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原著論文

キハギクラスに所属する植物社会学的な植生単位のタイプ指定

Typification of syntaxa belonging in *Lespedezetea buergeri*田中徳久^{1,2)}・村上雄秀²⁾・鈴木伸一²⁾・中村幸人²⁾Nori-hisa TANAKA^{1,2)}, Yuhide MURAKAMI²⁾, Shin-ichi SUZUKI²⁾ & Yukito NAKAMURA²⁾

Abstract. In this study, we reviewed designated types of vegetation units of rheophytic shrub communities on Rocks. The description and typification by Tanaka *et al.* (2024) were inadequate according to the International Phytosociological Nomenclature Convention, 4th edition (Theurillat *et al.*, 2021). As a result, the lectotype of *Lespedezetalia buergeri* Tanaka *et al.* 2024 and *Spiraeetum thunbergii* Ya. Sasaki *et* Oota 1986, the neotype of *Rhododendretum indici* Minamikawa 1963 and *Rhododendretum ripensis* Yamanaka *et* Takezaki 1959 were selected again, the holotype of *Lespedezetea buergeri* Tanaka *et al.* 2024 and the *Spiraenion thunbergii* Tanaka *et al.* 2024 was explicitly represented.

Key words: typification, *Lespedezetea buergeri*, *Lespedezetalia buergeri*, *Rhododendron indici*, *Spiraenion thunbergii*

緒 言

田中ほか (2024) は、溪流辺の岩上に成立する低木群落の植物社会学的な位置づけについて検討し、既存の4つの群集を、2群団、1オーダー、1クラスに位置づけた。その際、既報でタイプ指定がなされていない群集単位については、レクトタイプあるいはネオタイプを選定した。しかし、田中ほか (2024) において、新たに記載したキハギクラス *Lespedezetea buergeri* Tanaka *et al.* 2024、キハギオーダー *Lespedezetalia buergeri* Tanaka *et al.* 2024、サツキ群団 *Rhododendron indici* Tanaka *et al.* 2024、ユキヤナギ群団 *Spiraenion thunbergii* Tanaka *et al.* 2024 のタイプ指定が行われておらず、不完全な記載であった。本研究では、国際植物社会学命名規約第4版 (Theurillat *et al.*, 2021) に従い、

改めて必要なタイプを選定した。また、既報の群集についてのタイプ選定に関わる記述にも不備があったので、併せて、明示的に表した。

材料と方法

田中ほか (2024) で植生単位の規定に用いた表1のキハギクラスの総合常在度表により、田中ほか (2024) の規定した各植生単位の標徴種および区分種の出現頻度の高さおよび各植生単位の分布域により、国際植物社会学命名規約第4版 (Theurillat *et al.*, 2021) 上、必要なタイプとなる植生単位を改めて選定した。

田中ほか (2024) で植生単位の規定に用いたホソバハグマーサツキ群集 *Ainsliaea-Rhododendretum indici* Suz.-Tok. 1976 の鈴木 (1976)、佐々木 (1980)、サツキ群集 *Rhododendretum indici* Minamikawa 1963 の矢野ほか (1980)、南川・矢頭 (1972)、奥田 (1984, 1985, 1986)、中村・村上 (2001)、南川 (1970)、中川 (1982)、大場 (1991)、村上・中村 (1997)、田中 (1999)、キシツツジ群集 *Rhododendretum ripensis* Yamanaka *et* Takezaki 1959 の山中・竹崎 (1959)、

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徳島県編 (1978)、高知県編 (1978, 1979)、奥田 (1982, 1983)、村上ほか (2002)、ユキヤナギ群集 *Spiraeetum thunbergii* Ya. Sasaki *et* Oota 1986 の佐々木・太田 (1986)、中村・村上 (2001)、奥富ほか (1987)、中村 (2008) における群集組成表 (一部は常在度表など) を用い、群集単位ごとの総合常在度表を改めて作成した (表 1)。なお、大場 (1991) には一部大場 (1985) で公表済のデータを含んでいる。この際、サツキ群集とキシツツジ群集の原記載である南川 (1963) および山中・竹崎 (1959) は、植生調査資料の整理方法、組成表の構造が異なるため、それぞれ独立したスタンドとした。作成された総合常在度表 (表 1) から、田中ほか (2024) の規定した各植生単位の標徴種および区分種の出現頻度の高さおよび田中 (2024) に示された各植生単位の分布域から、植生単位を国際植物社会学命名規約第 4 版 (Theurillat *et al.*, 2021) 上、改めて選定が必要となるタイプとなる植生単位を選定した。

本報で使用した植物の和名と学名は米倉・梶田 (2003-) に従ったが、サガミニガナ、ホソバコンギクは神奈川県植物誌調査会 (2018) に、ナガバシャジンは山中 (1958) によった。ただし、表 1 中の学名は、命名者名を省略した。

結 果

国際植物社会学命名規約第 4 版 (Theurillat *et al.*, 2021) を再確認し、田中ほか (2024) による記載が不備である判断された、1 オーダー、1 群集のレクトタイプおよび 2 群集のネオタイプを改めて選定し、1 クラス、1 群団のホロタイプを明示的に表した。

I. キハギクラス *Lespedezetia buergeri* Tanaka *et al.* 2024

ホロタイプ Holotypus : キハギオーダー *Lespedezetia buergeri* Tanaka *et al.* 2024

田中ほか (2024) では、キハギオーダー *Lespedezetia buergeri* Tanaka *et al.* 2024 のみの 1 オーダーをキハギクラス *Lespedezetia buergeri* Tanaka *et al.* 2024 にまとめた。国際植物社会学命名規約第 4 版 (Theurillat *et al.*, 2021) 第 5 条 a の規定によると、キハギクラスは、単一のキハギオーダーのみで規定されているため、キハギオーダーがホロタイプとして認められる。しかし、同第 18 条によると、2021 年 1 月 1 日以降、タイプをラテン語により明示的に記すことになっているため、ここで改めてキハギオーダーをキハギクラスのホロタイプとして明示した。

1. キハギオーダー *Lespedezetia buergeri* Tanaka *et al.* 2024

レクトタイプ Lectotypus hoc loco : サツキ群団 *Rhododendron indicum* Tanaka *et al.* 2024

田中ほか (2024) で、サツキ群団とユキヤナギ群団 *Spiraeon thunbergii* Tanaka *et al.* 2024 がまとめられたものである。岩上を主な生育地とする低木のキハギ *Lespedeza buergeri* Miq. とヒメウツギ *Deutzia gracilis* Siebold & Zucc を標徴種に、イワギボウシ *Hosta longipes* (Franch. & Sav.) Matsum. var. *longipes* やホソバコンギク *Aster microcephalus* (Miq.) Franch. & Sav. var. *angustifolius* (Kitam.) Nor. Tanaka、アワモリショウマ *Astilbe japonica* (C. Morren & Decne.) A. Gray、ショウジョウソグ *Carex blepharicarpa* Franch.、ケイリュウタチツボスミ *Viola grypoceras* A. Gray var. *ripensis* N. Yamada & M. Okamoto、キヨスミギボウシ *Hosta kiyosumiensis* F. Maek. などの草本の溪流沿い植物と、ウラハグサ *Hakonechloa macra* (Munro ex S. Moore) Makino ex Honda やイワヒバ *Selaginella tamariscina* (P. Beauv.) Spring、イヌトウキ *Angelica shikokiana* Makino ex Y. Yabe などの岩上性の草本類を区分種とする。しかし、田中ほか (2024) ではタイプを指定しなかったため、国際植物社会学命名規約第 4 版 (Theurillat *et al.*, 2021) 第 19 条に従い、ここで改めてサツキ群団をレクトタイプとして選定した。表 1 に示されているようにサツキ群団と、キハギオーダーにまとめられたもう一つのユキヤナギ群団と上記標徴種群の頻度に大きな差はない。しかし、田中ほか (2024) に示されたそれぞれの分布域を比較すると、キハギオーダーとサツキ群団は、本州の関東以西、中部、近畿、中国、四国、九州 (屋久島) に、ユキヤナギ群団は、関東と近畿のみに分布しており、同じ広い分布域を持つサツキ群団をキハギオーダーのレクトタイプに選定した。

A. サツキ群団 *Rhododendron indicum* Tanaka *et al.* 2024

レクトタイプ Lectotypus : サツキ群集 *Rhododendron indicum* Minamikawa 1963

田中ほか (2024) で、ホソバハグマサツキ群集、サツキ群集、キシツツジ群集の 3 つの群集をまとめられたものである。田中ほか (2024) は、サツキ群団の記載に際し、ホロタイプを指定しなかった。しかし、国際植物社会学命名規約第 4 版 (Theurillat *et al.*, 2021) 第 20 条の規定により、その下位単位に、群団名の命名に採用されたサツキ *Rhododendron indicum* (L.) Sweet により命名されたサツキ群集が含まれているため、サツキ群集が自動的にレクトタイプとなる。

a. ホソバハグマーサツキ群集 *Ainsliaea-Rhododendretum indici* Suz.-Tok. 1976

ホロタイプ Holotypus: 鈴木 (1976) による Table 2 の調査番号 YF17

田中ほか (2024) 同様、国際植物社会学命名規約第 4 版 (Theurillat *et al.*, 2021) 第 5 条の規定により、原記載 (鈴木, 1976) のタイプ指定が有効であると判断した。

b. サツキ群集 *Rhododendretum indici* Minamikawa 1963

ネオタイプ Neotypus hoc loco: 奥田 (1985) による Tab.26 の調査番号 NO38

田中ほか (2024) で、ネオタイプを選定した。しかし、国際植物社会学命名規約第 4 版 (Theurillat *et al.*, 2021) 第 21 条の規定により、2021 年 1 月 1 日以降、ネオタイプの選定は、ラテン語で「neotypus hoc loco」と指定しなければならないため、改めて本報で、ネオタイプとして、奥田 (1985) による Tab.26 の調査番号 NO38 を選定した。

c. キシツツジ群集 *Rhododendretum ripensis* Yamanaka *et* Takezaki 1959

ネオタイプ Neotypus hoc loco: 奥田 (1982) による Tab.26 の調査番号 SS76

田中ほか (2024) で、ネオタイプを選定した。しかし、国際植物社会学命名規約第 4 版 (Theurillat *et al.*, 2021) 第 21 条の規定により、2021 年 1 月 1 日以降、ネオタイプの選定は、ラテン語で「neotypus hoc loco」と指定しなければならないため、改めて本報で、ネオタイプとして、奥田 (1982) による Tab.26 の調査番号 SS76 を選定した。

B. ユキヤナギ群団 *Spiraenion thunbergii* Tanaka *et al.* 2024

ホロタイプ Holotypus: ユキヤナギ群集 *Spiraetum thunbergii* Ya. Sasaki *et* Oota 1986

田中ほか (2024) では、ユキヤナギ群集のみの 1 群集をユキヤナギ群団にまとめた。国際植物社会学命名規約第 4 版 (Theurillat *et al.*, 2021) 第 5 条 a の規定によると、ユキヤナギ群団は、単一のユキヤナギ群集のみで規定されているため。ユキヤナギ群集がホロタイプとして認められる。しかし、第 18 条の規定によると、2021 年 1 月 1 日以降、タイプをラテン語により明示的に記すことになっているため、ここに改めてユキヤナギ群集をユキヤナギ群団のホロタイプとして明示した。

d. ユキヤナギ群集 *Spiraetum thunbergii* Ya.Sasaki *et* Oota 1986

レクトタイプ Lectotypus hoc loco: 佐々木・太田 (1986) による Table 1 の調査番号 Na20

田中ほか (2024) で、レクトタイプを選定した。しかし、国際植物社会学命名規約第 4 版 (Theurillat *et al.*, 2021) 第 19 条の規定により、2021 年 1 月 1 日以降、レクトタイプの選定は、ラテン語で「lectotypus hoc loco」と指定しなければならないため、改めて本報で、ユキヤナギ群集のレクトタイプとして、佐々木・太田 (1986) による Table 1 の調査番号 Na20 を選定した。

