, 26.V.1995, T. MIKAGE (KUM); 1 ex., Mt. Kâradake, 18.III.1964, Y. MIYATAKE (KUM); 3 exs., Miyara, 19.IV.2018, T. MIKAGE (KUM); 1 ex., same locality, 26.IV.2018, T. MIKAGE (KUM); 6 exs., same locality, 2.V.2018, T. MIKAGE (KUM & NMNS); 1 ex., Maesato Dam, 1.III.2018, T. MIKAGE (KUM); 2 exs., Mt. Omotodake, 30.VIII.1962, M. OKABE (KUM); 2 exs., same locality, 14.X.1963, S. MIYAMOTO & Y. HIRASHIMA (KUM); 1 male, same locality, 8–11.IV.1975, H. IRIE (KUM); 2 females & 1 ex., same locality, 18–21.IV.1975, H. IRIE (KUM); 16 exs., same locality, 30.VII.1979, J. OKUMA (KUM); 1 male, same locality, 23–26.V.1990, K. MORIMOTO (KUM); 1 male, 3 females & 3 exs., same locality, 18–22.VI.1991, S. MIYAKAWA & K. MORIMOTO (KUM); 1 ex., same locality, 12.III.1997, K. TAKAHASHI (KUM); 1 ex., same locality, 2.V.1998, K. TAKAHASHI (KUM); 1 ex., same locality, 11.III.2003, H. HIRANO (NIAES); 1 ex., same locality, 9.IV.2006, T. MIKAGE (KUM); 1 ex., same locality, 30.III.2010, H. SUENAGA (NIAES); 1 ex., Takeda-rindô Forestry Road, 14.IV.1996, I. HIRAI (KUM); 1 ex., Yoshihara, 16.X.1963, S. MIYAMOTO (KUM); 1 ex., same locality, 12.V.1988, E. KITAMURA (KUM); 6 exs., Kabira, 13.V.1973, S. HISAMATSU (NMNS); 1 ex., Mt. Yarabudake, 1.V.1993, K. AKITA (KUM); 2 exs., same locality, 9.X.2014, K. MATSUDA (KUM); 1 ex., same locality, 15.IV.2018, T. MIKAGE (KUM); 1 ex., same locality, 26.IV.2018, T. MIKAGE (KUM); 2 exs., Mt. Buzamadake, 20.IV.2012, J. AOKI (KUM); 1 female, same locality, 8.VIII.1998, K. TAKAHASHI (KUM); 1 ex., Nagura, 2.VIII.1962, M. CHÛJÔ (KUM); 3 exs., Mt. Bannadake, 28.VIII.1961, M. OKABE (KUM); 1 ex., same locality, 7.X.1963, K. MORIMOTO (KUM); 1 ex., same locality, 27–31.X.1963, Y. HIRASHIMA (KUM); 1 ex., same locality, 1.V.1969, H. MAKIHARA (KUM); 1 ex., same locality, 8.VI.1977, J. OKUMA (KUM); 1 ex., same locality, 23.V.1990, S. MIYAKAWA (KUM); 2 males & 1 female, same locality, 23–26.V.1990, K. MORIMOTO (KUM); 7 exs., same locality, 18–22.VI.1991, S. MIYAKAWA & K. MORIMOTO (KUM); 1 ex., same locality, 10–15.VIII.1995, K. TAKAHASHI (KUM); 1 ex., same locality, 8.XI.1995, M.T. CHÛJÔ (KUM); 1 ex., same locality, 1–7.IV.1997, H. YOSHITAKE (NIAES); 3 exs., same locality, 20.VIII.2001, H. HIRANO (NIAES); 1 ex., Mt. Maesedake, 26.IV.2018, T. MIKAGE (KUM); 1 ex., same locality, 20.X.2018, T. MIKAGE (KUM); 1 ex., Arakawa, 30.III.1974, O. YAMAJI (KUM); 1 ex., same locality, 21.VI.1974, T. MIKAGE (KUM). [Taketomijima Is.] 1 ex., 13.XI.1995, M.T. CHÛJÔ (KUM). [Kuroshima Is. (Taketomi-chô)] 8 exs., 24.IV.1992, S. MIYAKAWA (KUM). [Hatomajima Is.] 1 ex., 24.VI.2018, M. SHOYAMA (NIAES). [Iriomotejima Is.] 9 exs., 27–29.VIII.1962, H. NOMURA & Y. HAMA (KUM); 1 ex., 13.III.1997, M.T. CHÛJÔ (KUM); 1 male & 44 exs., Urauchi, 22.IV.1981, K. BABA (KUM); 4 exs., Sonai, 6–9.X.1963, K. MORIMOTO & S. MIYAMOTO (KUM); 1 ex., same locality, 27.V.1977, J. OKUMA (KUM); 1 ex., Inaba, 8.VIII.1962, M. SATÔ & Y. ARITA (KUM); 4 exs., Ushiku-mori, 7.VIII.1962, M. SATÔ & Y. ARITA (KUM); 1 male, 1 female & 5 exs., same locality, 7.IV.1976, H. SASAJI (KUM); 1 ex., Kampiree-no-taki Fall, 10.X.1963, K. MORIMOTO (KUM); 1 ex., 12.IV.1969, M. CHÛJÔ (KUM); 1 ex., same locality as the holotype, 23.VIII.1962, M. CHÛJÔ (KUM); 4 exs., same locality, 4.X.1963, K. MORIMOTO (KUM); 2 exs., same locality, 11.X.1963, S. MIYAMOTO (KUM); 1 ex., same locality, 8.III.1964, S. MIYAMOTO (KUM); 1 ex., same locality, 2.VII.1968, M. TAKAGI (IM); 3 males, 1 female & 17 exs., same data as the holotype (KUM);



Figs. 54–60. Male genitalia of *Orochlesis takaosana* KÔNO. — 54–58, Specimen from Mt. Takaosan, Tokyo; 59, ditto from Naidaijin-rindô, Kumamoto Pref.; 60, holotype of *O. meshimensis*, from Meshima Is. in the Danjo Isls. — 54, 59 & 60 Aedeagus, in dorsal view; 55, aedeagus & tegmen, lateral view; 56, aedeagal apex; 57, tegmen, in dorsal view; 58, 8th and 9th sternites, in ventral view. Scale: 0.20 mm.

1 male, 1 female & 2 exs., same locality, 23–24.VI.1970, H. MAKIHARA (KUM); 1 ex., same locality, 16.VI.1974, T. MIKAGE (KUM); 4 exs., same locality, 29.V.1977, J. OKUMA (KUM); 2 females & 8 exs., same locality, 31.V.1977, J. OKUMA (KUM); 7 exs., same locality, 4.VI.1977, J. OKUMA (KUM); 1 ex., same locality, 8.III.2003, H. HIRANO (NIAES); 1 ex., same locality, 1.III.2008, M. SHOYAMA (NIAES); 1 ex., Sonai–Shirahama, 1.VII.1968, M. TAKAGI (IM); 1 ex., Uehara, 23.II.2016, N. TSUJI (KUM); 1 ex., Komi-no-maehama Beach, 23–27.VI.2019, N. TSUJI (KUM); 1 ex., Komi, 8.IV.1969, M. CHÛJÔ (KUM); 1 ex., same locality, 15.V.1973, T. NAKANE (NMNS); 1 ex., same locality, 23.IV.1981, K. BABA (KUM); 1 ex., same locality, 15.III.2015, H. YOSHITAKE (NIAES); 2 exs., Shirahama–Ôhara, 10.XI.1995, M.T. CHÛJÔ (KUM); 1 ex., Mt. Gozadake, 16.IV.1969, H. MAKIHARA (KUM); 1 ex., Mt. Gozadake–Ôhara, 11.XI.1995, M.T. CHÛJÔ (KUM); 1 ex., Ôtomi, 12.VIII.1962, M. CHÛJÔ (KUM); 1 ex., same locality, 12.IV.1969, H. MAKIHARA (KUM); 1 ex., same locality, 26.IV.1969, H. MAKIHARA (KUM); 5 exs., same locality, 17–18.V.1974, J. OKUMA (KUM); 2 exs., same locality, 24.V.1977, J. OKUMA (KUM); 4 exs., same locality, 26.V.1977, J. OKUMA (KUM); 4 exs., same locality, 6–7.VI.1977, J. OKUMA (KUM); 1 ex., same locality, 3.IV.2002, H. HIRANO (NIAES); 1 ex., same locality, 24.II.2016, N. TSUJI (KUM); 1 ex., Ôtomi-rindô Forestry Road, 30.IV.2012, H. OHKI (HO); 3 exs., same locality, 15.III.2013, H. YOSHITAKE (NIAES); 1 female, same locality, 24.VIII.2014, N. TSUJI, at light (KUM); 2 exs., same locality, 30.VIII.2016, M. SHOYAMA, at light (KA); 1 ex., same locality, 23.IX.2016, M. SHOYAMA, at light (KUM); 1 ex., same locality, 1.X.2016, M. SHOYAMA, at light (KUM); 3 exs., same locality, 4.X.2016, M. SHOYAMA, at light (KA); 1 ex., same locality, 5.I.2017, M. SHOYAMA, at light (NIAES); 1 ex., same locality, 27.V.2017, Y. TAMADERA (KUM); 1 ex., same locality, 25.VI.2017, M. SHOYAMA, at light (KUM); 1 ex., same locality, 15.II.2018, M. SHOYAMA, at light (KUM); 1 ex., same locality, 18.II.2018, T. MIKAGE (KUM); 1 ex.,

same locality, 20.IV.2018, T. MIKAGE (KUM); 1 ex., same locality, 30.IV.2018, T. MIKAGE (KUM); 2 exs., same locality, 23.V.2018, T. MIKAGE (KUM); 3 exs., same locality, 26.V.2018, T. MIKAGE (KUM); 1 ex., same locality, 19.X.2018, T. MIKAGE (KUM); 1 ex., ÔHARA, 16.V.1973, T. NAKANE (NMNS); 3 exs., Haemi, 19.V.1974, J. OKUMA (KUM); 1 ex., same locality, 25.V.1977, J. OKUMA (KUM); 2 exs., same locality, 4.IV.2009, R. ITO (KUM); 1 ex., near Haemida-no-hama Beach, 14.III.2013, H. YOSHITAKE (NIAES); 2 exs., near Nakaragawa River, 5.X.1963, K. MORIMOTO (KUM); 1 ex., Mokutan, 24.IV.1970, H. MAKIHARA (KUM); 1 ex., Funauki, 3.VI.1977, J. OKUMA (KUM); 1 ex., same locality, 30.I.2018, H. OHKI (HO); 1 ex., Toyohara, 19.V.1974, K. UNNO (KUM); 1 ex., same locality, 8–11.IV.1997, H. YOSHITAKE (NIAES). [Haterumajima Is.] 2 exs., 22–24.VI.1977, H. IRIE (KUM); 1 ex., 20.X.2003 (collected as dead branches of *Leucaena leucocephala*), 27.II–11.III.2004 (emerged), H. MAKIHARA (NIAES); 2 exs., 19.V.2017, T. MIKAGE (KUM).

Distribution. Japan: the southern Ryukyus (Sakishima Is.: Miyakojima Is., Ishigakijima Is., Kuroshima Is., Taketomijima Is., Hatomajima Is., Iriomotejima Is., and Haterumajima Is.).

Biology. *Orochlesis sakishimensis* is associated at least with *Leucaena leucocephala* (Fabaceae; Ginnemu, in Japanese). The adults were collected from dead branches of various broad-leaved trees and also attracted to light at night.

Etymology. The new species was named after its distribution range restricted in the Sakishima Is. in the southern Ryukyus.

Remarks. The distribution range of this species almost overlaps with that of *Orochlesis bimaculata* in the southern Ryukyus and both species occur sympatrically in several localities in main islands such as Miyakojima Is., Ishigakijima Is., and Iriomotejima Is. However, *O. sakishimensis* is more widely distributed than *O. bimaculata* in the Yaeyama Is., occurring also on the following four small islands: Taketomijima Is., Kuroshima Is., Hatomajima Is., and Haterumajima Is.

Orochlesis bimaculata sp. nov.

[Japanese name: Futamon-maru-kuchikakushi-zômushi]

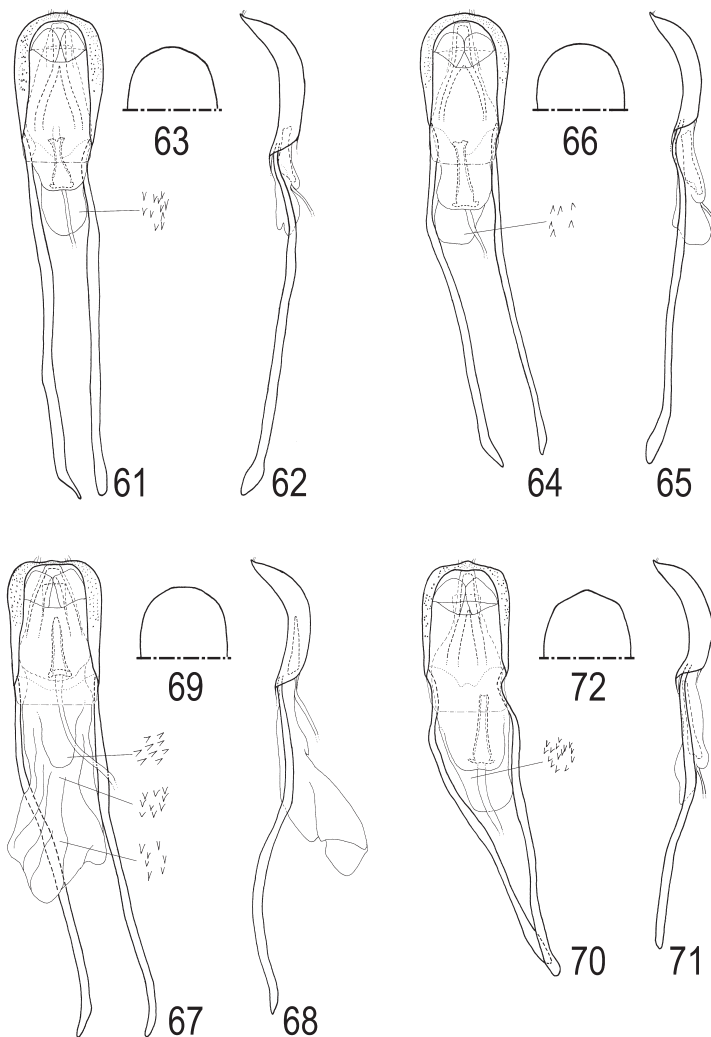
(Figs. 15, 34–36, 38, 64–66 & 95–96)

Orochlesis sp. 2: MORIMOTO & MIYAKAWA, 1985: 26-fig. 4 [partly in distribution map].

Diagnosis. *Orochlesis bimaculata* is similar in maculation to two Japanese congeners, *O. morimotoi* and *O. yambaruana*, as well as to two Oceanian congeners, *O. tessellata* ZIMMERMAN, 1936 from Fiji and *O. conspersa* ZIMMERMAN, 1938 from Samoa. However, this species can be distinguished from the other congeners by a combination of the following characteristics: 1) body mostly imbricate with ovate to orbicular scales; 2) elytra bearing small granules on 7th to 10th intervals; 3) 10th elytral intervals each with granulate-costa, which is subconfluent with that of 9th at humeri; 4) fore femora each with receptacle for tarsus weakly raised basally along outer margin; 5) 3rd and 4th ventrites densely squamous.

Description. Male. Measurements (n = 10; in mm): TL 3.11–3.95 (holotype 3.68; mean 3.61); LP 0.90–1.23 (1.07; 1.07); WP 1.38–1.85 (1.65; 1.66); LE 2.21–2.86 (2.61; 2.53); WE 1.61–2.16 (2.01; 1.95).

Body (Figs. 34–36) mostly imbricate with ovate to orbicular scales, scatteredly mingled with subrecumbent oblanceolate ones. Rostrum covered with scales on basal 1/4–1/3, narrowly squamous on both sides along upper margins of antennal scrobes but subglabrous medially to level of antennal insertions, then glabrous apically. Head covered with yellowish white to dark brown scales. Pronotum with pair of dark squamous areas on disc along basal margin; remaining part covered with yellowish white to dark brown scales. Elytra mainly covered with ash brown to black scales, with pair of spots



Figs. 61–72. Male aedeagi of *Orochlesis* spp. from Japan — 61–63, *O. sakishimensis* sp. nov., holotype; 64–66, *O. bimaculata* sp. nov., holotype; 67–69, *O. morimotoi* sp. nov., paratype; 70–72, *O. yambaruana* sp. nov., holotype. — 61, 64, 67 & 70, Aedeagus, in dorsal view; 62, 65, 68 & 71, ditto, in lateral view; 63, 66, 69 & 72, aedeagal apex. Scale: 0.20 mm.

of light-colored scales on basal 1/3 of 4th intervals, which are sometimes connected by median V-shaped patch of light-colored scales; each interval with row of oval scales; 1st intervals furnished with several slenderer scales basally. Metasternum densely covered with general scales. Venter partially closely covered with general scales; scales of 1st ventrite become smaller and sparser on sublateral parts toward glabrous areas on both sides; 3rd and 4th ventrites each with two to three transverse rows of dense general scales on middle (Fig. 38).

Rostrum closely punctate from base to basal 1/4–1/3; punctures become smaller and sparser on apical half of dorsal surface; sides narrowing apically from base to basal 1/3, slightly expanded above antennal insertions, and then widened apically; antennal club with 1st segment slightly longer than re-

maining segments combined.

Prothorax much wider than long, WP/LP 1.44–1.71 (holotype 1.54; mean 1.54); sides slightly widened from base to widest point at basal 1/4, and then strongly arcuately convergent to subapical constriction; dorso-lateral parts more or less granulate from middle to apex.

Scutellum small, suboval, and being on the same plane as or slightly more prominent dorsally than elytral bases.

Elytra subovate, LE/WE 1.26–1.38 (holotype 1.30; mean 1.30), dorsally strongly convex in sub-basal part; sides slightly expanded at humeri, faintly widened to widest point at middle, and then gently arcuately convergent to subapical calli; 1st to 8th intervals flat; posterior parts of 5th and entire length of 7th and 8th intervals each bearing scattered small granules in row, which sometimes become very small and indistinct on 5th intervals; 9th intervals strongly granulate-costate at humeri, faintly granulate-costate before humeri to behind middle and then weakly granulate-costate to subapical part, slightly more prominent than 8th due to granulate-costae; 10th intervals strongly granulate-costate, being more prominent than 9th from before humeri to behind middle; granulate-costae of 9th and 10th intervals subconfluent with each other at humeri. Hind wings fully developed.

Mesosternal receptacle slightly convex ventrally along mid-line, being on the same plane as metasternum.

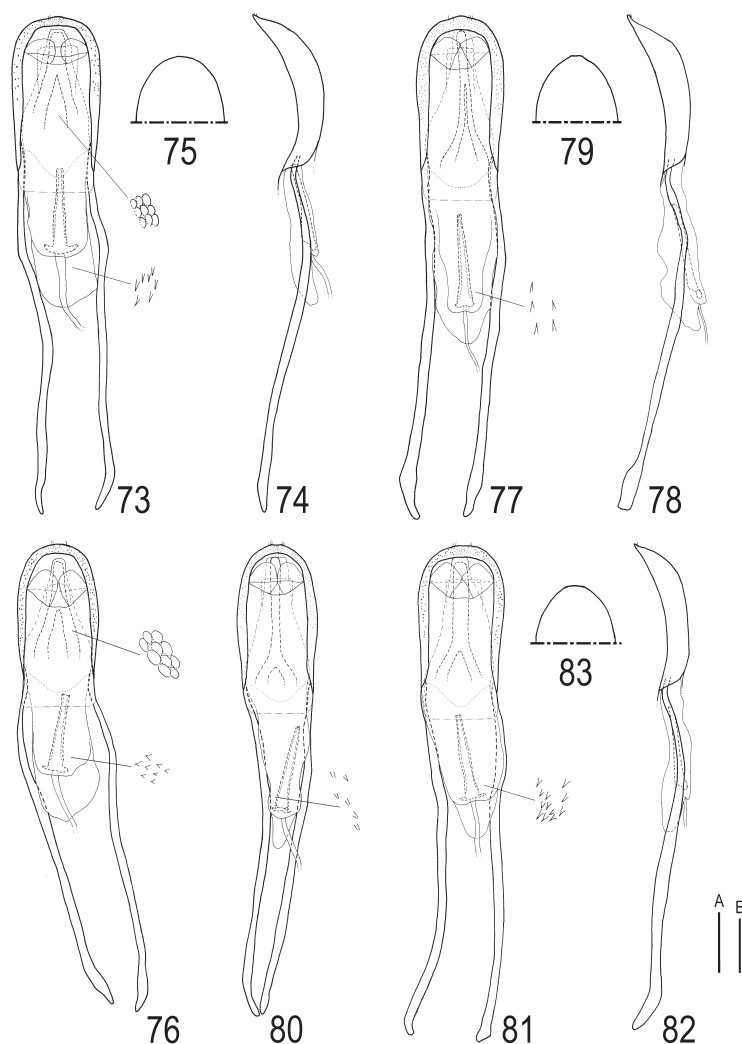
Legs relatively short and robust; fore femora (Fig. 15) each with receptacle for tibia, which is nearly as wide as or narrower than that for tarsus; receptacle for tarsi shallowly concave, weakly raised basally along outer margins; hind femora subparallel-sided; fore tibiae unicarinate along outer margins.

Aedeagus with aedeagal body (Figs. 64–66) approximately 1.3–1.5 times as long as wide, with sides weakly arcuate from base to subapical part, then roundly convergent apically, sometimes faintly produced at middle of apex, and in profile gently curved ventrally; endophallus (Fig. 64) spinulate basally, with sagittate sclerite in apical part, and with short tubular transfer apparatus in subbasal part, which tapers apically and bears small lateral projections at both extremities.

Female. Measurements ($n = 12$; in mm): TL 2.31–4.14 (mean 3.46); LP 0.68–1.23 (1.03); WP 1.03–1.90 (1.53); LE 1.64–2.91 (2.43); WE 1.26–2.30 (1.84); WP/LP 1.38–1.56 (1.49); LE/WE 1.27–1.38 (1.32). Similar to males, but rostrum slightly slenderer and more minutely and sparsely punctate.

Spermatheca (Figs. 95 & 96) C-shaped, with cornu short to long, more or less attenuate apically; collum obliquely convex downward; ramus less-marked; insertions of duct and gland moderately distant; duct inserted at subapical part of bursa copulatrix.

Type material. Holotype: male (KUM), “Yoshihara / Ishigaki I. / 18.vi.1977 / H. Irie leg.” (typed on a white card); “HOLOTYPE / *Orochlesis* / *bimaculata* / Tsuji et Yoshitake, 2020” (typed on a red card). Paratypes. Japan: the Ryukyus. [Amami-Ōshima Is.] 1 male & 1 ex., Nishinakama, Sumiyōson, 3–5.VIII.1969, H. MAKIHARA (KUM). [Miyakojima Is.] 1 male & 1 ex., Hirara, 17–23.VIII.1969, H. MAKIHARA (KUM). [Ishigakijima Is.] 1 ex., Hirakubo, 6.V.1999, K. TAKAHASHI (KUM); 1 ex., Nosoko-rindō Forestry Road, 21.II.1998, K. TAKAHASHI (KUM); 1 female, Urasoko-rindō Forestry Road, 13.II.1999, K. TAKAHASHI (KUM); 1 male, Maesato Dam, 8.II.1998, K. TAKAHASHI (KUM); 1 male & 2 exs., same locality, 7.III.1998, K. TAKAHASHI (KUM); 1 female & 1 ex., Mt. Omotodake, 13.VI.1974, T. MIKAGE (KUM); 1 ex., same locality, 23.VI.1974, O. TAMURA (IM); 1 ex., same locality, 30.VI.1974, T. MIKAGE (KUM); 2 females, same locality, 8–11.IV.1975, H. IRIE (KUM); 1 female, same locality, 18–21.IV.1975, H. IRIE (KUM); 1 female, same locality, 31.V.1993, E. KITAMURA (KUM); 1 ex., same locality, 19.VIII.2001, H. HIRANO (NIAES); 4 exs., same locality, 9.IV.2006, T. MIKAGE (KUM); 1 female, Takeda-rindō Forestry Road, 9.VII.1998, K. TAKAHASHI (KUM); 1 ex., same locality, 14.II.2016, K. KURIHARA (TY); 1 ex., Takeda, 26.VII.1998, K. TAKAHASHI (KUM); 1



Figs. 73–83. Male aedeagi of *Orochlesis* spp. from Japan — 73–76, *O. amplicollis* MORIMOTO et MIYAKAWA, paratype from Izu-Ōshima Is. in the Izu Isls.; 76, ditto, specimen from Nakanoshima Is., the Tokara Isls. in the northern Ryukyus; 77–80, *O. simulata* sp. nov., holotype from Himeshima Is., Fukuoka Pref.; 80, ditto, paratype from Kunigami-son, Okinawajima Is. in the central Ryukyus; 81–83, *O. donana* sp. nov., holotype from Yonagunijima Is. in the southern Ryukyus. — 73, 76, 77, 80 & 81, Aedeagus, in dorsal view; 74, 78 & 82, ditto, in lateral view; 75, 79 & 83, aedeagal apex. Scales: 0.20 mm: A for 73–76; B for 77–82.

ex., same locality, 27.IX.1998, K. TAKAHASHI, at light (KUM); 1 female, same locality, 30.IX.1998, K. TAKAHASHI, at light (KUM); 1 ex., Mt. Kâradake, 18.III.1964, Y. MIYATAKE (KUM); 1 ex., Mt. Yarabudake, 3.V.1998, K. TAKAHASHI (KUM); 1 ex., same locality, 10.V.2018, T. MIKAGE (KUM); 1 ex., Mt. Bannadake, 24.VIII.1969, H. MAKIHARA (KUM); 1 female & 2 exs., same locality, 6.VII.1979, J. OKUMA (KUM); 1 ex., same locality, 23.V.1990, S. MIYAKAWA (KUM); 1 ex., same locality, 18–22.VI.1991, K. MORIMOTO (KUM); 1 ex., same locality, 5.VII.1993, K. MORIMOTO (KUM). [Iriomotejima Is.] 1 ex., near Itachikigawa Stream, 8.VII.1963, Y. MIYATAKE (KUM); 2 exs., Kampira,

28.V.1973, Y. KUROSAWA (NMNS); 1 ex., Kampiree-no-taki Fall, 14–15.VI.1975, H. IRIE (KUM); 1 ex., same locality, 30–31.XII.1979, Y. FUJISAKI & I. KANAZAWA (KUM); 1 ex., Ôtomi-rindô Forestry Road, 30.VIII.2016, M. SHOYAMA, at light (NMNS); 1 ex., same locality, 23.IX.2016, M. SHOYAMA, at light (KUM); 1 ex., same locality, 4.X.2016, M. SHOYAMA, at light (NMNS); 1 ex., same locality, 28.VI.2017, M. SHOYAMA, at light (KA); 1 ex., same locality, 26.V.2018, T. MIKAGE (KUM); 1 ex., Haemi, 19.V.1974, K. UNNO (KUM); 4 males & 11 exs., Shirahama, 31.VIII–5.IX.1969, H. MAKIHARA (KUM); 1 ex., near Nakaragawa River, 25–28.VI.1970, H. MAKIHARA (KUM).