考 察

キハギオーダーのタイプ群団について

キハギオーダーのタイプ群団の選定に際しては、前述のようにキハギオーダーの標徴種および区分種の出現頻度は、サツキ群団とユキヤナギ群団で変わらなかった。しかし、田中ほか (2024) によると、ユキヤナギ群団の分布は、関東と近畿に限られる。今後、ユキヤナギ群団の記録地が増える可能性もあるが、ここでは、同じ広い分布を示すサツキ群団をタイプとした。田中ほか (2024) でも言及されているが、キハギオーダーにまとめられる植生単位は、より広い日華区系の溪流辺にも分布する可能性がある。一方、サツキ群団の標徴種としたサツキやキシツツジは、日本固有の植物である。しかし、溪岸に生育するツツジ類には、琉球ではサキシマツツジが知られており、齊藤ほか (2019) でシマミズーヒナヨシ群集 *Pilo-Arundenum formosae* K. Suzuki 1979 に同定された植分には、高い常在度で出現している。シマミズーヒナヨシ群集は、草本を主体とする植生単位であるため田中ほか (2024) では扱われなかったが、これらのツツジ類を主体とする低木群落が記録、記載される可能性もある。これらの植生単位の位置づけは現状では議論できないが、サツキ群団の分布についても、キハギクラス同様、日華区系の溪流辺に広がる可能性もある。

なお、田中ほか (2004) では、サツキ群団とユキヤナギ群団をまとめ、キハギオーダーに位置づけた。しかし、その規定に際しては、キハギクラスの標徴種および区分種により特徴づけられると記載されたが、本来は、下位単位であるオーダーの規定が先にあり、それによりクラスを規定すべきであったと考えられる。

表 1. キハギクラス

Table 1. *Lespedezetea buergeri*I: キハギクラス *Lespedezetea buergeri* Tanaka *et al.* 20241: キハギオーダー *Lespedezetalia buergeri* Tanaka *et al.* 2024A: サツキ群団 *Rhododendrion indic* Tanaka *et al.* 2024a: ホソバハグマーサツキ群集 *Ainsliaeo-Rhododendretum indic* Suz.-Tok. 1976b: サツキ群集 *Rhododendretum indic* Minamikawa 1963c: キシツツジ群集 *Rhododendretum ripensis* Yamanaka *et* Takezaki 1959B: ユキヤナギ群団 *Spiraeion thunbergii* alliance Tanaka *et al.* 2024d: ユキヤナギ群集 *Spiraeetum thunbergii* Ya. Sasaki *et* Oota 1986

群落区分

I					
I					
A					B
a	b			c	d

Community type

通し番号

1

2

3

4

5

6

Relevé reference number

調査区数

22

—

90

170

20

26

Number of relevés

平均出現種数

5.6

—

9.3

—

15.8

12.3

Average number of species

群集の標徴種および区分種

ヒメタカノハウラボシ	V(+4)	•	•	•	•	
ホソバハグマ	V(+4)	•	•	•	•	
ヤクシマシヨウマ	III(+2)	•	•	•	•	
ホングウシダ	III(+3)	•	•	•	•	
サツキ*	IV(+5)	IV	V(+5)	•	I(+)	
ヒメノガリヤス	•	•	I(+1)	•	•	
ヌカボシソウ	•	•	I(+)	•	•	
キシツツジ*	•	•	•	V	V(2-5)	
アオヤギバナ	•	•	•	II	II(+2)	
トサンモツケ	•	•	•	II	I(+3)	
イワカンスゲ	•	•	•	•	III(+3)	

Character and differential species of association

*Selliguea yakushimensis**Ainsliaea linearis**Astilbe glaberrima* var. *glaberrima**Osmolindsaea odorata**Rhododendron indicum***Deyeuxia hakonensis**Luzula plumosa* subsp. *plumosa**Rhododendron ripense***Solidago yokusaiana**Spiraea nipponica* var. *tosaensis**Carex makinoana*

群団の区分種

ヤシヤゼンマイ	•	II	II(+2)	I	IV(+3)	I(+1)
ナルコスゲ	I(+)	•	I(+)	•	I(1)	•
ミツデウラボシ	•	•	I(+1)	II	I(+2)	•
セキショウ	•	•	I(+)	I	I(+)	•
コウヤコケシノブ	II(+3)	•	I(+)	•	•	•
コガクウツギ	I(+)	•	I(+)	•	•	•
ダイモンジソウ	•	II	I(+1)	•	•	•
ウチワダイモンジソウ	•	•	I(1-2)	•	II(+3)	•
コアカソ	•	•	I(+)	•	I(+1)	•
ツクバサゲ	•	•	I(+2)	•	•	•
ヒメレンゲ	•	•	I(+1)	•	•	•
サガミニガナ	•	•	I(+)	•	•	•

Differential species of alliance

*Osmunda lancea**Carex curvicolis**Selliguea hastata**Acorus gramineus**Hymenophyllum barbatum**Hydrangea luteovenosa**Saxifraga fortunei* var. *alpina**Saxifraga fortunei* var. *obtusocuneata**Boehmeria spicata**Carex hirtifructus**Sedum subtile**Ixeris dentata* subsp. *dentata* var. *sagamiensis*

群集および群団の標徴種

ユキヤナギ	•	•	•	•	•	V(+4)
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Character species of association and alliance

Spiraea thunbergii

群団の区分種

タマアジサイ	•	•	I(+1)	•	•	I(+)
スマレ	•	•	I(+)	•	•	I(+)
イヌワラビ	•	•	I(+)	•	•	I(+)
オオバギボウシ	•	•	•	•	•	II(+2)
ヤブカンゾウ	•	•	•	•	•	I(+3)
オオバノイノモトソウ	•	•	•	•	•	I(+)

Differential species of alliance

*Hydrangea involucrata**Viola mandshurica**Anisocampium niponicum**Hosta sieboldiana* var. *sieboldiana**Hemerocallis fulva* var. *kwanso**Pteris cretica*

クラスおよびオーダーの標徴種

ヒメウツギ	I(+)	•	II(+3)	I	I(+)	II(+3)
キハギ	•	III	I(+3)	II	II(+1)	II(+2)

Character species of class and order

*Deutzia gracilis**Lespedeza buergeri* var. *oldhamii*

クラスおよびオーダーの区分種

アワモリショウマ	•	•	I(+1)	III	III(+2)	I(+2)
イヌトウキ	•	•	I(+1)	I	I(+)	I(+)
イワギボウシ	•	•	II(+2)	•	I(2)	I(+3)
イワヒバ	•	•	II(+2)	•	I(+)	I(1)
ホソバコンギク	•	•	II(+1)	•	II(+1)	II(+1)
ショウジョウスゲ	•	•	I(+2)	•	II(2)	I(+3)
ウラハグサ	•	•	III(+2)	•	•	II(+3)
キヨスミギボウシ	•	•	I(+1)	•	•	I(3)
ケイリュウタチツボスミレ	•	•	I(+)	•	•	I(+3)

Differential species of class and order

*Astilbe japonica**Angelica shikokiana**Hosta longipes* var. *longipes**Selaginella tamariscina**Aster microcephalus* var. *angustifolius**Carex blepharicarpa**Hakonechloa macra**Hosta kiyosumiensis**Viola grypoceras* var. *ripensis*

ススキクラスの種

ススキ	I(1)	III	I(+1)	II	II(+3)	II(+2)
トダシバ	•	•	I(+)	II	I(+2)	III(+3)
ノコンギク	•	•	II(+2)	III	I(+1)	III(+1)
ニガナ	•	•	II(+1)	III	III(+1)	II(+1)
コマツナギ	•	•	I(+1)	•	I(+)	II(+1)
シバ	•	•	I(+)	•	•	I(+)
メドハギ	•	•	I(+)	•	•	I(+)

Species of *Miscanthetia sinensis**Miscanthus sinensis**Arundinella hirta**Aster microcephalus* var. *ovatus**Ixeridium dentatum* subsp. *dentatum**Indigofera pseudotinctoria**Zoysia japonica**Lespedeza cuneata* var. *cuneata*

Table 1. Continued

群落区分	I						Community type
	I						
	A					B	
	a	b	c	d			
通し番号	1	2	3	4	5	6	Relevé reference number
調査区数	22	—	90	170	20	26	Number of relevés
平均出現種数	5.6	—	9.3	—	15.8	12.3	Average number of species
チガヤ	•	•	I(+)	•	•	I(+)	<i>Imperata cylindrica</i> var. <i>koenigii</i>
ナガバシヤジン	•	•	•	I	I(+1)	•	<i>Adenophora triphylla</i> var. <i>japonica</i> form. <i>lancifolia</i>
シラン	•	•	•	•	I(+)	I(1)	<i>Bletilla striata</i>
ナワシロイチゴ	•	•	I(+)	•	•	•	<i>Rubus parvifolius</i>
ミツバツチグサ	•	•	•	•	I(+)	•	<i>Potentilla freyniana</i>
ツリガネニンジン	•	•	•	•	I(2)	•	<i>Adenophora triphylla</i> var. <i>japonica</i>
メガルカヤ	•	•	•	•	•	II(+2)	<i>Themeda barbata</i>
オガルカヤ	•	•	•	•	•	I(+1)	<i>Cymbopogon tortilis</i> var. <i>goeringii</i>
チダケサシ	•	•	•	•	•	I(2)	<i>Astilbe microphylla</i>
ヒメハギ	•	•	•	•	•	I(+)	<i>Polygala japonica</i>
スズサイコ	•	•	•	•	•	I(+)	<i>Vincetoxicum pycnostelma</i>
オトコヨモギ	•	•	•	•	•	I(+)	<i>Artemisia japonica</i>
ノイバラクラスの種							<u>Species of <i>Rosetea multiflorae</i></u>
ウツギ	•	II(+1)	II(+2)	I(+)	I(+)	I(+)	<i>Deutzia crenata</i>
ヘクソカズラ	•	I(+)	I(+)	•		I(+1)	<i>Paederia foetida</i>
ノイバラ	•	•	I(+)	•	I(+1)	I(+1)	<i>Rosa multiflora</i>
センニンソウ	•	•	I(+)	•		I(+)	<i>Clematis terniflora</i>
オノエヤナギクラスの種							<u>Species of <i>Salicetea sachalinensis</i></u>
カワラハシノギ	•	•	I(+1)	I	II(+2)	•	<i>Alnus serrulatooides</i>
ネコヤナギ	•	•	I(+1)	I	II(+2)	•	<i>Salix gracilistyla</i>
随伴種							<u>Companion species</u>
ヒサカキ	I(+)	•	I(+)	II	III(+2)	•	<i>Eurya japonica</i> var. <i>japonica</i>
タチツボスミレ	•	•	I(+1)	III	III(+1)	I(+1)	<i>Viola grypoceras</i> var. <i>grypoceras</i>
ヒメヤブラン	•	•	I(+1)	II	I(+1)	II(+2)	<i>Liriope minor</i>
マルバウツギ	•	•	I(+1)	I	I(+1)	II(+2)	<i>Deutzia scabra</i> var. <i>scabra</i>
テイカカズラ	•	•	I(+1)	II	I(+)	I(+1)	<i>Trachelospermum asiaticum</i> var. <i>asiaticum</i>
フジ	•	•	I(+)	II	I(+)	I(+3)	<i>Wisteria floribunda</i>
アキグミ	•	•	I(+)	I	I(+1)	I(+2)	<i>Elaeagnus umbellata</i> var. <i>umbellata</i>
スギ	I(+1)	•	I(+)	•	I(+)	I(+)	<i>Cryptomeria japonica</i>
カタヒバ	I(+)	•	I(+)	I	•	•	<i>Selaginella involvens</i>
ミゾシダ	I(+)	•	I(+)	•	II(+)	•	<i>Thelypteris pozoi</i> subsp. <i>mollissima</i>
スゲ属の一種	I(+)	•	I(+)	•	I(2)	•	<i>Carex</i> sp.
シロヨメナ	•	•	I(1)	I	I(+2)	•	<i>Aster leiophyllus</i> var. <i>leiophyllus</i>
イボタノキ	•	•	I(+)	II	I(+)	•	<i>Ligustrum obtusifolium</i>
イブキシモツケ	•	•	I(+)	I	I(1)	•	<i>Spiraea dasyantha</i>
コナスビ	•	•	I(+)	I	I(+)	•	<i>Lysimachia japonica</i>
リンドウ	•	•	I(+)	I	I(+1)	•	<i>Gentiana scabra</i> var. <i>buergeri</i>
テリハノイバラ	•	•	I(+4)	•	I(+)	I(+1)	<i>Rosa luciae</i>
マルババオダモ	•	•	I(+1)	•	I(+)	I(1)	<i>Fraxinus sieboldiana</i>
クマワラビ	•	•	I(+)	•	I(+)	I(+)	<i>Dryopteris lacera</i>
ヨモギ	•	•	I(+)	•	I(+)	I(+)	<i>Artemisia indica</i> var. <i>maximowiczii</i>
ケヤキ	•	•	I(1)	•	I(+)	I(+)	<i>Zelkova serrata</i>
サカキ	I(+)	•	I(+)	•	•	•	<i>Cleyera japonica</i>
ホラシノブ	I(+)	•	I(+)	•	•	•	<i>Odontosoria chinensis</i>
ネジバナ	I(+1)	•	•	•	I(+)	•	<i>Spiranthes sinensis</i> subsp. <i>australis</i>
クサヤツデ	•	•	I(+1)	I	•	•	<i>Ainsliaea uniflora</i>
ヤマイタチシダ	•	•	I(+)	II	•	•	<i>Dryopteris bissetiana</i>
アキノキリンソウ	•	•	I(+)	•	I(+)	•	<i>Solidago virgaurea</i> subsp. <i>asiatica</i>
イタドリ	•	•	I(+)	•	I(+)	•	<i>Fallopia japonica</i> var. <i>japonica</i>
ミツバアケビ	•	•	I(+)	•	I(+)	•	<i>Akebia trifoliata</i>
イワニガナ	•	•	I(+)	•	I(+)	•	<i>Ixeris stolonifera</i>
ゼンマイ	•	•	I(+)	•	I(+)	•	<i>Osmunda japonica</i>
イロハモミジ	•	•	I(+)	•	I(+)	•	<i>Acer palmatum</i>
イヌシダ	•	•	I(+)	•	I(+)	•	<i>Dennstaedtia hirsuta</i>
ヤマフジ	•	•	I(1)	•	I(+)	•	<i>Wisteria brachybotrys</i>
ナツグミ	•	•	I(+)	•	I(+)	•	<i>Elaeagnus multiflora</i> var. <i>multiflora</i>
キツコウハグマ	•	•	I(+)	•	I(+)	•	<i>Ainsliaea apiculata</i>
シシガシラ	•	•	I(+)	•	I(+)	•	<i>Struthiopteris niponica</i>
シライトソウ	•	•	I(+)	•	I(+)	•	<i>Chionographis japonica</i>
トウバナ	•	•	I(+)	•	I(+)	•	<i>Clinopodium gracile</i>
カニツリグサ	•	•	I(+)	•	I(+)	•	<i>Trisetum bifidum</i>
ヒカゲスゲ	•	•	V(+2)	•	•	I(+2)	<i>Carex lanceolata</i>
サワヒメスゲ	•	•	I(2)	•	•	I(2)	<i>Carex mira</i>
ネジキ	•	•	I(+)	•	•	I(1)	<i>Lyonia ovalifolia</i> var. <i>elliptica</i>
コナラ	•	•	I(+)	•	•	I(+3)	<i>Quercus serrata</i>
タチシノブ	•	•	I(+)	•	•	I(+1)	<i>Onychium japonicum</i>
オキナグサ	•	•	I(+)	•	•	I(+1)	<i>Pulsatilla cernua</i>
アオツツラフジ	•	•	I(+)	•	•	I(1)	<i>Cocculus trilobus</i>
ヤマユリ	•	•	I(+)	•	•	I(1)	<i>Lilium auratum</i>
カモジグサ	•	•	I(+)	•	•	I(+)	<i>Elymus tsukushiensis</i> var. <i>transiens</i>
ナガバタチツボスミレ	•	•	I(+)	•	•	I(+)	<i>Viola ovato-oblonga</i>
ヒメカンスゲ	•	•	I(+)	•	•	I(+)	<i>Carex conica</i> var. <i>conica</i>
ヌカボ	•	•	I(+)	•	•	I(+)	<i>Agrostis clavata</i> var. <i>nukabo</i>
オニタビラコ	•	•	I(+)	•	•	I(+)	<i>Youngia japonica</i>
ネムノキ	•	•	I(+)	•	•	I(+)	<i>Albizia julibrissin</i>