Distribution. Japan: the southern Ryukyus (Sakishima Isls: Miyakojima Is., Ishigakijima Is., and Iriomotejima Is.); Amami-Ôshima Is. (?).

Biology. Adults of this species were collected from dead branches of various broad-leaved trees and also attracted to light at night.

Etymology. The new species was named after its characteristic maculation.

Remarks. This species occurs in the Sakishima Isls. in the southern Ryukyus, but only two specimens were collected from the same locality in Amami-Ôshima Is. in the central Ryukyus at the same time. The specimens in question might be accidentally transferred or artificially imported from the Sakishima Isls. to Amami-Ôshima Is., since no more specimens of this species have been collected from the central Ryukyus.

Orochlesis morimotoi sp. nov.

[Japanese name: Morimoto-maru-kuchikakushi-zômushi]

(Figs. 16, 39–41, 67–69, 88 & 97)

Orochlesis sp. 2: MORIMOTO & MIYAKAWA, 1985: 26-fig. 4 [partly in distribution map].

Diagnosis. This species is very similar to *Orochlesis yambaruana* in maculation and elytral structure, but can be clearly distinguished from it by the 3rd elytral intervals not granulate basally, as well as by the following genital structures: male aedeagus subtruncate at apex and bearing conical transfer apparatus in subapical part of endophallus; female spermatheca with insertions of gland and duct widely distant from each other; and spermathecal duct inserted at apical part of bursa copulatrix, adjacent to insertion of oviduct.

Description. Male. Measurements ($n = 10$; in mm): TL 2.63–4.32 (holotype 3.66; mean 3.62); LP 0.76–1.28 (1.06; 1.06); WP 1.15–1.87 (1.60; 1.58); LE 1.88–3.07 (2.60; 2.56); WE 1.41–2.28 (2.60; 2.56).

Body (Figs. 39–41) mostly imbricate with ovate to orbicular scales, scatteredly mingled with subrecumbent ones. Rostrum covered with scales on basal 1/4, narrowly squamous on both sides along upper margins of antennal scrobes but subglabrous medially to level of antennal insertions, then glabrous apically. Head covered with yellowish white scales. Pronotum with pair of dark squamous areas on disc along basal margin; remaining part covered with yellowish white to dark brown scales. Elytra mainly covered with ash brown to dark brown scales, but with the following two dark patches of general scales: 1) large obscure obtriangular patch in subbasal part between 5th intervals, which is fringed posteriorly with subcrescent band of light-colored scales and 2) obscure transverse band between subapical calli; light-colored subcrescent band sometimes become reduced to pair of spots on 4th intervals. Metasternum densely covered with general scales. Venter partially closely covered with general scales; scales of 1st ventrite become smaller and sparser on sublateral parts toward glabrous areas on both sides; 3rd and 4th ventrites each with one to two transverse rows of dense general scales on middle.

Rostrum rugose from base to basal 1/4; punctures become smaller and sparser on apical half of

dorsal surface; sides narrowing apically from base to basal 1/3, slightly expanded above antennal insertions, and then widened apically. Antennal club with 1st segment nearly as long as remaining segments combined.

Prothorax much wider than long, WP/LP 1.38–1.56 (holotype 1.52; mean 1.49); sides slightly to gently widened from base to widest point at basal 1/3, and then strongly and roundly convergent to subapical constriction; dorso-lateral parts each granulate in row in basal 1/3 and so in irregular row from basal 1/3 to behind subapical constriction.

Scutellum small, suboval, and being on the same plane as or slightly more prominent dorsally than elytral bases.

Elytra subovate, LE/WE 1.20–1.36 (holotype 1.29; mean 1.31), dorsally weakly to moderately convex in subbasal part; sides slightly expanded at humeri, slightly widened to widest point before middle, and then gently arcuately convergent to subapical calli; 1st to 8th intervals flat; posterior parts of 1st and 3rd and entire length of 5th, 7th and 8th intervals each bearing scattered small granules in row, which sometimes become very small and indistinct on 3rd and 5th; 9th intervals weakly granulate-costate from humeri to behind middle and then faintly to weakly so to subapical part, being on the same plane as or slightly more prominent than 8th due to granulate-costae; 10th intervals weakly granulate-costate, slightly more prominent than 9th from before humeri to behind middle; granulate-costae of 9th and 10th intervals entirely separated, not confluent with each other at humeri. Hind wings fully developed.

Mesosternal receptacle convex ventrally along apical margin, weakly more prominent than metasternum.

Legs relatively slender; fore femora (Fig. 16) each with wider receptacle for tibia than that for tarsus; receptacle for tarsi very shallowly concave and hardly raised along outer margins; hind femora subparallel-sided; fore tibiae unicarinate along outer margins.

Aedeagus (Figs. 67–69) with aedeagal body approximately 1.4 times as long as wide and in profile moderately curved ventrally; sides subparallel from base to near ostium, then strongly and arcuately convergent apically, and finally subtruncate at apex; endophallus (Fig. 67) spinulate basally, with sagittate sclerite in apical part and subconical tubular transfer apparatus in subapical part.

F e m a l e. Measurements (n = 9; in mm): TL 3.63–4.31 (mean 3.63); LP 0.99–1.23 (1.14); WP 1.44–1.83 (1.68); LE 2.56–3.10 (2.79); WE 1.79–2.35 (2.08); WP/LP 1.44–1.56 (1.48); LE/WE 1.24–1.48 (1.34). Similar to males, but rostrum slightly slenderer, more minutely and sparsely punctate.

Genitalia as illustrated (Figs. 88 & 97). Spermatheca (Fig. 97) C-shaped, with cornu gradually attenuate apically and weakly or moderately incurved at tip; collum transversely strongly convex; ramus less-marked; insertions of duct and gland widely distant; duct inserted at apical part of bursa copulatrix, adjacent to insertion of oviduct (Fig. 88).

Type material. Holotype: male (KUM), “Amami-Oshima / Mt. Yuwan / 29. VII. 1963 / L. Gressitt” (handwritten on a white card); “HOLOTYPE / *Orochlesis morimotoi* / Tsuji et Yoshitake, 2020” (typed on a red card). Paratypes. Japan: the Ryukyus. [Amami-Ōshima Is.] 1 female, Chûô-rindô Forestry Road, Naze-shi, 5.V.1989, T. MIKAGE (KUM); 1 male, Kinsakubaru, Amami-shi, 4.VII.2009, J. AOKI (KUM); 1 male, Asato, Amami-shi, 20.IV.2017, H. KAWASE (NMNS); 1 female & 6 exs., Santarô-tôge Pass, 26–31.XII.2001 (collected as dead wood), IV–VI.2002 (emerged), Y. MATSUMOTO (NMNS & KA); 1 male, Sumiyô, Amami-shi, 27.V.2004, K. TAKAHASHI (KUM); 1 female, Nishinakama, Sumiyô-son, 3–5.VIII.1969, H. MAKIHARA (KUM); 1 female, same locality, 24–26.V.1978, H. MAKIHARA (KUM); 1 male, Hatsuno, Sumiyô-son, 12.VI.1963, J. NAGAO (KUM); 1 male, Yamato-son, 6.VI.2004, K. TAKAHASHI (KUM); 1 male, same data as the holotype (KUM); 1 ex., same locality, 17.IV.1971, T. KINOSHITA (KUM); 1 ex., same locality, 9.IV.1991, K. MATSUMOTO (NIAES); 1

male, same locality, 8.X.2011, M. NISHI (KUM); 1 ex., Mt. Akatsuchiyama, Uken-son, 17–18.VI.2001, N. OHBAYASHI (NIAES); 1 female, Uken-son, 20.V.1999, K. TAKAHASHI (KUM); 1 female, Mt. Yuidake, Setouchi-chô, 25.IV.2017, H. KAWASE (NMNS); 3 exs., same locality, 17.VII.2004 (collected as dead branch of *Pinus luchuensis*), 18.VIII.2004 (emerged), H. MAKIHARA (NIAES); 1 ex., same locality, 24.VIII.2004 (collected as dead *Mallotus japonicus*), X.2004 (emerged), H. MAKIHARA (NIAES); 1 ex., same locality, 18.IX.2004, H. MAKIHARA (NIAES); 1 female, Hatsuno, Setouchi-chô, 11.V.1976, J. OKUMA (KUM); 1 ex., Ikari, 22.V.1960, T. SHIBATA, (KUM); 1 ex., same locality, 28.V.1960, T. SHIBATA, (KUM). [Tokunoshima Is.] 3 exs., Kametsu, Tokunoshima-chô, 16–17.IX.2017, N. TSUJI & H. YOSHITAKE (KUM). [Okinoerabujima Is.] 1 male & 1 female, 31.VII–2.VIII.1969, H. MAKIHARA (KUM); 1 ex., Cape Kunigami-misaki, Wadomari-chô, 21.V.2016, H. YOSHITAKE (NIAES); 1 female, Mt. Ôyama, China-chô, 4.V.1989, T. UENO (KUM); 1 ex., same locality, 6.VII.2015, H. SUENAGA (NIAES); 2 exs., same locality, 21.V.2016, H. YOSHITAKE (NIAES); 1 ex., same locality, 22.V.2016, H. YOSHITAKE (NIAES); 1 female, China-chô, 4.VI.1973, S. KIMOTO (KUM).

Distribution. Japan: the central Ryukyus (Amami Isls.: Amami-Ôshima Is., Tokunoshima Is., and Okinoerabujima Is.).

Biology. *Orochlesis morimotoi* is associated at least with *Mallotus japonicus* (Euphorbiaceae; Akamegashiwa, in Japanese) and *Pinus luchuensis* (Pinaceae; Ryûkyûmatsu, in Japanese). The host association record with a Pinaceae tree is unusual, since the adults were collected from dead branches of various broad-leaved trees.

Etymology. The specific name is dedicated to the late Dr. Katsura MORIMOTO, who was a prominent entomologist who loved weevils more than anyone else, for his great contribution towards the systematics of the superfamily Curculionoidea.

Orochlesis yambaruana sp. nov.

[Japanese name: Yambaru-maru-kuchikakushi-zômushi]

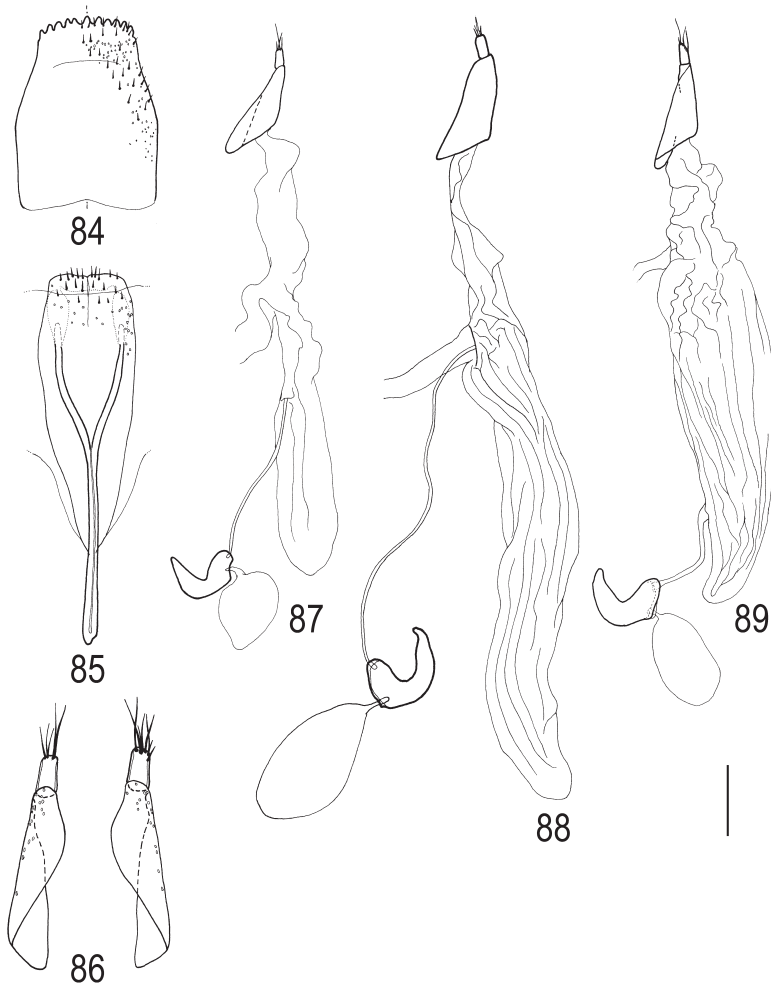
(Figs. 42–44, 70–72 & 98)

Orochlesis sp. 2: MORIMOTO & MIYAKAWA, 1985: 26-fig. 4 [partly in distributional map].

Diagnosis. This species is very similar to *Orochlesis morimotoi* in maculation and elytral structure, but can be clearly distinguished from it by the 3rd elytral intervals granulate for entire length, as well as by the following genital structures: male aedeagus acuminate at apex and bearing tubular transfer apparatus in subbasal part of the endophallus; and female spermatheca with insertions of gland and duct moderately distant from each other.

Description. Measurements (n = 2; in mm): TL 3.99–4.18 (holotype 3.99); LP 1.15–1.18 (1.15); WP 1.66–1.81 (1.66); LE 2.84–3.01 (2.84); WE 2.00–2.11 (2.00).

Body (Figs. 42–44) mostly imbricate with ovate or linear scales, scatteredly mingled with subrecumbent ones. Rostrum covered with scales on basal 1/3, narrowly squamous on both sides along upper margins of antennal scrobes but subglabrous medially to level of antennal insertions, then grabrous apically. Head covered with yellowish white to pale brown scales. Pronotum with large dark scaly area on disc along basal margin and obscure small paired dark scaly patches on subapical part of disc; remaining part covered with yellowish white to dark brown scales. Elytra mainly covered with brown to black scales in basal 1/3 between 4th intervals, each with large black scaly area which extends from 5th to 9th intervals in basal half; remaining part mainly covered with yellowish white to ochreous scales but with black scaly patch between subapical calli. Metasternum densely covered with general scales. Venter partially closely covered with general scales; scales of 1st ventrite become



Figs. 84–89. Female terminalia of *Orochlesis* spp. from Japan. — 84–87, *O. takaosana* KÔNO; 88, *O. morimotoi* sp. nov.; *O. simulata* sp. nov. — 84, 8th tergite in dorsal view; 85, 8th sternite in ventral view; 86, styli and coxites in dorsal view; 87, 88 & 89, ovipositor and spermatheca in lateral view. Scale: 0.20 mm for 84, 85 & 87–89; 0.10 mm for 86.

smaller and sparser on sublateral parts toward glabrous areas on both sides; 3rd and 4th ventrites each with one to two transverse rows of dense general scales on middle.

Rostrum rugose from base to basal 1/4; punctures become smaller and sparser on apical half of dorsal surface; sides narrowing apically from base to basal 1/3, faintly expanded above antennal insertions, and then widened apically. Antennal club with 1st segment nearly as long as remaining segments combined.

Prothorax much wider than long, WP/LP 1.44–1.54 (holotype 1.44); sides gently widened from base to widest point at basal 1/4 to 1/3, and then strongly and roundly convergent to subapical constriction; dorso-lateral parts each granulate in row in basal 1/3 and so in irregular row from basal 1/3

to behind subapical constriction.

Scutellum very small to small, suboval, and being on the same plane as or slightly more prominent dorsally than elytral bases.

Elytra subovate, LE/WE 1.42 (holotype 1.42), dorsally weakly convex in subbasal part; sides slightly expanded at humeri, slightly widened to middle, and then gently arcuately convergent to subapical calli; 1st to 8th intervals flat; posterior parts of 1st and entire length of 3rd, 5th, 7th and 8th intervals each bearing scattered small granules in row; 9th intervals granulate-costate at humeri, distinctly granulate in row and faintly costate from before humeri to subapical part, and being on the same plane as or faintly more prominent than 8th due to granulate-costae; 10th intervals weakly or moderately granulate-costate, being slightly more prominent than 9th from before humeri to behind middle; granulate-costae on 9th and 10th intervals entirely separated, not confluent with each other at humeri. Hind wings fully developed.

Mesosternal receptacle more or less convex ventrally along apical margin, slightly to weakly more prominent than metasternum.

Legs relatively slender; fore femora each with wider receptacle for tibia than that for tarsus; receptacle for tarsi very shallowly concave and hardly raised along outer margins; hind femora faintly widened apically; fore tibiae unicarinate along outer margins.

Aedeagus (Figs. 70–72) with aedeagal body approximately 1.3 times as long as wide, with sides subparallel from base to near ostium, then strongly and arcuately convergent apically, clearly or obscurely acuminate at middle of apex, and in profile gently curved ventrally; endophallus (Fig. 70) spinulate basally, with sagittate sclerite in apical part and slender tubular transfer apparatus in subbasal part, which tapers apically with small lateral projections at base.

F e m a l e. Measurements ($n = 4$; in mm): TL 3.48–4.19 (mean 3.86); LP 0.98–1.18 (1.10); WP 1.45–1.66 (1.59); LE 2.50–3.04 (2.76); WE 1.70–2.05 (1.93); WP/LP 1.41–1.48 (1.45); LE/WE 1.30–1.48 (1.43). Similar to males, but rostrum slightly slenderer, more minutely and sparsely punctate.

Spermatheca (Fig. 98) C-shaped, with cornu gradually attenuate apically and weakly to moderately incurved at tip; collum obliquely weakly convex downward; ramus less-marked; insertions of duct and gland moderately distant; duct inserted at subapical part of bursa copulatrix.

Type material. Holotype: male (KUM), “from 国頭村 / 大國林道福原 / Host” (typed and handwritten on a white card, with locality data in Japanese meaning “Kunigami-son / Ôkuni-rindô, Fuku-hara”), “Date ’87 Jul. 19 / at OKINAWA IS. / by K. Kume” (typed and handwritten on a white card); “HOLOTYPE / *Orochlesis* / *yambaruana* / Tsuji et Yoshitake, 2020” (typed on a red card). Paratypes. Japan: the Ryukyus. [Okinawajima Is.] 1 female, same locality as the holotype, 31.VI.1987, K. KUME (KUM); 1 female, same data as the holotype (KUM); 1 male, Mt. Yonahadake, Kunigami-son, 4. V.1990, T. UENO (KUM); 1 female, Hiji, Kunigami-son, 3.VII.1974, T. MIKAGE (KUM); 1 ex., same locality, 9.VII.1974, T. MIKAGE (KUM).

Distribution. Japan: the central Ryukyus (Okinawa Isls.: northern part of Okinawajima Is.).

Biology. Unknown.

Etymology. The new species was named after the type locality, “Yambaru”, a local name given to the forested northern part of Okinawajima Is.

Remarks. This species is found only in the Yambaru area of Okinawajima Is., where many biological surveys have been conducted until now. In this study, however, we could examine only a short series of old specimens collected over 20 years ago.

***Orochlesis amplicollis* MORIMOTO et MIYAKAWA, 1985**

[Japanese name: Munabiro-maru-kuchikakushi-zōmushi]

(Figs. 21–22, 45–47, 73–76 & 99–100)

Orochlesis amplicollis MORIMOTO & MIYAKAWA, 1985: 26-fig. 4 [in distributional map] & 62 [type locality: “Mt. Miyatsukayama, Niijima I.”]; MORIMOTO, 1989: 522 [cataloged; Izu Isls. (Izu-Ōshima Is., Niijima Is., Sikinejima Is., Kōzushima Is., Miyakejima Is., Mikurajima Is., Hachijōjima Is. & Aogashima Is.), Shikoku (Okinoshima Is.), Yakushima Is., Satsuma-kuroshima Is. & Tokara Isls. (Akusekijima Is. & Nakanoshima Is.)); SASAKI *et al.*, 2002: 280 [cataloged; Tokara Isls. (Akusekijima Is. & Nakanoshima Is.), Izu Isls. (Izu-Ōshima Is., Niijima Is., Shikinejima Is., Kōzushima Is., Miyakejima Is., Mikurajima Is., Hachijōjima Is. & Aogashima Is.), Shikoku (Okinoshima Is.), Yakushima Is. & Satsuma-kuroshima Is.]; KOJIMA & MORIMOTO, 2004: 117 [cataloged; “Japan (Izu Isls., Yakushima, Satsuma-Kuroshima I., Ryukyus)”]; STÜBEN & ALONSO-ZARAZAGA, 2013: 242 [cataloged; “A: JA”]; KOJIMA, 2015: 29 [Izu Isls. (Izu-Ōshima Is., Toshima Is., Niijima Is., Sikinejima Is., Kōzushima Is., Miyakejima Is., Mikurajima Is., Hachijōjima Is. & Aogashima Is.), Shikoku (Okinoshima Is.), Yakushima Is., Satsuma-kuroshima Is. & Tokara Isls. (Kuchinoshima Is., Nakanoshima Is. & Akusekijima Is.); biological note]; ALONSO-ZARAZAGA *et al.*, 2017: 470 [cataloged; “A: JA”].

Orochlesis takaosanus (nec KŌNO, 1932): IMASAKA, 2019: 38 [Shimokoshikijima Is. (in part)].

Diagnosis. This species is similar to *Orochlesis donana* in maculation and degree of hind wing development, but can be clearly distinguished from the latter by having the straightly widened sides of pronotum from the base to widest point at basal 1/3 and the less-developed hind wings which are shorter than the elytra. This species is also similar to *O. morimotoi* and *O. yambaruana* in structures of elytra and fore femora, but clearly differs from them by the maculation, less-developed scutellum and elytral shape.

Redescription. Male. Measurements (n = 10; in mm): TL 2.78–5.01 (holotype 4.35; mean 4.02); LP 0.88–1.66 (1.44; 1.35); WP 1.31–2.20 (1.96; 1.84); LE 1.88–3.35 (2.91; 2.68); WE 1.53–2.60 (2.29; 2.16).

Body (Figs. 45–47) mostly imbricate with ovate to oblongate scales, scatteredly mingled with subrecumbent ones. Venter partially closely covered with general scales; scales of 1st ventrite become smaller and sparser on sublateral parts toward glabrous areas on both sides; 3rd and 4th ventrites each with one to two transverse rows of dense general scales on middle.

Prothorax much wider than long, WP/LP 1.30–1.47 (holotype 1.36; mean 1.37); dorso-lateral parts more or less granulate from middle to behind subapical constriction.

Scutellum very small and invisible or barely visible in dorsal view.

Elytra ovate, LE/WE 1.17–1.29 (holotype 1.27; mean 1.24), dorsally weakly to moderately convex in subbasal part; sides weakly widened from humeri to behind middle, and then somewhat arcuately convergent from middle to acutely rounded apex; 1st to 8th intervals flat; 5th, 7th, and 8th intervals each bearing scattered small granules in row for entire length; 3rd intervals sometimes granulate; 9th intervals weakly or moderately granulate-costate at humeri, barely to weakly so from before humeri to subapical part, and being almost at the same height as 8th; 10th intervals weakly granulate-costate, being on the same plane as 9th in basal 1/3; granulate-costae of 9th and 10th intervals entirely separated, not confluent with each other at humeri. Hind wings (Figs. 21 & 22) less-developed, shorter than elytra.

Legs relatively slender; fore femora each with wider receptacle for tibia than that for tarsus; receptacle for tarsi very shallowly concave and hardly raised along outer margins; fore tibiae uncarinate along outer margins.

Aedeagus (Figs. 73–76) with aedeagal body approximately 1.7 times as long as wide, with sides faintly expanded or subparallel from base to near ostium, then strongly and arcuately convergent apically, and in profile gently curved ventrally; endophallus (Figs. 73 & 76) spinulate basally, asperate with tortoiseshell pattern in subapical part, with sagittate sclerite in apical part and with long and slen-

der tubular transfer apparatus in subbasal part, which tapers apically and bears small lateral projections at base.

Female. Measurements ($n = 11$; in mm): TL 2.72–5.04 (mean 3.86); LP 0.88–1.66 (1.27); WP 1.25–2.22 (1.78); LE 1.85–3.39 (2.60); WE 1.48–2.62 (2.06); WP/LP 1.30–1.51 (1.40); LE/WE 1.18–1.46 (1.26). Similar to males, but rostrum slightly slenderer, more minutely and sparsely punctate.

Spermatheca (Figs. 99 & 100) C-shaped, with slender cornu gradually attenuate apically but not incurved at tip; collum obliquely convex downward; ramus less-marked; insertions of duct and gland moderately distant; duct inserted at subbasal part of bursa copulatrix.

See MORIMOTO & MIYAKAWA (1985) for other morphological characters.