Table 1. Continued

群落区分	I						Community type
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平均出現種数	5.6	—	9.3	—	15.8	12.3	Average number of species
ナツフジ	•	•	I(+)	•	•	I(+)	<i>Wisteriopsis japonica</i>
ノガリヤス	•	•	I(+)	•	•	I(+)	<i>Deyeuxia brachytricha</i>
キヅタ	•	•	•	II	I(+)	•	<i>Hedera rhombea</i>
ヒガンバナ	•	•	•	I	I(+)	•	<i>Lycoris radiata</i>
トサノギボウシ	•	•	•	I	I(+)	•	<i>Hosta kikutii</i> var. <i>tosana</i>
ナカガワノギク	•	•	•	I	I(+)	•	<i>Chrysanthemum yoshinaganthum</i>
メダケ	•	•	•	I	I(1)	•	<i>Pleioblastus simonii</i>
シチョウゲ	•	•	•	I	I(2)	•	<i>Leptodermis pulchella</i>
ツボスミレ	•	•	•	•	I(+1)	I(+)	<i>Viola verecunda</i> var. <i>verecunda</i>
コマユミ	•	•	•	•	I(+)	I(+)	<i>Euonymus alatus</i> form. <i>striatus</i>
リョウブ	•	•	•	•	I(+)	I(+)	<i>Clethra barbinervis</i>

出現 1 回の種は省略した . Additional species occurring once are not listed.

調査地 Locarity for relevé reference no. 1: 屋久島 (鹿児島県) Yakushima isl. (Kagoshima Pref.); no.2: 矢作川 (長野県) Yahagigawa River (Nagano Pref.); no.3: 武庫川 (兵庫県) Mukogawa River (Hyogo Pref.), 大杉川 (三重県) Oosugi River, (Mie Pref.), 多気郡合川 (三重県) Aikawa, Taki-gun (Mie Pref.), 北牟婁郡海山町 (三重県) Miyama-cho, Kitamuro-gun (Mie Pref.), 尾鷲市又口川 (三重県) Mataguchigawa River, Owase-shi (Mie Pref.), 度会郡大内山村 (三重県) Ouchi-yama-mura, Watarai-gun (Mie Pref.), 西牟婁郡日置川町 (和歌山県) Hikigawa-cho, Nishimuro-gun (Wakayama Pref.), 吉野川 (奈良県) Yoshino River (Nara Pref.), 飛騨川 (岐阜県) Hidagawa River (Gifu Pref.), 北設楽郡 (愛知県) Kitashitaragun (Aichi. Pref.), 中津川 (神奈川県) Nakatsu River (Kanagawa Pref.), 道志川 (神奈川県) Doshi River (Kanagawa Pref.); no. 4: 四国 Shikoku; no. 5: 三好郡東祖山村ほか (徳島県) Higashiiyayama-son, Miyoshi-gun etc. (Tokushima Pref.), 長岡郡本山町 (高知県) Motoyama-cho, Nagaoka-gun (Kochi Pref.), 長岡郡大豊町 (高知県) Ootoyo-cho, Nagaoka-gun (Kochi Pref.), 安芸郡馬路村ほか (高知県) Umaji-mura, Aki-gun etc. (Kochi Pref.), 那賀郡上那賀町ほか (徳島県) Kaminaka-cho, Naka-gun etc (Tokushima Pref.), 土佐郡大川村 (高知県) Ookawa-mura, Tosa-gun (Kochi Pref.), 佐伯郡佐伯町羅漢峡ほか (広島県) Rakankyo, Saeki-cho, Saeki-gun etc. (Hiroshima Pref.), 美濃郡匹見町裏匹見峡ほか (島根県) Urahikimikyo, Hikimi-cho, Mino-gun etc.(Shimane Pref.); no. 6: 長瀬 (埼玉県) Nagatoro (Saitama Pref.), 吉野川 (奈良県) Yoshino River (Nara Pref.), 多摩川 (東京都) Tamagawa River (Tokyo Metor.).

既発表資料 Reference of relevé reference no. 1: 鈴木 Suzuki (1976), 佐々木 Sasaki (1980); no. 2: 南川 Minamikawa (1963); no. 3: 矢野ほか Yano et al. (1980), 南川・矢頭 Minamikawa & Yato (1972), 奥田 Okuda (1984), 中村・村上 Nakamura & Murakami (2001), 南川 Minamikawa (1970), 奥田 Okuda (1985), 中川 Nakagawa (1982), 奥田 Okuda (1986), 大場 Ohba (1991), 村上・中村 Murakami & Nakamura (1997), 田中 Tanaka (1999); no. 4: 山中・竹崎 Yamanaka & Takezaki (1979); no. 5: 徳島県 Tokushima Pref. (1978), 高知県 Kochi Pref. (1978), 高知県 Kochi Pref. (1979), 奥田 Okuda (1982), 村上 Murakami et al. (2002), 奥田 Okuda (1983); no. 6: 佐々木・太田 Sasaki & Oota (1986), 中村・村上 Nakamura & Murakami (2001), 奥富 Okutomi et al. (1987), 中村 Nakamura (2008).

* 群団の標徴種を兼ねる . Also serve as character species of alliance.

結 論

本研究により、国際植物社会学命名規約第 4 版 (Theurillat *et al.*, 2021) 上、田中ほか (2024) による記載が不備である判断された、キハギオーダーとユキヤナギ群集のレクトタイプおよびサツキ群集とキシツツジ群集のネオタイプを改めて選定し、キハギクラスとユキヤナギ群団のホロタイプを明示的に表した。

謝 辞

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摘 要

田中徳久・村上雄秀・鈴木伸一・中村幸人, 2025. キハギクラスに所属する植物社会学的な植生単位のタイプ指定. 神奈川県立博物館研究報告 (自然科学), (54): 1–7. [Tanaka, N., Y. Murakami, S. Suzuki & Y. Nakamura, 2025. Typification of syntaxa belonging in *Lespedezetea buergeri*. Bull. Kanagawa Pref. Mus. (Nat. Sci.), (54): 1–7.]

田中ほか (2024) が記載した植生単位の記載は、タイプ選定がなされていないなど、国際植物社会学命名規約第 4 版 (Theurillat *et al.*, 2021) に照らして不適当であった。本研究では、キハギオーダーとユキヤナギ群集のレクトタイプおよびサツキ群集とキンツツジ群集のネオタイプを改めて選定し、キハギクラスとユキヤナギ群団のホロタイプを明示的に表した。

Report

Plant Type Materials from Kanagawa Prefecture (Japan) in the Herbarium of the Komarov Botanical Institute (LE; Russia): Angiosperms (Dicots)

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Abstract. In this study, we examined type specimens and related materials collected from Kanagawa Prefecture, Japan, deposited in the herbarium of the Komarov Botanical Institute of the Russian Academy of Sciences (LE). Many of these specimens were collected by the Russian botanist C. J. Maximowicz (1827–1891) and his assistant Tschonosuki (Chonosuke) Sukawa, and most have been described as new taxa by C. J. Maximowicz. Additional complementary data obtained in this investigation, such as collection date, locality, and collector, are registered in the database of Kanagawa Prefectural Museum of Natural History along with images of the specimens: 196 specimens from 69 taxa comprising angiosperms (dicots). In this paper, we indicated the information of examined type materials, including the type materials of thirteen taxa (*Myriophyllum spicatum* L. var. *muricatum* Maxim., *Rhynchosia volubilis* Lour. var. *acuminata* Maxim., *Achudemia japonica* Maxim., *Elatostema umbellatum* Blume var. *majus* Maxim., *Actinostemma lobatum* (Maxim.) Franch. & Sav. var. *japonicum* Maxim. ex Franch. & Sav., *Polygonum suffultum* Maxim., *Stellaria monosperma* Buch.-Ham. var. *japonica* Maxim., *Andromeda cernua* (Siebold & Zucc.) Miq. var. *rubens* Maxim., *Rhododendron ledifolium* G. Don var. *purpureum* Maxim., *Vincetoxicum japonicum* (C.Morren & Decne.) Decne. var. *grayanum* Maxim., *Veronica ornata* Monjusch., *Ajuga genevensis* L. var. *pallens* Maxim. and *Senecio krameri* Franch. & Sav.) that we have discovered.

Key words: Carl Johann Maximowicz, *Achudemia japonica* Maxim., *Polygonum suffultum* Maxim., *Stellaria monosperma* Buch.-Ham. var. *japonica* Maxim., Sukawa Tschonosuki (Chonosuke)

Introduction

In this report, following the vascular plants [lycophytes, ferns, gymnosperms, and angiosperms (all monocots and some dicots)] (Tanaka *et al.*, 2024), we examined and listed the type materials of vascular plants [angiosperms (remaining dicots)] collected from Kanagawa Prefecture in the Central and East Asian Department of Herbarium of

higher plants at Komarov Botanical Institute of the Russian Academy of Sciences (LE).

Modern taxonomic studies of the Japanese flora were initiated with the collections made by Carl Peter Thunberg, who came to Japan in 1775, followed by Philipp Franz Balthasar von Siebold, Paul Amedée Ludovic Savatier, Carl Johann Maximowicz and others. Many of the type specimens and related materials of the plants they studied are deposited in the herbaria of institutes within their home countries, and so are the plants collected from Kanagawa Prefecture.

The plants described from Kanagawa Prefecture have been listed by Ozaki (2001). In order to establish a database of the regional flora, we have studied the specimens kept in these foreign herbaria and published serial reports on the type materials (Katsuyama *et al.*, 2013; Tanaka *et al.*, 2015, 2016; Tanaka *et al.*, 2024).

Various specimens of vascular plants, bryophytes,

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lichens, fungi, and algae collected worldwide are deposited in LE, among which are numerous specimens collected in Japan by Maximowicz and his assistant, Tschonosuki (Chonosuke in the Hepburn system of Romanizing the Japanese language) Sukawa.

The Russian botanist Maximowicz (1827–1891) who studied vascular plants, primarily in East and Central Asia, spent the years from 1860 to 1864 in Japan, during which time, he actively surveyed the flora of the Yokohama in Kanagawa Prefecture, as well as Oshima Peninsula in Hokkaido, Nagasaki, and other areas. In the course of the fieldtrip, Maximowicz hired Sukawa Tschonosuki as an assistant collector. After Maximowicz had returned to Russia, Tschonosuki responded to Maximowicz's request to collect plant specimens from wider regions of Japan, which were duly sent to Maximowicz in St. Petersburg. Maximowicz's activities and research in Japan, and his interaction with Japanese botanists are shown in detail by Grabovskaya-Borodina (2016).

Materials and methods

We examined the type specimens and related materials of plants collected from Kanagawa Prefecture in the LE from September 4th to 13th, 2019, with reference to Ozaki (2001) and Grubov (2004). The specimens were photographed using a hand-held Nikon D800E digital SLR camera with a built-in flash and AF-S NIKKOR 28mm f/1.8G. The resulting images were 4,912 × 7,360 pixels. All cited specimens have already been scanned (600 DPI) and deposited at the database of the Komarov Botanical Institute (LE) (<https://en.herbariumle.ru/>). The collection information of cited specimens on the LE database were compiled from the “Catalogue of the type specimens of East-Asian vascular plants in the Herbarium of the Komarov Botanical Institute (LE) Part 1 (Japan and Korea)” (Grubov, 2004) and the latest studies by A. E. Grabovskaya-Borodina. The collected images and specimen collection information have been registered at the vascular plant image database (KPM-NX) in the collection management system of the Kanagawa Prefectural Museum of Natural History.

Results and discussion

Among the materials examined in the LE herbarium, we identified 196 type materials on 187 sheets of vascular plants collected from Kanagawa Prefecture. These comprise 10 holotypes, 14 isotypes, 24 lectotypes, 36 isolectotypes, 89 syntypes, and 23 isosyntypes of

69 taxa belonging to 31 families. Most of these taxa were described by C. J. Maximowicz, with the exception of eight taxa described by other authors, namely, Carl Ludwig Ritter von Blume, Vladimir A. Monjusch, Eduard August von Regel, Adrien René Franchet & Paul Amedée Ludovic Savatier (4 taxa) and Richard Wettstein. The type materials of *Myriophyllum spicatum* L. var. *muricatum* Maxim., *Rhynchosia volubilis* Lour. var. *acuminata* Maxim., *Achudemia japonica* Maxim., *Elatostema umbellatum* Blume var. *majus* Maxim., *Actinostemma lobatum* (Maxim.) Franch. & Sav. var. *japonicum* Maxim. ex Franch. & Sav., *Polygonum suffultum* Maxim., *Stellaria monosperma* Buch.-Ham. var. *japonica* Maxim., *Andromeda cernua* (Siebold & Zucc.) Miq. var. *rubens* Maxim., *Rhododendron ledifolium* G. Don var. *purpureum* Maxim., *Vincetoxicum japonicum* (C. Morren & Decne.) Decne. var. *grayanum* Maxim., *Veronica ornata* Monjuschko, *Ajuga genevensis* L. var. *pallens* Maxim. and *Senecio krameri* Franch. & Sav. are recognized for the first time and are here in treated as syntypes.

A list of type materials

Explanation

1. The arrangement of families in the list follows the Angiosperm Phylogeny Group (2016) for angiosperms. Genera and species within families are arranged alphabetically by scientific name.
2. The descriptions of each species are presented in the following order:
 - (1) the scientific name and nomenclature citation.
 - (2) accepted name: the scientific name accepted by the Flora-Kanagawa Association (2018). The taxa which are not listed in the Flora-Kanagawa Association (2018), *Berberis maximowiczii* Regel, *Sedum sordidum* Maxim., *Rhododendron ledifolium* G. Don, *Veronica ornata* Monjuschko and *Artemisia schmidtiana* Maxim., follow Yonekura & Kajita (2003–).
 - (3) specimen collection information, including locality, date, collector, and collector specimen number, as indicated on the label attached to the specimen. In C. J. Maximowicz's collections we use two dates—the Gregorian and the Julian calendar, which were then used in Russia. We use a previously adopted form of labeling (Tanaka *et al.*, 2015, 2016, 2024). We omit *Iter secundum*—C. J. Maximowicz second journey in the Russian Far East and Japan (1859–1864).
 - (4) specimens ID: The herbarium acronym LE refers to

the Herbarium of higher plants at Komarov Botanical Institute of the Russian Academy of Sciences.

(5) figure numbers and images ID: KPM-NX indicates the vascular plant image database in the collection management system of the Kanagawa Prefectural Museum of Natural History.

(6) comment: Typification and other information. Typification was based on Grubov (2004) and the latest studies.

3. No typification is proposed in this publication, only information from the published literature and labels attached to the specimens.

4. The abbreviations of authors and literary sources of the names are those given in the International Plant Names Index database (<https://www.ipni.org/>). Herbarium acronyms were obtained from the Index Herbariorum database (<http://sweetgum.nybg.org/science/ih/>).

Angiosperms

Berberidaceae

Berberis maximowiczii Regel in Gartenflora, 21: 238 (1872).

Accepted name: *Berberis vulgaris* L. [Japanese name: Seiyō-megi]



Fig. 1. Lectotype of *Berberis maximowiczii* Regel (LE01012797; KPM-NX0001468).

Japonia, Yokohama, 23 IV/5 V 1862, Maximowicz [sine num.] [LE01012797] (Fig. 1, KPM-NX0001468). Imkhanitzkaya (2004) designated this specimen as the lectotype, with an isoelectotype [LE01012796] (Fig. 2, KPM-NX0001469).

Japonia, Yokohama, 11/23 IV 1862, Maximowicz [sine num.] [LE01012795] (Fig. 3, KPM-NX0001467), Japonia, Yokohama, 09/21 XII 1862, Maximowicz [sine num.] [LE01013812] (Fig. 3, KPM-NX0001467), Japonia, Yokohama, 10/22 IV 1862, Maximowicz [sine num.] [LE01012798] (Fig. 4, KPM-NX0001470). Imkhanitzkaya (2004) treated these specimens as syntypes.

Ranunculaceae

Isopyrum trachyspermum Maxim. in Bull. Acad. Sci. Pétersb. 29: 60 (1883).

Accepted name: *Dichocarpum trachyspermum* (Maxim.) W.T.Wang & P.K.Hsiao [Japanese name: Tōgoku-sabanoo]

Japonia, Oyama, 20 IV 1877, J. Bisset, no. 974 [LE01013614] (Fig. 5, KPM-NX0001338). Grabovskaya-Borodina (2004) treated this specimen as a syntype.



Fig. 2. Isoelectotype of *Berberis maximowiczii* Regel (LE01012796; KPM-NX0001469).

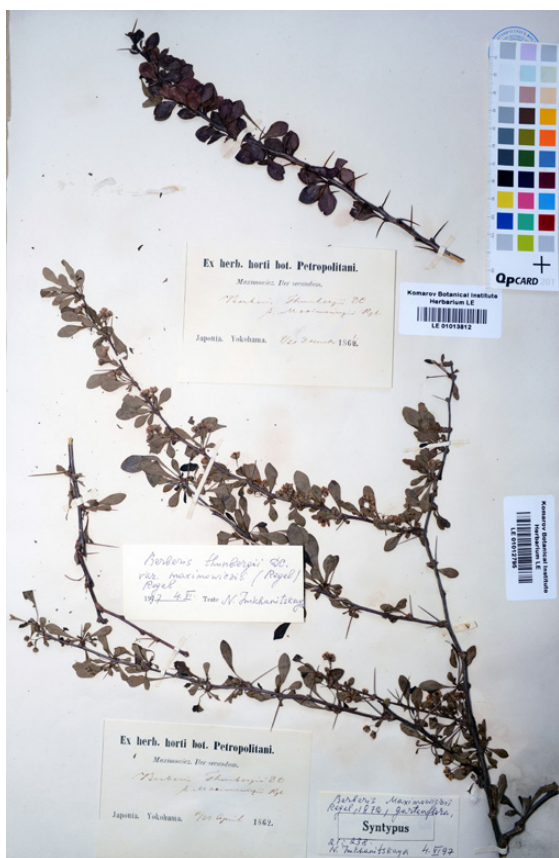


Fig. 3. Syntypes of *Berberis maximowiczii* Regel (LE01012795 & LE01013812; KPM-NX0001467).

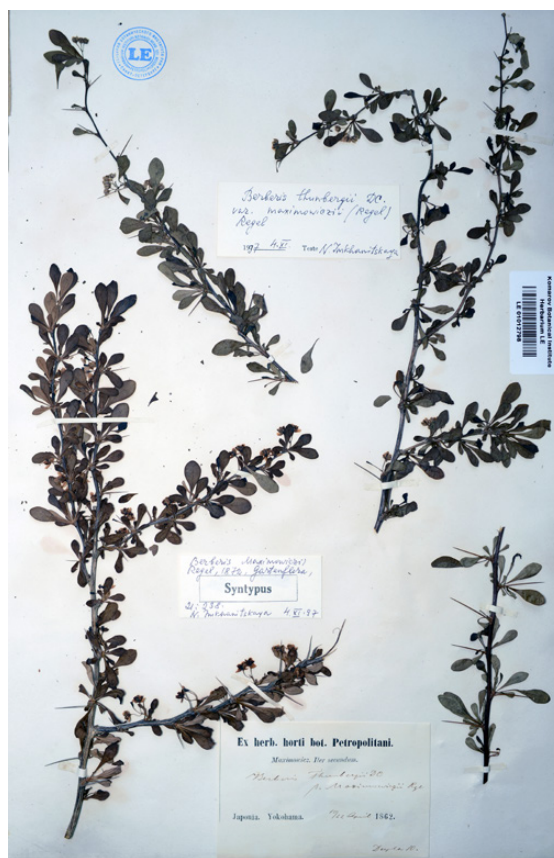


Fig. 4. Syntype of *Berberis maximowiczii* Regel (LE01012798; KPM-NX0001470).

Trochodendraceae

Trochodendron aralioides Siebold & Zucc. var. *longifolium* Maxim. in Bull. Acad. Sci. Pétersb. 17: 145 (1872).

Accepted name: *Trochodendron aralioides* Siebold & Zucc. form. *longifolium* (Maxim.) Ohwi [Japanese name: Ngaba-no-yamaguruma]

Japonia, Hakone, in silvis mixtis graminis, 18/30 X 1862, Maximowicz [sine num.] [LE01013577] (Fig. 6, KPM-NX0001423). Imkhanitzkaya (2004) treated this specimen as a syntype.

Saxifragaceae

Chrysosplenium macrostemon Maxim. in Bull. Acad. Sci. Pétersb. 23: 348 (1877).