Type material examined. Holotype: male (KUM), “Mt. Miyatsuka- / yama Nii jima Is. / Izu-Shyoto Isls. / May 6, 1979 / Coll. Jun OKUMA” (typed on white card); “Holotype / *Orochlesis* ♂ / *ampli-collis* / MORIMOTO et / MIYAKAWA, 1984” (handwritten on a red card, partially typed). Paratypes. Japan: the Izu Isls. [Izu-Ōshima Is.] 1 male & 1 female, Ōshima-kôen Park, 23.V.1980, J. OKUMA (KUM); 2 exs., Senzu, 28.IV.1979, S. MIYAKAWA (KUM); 1 female, Okada, 21.VII.1978, J. OKUMA (KUM); 1 female, Mt. Atagoyama, 30.IV.1979, S. MIYAKAWA (KUM); 1 female, Motomachi, 27.IV.1979, S. MIYAKAWA (KUM); 1 male, Nomashi-Senba, 1.V.1979, S. MIYAKAWA (KUM). [Niijima Is.] 2 exs., Mt. Mukoyama, 8.VII.1978, J. OKUMA (KUM); 1 male, same locality, 15.V.1979, H. FUJITA (KUM). [Shikinejima Is.] 1 ex., Ishijirogawa, 13.VII.1978, J. OKUMA (KUM); 1 male, Mt. Kanbikiyama, 12.VII.1978, J. OKUMA (KUM). [Kôzushima Is.] 1 female & 1 ex., Mt. Tenjôsan, 10.V.1979, J. OKUMA (KUM); 2 males, Mt. Chichibusan, 11.V.1979, J. OKUMA (KUM). [Hachijôjima Is.] 1 male, Mt. Miharayama, 11.V.1977, S. MIYAKAWA (KUM); 2 females, same locality, 13.V.1977, S. MIYAKAWA (KUM). [Aogashima Is.] 1 female & 1 ex., Ikenosawa, 23.V.1979, J. OKUMA (KUM). The Ryukyus. [Satsuma-kuroshima Is.] 1 ex., 11.VII.1978, H. FUJITA (KUM). [Nakanoshima Is.] 1 ex., 25.VII.1964, S. OGA (KUM); 5 exs., 25–30.IV.1975, H. IRIE (KUM); 1 ex., 1–2.V.1975, H. IRIE (KUM). [Akusekijima Is.] 4 exs., 30.VII.1969, M. SAKAI (KUM).

Non-type material examined. Japan: the Izu Isls. [Mikurajima Is.] 1 ex., Sato, 4–7.VII.2010, M. TAKAKUWA (NIAES); 1 ex., Sato-Kurosaki-takao, 19.VI.2011, M. TAKAKUWA (NIAES); 1 ex., Borosawa, 12.VI.2010, M. TAKAKUWA (NIAES); 8 exs., same locality, 4.VII.2010, M. TAKAKUWA (NIAES); 1 ex., Borosawa-Inane, 18.IV.2011, M. TAKAKUWA (NIAES); 4 exs., Inanegamori, 5.IX.2012, H. KOJIMA (TUA); 1 ex., Inane-jinja Shrine, 19.VI.2011, M. TAKAKUWA (NIAES); 7 exs., Nagatakiyama-bunki, 19.IV.2011, M. TAKAKUWA (NIAES); 3 exs., Nangô, 13.VI.2010, M. TAKAKUWA (NIAES); 2 exs., same locality, 5.VII.2010, M. TAKAKUWA (NIAES); 1 ex., same locality, 14.V.2012, H. KOJIMA (TUA). [Hachijôjima Is.] 1 female, Sueyoshi, 10.VII.1986, K. MATSUI (KUM). Shikoku. [Kôchi] 1 ex., Okinoshima Is., Sukumo-shi, 2–4.V.2019, K. KURODA & K. YASUDA (KUM). Kyushu. [Kumamoto] 1 ex., Shimizudera, Kugino-mura, 28.VIII.2003, H. HIRANO (NIAES). [Ôita] 1 ex., Sekizaki, Saganoseki, Ôita-shi, 9.IV.2016, R. ITO (KUM); 1 ex., same locality, 17.IV.2016, R. ITO (KUM). [Miyazaki] 1 ex., Ōshima Is., Nangô-chô, 8.V.1989, A. NAGAI (KUM); 1 ex., same locality, 27.V.1989, A. NAGAI (KUM); 4 exs., same locality, 27.V.2019, N. TSUJI & S. IMADA (KUM). [Kagoshima] 2 exs., Seo, Shimokoshikijima Is., 17.VI.1982, S. IMASAKA (SI); 1 ex., same locality, 19.VI.1982, S. IMASAKA (SI); 1 ex., same locality, 21.VI.1982, S. IMASAKA (SI); 1 ex., Ôura, Kimotsuki-chô, 9.VI.2007, K. KIDO (KUM); 1 ex., Futagawa, Nejime-chô, 3.V.1992, K. HAGA (KUM); 5 exs., Hetsuka, Minamiôsumi-chô, 30.VII.2017, N. TSUJI & K. NARITA, at light and from dead branches of broad leaf trees on the ground (KUM); 1 ex., Cape Sata-misaki, Sata-chô, 24.VII.1960, M. SHIGA (KUM). The Ryukyus. [Yakushima Is.] 1 ex., Kusukawa, 17.VII.2007, H. OHKI (HO); 1 ex., Anbô, 24.VII.1976, M. KANEDA (KUM); 1 ex., Onoaida, 13.VI.1981, J. OKUMA (KUM); 2 exs., same locality, 6.VI.1988, S. IMASAKA (SI); 1 ex., Yudomari, 9.VI.1988, S. IMASAKA (SI). [Satsuma-kuroshima Is.] 2 exs., Mt. Yaguradake,

Mishima-mura, 20.IV.1999, H. FUJIMOTO (KUM); 1 ex., same locality, 13.IV.1999, H. FUJIMOTO (KUM); 2 exs., Ôsato, Mishima-mura, 21.IV.1999, H. FUJIMOTO (KUM). [Kuchinoshima Is.] 10 exs., Hirase, 29.III.2013, H. KOJIMA (TUA); 1 ex., near Shûraku, 7.VII.2015, H. KOJIMA (TUA); 1 ex., Kuchinoshima-sen Forestry Road, 2.V.2013, H. KOJIMA (TUA); 1 ex., Seranma, 1.V.2013, H. KOJIMA (TUA); 1 ex., same locality, 7.VII.2015, H. KOJIMA (TUA); 3 exs., 26.VI–3.VII.1969, H. MAKIHARA (KUM); 1 ex., 7.VII.2004, J. YAMASAKO (NIAES). [Nakanoshima Is.] 1 ex., 29.IV.1987, S. NOMURA (KUM); 1 ex., 9.VIII.1989, T. UENO (KUM); 2 exs., 18–22.VII.2016, H. YOSHITAKE (NIAES); 1 ex., the foot of Mt. Otake, 7.VII.2009, J. AOKI (KUM); 3 exs., Oike, 14.III.2013, H. KOJIMA (KUM); 4 exs., Nanatsuyama, 7–9.VII.2019, N. TSUJI, H. ONO & S. TOMURA. (KUM); 1 ex., Sato, 4.V.1984, T. MIKAGE (KUM); 1 ex., same locality, 6.VII.2009, J. AOKI (KUM); 1 ex., Yoriki, 15.III.2013, H. KOJIMA (TUA). [Suwanosejima Is.] 2 exs., 15–17.VII.2016, H. YOSHITAKE (NIAES). [Akusekijima Is.] 1 ex., 27.VII.1982, M. ÔHARA (TUA); 1 ex., 23.VII.2009, M. SHOYAMA (NIAES); 2 exs., 15–17.VI.2016, H. YOSHITAKE (NIAES); 1 ex., Mt. Mitake, 5–8.III.2013, H. KOJIMA (TUA); 1 ex., same locality, 16.VI.2016, H. YOSHITAKE (NIAES); 2 exs., Ue-shûraku, 5–9.III.2013, H. KOJIMA (TUA); 1 ex., Mt. Birouyama, 6–8.III.2013, H. KOJIMA (TUA); 1 ex., Mt. Negamiyama, 7.III.2013, Y. FUJISAWA (TUA).

Distribution. Japan: the Izu Isls., Shikoku (Kôchi Pref.), Kyushu (Ôita Pref., Kumamoto Pref., Miyazaki Pref., and Kagoshima Pref. incl. Shimokoshikijima Is.), and the Ryukyus (Yakushima Is., Satsuma-kuroshima Is., and Tokara Isls. from Kuchinoshima Is. to Akusekijima Is.).

Biology. *Orochlesis amplicolis* were collected from dead branches of various broad-leaved trees (KOJIMA, 2015). A couple of the adults were collected by light trapping in Minamiôsumi-chô, Kagoshima Pref., Kyushu, suggesting that they are attracted to light at night.

Orochlesis simulata sp. nov.

[Japanese name: Saikai-maru-kuchikakushi-zômushi]

(Figs. 12–13, 17, 19, 48–50, 77–80, 89 & 101–102)

Orochlesis takaosanus (nec KÔNO, 1932): IMASAKA, 2019: 38 [Shimokoshikijima Is. (in part)].

Orochlesis meshimensis (nec KÔNO, 1937): IMASAKA, 2002: 62 [Mt. Iwatoyama, Nagasaki Pref.].

Orochlesis sp. 1: MORIMOTO & MIYAKAWA, 1985: 26-fig. 4 [in distributional map].

Orochlesis sp.: KIDO, 1992: 103 & pl. 11-fig. 10 [Himeshima Is., Fukuoka Pref.]; KIDO, 1994 a: 70 [Genkaijima Is., Fukuoka Pref.]; KIDO, 1994 b: 145 [Chikuzen-Ôshima Is., Fukuoka Pref.].

Diagnosis. This species is closely similar to *Orochlesis donana* in maculation and elytral structure, as well as in genital structures. However, it can be clearly distinguished from *O. donana* by the following features: fore femora each with receptacle for tarsus as wide as or a little wider than that for tibia and at most weakly raised along outer margin basally; and hind wings fully developed. This species also resembles *O. takaosana* in maculation, but can be easily distinguished from it by the 3rd, 5th, and 7th elytral intervals bearing small granules.

Description. Male. Measurements (n = 14; in mm): TL 2.57–4.73 (holotype 4.17; mean 3.99); LP 0.73–1.47 (1.26; 1.19); WP 1.15–2.25 (2.03; 1.83); LE 1.85–3.26 (2.91; 2.80); WE 1.36–2.51 (2.30; 2.11).

Body (Figs. 48–50) mostly imbricate with ovate to orbicular scales, scatteredly mingled with subrecumbent ones. Rostrum covered with scales on basal 1/3, narrowly squamous on both sides along upper margins of antennal scrobes but glabrous medially to level of antennal insertions, then sparsely covered with minute scales apically. Head covered with yellowish white to ash brown scales except frons between eyes with light-colored and dark suberect scales. Pronotum with large semicir-

cular dark squamous area on disc along basal margin, which is fringed with semiannular light-colored scaly band and sometimes divided into pair of smaller patches; remaining part covered with yellowish white to ash brown scales. Elytra mainly covered with yellowish white to ash brown scales but with the following three dark patches of general scales: 1) obscure semicircular patch on basal part, which is fringed posteriorly with subrescent light-colored scaly band between 7th intervals; 2) small lateral patch on middle of 7th and 8th intervals on each side; and 3) short transverse band on subapical part between 3rd intervals; each interval with row of oblongate to ovate scales; 1st intervals basally densely covered with slenderer scales. Metasternum densely covered with general scales. Venter partially closely covered with general scales; scales of 1st ventrite become smaller and sparser on sublateral parts toward glabrous areas on both sides; 3rd and 4th ventrites each with two to three transverse rows of general scales on middle.

Rostrum closely punctate from base to middle; punctures become smaller and sparser on apical half of dorsal surface; sides narrowing apically from base to basal 1/3, slightly expanded above antennal insertions, and then slightly widened apically. Antennal club with 1st segment slightly shorter than remaining segments combined.

Prothorax much wider than long, WP/LP 1.47–1.61 (holotype 1.61; mean 1.54); sides subparallel from base to basal 1/3, and then strongly arcuately convergent to subapical constriction; dorso-lateral parts more or less granulate from middle to behind subapical constriction.

Scutellum small, suboval, and slightly more prominent dorsally than elytral bases.

Elytra subovate, LE/WE 1.27–1.40 (holotype 1.27; mean 1.33), dorsally moderately to strongly convex in subbasal part; sides slightly expanded at humeri, faintly widened to widest point at middle, and then gently arcuately convergent to subapical calli; 1st to 8th intervals flat; posterior part of 3rd and entire length of 5th and 7th intervals bearing scattered small granules in row, which sometimes become very small and indistinct on 3rd intervals; 9th intervals strongly granulate-costate at humeri, granulate in row from before humeri to basal 1/3 and then moderately granulate-costate to subapical parts, slightly more prominent than 8th due to granulate-costae; 10th intervals strongly granulate-costate on basal half and more prominent than 9th from before humeri to behind middle; granulate-costae of 9th and 10th intervals subconfluent with each other at humeri. Hind wings (Fig. 19) fully developed.