Accepted name: *Chrysosplenium macrostemon* Maxim. var. *macrostemon* [Japanese name: Iwa-botan]

Japonia, Jokoska, in silvis humidis, III 1875, L. Savatier, no. 593 [LE01014837] (Fig. 7, KPM-NX0001356). Vinogradova (2004) designated this specimen as the lectotype, with an isoelectotype [LE01012838] (Fig. 7, KPM-NX0001356).

Crassulaceae

Cotyledon japonica Maxim. in Bull. Acad. Sci. Pétersb. 29: 122 (1883).

Accepted name: *Orostachys japonica* (Maxim.) A. Berger [Japanese name: Tsume-enge]

Japonia, Yokohama, 18/30 X 1862, [Fl., fr.] Maximowicz [sine num.] [LE01015589] (Fig. 8, KPM-NX0001357). Byalt (2000) designated this specimen as the lectotype.

Sedum sordidum Maxim. in Bull. Acad. Sci. Pétersb. 29: 142 (1883).

Accepted name: *Hylotelephium sordidum* (Maxim.) H. Ohba [Japanese name: Chichippa-benkei]

Japonia, Yokohama, cult. 27 IX/9 X 1862, Maximowicz [sine num.] [LE01014761] (Fig. 9, KPM-NX0001359). Byalt (2004) treated this specimen as the holotype.

Haloragaceae

Myriophyllum spicatum L. var. *muricatum* Maxim. in Bull. Acad. Sci. Pétersb. 19: 182 (1873) ("muricata").

Accepted name: *Myriophyllum spicatum* L. [Japanese name: Hozaki-no-fusamo]



Fig. 5. Syntype of *Isopyrum trachyspermum* Maxim. (LE01013614; KPM-NX0001338).



Fig. 6. Syntype of *Trochodendron aralioides* Siebold & Zucc. var. *longifolium* Maxim. (LE01013577; KPM-NX0001423).



Fig. 7. Lectotype (LE01014837) and Isolectotype (LE01014838) of *Chrysosplenium macrostemon* Maxim. (KPM-NX0001356).



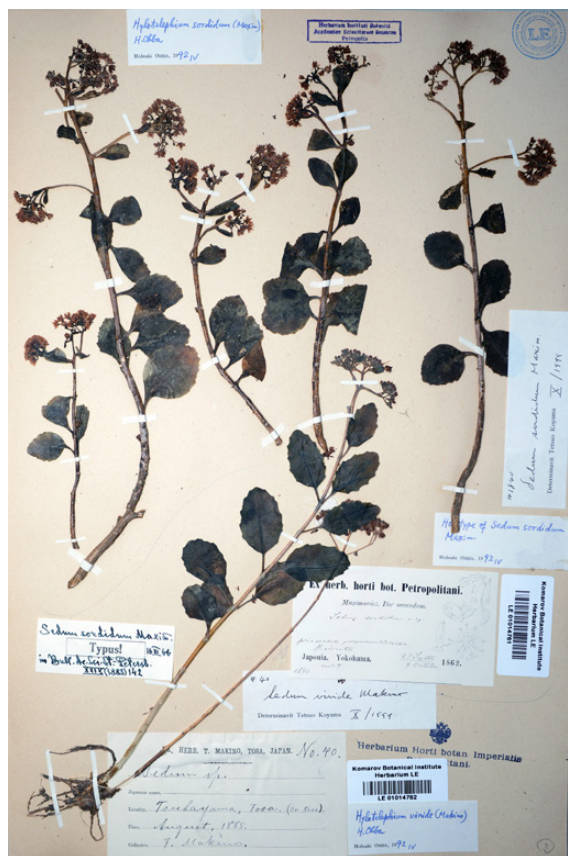
Fig. 8. Lectotype of *Cotyledon japonicus* Maxim. (LE01015589; KPM-NX0001357).

Fabaceae/Leguminosae

Japonia, Yokohama, 13/25 VIII 1862, Maximowicz [sine num.] [LE01042662] (Fig. 12, KPM-NX0001372). This specimen is a syntype newly pointed out here.

Japonia, Yokohama, Hakone in cacumine montium lapidosorum graminosorum frequens, 18/30 X 1862, Maximowicz [sine num.] [LE01015068] (Fig. 13, KPM-NX0001376). Schanzer (1994) designated this specimen as the lectotype, with two isoelectotypes [LE01015069] (Fig. 14, KPM-NX0001378), [LE01015071] (Fig. 15, KPM-NX0001377).

Japonia, Nippon, in arenosis uliginosis prope Yokoska, V 1867, L. Savatier, no. 365 [LE01017076] (Fig. 16, KPM-NX0001383). Buzunova (2004) treated this specimen as a syntype.



Type of *Myriophyllum spicatum* L. var. *muricatum*
 from
 Ho. Bull. And. Ing. Sta. St. Petersburg, 1941/12/19/1971
 Date: 06. 09. 1971. Loc.: TAMBOV, Mordvin (SPP)

Komarov Botanical Institute
 Herbarium L.
 LE 01042088

Ex herb. horti bot. Petropolitani.
 Mesomeres, Per. meridion.
Myriophyllum spicatum L.
 1942

Fig. 10. Syntype of *Myriophyllum spicatum* L. var. *muricata* Maxim. (LE01042688; KPM-NX0001368).





Fig. 15. Isolectotype of *Filipendula multijuga* Maxim. (LE01015071; KPM-NX0001377).



Fig. 16. Syntype of *Potentilla cryptotaeniae* Maxim. (LE01017076; KPM-NX0001383).

Potentilla fragarioides L. var. *ternata* Maxim. in Bull. Acad. Sci. Pétersb. 19: 165 (1873) (“*ternatam*”).

Accepted name: *Potentilla freyniana* Bornm.

[Japanese name: Mitsuba-tuchiguri]

Japonia, Yokohama, in decliviis graminosis passim, 10/22 IV 1862, Maximowicz [sine num.] [LE01017086] (Fig. 17, KPM-NX0001387). Buzunova (2001) designated this specimen as the lectotype, with two isolectotypes [LE01017089] (Fig. 18, KPM-NX0001384), [LE01017090] (Fig. 19, KPM-NX0001388).

Prunus ceraseidos Maxim. in Bull. Acad. Sci. Pétersb. 29: 103 (1883).

Accepted name: *Cerasus apetala* (Siebold & Zucc.)

H. Ohba ex H. Ohba var. *tetsuyae* H. Ohba [Japanese name: Chōji-zakura]

Japonia, Yokohama, in silvis frondosis mont. Hakone et ad Fudzi occurrent dicitur, 13/25 IX 1862, Maximowicz [sine num.] [LE01015799] (Fig. 20, KPM-NX0001390), Hakone, 1866–1871, L. Savatier, no. 326 [LE01015800] (Fig. 20, KPM-NX0001390), Hakone, IX–X 1859–1863, Ph. Fr. Siebold [sine num.] [LE01015801] (Fig. 20, KPM-NX0001390). Buzunova (2004) treated these

specimens as syntypes.

Urticaceae

Achudemia japonica Maxim. in Bull. Acad. Sci. Pétersb. 22: 241 (1876).

Accepted name: *Pilea japonica* (Maxim.) Hand-Mazz.

[Japanese name: Yama-mizu]

Japonia, Yokohama, Hakone, 5/17 X 1862, Maximowicz [sine num.] [LE01013132] (Fig. 21, KPM-NX0001402), [LE01013133] (Fig. 22, KPM-NX0001403). These are syntypes pointed out here, but Grudzinskaya annotated one [LE01013132] (Fig. 21, KPM-NX0001402) of these specimens as “lectotypus” in 1980. *Achudemia japonica* Maxim. need to be lectotypified.

Elatostema umbellatum Blume var. *majus* Maxim. in Bull. Acad. Sci. Pétersb. 22: 247 (1876).

Accepted name: *Elatostema involucratum* Franch. & Sav. [Japanese name: Uwabami-sō]

Japonia, Nippon, Hakone ad rivulos 1864 Tschonoski [sine num.] [LE01042656] (Fig. 23, KPM-NX0001394), Japonia, Yokohama, Kamakura 15/27 V 1862 Maximowicz [sine num.] [LE01042657] (Fig. 24, KPM-NX0001395), Japonia, Yokohama



Fig. 17. Lectotype of *Potentilla fragarioides* L. var. *ternata* Maxim. (LE01017086; KPM-NX0001387).



Fig. 18. Isolectotype of *Potentilla fragarioides* L. var. *ternata* Maxim. (LE01017089; KPM-NX0001384).



Fig. 19. Isolectotype of *Potentilla fragarioides* L. var. *ternata* Maxim. (LE01017090; KPM-NX0001388).

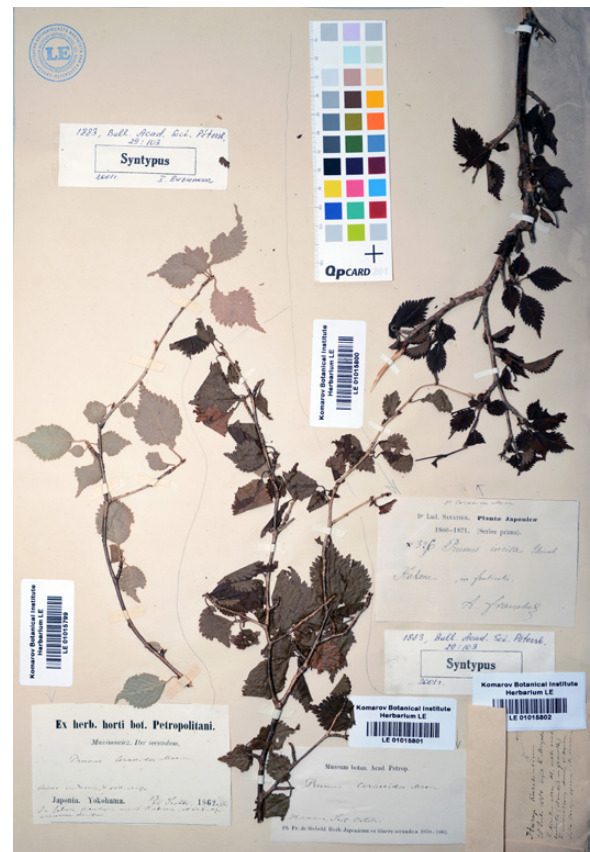


Fig. 20. Syntypes of *Prunus ceraseoides* Maxim. (LE01015799, LE01015800 & LE01015801; KPM-NX0001390).



Fig. 21. Syntype of *Achudemia japonica* Maxim. (LE01013132; KPM-NX0001402).



Fig. 22. Syntype of *Achudemia japonica* Maxim. (LE01013133; KPM-NX0001403).

15/24 V 1862 Maximowicz [sine num.] [LE01042658] (Fig. 25, KPM-NX0001399), [LE01042659] (Fig. 26, KPM-NX0001398), [LE01042660] (Fig. 27, KPM-NX0001397), [LE01042661] (Fig. 28, KPM-NX0001396). These are syntypes newly pointed out here.

Fagaceae

Fagus japonica Maxim. in Bull. Acad. Sci. Pétersb. 31: 101 (1886).

Accepted name: *Fagus japonica* Maxim. [Japanese name: Inu-buna]

Japonia, Nippon, Hakone, 1864, Tschonoski [sine num.] [LE01014452] (Fig. 29, KPM-NX0001408). Krestovskaya (2004) designated this specimen as the lectotype.

Juglandaceae

Juglans sieboldiana Maxim. in Bull. Acad. Sci. Pétersb. 18: 60 (1872).

Accepted name: *Juglans mandshurica* Maxim. var. *sachalinensis* (Komatsu) Kitam. Japanese name: Oni-gurumi]

Japonia, Yokohama, Kamakura culta apud rusticanes,

12/24 VII 1862, Maximowicz [sine num.] [LE01012929] (Fig. 30, KPM-NX0001411). Krestovskaya (2004) treated this specimen as a syntype.

Betulaceae

Carpinus tschonoskii Maxim. in Bull. Acad. Sci. Pétersb. 27: 534 (1882).

Accepted name: *Carpinus tschonoskii* Maxim. [Japanese name: Inu-shide]

Japonia, Nippon, Hakone, 1864, Tschonoski, no. 253 [LE01012938] (Fig. 31, KPM-NX0001428). Grabovskaya-Borodina (2004) treated this specimen as a syntype.

Cucurbitaceae

Actinostemma lobatum (Maxim.) Franch. & Sav. var. *japonicum* Maxim. ex Franch. & Sav. in Enum. Pl. Jap., 1, 1: 175 (1873) ("*Japonica*").

Accepted name: *Actinostemma tenerum* Griff. [Japanese name: Goki-dzuru]

Japonia, Yokohama 18/30 V 1862, Maximowicz [sine num.] [LE01041270] (Fig. 32, KPM-NX0001431). This specimen is syntype newly pointed out here.





Fig. 27. Syntype of *Elatostema umbellatum* Blume var. *majus* Maxim. (LE01042660; KPM-NX0001397).



Fig. 28. Syntype of *Elatostema umbellatum* Blume var. *majus* Maxim. (LE01042661; KPM-NX0001396).



Fig. 29. Lectotype of *Fagus japonica* Maxim. (LE01014452; KPM-NX0001408).



Fig. 30. Syntype of *Juglans sieboldiana* Maxim. (LE01012929; KPM-NX0001411).

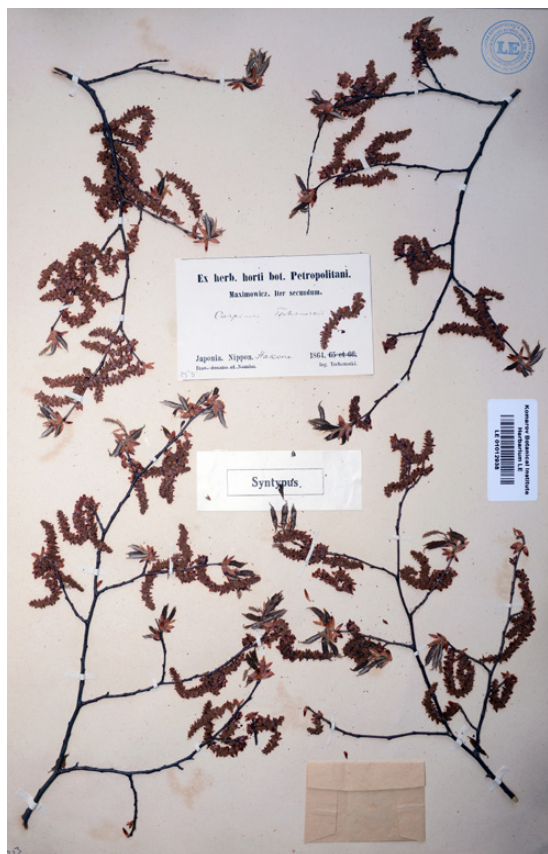


Fig. 31. Syntype of *Carpinus tschonoskii* Maxim. (LE01012938; KPM-NX0001428).



Fig. 32. Syntype of *Actinostemma lobatum* (Maxim.) Maxim. var. *japonica* Maxim. ex Franch. & Sav. (LE01041270; KPM-NX0001431).

Violaceae

Viola bissetii Maxim. in Bull. Soc. Natur. Moscou, 54, 1: 5 (1879).

Accepted name: *Viola bissetii* Maxim. [Japanese name: Nagaba-no-sumire-saishin]

Japonia, Nipponi Oyama, [sine die], J. Bisset, no. 996 [LE01042750] (Fig. 33, KPM-NX0001444). Nikitin (2004) treated this specimen as the holotype.

Japonia, Oyama, [sine die], J. Bisset, no. 995 [LE01042751] (Fig. 33, KPM-NX0001444). This specimen is syntype newly pointed out here.

In original description two specimens are cited — J Bisset, n. 995 and no. 996, and it would be more correct to consider specimen no. 996 [LE01042750] (Fig. 33, KPM-NX0001444) as the lectotype.

Viola phalacrocarpa Maxim. in Bull. Acad. Sci. Pétersb. 23: 318 (1877).

Accepted name: *Viola phalacrocarpa* Maxim. [Japanese name: Akane-sumire]

Japonia, Yokohama, inter *V. sylvestrem* ad margines agrorum sat frequens, 7/19 IV 1862, Maximowicz [sine num.] [LE01017334] (Fig. 34, KPM-

NX0001445). Nikitin (2004) treated this specimen as a syntype.

Salicaceae

Idesia polycarpa Maxim. in Bull. Acad. Sci. Pétersb. 10: 485 (1866).

Accepted name: *Idesia polycarpa* Maxim. [Japanese name: Iigiri]

Japonia, ad pagum Fudsi-sawa in vicinio m. Fudsi [Fuji], culta, 5/17 X 1862, Maximowicz [sine num.] [LE01025827] (Fig. 35, KPM-NX0001450). Imkhanitzkaya (2004) treated this specimen as a syntype.

Malvaceae

Tilia miqueliana Maxim. in Bull. Acad. Sci. Pétersb. 26: 434 (1880).

Accepted name: *Tilia miqueliana* Maxim. [Japanese name: Bodaiju]

Japonia, Yokohama, 22 VI/4 VII 1862, Maximowicz, no. 1433 [LE01025763] (Fig. 36, KPM-NX0001455). Krestovskaya (2004) designated this specimen as the lectotype, with two isolectotypes [LE01025765] (Fig. 37, KPM-NX0001457), [LE01025764] (Fig. 38, KPM-NX0001456).



Fig. 33. Holotype (LE01042750) and syntype (LE01042751) of *Viola bissetii* Maxim. (KPM-NX0001444).



Fig. 34. Syntype of *Viola phalacrocarpa* Maxim. (LE01017334; KPM-NX0001445).



Fig. 35. Syntype of *Idesia polycarpa* Maxim. (LE01025827; KPM-NX0001450).



Fig. 36. Lectotype of *Tilia miqeliiana* Maxim. (LE01025763; KPM-NX0001455).

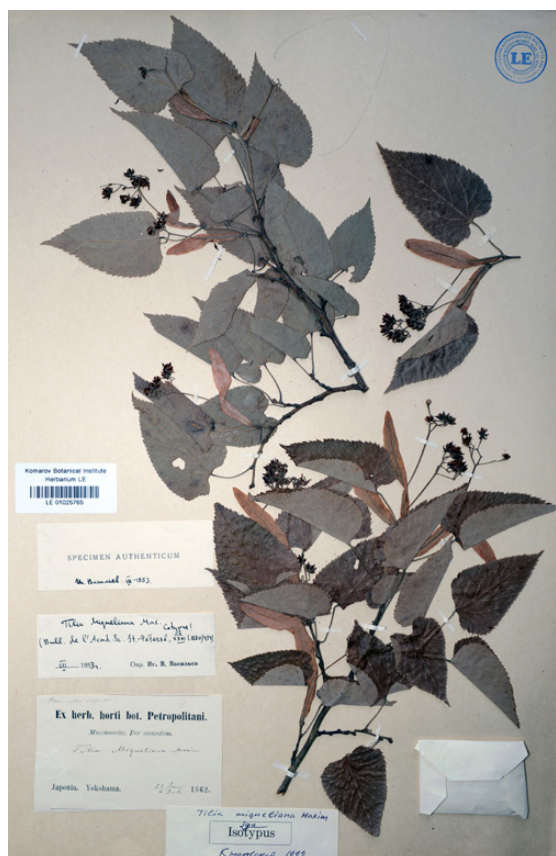


Fig. 37. Isolectotype of *Tilia miqueliana* Maxim. (LE01025765; KPM-NX0001457).



Fig. 38. Isolectotype of *Tilia miqueliana* Maxim. (LE01025764; KPM-NX0001456).

Brassicaceae/Cruciferae

Eutrema wasabi Maxim. in Bull. Acad. Sci. Pétersb. 18: 283 (1873).

Accepted name: *Eutrema japonicum* (Miq.) Koidz. [Japanese name: Wasabi]

Japonia, Nippon, ad rivulos in alpinis Hakone, 1864, Tschonoski [sine num.] [LE01014520] (Fig. 39, KPM-NX0001463). Buzunova (2004) treated this specimen as a syntype, with two isosyntypes [LE01014523] (Fig. 40, KPM-NX0001464), [LE01014519] (Fig. 41, KPM-NX0001462).

Hesperis lutea Maxim. in Bull. Acad. Sci. Pétersb. 18: 282 (1873).

Accepted name: *Sisymbrium luteum* (Maxim.) O.E. Schulz [Japanese name: Kibana-hatazao]

Japonia, Yokohama, Hakone, VII 1862, Maximowicz [sine num.] [LE01014619] (Fig. 42, KPM-NX0001465). Buzunova (2004) treated this specimen as a syntype, with an isosyntype [LE01014620] (Fig. 43, KPM-NX0001466).

Polygonaceae

Polygonum suffultum Maxim. in Bull. Acad. Sci. Pétersb. 22: 233 (1876).

Accepted name: *Bistorta suffulta* (Maxim.) H. Gross [Japanese name: Kurin-yukifude]

Japonia, Yokohama, Hakone V 1862, Maximowicz [sine num.] [LE01016045] (Fig. 44, KPM-NX0001473), Japonia, Yokohama, in altissimis jugi Hakone V 1862 Maximowicz [sine num.] [LE01016043] (Fig. 45, KPM-NX0001474). A. Grabovskaya-Borodina annotated on the sheets as “syntype” in 2016, but we identified these specimens as *Bistorta tenuicaulis* (Bisset & S.Moore) Nakai. However, another specimen [LE01016047] (Fig. 46, KPM-NX0001471) collected at prov. Nambu, annotated on the sheet as the “lectotype” by A. Grabovskaya-Borodina in 11 IV 2016, was correctly *Bistorta suffulta* (Maxim.) H.Gross. This is a syntype pointed out here, *Polygonum suffultum* Maxim. need to be lectotypified.

Caryophyllaceae

Stellaria diandra Maxim. in Bull. Acad. Sci. Pétersb. 18: 379 (1873).

Accepted name: *Stellaria diversiflora* Maxim. [Japanese name: Sawa-hakobe]

Japonia, Yokohama, Hakone, 3/15 X 1862, Maximowicz [sine num.] [LE01011766] (Fig. 47,



Fig. 39. Syntype of *Eutrema wasabi* Maxim. (LE01014520; KPM-NX0001463).



Fig. 40. Isosyntype of *Eutrema wasabi* Maxim. (LE01014523; KPM-NX0001464).



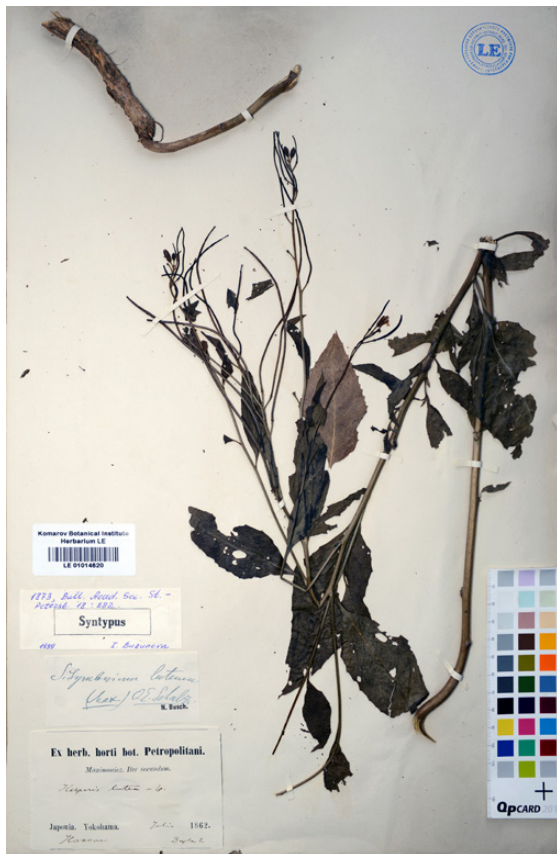


Fig. 43. Isosyntype of *Hesperis lutea* Maxim. (LE01014620; KPM-NX0001466).



Fig. 44. Syntype of *Polygonum suffultum* Maxim. (LE01016045; KPM-NX0001473). It is identified *Bistorta tenuicaulis* in this study.



Fig. 45. Syntype of *Polygonum suffultum* Maxim. (LE01016043; KPM-NX0001474). It is identified *Bistorta tenuicaulis* in this study.



Fig. 46. Syntype of *Polygonum suffultum* Maxim. (LE01016047; KPM-NX0001471).

KPM-NX0001487). Buzunova (2004) treated this specimen as the holotype, with an isotype [LE01011767] (Fig. 48, KPM-NX0001486).