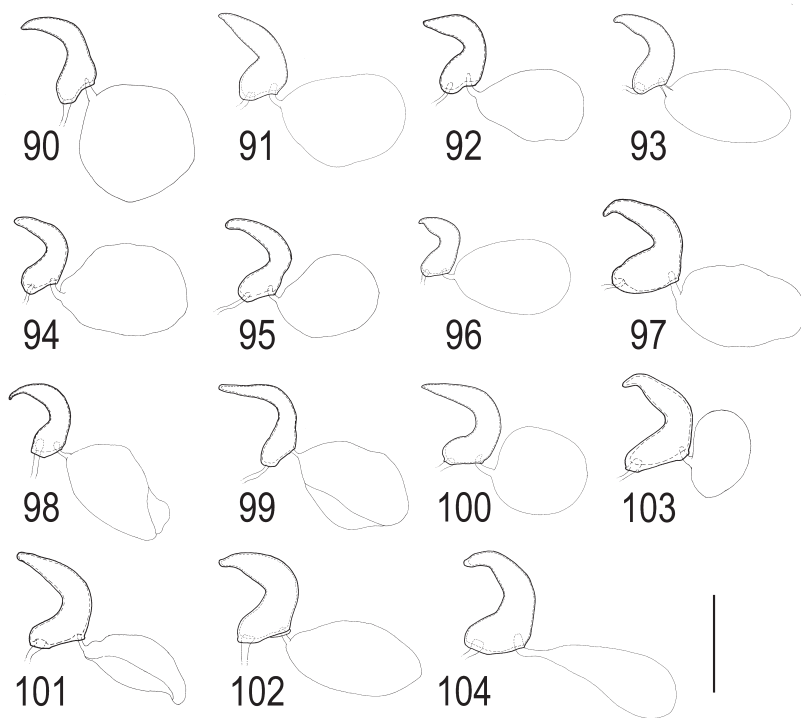
Mesosternal receptacle slightly convex ventrally along mid-line, being on the same plane as metasternum.

Legs relatively short and robust; fore femora (Figs. 12, 13 & 17) each with receptacle for tibia nearly as wide as or a little narrower than that for tarsus; receptacle for tarsi faintly raised along outer margins basally; hind femora slightly widened apically; fore tibiae unicarinate along outer margins.

Aedeagus (Figs. 77–80) with aedeagal body approximately 1.8–1.9 times as long as wide, with sides faintly expanded or slightly arcuate from base to near ostium, and then moderately and arcuately constricted apically, faintly produced at middle of apex, and in profile slightly curved ventrally; endophallus (Figs. 77 & 80) spinulate basally, with Y-shaped sclerite in apical part and with long and slender tubular transfer apparatus in subbasal part, which tapers apically and bears small lateral projections at base.

Female. Measurements ($n = 16$; in mm): TL 2.92–4.69 (mean 3.99); LP 0.86–1.45 (1.15); WP 1.36–2.00 (1.74); LE 2.07–3.24 (2.73); WE 1.61–2.44 (2.04); WP/LP 1.38–1.66 (1.51); LE/WE 1.28–1.38 (1.33). Similar to males, but rostrum slightly slenderer, more minutely and sparsely punctate on apical half.

Terminalia as illustrated (Figs. 89, 101 & 102). Spermatheca (Figs. 101 & 102) C-shaped, with cornu gradually attenuate apically and not to faintly incurved at tip; collum weakly obliquely convex



Figs. 90–104. Spermathecae of *Orochlesis* spp. from Japan. — 90–93, *O. takaosana* KÔNO, showing intraspecific variation; 94, *O. sakishimensis* sp. nov., 95 & 96, *O. bimaculata*, sp. nov., showing intraspecific variation; 97, *O. morimotoi* sp. nov.; 98, *O. yambaruana* sp. nov.; 99 & 100, *O. amplicollis* MORIMOTO et MIYAKAWA, showing intraspecific variation; 101 & 102, *O. simulata* sp. nov., showing intraspecific variation; 103–104, *O. donana* sp. nov., showing intraspecific variation. — 90, Lectotype from Mt. Takaosan, Tokyo; 91 & 92, specimen from Hirakura, Mie Pref.; 93, ditto from Meshima Is. in the Danjo Isls.; 99, paratype from Izu-Ôshima Is. in the Izu Isls.; 100, specimen from Nakanoshima Is., the Tokara Isls. in the northern Ryukyus; 101, paratype from Himeshima Is., Fukuoka Pref.; 102, ditto from Kunigami-son, Okinawajima Is. in the central Ryukyus. Scale: 0.20 mm.

downward; ramus less-marked; insertions of duct and gland moderately distant; duct inserted at sub-basal part of bursa copulatrix (Fig. 89).

Type material. Holotype: male (KUM), “Himeshima I. / Fukuoka Pref. / 2.ix.1991 / K. Kido leg.” (typed on a white card); “シイ枯木” (handwritten in Japanese on a white card, meaning “dead *Castanopsis* tree”); “J000881” (typed on a yellow card); “HOLOTYPE / *Orochlesis* / *simulata* / Tsuji et Yoshitake, 2020” (typed on a red card). Paratypes. Japan: Honshu. [Mie] 1 ex., Togashima Is., Owase-shi, 4.V.1996, K. KANNÔ (KKN). [Wakayama] 1 ex., Taiji-chô, 27.IV.2003, H. HIRANO (NIAES). Kyushu. [Fukuoka] 1 ex., Mt. Fukuchiyama, Kokura-shi, 29.IV.1953, T. YOSHIDA (KUM); 1 female, same locality, 5.V.1954, T. YOSHIDA (KUM); 6 exs., Okinoshima Is., Munakata-shi, 29–30.VII.2006, K. KIDO (KUM); 1 ex., Jinoshima Is., Munakata-shi, 29.IV.1999, K. KIDO (KUM); 2 exs., same locality, 16.V.2019, S. IMADA (KUM); 3 exs., Chikuzen-Ôshima Is., Munakata-shi, 22.V.1993; K. KIDO (KUM); 3 exs., same locality, 9.VI.1993; K. KIDO (KUM); 2 exs., same locality, 20.VI.1993, K. KIDO (KKD); 1 ex., Kiyotaki, Koga-shi, 24.V.1995, O. FUKUDA (KUM); 1 ex., Mt. Toishiyama, 17.IX.2014, K. KIDO (KKD); 1 ex., Mt. Hômanzan, Dazaifu-shi, 11.V.1975, H. IRIE (KUM); 1 ex.,

Shikanoshima Is., Higashi-ku, Fukuoka-shi, 16.V.1993, K. MORIMOTO (KUM); 1 ex., same locality, 2.V.1996, H. FUJIMOTO (KUM); 1 ex., Genkaijima Is., Nishi-ku, Fukuoka-shi, 27.VI.1993, K. KIDO (KKD); 4 exs., same locality as the holotype, 1.IX.1991, K. KIDO (KUM); 3 males & 4 females, same data as the holotype (KUM); 1 ex., Mt. Kumadoyama, Hoshino-mura, 1.VI.1958, Y. MIYAKE (KUM); 1 ex., Mt. Monjidake, Yabe-mura, 18.IV.2010, K. KIDO (KKD). [Nagasaki] 1 ex., Ôfunakoshi, Mitsu-shima-chô, Tsushima Is., 19.V.2018, N. TSUJI (KUM); 1 ex., Mt. Yahirodake, Sasebo-shi, 25.IV.1980, J. OKUMA (KUM); 1 ex., same locality, 12.IV.1983, J. OKUMA (KUM); 2 females & 1 ex., Mt. Iwa-toyama, Kazusa-chô, 6.VII.1976, S. IMASAKA (KUM); 3 males & 1 ex., same locality, 18.VI.1977, S. IMASAKA (KUM); 1 ex., same locality, 24.VI.1985, S. IMASAKA (SI). [Ôita] 1 ex., Mt. Ondakeyama, Kiyokawa-machi, Bungo-Ôno-shi, 11.II.2016, R. ITO (KUM). [Miyazaki] 1 ex., Ôshima Is., Nango-chô, Nichinan-shi, 20.VII.1988, A. NAGAI (KUM). [Kagoshima] 1 female, Shiroyama, Kagoshima-shi, 27.V.1960, Y. KIMURA (KUM); 1 ex., Mt. Odake, Shimokoshikijima Is., 22.VI.1982, S. IMASAKA (SI); 1 male, Teuchi, Shimokoshikijima Is., 27–29.VIII.1960, K. MORIMOTO (KUM); 1 ex., Ôdomari, Sata-chô, 25.V.1953, I. HIURA (KUM); 2 exs., Cape Sata-misaki, Sata-chô, 24.VI.1957, H. KAMIYA (KUM); 1 male, same locality, 25.VI.1957, T. SAIGUSA (KUM); 1 female & 2 exs., same locality, 2–5.V.1958, K. MORIMOTO (KUM); 1 ex., same locality, 25.X.1961, K. MORIMOTO (KUM); 1 ex., same locality, 5.V.1973, H. MAKIHARA (KUM). The Ryukyus. [Nakanoshima Is.] 1 ex., Nanatsuyama, 7–9.VII.2019, N. TSUJI (KUM). [Takarajima Is.] 2 exs., 15.V.1991, T. UENO (KUM); 1 ex., Mt. Megamiyama, 11.III.2013, H. KOJIMA (TUA); 1 ex., Mt. Imakiradake, 9.III.2013, Y. FUJISAWA (TUA); 7 exs., same locality, 2–6.VII.2019, N. TSUJI (KUM); 2 exs., Mt. Imakiradake-Ôike, 2–6.VII.2019, N. TSUJI (KUM). [Amami-Ôshima Is.] 1 ex., Mt. Rankanyama, 12.VIII.1961, K. YAMADA (KUM); 1 ex., Santarô-tôge Pass, 26–31.XII.2001 (collected as dead wood), VI.2002 (emerged), Y. MATSUMOTO (KUM); 1 ex., Shinmura-Yuwan, Sumiyô-son, 4.IV.1956, S. MIYAMOTO (KUM); 1 female & 2 exs., Marubatake, Sumiyô-son, 13.V.1976, J. OKUMA (KUM); 1 ex., Hatsuno, Sumiyô-son, 26.V.1960, T. SHIBATA (KUM); 1 ex., same locality, 25.VII.1962, Y. MIYAKE (KUM); 1 ex., same locality, 28.VII.1962, H. KAWAI (KUM); 2 exs., same locality, 14.IV.1971, T. KINOSHITA (KUM); 1 ex., same locality, 13–20.VI.1963, J. NAGAO (KUM); 1 female, Chuô-rindô Forestry Road, 26.IV.1976, J. OKUMA (KUM); 1 ex., Mt. Yuwandake, 20.IV.1971, T. KINOSHITA (KUM); 1 ex., same locality, 25.IV.1995, N. TAKAHASHI (NIAES); 1 male, Mt. Eboshiyama, Setouchi-chô, 13.X.1988, K. MORIMOTO (KUM); 2 exs., Mt. Yuidake, Setouchi-chô, 1–2.VII.2004 (collected as dead wood of *Castanopsis sieboldii*), 18.VIII.2004 (emerged), H. MAKIHARA (NIAES); 1 ex., same locality, 1–2.VII.2004 (collected as dead wood of *Machilus japonica*), 18.VIII.2004 (emerged), H. MAKIHARA (NIAES); 2 exs., same locality, 17.VII.2004 (collected as dead wood of *Castanopsis sieboldii*), 14.IX.2004 (emerged), H. MAKIHARA (NIAES); 2 exs., Mt. Kôchiyama, Setouchi-chô, 4.XII.2017, H. YOSHITAKE (NIAES); 1 ex., Ikari, 6.V.1960, T. SHIBATA (KUM); 1 female, Kofukujigawa-rindô Forestry Road, 27.IV.1976, J. OKUMA (KUM). [Tokunoshima Is.] 1 ex., Yamakubiri-rindô Forestry Road, Todoroki, Tokunoshima-chô, 14.IX.2017, H. YOSHITAKE (NIAES); 1 ex., same locality, 19.IX.2018, H. YOSHITAKE (NIAES); 1 ex., Uenamichi-shinrin-kôen Park, Amagi-chô, 18.IX.2017, H. YOSHITAKE (NIAES); 1 ex., Mikyô, Amagi-chô, 27.IX.2016, H. YOSHITAKE (NIAES). [Iheyajima Is.] 3 exs., Maedomari-Gakiya, Mt. Koshidake, 20.III.2020, H. YOSHITAKE (NIAES). [Okinawajima Is.] 1 ex., Hedo-Yona, Kunigami-son, 14.XI.1960, K. YASUMATSU (KUM); 1 ex., Benoki, Kunigami-son, 25.V.1983, M. KANEDA (KUM); 1 ex., same locality, 25.VI.1984, M. KANEDA (KUM); 1 ex., same locality, 12.VI.1999, T. MIKAGE (NMNS); 1 ex., same locality, 29.X.2013, Y. TAMAKI (TY); 2 exs., Okuyona-rindô Forestry Road, Kunigami-son, 15.VII.2018, H. YOSHITAKE (NIAES); 1 ex., Yona, Kunigami-son, 24.III.1964, Y. MIYATAKE (KUM); 1 male, 1 female & 1 ex., same locality, 9–13.VIII.1969, H. MAKIHARA (KUM); 1 ex., same locality, 16–20.V.1978, H. MAKIHARA (KUM); 1 ex., same locality, 21.X.1987, M. SAKAI