Stellaria monosperma* Buch.-Ham. var. *japonica

Maxim. in Bull. Acad. Sci. Pétersb. 18: 384–385 (1873).

Accepted name: *Stellaria monosperma* Buch.-Ham. ex D. Don var. *japonica* Maxim. [Japanese name: Oōyama-hakobe]

Yokohama Hakone 20 X/1 IX 1862 [LE01042654] (Fig. 49, KPM-NX0001488). [LE01042655] (Fig. 50, KPM-NX0001489). This is syntype pointed out here, *Stellaria monosperma* Buch.-Ham. var. *japonica* Maxim. need to be lectotypified.

Primulaceae

***Ardisia hortorum* Maxim.** in Gartenflora, 14: 363, tab. 491 (1865).

Accepted name: *Ardisia crispa* (Thunb.) A. DC. var. *crispa* [Japanese name: Kara-tachibana]

Yokohama, cult., 9/21 VII 1862, Maximowicz, no. 1534 [LE01031915] (Fig. 51, KPM-NX0001936). Imkhanitzkaya (2004) treated this specimen as a syntype.

***Lysimachia acroadenia* Maxim.** in Bull. Acad. Sci. Pétersb. 12: 70 (1867).

Accepted name: *Lysimachia acroadenia* Maxim. [Japanese name: Miyama-ta-gobō]

Japonia, Yokohama, 30 V/11 VI 1862, Maximowicz [sine num.] [LE01032211] (Fig. 52, KPM-NX0001517). Imkhanitzkaya (2004) treated this specimen as a syntype, with an isosyntype [LE01032206] (Fig. 53, KPM-NX0001511).

***Lysimachia fortunei* Maxim.** in Bull. Acad. Sci. Pétersb. 12: 68 (1867).

Accepted name: *Lysimachia fortunei* Maxim. [Japanese name: Numa-toranoō]

Japonia, Yokohama, 24 VI/6 VII 1862, Maximowicz [sine num.] [LE01032229] (Fig. 54, KPM-NX0001518). Imkhanitzkaya (2004) treated this specimen as a syntype.

Theaceae

***Stewartia pseudocamellia* Maxim.** in Bull. Acad. Sci. Pétersb. 11: 429 (1867).

Accepted name: *Stewartia pseudocamellia* Maxim. [Japanese name: Natsu-tsubaki]

Japonia, Yokohama, culta, 12/24 VI 1862,

Maximowicz [sine num.] [LE01042682] (Fig. 55, KPM-NX0001521). Krestovskaya (2004) treated this specimen as the holotype.

Ericaceae

***Andromeda cernua* (Siebold & Zucc.) Miq. var. *rubens* Maxim.** in Bull. Acad. Sci. Pétersb. 18: 50 (1872).

Accepted name: *Enkianthus cernuus* (Siebold & Zucc.) Makino form. *rubens* (Maxim.) Ohwi [Japanese name: Beni-Dōdan]

Japonia, Nippon, Hakone, 1864, Tschonoski [sine num.] [LE01042719] (Fig. 56, KPM-NX0001526). This specimen is a syntype newly pointed out here, with two isosyntypes [LE01042713] (Fig. 57, KPM-NX0001529), [LE01042712] (Fig. 58, KPM-NX0001530).

***Rhododendron ledifolium* G. Don var. *purpureum* Maxim.** in Mém. Acad. Sci. Pétersb. sér. 7, 16, 9: 36 (1870).

Accepted name: *Rhododendron ledifolium* G. Don [Japanese name: Ryukyu-Tsutsuji]

Japonia, Yokohama cult, 2/14 V 1862, Maximowicz [sine num.] [LE01042679] (Fig. 59, KPM-NX0001551), Japonia, Yokohama cult, 5/17 V 1862, Maximowicz [sine num.] [LE01042675] (Fig. 60, KPM-NX0001554), Japonia, Yokohama Kamado, in viciniis m. Hakone, cult, 25 X/6 XI 1862, Maximowicz [sine num.] [LE01042681] (Fig. 59, KPM-NX0001551). These are syntypes newly pointed out here.

***Tsusiophyllum tanakae* Maxim.** in Mém. Acad. Sci. Pétersb. sér. 7, 16, 9: 12, tab. 3, fig. 1–8 (1870).

Accepted name: *Rhododendron tsusiophyllum* Sugim. [Japanese name: Hakone-kome-tsutsuji]

Japonia, in mont[ibus] Hakone, ins. Nippon, [sine die], Tanaka et Yeouchima [sine num.] [LE01031852] (Fig. 61, KPM-NX0001559). Vinogradova (2004) treated this specimen as the holotype.

Apocynaceae

***Cynoctonum wilfordii* Maxim.** in Mém. Biol. 9: 799 (1876); Maxim. in Bull. Acad. Sci. Pétersb. 23: 369 (1877).

Accepted name: *Cynanchum wilfordii* (Maxim.) Hemsl. [Japanese name: Ko-ikema]

Japonia, Yokohama, in fruticetis satis frequens, 23 VI/5 VII 1862, Maximowicz [sine num.]



Fig. 47. Holotype of *Stellaria diandra* Maxim. (LE01011766; KPM-NX0001487).



Fig. 48. Isotype of *Stellaria diandra* Maxim. (LE01011767; KPM-NX0001486).



Fig. 49. Syntype of *Stellaria monosperma* Buch.-Ham. var. *japonica* Maxim. (LE01042654; KPM-NX0001488).



Fig. 50. Syntype of *Stellaria monosperma* Buch.-Ham. var. *japonica* Maxim. (LE01042655; KPM-NX0001489).



Fig. 51. Syntype of *Ardisia hortorum* Maxim. (LE01031915; KPM-NX0001936).



Fig. 52. Syntype of *Lysimachia acroadenia* Maxim. (LE01032211; KPM-NX0001517).



Fig. 53. Isosyntype of *Lysimachia acroadenia* Maxim. (LE01032206; KPM-NX0001511).

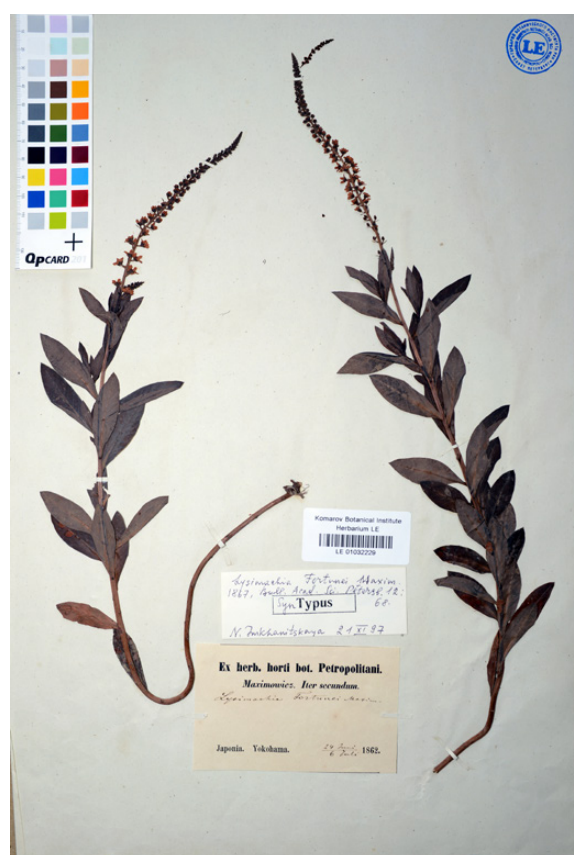


Fig. 54. Syntype of *Lysimachia fortunei* Maxim. (LE01032229; KPM-NX0001518).



Fig. 55. Holotype of *Stewartia pseudocamellia* Maxim. (LE01042682; KPM-NX0001521).



Fig. 56. Syntype of *Andromeda cernua* (Siebold & Zucc.) Miq. var. *rubens* Maxim. (LE01042719; KPM-NX0001526).



Fig. 57. Isosyntype of *Andromeda cernua* (Siebold & Zucc.) Miq. var. *rubens* Maxim. (LE01042713; KPM-NX0001529).

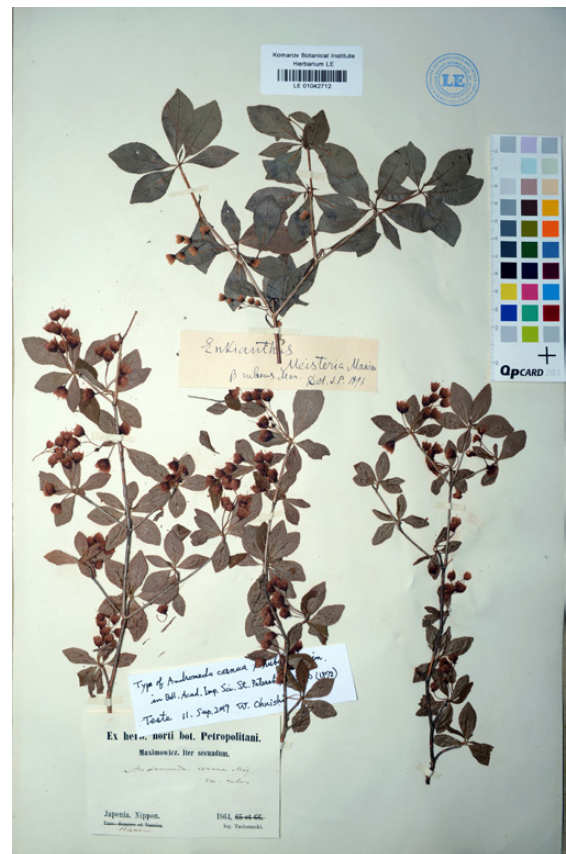


Fig. 58. Isosyntype of *Andromeda cernua* (Siebold & Zucc.) Miq. var. *rubens* Maxim. (LE01042712; KPM-NX0001530).

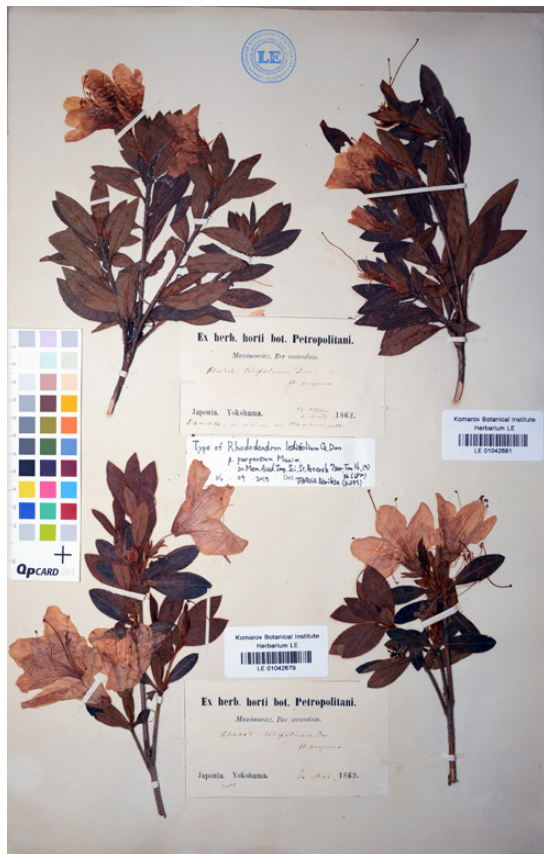


Fig. 59. Syntypes of *Rhododendron ledifolium* G. Don var. *purpureum* Maxim. (LE01042679 & LE01042681 KPM-NX0001551).



Fig. 60. Syntype of *Rhododendron ledifolium* G. Don var. *purpureum* Maxim. (LE01042675; KPM-NX0001554).

[LE01036903] (Fig. 62, KPM-NX0001563). Imkhanitzkaya (2004) designated this specimen as the lectotype, with two isoelectotypes [LE01036901] (Fig. 63, KPM-NX0001561), [LE01036904] (Fig. 64, KPM-NX0001564).

Yokoska, in fruticetis, 1866–1871, L. Savatier, no. 832 [LE01036902] (Fig. 65, KPM-NX0001562). Imkhanitzkaya (2004) treated this specimen as a syntype.

Vincetoxicum japonicum (C. Morren & Decne.)

Decne. var. *grayanum* Maxim. in Bull. Acad. Sci. Pétersb. 23: 359 (1877).