(KUM); 1 male, same locality, 16.III.1988, T. UENO (KUM); 2 exs., same locality, 3.VII.2015, T. YOSHIDA (KUM); 1 ex., Aha, Kunigami-son, 11.V.1974, K. UNNO (KUM); 1 male, Okuma, Kunigami-son, 15.VI.2006, K. TAKAHASHI (KUM); 1 male, Mt. Yonahadake, Kunigami-son, 11.XII.1994, K. MORIMOTO (KUM); 1 ex., Hiji, Kunigami-son, 3.VII.1974, T. MIKAGE (KUM); 1 ex., same locality, 22.X.1987, M. SAKAI (KUM); 4 exs., Kunigami-son, 12.VI.–26.VIII.2006, H. GOTÔ (NIAES); 5 exs., Mt. Nagodake, Nago-shi, 17.IX.2004, H. MAKIHARA (NIAES); 1 ex., same locality, 31.VII.–16.VIII.2019, H. YOSHITAKE, at light (NIAES); 4 exs., same locality, 1–10.VIII.2019, H. YOSHITAKE, at light (NIAES); 1 ex., same locality, 7–14.IX.2019, H. YOSHITAKE, at light (NIAES); 1 female, Haneji, Nago-shi, 5.VII.1995, T. MIKAGE (KUM); 1 ex., Inamine, Nago-shi, 6.IV.2008, H. OHKI (HO); 1 ex., Miyagi, Higashi-son, 28.V.2003, Gashow (NIAES); 1 ex., same locality, 9.VII.2003, Gashow (NIAES); 1 ex., Izumi, Motobu-chô, 22.III.2002, H. OHKI (HO); 1 ex., Motobu-chô, 12.V.2012, J. AOKI (KUM); 1 ex., Shuri, Naha-shi, 9.V.1961, O. NAKAI (KUM); 1 male, 1 female & 2 exs., same locality, 21.VIII.1961, M. OKABE (KUM); 4 males & 4 exs., Ônoyama-kôen Park, Naha-shi, 16.VII.2018, N. TSUJI (NMNS & KUM). [Iejima Is.] 2 exs., Mt. Gusukuyama, 8–9.VI.2018, H. YOSHITAKE (NIAES). [Tonakijima Is.] 2 exs., Mt. Ufutaki, 1.IX.2018, H. YOSHITAKE (NIAES). [Kumejima Is.] 1 female, Mt. Ôtake, 29.IX.1989, T. UENO (KUM); 1 female, Mt. Darumayama, 28.IX.1989, T. UENO (KUM); 1 ex., same locality, 19.VII.2018, H. YOSHITAKE & N. TSUJI (KUM); 1 ex., Gima, Kumejima-chô, 20.VII.1987, T. UENO (KUM).

Distribution. Japan: Honshu (Mie Pref. and Wakayama Pref.), Kyushu (incl. Tsushima Is.), and the Ryukyus (Tokara Isls.: Nakanoshima Is. and Takarajima Is.; Amami Isls.: Amami-Ôshima Is. and Tokunoshima Is.; Okinawa Isls.: Iheyajima Is., Okinawajima Is., Iejima Is., Tonakijima Is., and Kumejima Is.).

Biology. Adults of this species were collected from dead branches of various broad-leaved trees such as *Castanopsis sieboldii* (Fagaceae; Sudajii, in Japanese) and also attracted to light at night.

Etymology. The new species was named after its similarity to *Orochlesis takaosana* in scaly maculation.

Remarks. *Orochlesis simulata* resembles *O. antepagiata* HELLER, 1931 described from Taiwan. In our observation based on KUM specimens, these two species are similar to each other in elytral and genital structures, but *Orochlesis simulata* can be distinguished from the latter by the carinae of 9th and 10th elytral intervals subconfluent basally with each other. However, HELLER (1931) did not mention the state of the carinae in the original description of *O. antepagiata*. The holotype of *O. antepagiata*, probably deposited at the Senckenberg Museum für Tierkunde, Dresden (SMTD) or Senckenberg Deutsches Entomologisches Institut, Müncheberg (SDEI), was not found from the collections of both institutions. The taxonomic identity of the Taiwanese congener will be discussed in our next work on *Orochlesis*.

***Orochlesis donana* sp. nov.**

[Yonaguni-maru-kuchikakushi-zômushi]

(Figs. 18, 20, 24, 51–53, 81–83, 103 & 104)

Orochlesis sp. 3: MORIMOTO & MIYAKAWA, 1985: 26-fig. 4 [in distributional map].

Diagnosis. This species is closely similar to *Orochlesis simulata* in maculation and elytral structure, as well as genital structures. However, it can be distinguished from *O. simulata* by the following features: hind wing less-developed and attenuate apically; fore femora each with receptacle for tarsus moderately raised in basal 2/3 along outer margin.

Description. Male. Measurements ($n = 10$; in mm): TL 2.68–4.50 (holotype 4.37; mean 4.01);

LP 0.86–1.43 (1.43; 1.26); WP 1.31–2.20 (2.15; 1.93); LE 1.82–3.14 (2.94; 2.75); WE 1.51–2.45 (2.40; 2.20).

Body (Figs. 51–53) mostly imbricate with ovate to orbicular scales, scatteredly mingled with subrecumbent ones. Rostrum covered with scales on basal 1/4, narrowly squamous on both sides along upper margins of antennal scrobes but glabrous medially to level of antennal insertions, then sparsely covered with minute scales apically. Head covered with yellowish white to darker suberect scales on frons. Pronotum with large semicircular area of dark scales on disc along basal margin and with obscure semiannular fringing band of light-colored scales along anterior margin of semicircular area; dark semicircular area sometimes divided into pair of smaller patches; remaining part covered with yellowish white to yellowish brown scales. Elytra mainly covered with yellowish white to yellowish brown scales but with the following two dark patches of general scales: 1) obscure subpentagonal patch in basal 2/7, which is fringed posteriorly with subcrescent light-colored scaly bands between 6th intervals and 2) pair of small lateral patches on middle of 7th to 9th intervals; each interval with row of oblongate to ovate scales; 1st intervals basally densely covered with slenderer scales. Metasternum densely covered with general scales. Venter partially closely covered with general scales; scales of 1st ventrite become smaller and sparser on sublateral parts toward glabrous areas on both sides; 3rd and 4th ventrites each with two to three transverse rows of general scales on middle.

Rostrum closely punctate from base to basal 1/4; punctures become smaller and sparser on apical half of dorsal surface; sides narrowing apically from base to basal 1/3, faintly expanded above antennal insertions, and then subparallel apically. Antennal club with 1st segment slightly shorter than remaining segments combined.

Prothorax much wider than long, WP/LP 1.43–1.61 (holotype 1.51; mean 1.53); sides slightly expanded or subparallel from base to widest point at basal 1/3, and then strongly arcuately convergent to subapical constriction; dorso-lateral parts more or less granulate from before base to behind subapical constriction.

Scutellum very small to small, suboval, and being on same plane as or slightly more prominent dorsally than elytral bases.

Elytra subovate, LE/WE 1.18–1.28 (holotype 1.23; mean 1.25), dorsally moderately to strongly convex in subbasal part; sides slightly expanded from humeri to basal 1/4, subparallel to widest point at middle, with faint constriction just behind middle, and then gently arcuately convergent to subapical calli; 1st to 8th intervals flat; posterior parts of 3rd intervals and entire length of 5th and 7th intervals each bearing scattered small granules in row, which sometimes become very small and indistinct on 3rd intervals; 9th intervals strongly granulate-costate at humeri, granulate in row from before humeri to basal 1/3 and then moderately granulate-costate to subapical parts, more prominent than 8th due to granulate-costae; 10th intervals strongly granulate-costate on basal half and being more prominent than 9th from before humeri to basal 1/3; granulate-costae of 9th and 10th intervals subconfluent with each other at humeri. Hind wings (Figs. 20 & 24) less-developed, attenuate apically, but much longer than elytra.

Mesosternal receptacle slightly convex ventrally along mid-line, being on the same plane as metasternum.

Legs relatively short and robust; fore femora (Fig. 18) each with narrower receptacle for tibia than that for tarsus; receptacle for tarsi weakly to moderately raised along outer margins in basal 2/3; hind femora subparallel-sided or slightly tapering apically; fore tibiae unicarinate along outer margins.

Aedeagus (Figs. 81–83) with aedeagal body approximately 1.7 times as long as wide, with sides slightly expanded from base to near ostium, then moderately and arcuately convergent apically, and in profile slightly to gently curved ventrally; endophallus (Fig. 81) spinulate basally, with Y-shaped

sclerite in apical part and with long and slender tubular transfer apparatus in subbasal part, which tapers apically and bears small lateral projections at base.

Female. Measurements ($n = 11$; in mm): TL 2.72–4.66 (mean 3.82); LP 0.87–1.50 (1.21); WP 1.28–2.20 (1.82); LE 1.86–3.16 (2.62); WE 1.58–2.61 (2.14); WP/LP 1.46–1.55 (1.50); LE/WE 1.18–1.27 (1.22). Similar to males, but rostrum slightly slenderer, more minutely and sparsely punctate on apical half.

Spermatheca (Figs. 103 & 104) C-shaped, with cornu gradually attenuate apically and weakly to strongly incurved at tip; collum strongly transversely convex; ramus less-marked; insertions of duct and gland widely distant; duct inserted at subbasal part of bursa copulatrix.

Type material. Holotype: male (KUM), “Mt. Kuburadake / Yonaguni-jima Is. / Okinawa Pref. / 27.III.1996, H. FUJIMOTO” (typed on a white card); “HOLOTYPE / *Orochlesis* / *donana* / Tsuji et Yoshitake, 2020” (typed on a red card). Paratypes. Japan: the Ryukyus. [Ishigakijima Is.] 1 ex., Mt. Omotodake, 21.X.2003, H. MAKIHARA (NIAES). [Iriomotejima Is.] 1 male, Komi, 3.IV.2005, I. MATOBA (IM). [Yonagunijima Is.] 1 ex., 20.VII.1962, H. NOMURA (KUM); 1 ex., 14–15.IX.2014, H. MAKIHARA (NIAES); 6 males, 7 females & 5 exs., Sonai, 25–29.VIII.1969, H. MAKIHARA (KUM); 1 ex., same locality, 25.VI.1974, T. MIKAGE (KUM); 1 ex., same locality, 11.V.1989, E. KITAMURA (KUM); 1 ex., same locality, 18.III.2001, H. OHKI (HO); 2 males & 1 ex., Mt. Urabudake, 26.VI.1974, T. MIKAGE (KUM); 1 ex., same locality, 4.IV.1994, I. HIRAI (KUM); 1 female, same locality, 3.VII.2001, N. ÔSHIGE (KUM); 1 ex., same locality, 26.VI.2004, M. SHOYAMA (NIAES); 1 ex., same locality, 19.III.2007, H. KAWAI (NIAES); 1 ex., Iranda-rindô Forestry Road, 30.III.2009, R. ITO (KUM); 1 ex., same locality, 1.IV.2009, R. ITO (KUM); 3 exs., Mt. Inbidake, 26–31.III.1997, H. YOSHITAKE (NIAES); 2 exs., Mt. Yonagunidake, 4.III.2018, T. MIKAGE (KUM); 2 exs., same locality, 12.V.2018, T. MIKAGE (KUM); 1 ex., same locality, 8.VI.2018, T. MIKAGE (KUM); 1 ex., Mandabaru, 14.VIII.2001, H. HIRANO (NIAES); 2 exs., same locality, 1–3.II.2010, J. AOKI (TY); 6 exs., same locality, 29.IV.–1.V.2016, N. TSUJI, H. IKEDA & K. YOSHIDA (KUM); 1 ex., same locality, 30.IV.2018, T. MIKAGE (KUM); 5 exs., same locality, 25–26.V.2017, Y. TAMADERA (KUM); 1 ex., Higawa-rindô Forestry Road, 26–31.III.1997, H. YOSHITAKE (NIAES); 1 ex., Higawa-hama Beach, 6.VIII.2001, H. HIRANO (NIAES); 1 male, 1 female & 1 ex., same locality as the holotype, 8.XI.1995, M.T. CHÛJÔ (KUM); 1 ex., same locality, 27.III.1996, H. FUJIMOTO (KUM); 1 ex., same locality, 10.VI.2002, H. HIRANO (NIAES); 4 exs., same locality, 14.IX.2004 (collected as dead wood of *Elaeocarpus zollingeri*), X.2004 (emerged), H. MAKIHARA (NIAES); 2 exs., same locality, 15.IX.2004 (collected as dead wood of *Ficus superba* var. *japonica*), 14.XII.2004 (emerged), H. MAKIHARA (NIAES); 2 exs., same locality, 26.V.2017, Y. TAMADERA (KUM); 2 exs., same locality, 5.III.2018, T. MIKAGE (KUM); 1 ex., same locality, 11.V.2018, T. MIKAGE (KUM).

Distribution. Japan: the southern Ryukyus (Sakishima Isls: Ishigakijima Is., Iriomotejima Is., and Yonagunijima Is.).

Biology. *Orochlesis donana* is associated at least with *Elaeocarpus zollingeri* (Elaeocarpaceae; Horutonoki, in Japanese) and *Ficus superba* var. *japonica* (Moraceae; Akô, in Japanese). The adults were collected from dead branches of various trees.

Etymology. The new species was named after the type locality, “Donan”, a local name of Yonagunijima Is.

Remarks. *Orochlesis donana* is unique in having the less-developed hind wings, which have been known from *O. amplicollis* in this genus. The hind wings of this species show an intermediate state in the degree of hind wing reduction between most of other congeners showing a fully developed state and *O. amplicollis* showing a vestigial state (Figs. 19–22).

Discussion

This study based on a number of specimens collected from various localities revealed that eight species of the genus *Orochlesis* exist in Japan, six of which are new to science. MORIMOTO and MIYAKAWA (1985: 26-fig. 4) suggested the presence of four undescribed species of the genus in the Ryukyus, but we recognized two more species based on detailed morphological observations of various body parts including several new taxonomic characters for *Orochlesis* species in the elytra, fore legs, and male and female genitalia.

The geographical distribution of Japanese *Orochlesis* is summarized in a distribution map (Fig. 105). *Orochlesis takaosana* shows a relatively wide range in Japan from Hokkaido to Kyushu including Tsushima Is. and Meshima Is., extending to South Korea. The remaining seven species are endemic to Japan and distributed in the Ryukyus, but distributions of two of them extend in the north to mainland Japan. *Orochlesis amplicollis* occurs in the Izu Isls., southern Shikoku, Kyushu including Shimokoshikijima Is., and the northern Ryukyus including Yakushima Is., Satsuma-kuroshima Is. and the Tokara Isls. north of Akusekijima Is. *Orochlesis simulata* occurs mainly in the central Ryukyus from Takarajima Is. to Kumejima Is., as well as in the Japan Sea coastal areas of Kyushu. However, a portion of the type specimens were collected from the Pacific coastal areas of western Honshu (the Kii Peninsula) and Kyushu (Ōita and Miyazaki Prefectures), and from the northern Ryukyus (Nakanoshima Is. in the Tokara Isls.). This species may be distributed also in South Korea (HONG *et al.*, 2000: 145 & 285-fig. 214). The remaining five species are entirely limited in distribution to the Ryukyus: *O. morimotoi* and *O. yambaruana* are endemic to the Amami Isls. and the northern part of Okinawajima Is. in the central Ryukyus, respectively, while *O. sakishimensis* (Miyakojima Is., Ishigakijima Is., Kuroshima Is., Taketomijima Is., Hatomajima Is., Iriomotejima Is., and Haterumajima Is.), *O. bimaculata* (Miyakojima Is., Ishigakijima Is., and Iriomotejima Is.), and *O. donana* (Ishigakijima Is., Iriomotejima Is., and Yonagunijima Is.) are endemic to the Sakishima Isls. in the southern Ryukyus.

With regard to inconsistencies between this study (Fig. 105) and MORIMOTO and MIYAKAWA (1985: 26-fig. 4) in distribution ranges of the Ryukyuan species, “*O. sp.1*” indicated in the previous study probably corresponds to *O. simulata*, though its distribution range extended to northwestern Kyushu and western Honshu by this study. Also, “*O. sp.2*” indicated in the previous study is considered to include three species with similar maculation: *O. bimaculata*, *O. morimotoi*, and *O. yambaruana*. “*O. sp.3*” corresponds to *O. donana* occurring mainly on Yonagunijima Is. MORIMOTO and MIYAKAWA (1985) included Taiwan in the distribution range of “*O. sp.4*” which corresponds to *O. sakishimensis*. In the weevil collection preserved at KUM, we found a series of specimens from the islands of Ludao and Lanyu, which are closely similar to *O. sakishimensis* and thus considered to be a part of “*O. sp.4*” in the previous study, but further study is necessary to determine their taxonomic identity. Additionally, the distributional record of *O. meshimensis* (= *O. takaosana*) from Akusekijima Is. in the Tokara Isls. (MORIMOTO, 1984; SASAKI *et al.*, 2002) is probably based on misidentification of *O. amplicollis* or *O. simulata*, though the taxonomic voucher could not be examined in this study.

Geographically, the Ryukyus is separated in the northern, central, and southern Ryukyus by the Tokara and Kerama Gaps (KONISHI, 1965; MATSUMOTO *et al.*, 1996; NAKAE, 2007; Fig. 105), which are well known as distribution boundaries (the Watase line and Hachisuka line, respectively) for many terrestrial animals (OTA, 1998, 2000; MOTOKAWA, 2000, 2016). The distribution pattern of *Orochlesis* species in the Ryukyus appears to roughly correspond to those biogeographic boundaries. Among the seven *Orochlesis* species distributed in the Ryukyus, two species, *O. morimotoi* and *O. yambaruana*, are restricted to the Amami Isls. and Okinawajima Is. in the central Ryukyus, respectively, while three species, *O. sakishimensis*, *O. bimaculata* and *O. donana*, are endemic to the Sakishima Isls. in the

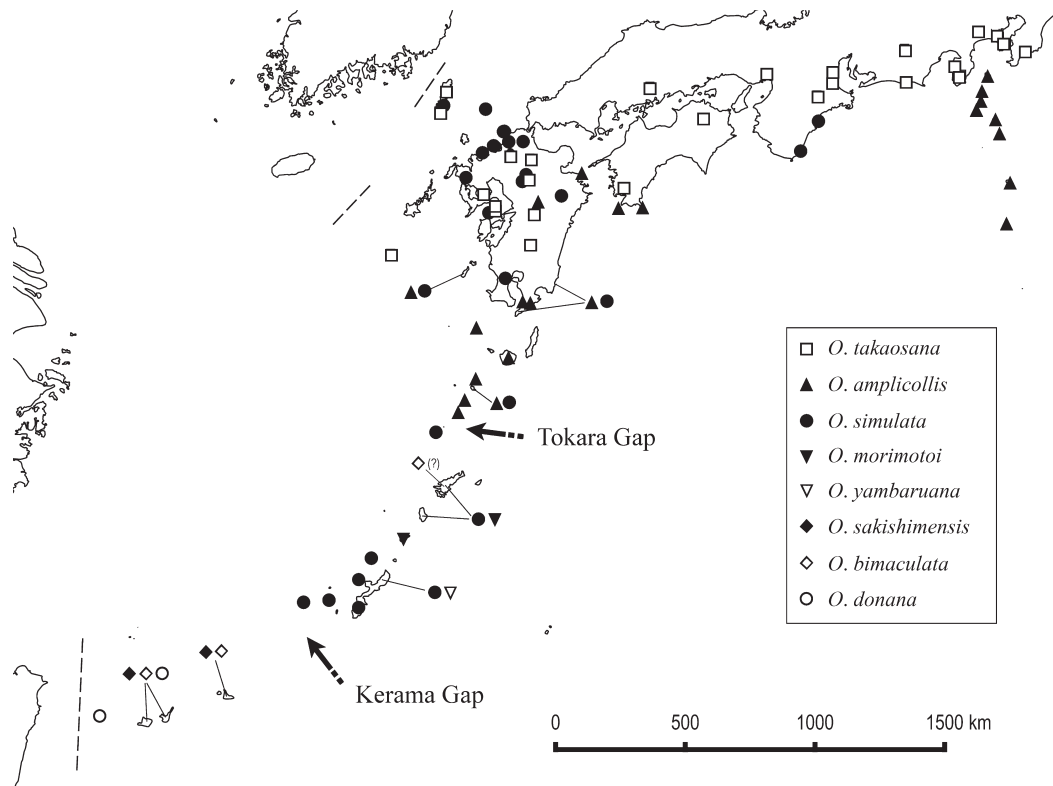


Fig. 105. Geographical distributions of *Orochlesis* spp. in Japan.

southern Ryukyus. In addition, the distribution range of *O. amplicollis* is limited in north of Akusekijima Is. in the Tokara Isls., northern Ryukyus. However, *O. simulata* is quite exceptional, since this species is mainly distributed in south of Takarajima Is. in the Tokara Isls., but was found also from Nakanoshima Is. in the Tokara Isls. and farther north. The distribution ranges of *O. amplicollis* and *O. simulata* partially overlap in the mainland Japan, but that of *O. simulata* is extended northward to the northwestern part of Kyushu, where *O. amplicollis* is not distributed.

This study clarified species diversity of the genus *Orochlesis* in Japan. Judging from their morphological diversity, these Japanese species do not seem monophyletic. For instance, the structure of the female genitalia can be divided into at least three types (Figs. 87–89). This genus has not yet been sufficiently studied in neighboring areas to Japan, such as China, Taiwan, and the Philippines. Our preliminary survey suggested that some *Orochlesis* species similar to the Japanese species are distributed in Taiwan (TSUJI & YOSHITAKE, unpubl.). Therefore, further studies including species of the neighboring areas are needed in order to understand the relationship between the Japanese species of the genus.

Key to the Japanese Species of *Orochlesis*

1. Scutellum small but distinct, always visible from above. Elytra with sides gently arcuately convergent from widest point to moderately developed subapical calli; apices more or less gently rounded. 2

- Scutellum vestigial, sometimes invisible from above. Elytra strongly convergent from widest point at middle to acutely rounded apices; subapical calli vestigial. Distributed in the Izu Isls., Shikoku, Kyushu, and the northern Ryukyus (Tokara Isls.). *O. amplicollis* MORIMOTO et MIYAKAWA, 1985
- 2. Elytra more or less granulate on 8th intervals. 3
- Elytra not granulate on 8th intervals. 6
- 3. Tenth elytral intervals weakly granulate-costate, at most slightly higher than 9th; granulate-costae of 9th and 10th intervals entirely separated. Fore femora each with receptacle for tarsus very shallowly concave, narrower than that for tibia (Fig. 16). 4
- Tenth elytral intervals strongly granulate-costate, much higher than 9th; granulate-costae of 9th and 10th intervals confluent or subconfluent at humeri. Fore femora each with receptacle for tarsus deeper, at least as wide as that for tibia (Figs. 14 & 15). 5
- 4. Elytra granulate on 3rd intervals posteriorly, as well as on 5th, 7th and 8th intervals along entire length. Distributed in the central Ryukyus (Amami Isls.). *O. morimotoi* sp. nov.
- Elytra granulate on 3rd, 5th, 7th, and 8th intervals along entire length. Distributed in the central Ryukyus (Yambaru area of Okinawajima Is.). *O. yambaruana* sp. nov.
- 5. Elytra mainly covered with pale brown scales, with large obtriangular blackish patch along basal margins, which is fringed posteriorly with light-colored subcrescent band. Fore femora each with receptacle for tarsus strongly raised along outer margin (Fig. 14). Distributed in the southern Ryukyus (Sakishima Isls.). *O. sakishimensis* sp. nov.
- Elytra mainly covered with ash brown scales, with pair of light-colored spots on basal 1/3 of 4th intervals. Fore femora each with receptacle for tarsus at most weakly raised basally along outer margin (Fig. 15). Distributed in the southern Ryukyus (Sakishima Isls.); Amami-Ōshima Is. (?). *O. bimaculata* sp. nov.
- 6. Elytra with 5th and 7th intervals granulate. 7
- Elytra with 1st to 7th intervals not granulate. Distributed in Hokkaido, Honshu, Shikoku and Kyushu, and South Korea. *O. takaosana* KÔNO
- 7. Fore femora each with receptacle for tarsus nearly as wide as or a little wider than that for tibia and at most weakly raised basally along outer margin (Fig. 17). Distributed in Honshu (Kii Pen.), Kyushu, and the Ryukyus north of the Okinawa Isls. *O. simulata* sp. nov.
- Fore femora each with receptacle for tarsus wider than that for tibia and moderately raised along outer margin in basal 2/3 (Fig. 18). Distributed in the southern Ryukyus (Yaeyama Isls.). *O. donana* sp. nov.

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要 約

辻 尚道・吉武 啓：日本産ムナビロマルクチカクシゾウムシ属（鞘翅目ゾウムシ科クチカクシゾウムシ亜科）の分類学的研究。—— オニクチカクシゾウムシ族（和名新称）Gasterocercini に属するムナビロマルクチカクシゾウムシ属 *Orochlesis* PASCOE には、ミクロネシア地域を中心に、東アジアからオセアニアにかけて 25 種が知られている。日本からは、タカオマルクチカクシゾウムシ *O. takaosana* KÔNO, 1932 およびメシママルクチカクシゾウムシ *O. meshimensis* KÔNO, 1937, ムナビロマルクチカクシゾウムシ *O. amplipollis* MORIMOTO et MIYAKAWA, 1985 が記録されているが、MORIMOTO & MIYAKAWA (1985) は、日本とその周辺地域における本属の構成種の分布図において、4 未記載種が存在することを示唆していた。本研究では、本属の日本産種について雌雄生殖器官を含む外部形態の観察によって分類学的研究を行った。その結果、上翅や前脚、雌雄生殖器官から新たに見出された判別形質によって 6 新種を認め、サキシママルクチカクシゾウムシ *Orochlesis sakishimensis* sp. nov. (琉球：先島諸島), フタモンマルクチカクシゾウムシ *O. bimaculata* sp. nov. (琉球：先島諸島, 奄美大島 (?)), モリモトマルクチカクシゾウムシ *O. morimotoi* sp. nov. (琉球：奄美群島), ヤンバルマルクチカクシゾウムシ *O. yambaruana* sp. nov. (琉球：沖縄島北部), サイカイマルクチカクシゾウムシ *O. simulata* sp. nov. (本州：紀伊半島；九州；琉球：トカラ列島～沖縄諸島), ヨナグニマルクチカクシゾウムシ *O. donana* sp. nov. (琉球：八重山諸島) としてそれぞれ命名、記載した。加えて、*O. takaosana* と *O. amplipollis* の 2 種を再記載し、前者のレクトタイプを指定するとともに、*O. meshimensis* を前者の新参異名として扱った。また、日本産全種の分布情報を整理し、分布図として示した。

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