Accepted name: *Cynanchum grayanum* (Maxim.) Koidz. [Japanese name: Iyo-kazura]

Yokoska 1866–1871, Savatier no. 823 [LE01042671] (Fig. 66, KPM-NX0001565), Japonia, Yokohama, Kanisawa [in protologue “Kanasawa”, modern “Kanazawa-ku”], 14/26 V 1862 [LE01070437] (Fig. 67, KPM-NX0002021). A. Grabovskaya-Borodina annotated on the sheets as “syntypes” in 2019. These are syntypes pointed out here.

Boraginaceae

Eritrichium brevipes Maxim. in Bull. Acad. Sci. Pétersb. 17: 446 (1872).

Accepted name: *Trigonois brevipes* (Maxim.) Maxim. ex Hemsl. [Japanese name: Mizu-tabirako]

Yokohama, Hakone, ad rivulos, 5/17 X 1862, Maximowicz [LE01036944] (Fig. 68, KPM-NX0001570). Raenko (2001a) designated this specimen as the lectotype.

Plantaginaceae

Veronica ornata Monjuschko in Not. Syst. 5: 12 (1924).

Accepted name: *Veronica ornata* Monjuschko [Japanese name: Tōtei-ran]

Hakone, in rupibus inter frutices, 1866–1871, A. Franchet, no. 902 [LE01042788] (Fig. 69, KPM-NX0001575). Elenevsky (1978) designated this specimen as the lectotype.

Japonia, Yokohama, culta, 26 VIII/7 IX 1862, Maximowicz [sine num.] [LE01042819] (Fig. 70, KPM-NX0002019). Japonia, Yokohama, culta, 13/25 IX 1862, Maximowicz [sine num.] [LE01042710] (Fig. 70, KPM-NX0002019). These specimens are syntypes pointed out here.



Fig. 61. Holotype of *Tsusiophyllum tanakae* Maxim. (LE01031852; KPM-NX0001559).



Fig. 62. Lectotype of *Cynotomum wilfordii* Maxim. (LE01036903; KPM-NX0001563).



Fig. 63. Isolectotype of *Cynotomum wilfordii* Maxim. (LE01036901; KPM-NX0001561).



Fig. 64. Isolectotype of *Cynotomum wilfordii* Maxim. (LE01036904; KPM-NX0001564).

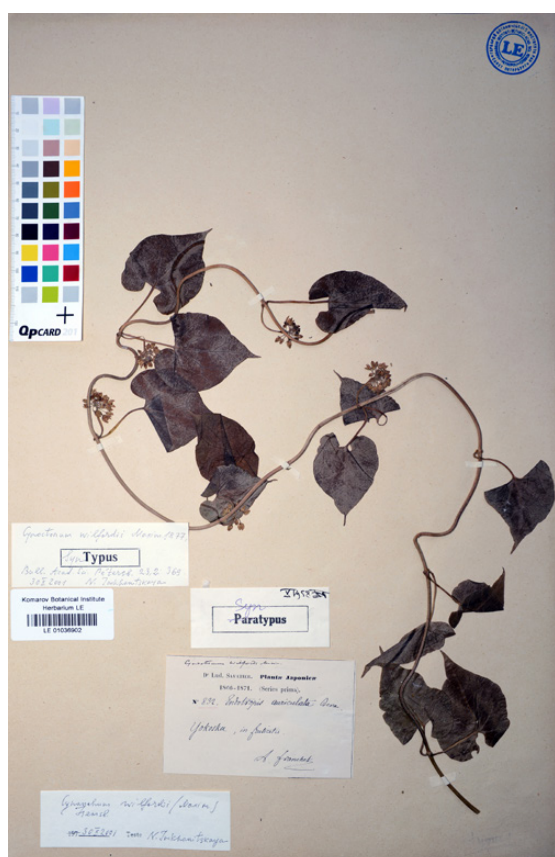


Fig. 65. Syntype of *Cynotonum wilfordii* Maxim. (LE01036902; KPM-NX0001562).



Fig. 66. Syntype of *Vincetoxicum japonicum* (C.Morren & Decne.) Decne. var. *grayanum* Maxim. (LE01042671; KPM-NX0001565).

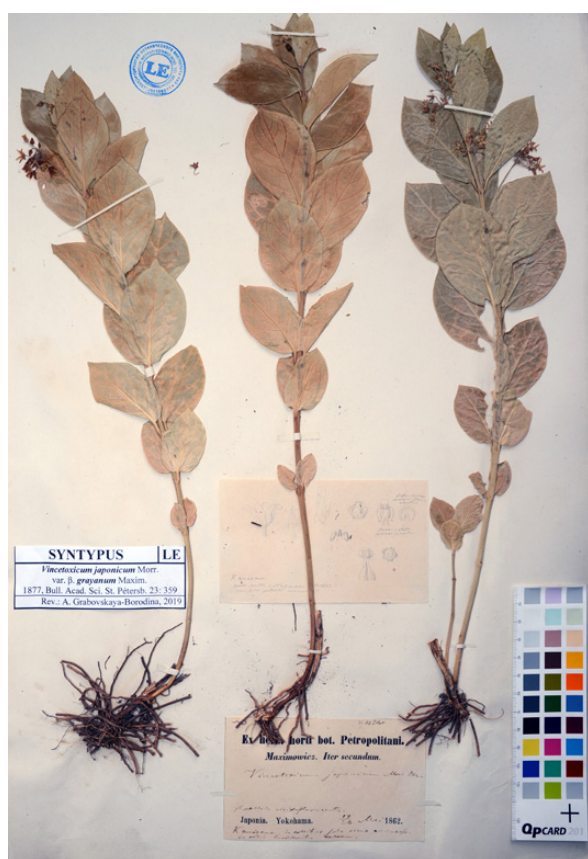


Fig. 67. Syntype of *Vincetoxicum japonicum* (C.Morren & Decne.) Decne. var. *grayanum* Maxim. (LE01070437; KPM-NX0002021).



Fig. 68. Lectotype of *Eritrichium brevipes* Maxim. (LE01036944; KPM-NX0001570).

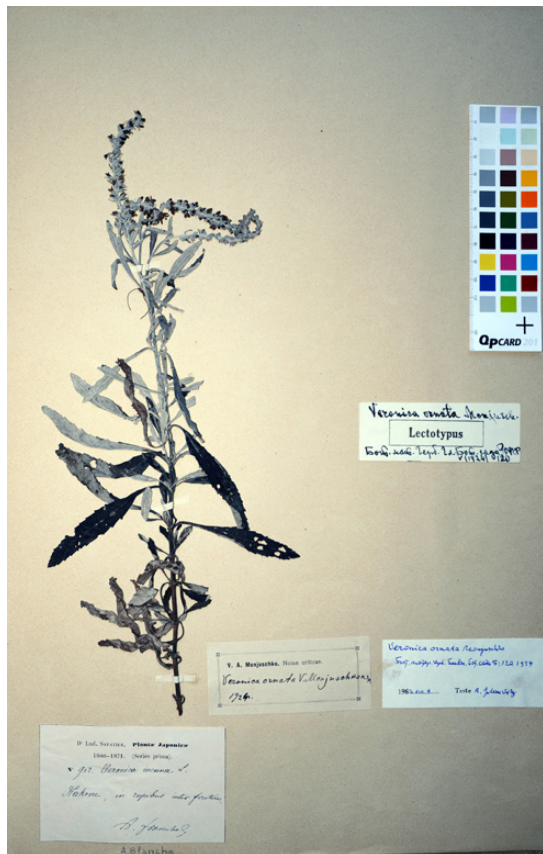


Fig. 69. Lectotype of *Veronica ornata* Monjuschko (LE01042788; KPM-NX0001575).



Fig. 70. Syntypes of *Veronica ornata* Monjuschko (LE01042819 & LE01042710; KPM-NX0002019).

Lamiaceae/Labiatae

Ajuga genevensis L. var. *pallescens* Maxim. in Bull. Acad. Sci. Pétersb. 29: 185 (1883).

Accepted name: *Ajuga shikotanensis* Miyabe & Tatew. [Japanese name: Tsuru-kakosō]

Japonia, Yokohama 5/17 V 1862 Maximowicz [sine num.] [LE01042721] (Fig. 71, KPM-NX0001580), Yokohama 5/17 V 1862 Maximowicz [sine num.] [LE01042722] (Fig. 72, KPM-NX0001581). These specimens are syntypes pointed out here. We identified these specimens as *Ajuga nipponensis* Makino.

Mosla grosseserrata Maxim. in Bull. Acad. Sci. Pétersb. 20: 458 (1875).

Accepted name: *Mosla dianthera* (Buch.-Ham. ex Roxb.) Maxim. [Japanese name: Hime-jiso]

Japonia, Yokohama, 11/23IX 1862, Maximowicz [sine num.] [LE01042811] (Fig. 73, KPM-NX0001587). Krestovskaya (2001) designated this specimen as the lectotype.

Japonia, Yokohama, 26 IX/8 X 1862, Maximowicz [sine num.] [LE01042810] (Fig. 74, KPM-NX0001588). Krestovskaya (2004) treated this specimen as a syntype.

Plectranthus inflexus (Thunb.) Vahl. Vahl ex Benth. var. *umbrosus* Maxim. in Bull. Acad. Sci. Pétersb. 20: 453 (1875).

Accepted name: *Isodon umbrosus* (Maxim.) H. Hara var. *umbrosus* [Japanese name: Inu-yama-hakka]

Japonia, Yokohama, Hakone, in silvis ad rivulos, 6/18 X 1862, Maximowicz [sine num.] [LE01042803] (Fig. 75, KPM-NX0001586). Krestovskaya (2004) treated this specimen as the holotype.

Plectranthus longitubus Miq. var. *effusus* Maxim. in Bull. Acad. Sci. Pétersb. 20: 451 (1875) ("effusa").

Accepted name: *Isodon effusus* (Maxim.) H. Hara [Japanese name: Sekiya-no-aki-chōji]

Japonia, Yokohama, Hakone, 5/17X 1862, Maximowicz no. 1878 [LE01042804] (Fig. 76, KPM-NX0001583). Krestovskaya (2004) treated this specimen as the holotype, with two isotypes [LE01042805] (Fig. 77, KPM-NX0001582), [LE01042806] (Fig. 78, KPM-NX0001584).

Teucrium stoloniferum Roxb. var. *miquelianum* Maxim. in Bull. Acad. Sci. Pétersb. 23: 387 (1877).

Accepted name: *Teucrium viscidum* Blume var. *miquelianum* (Maxim.) H. Hara [Japanese name:

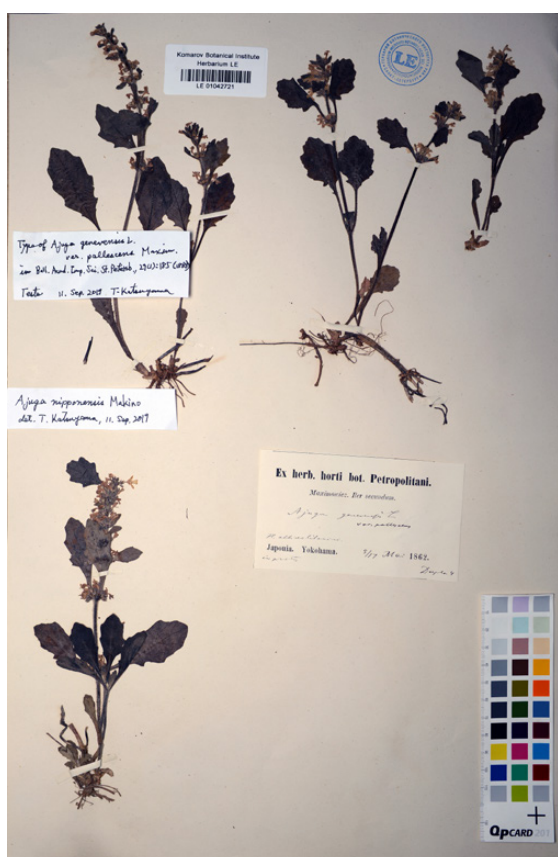


Fig. 71. Syntype of *Ajuga genevensis* L. var. *pallescens* Maxim. (LE01042721; KPM-NX0001580). It is identified *Ajuga nipponensis* in this study.



Fig. 72. Syntype of *Ajuga genevensis* L. var. *pallescens* Maxim. (LE01042722; KPM-NX0001581). It is identified *Ajuga nipponensis* in this study.



Fig. 73. Lectotype of *Mosla grosseserrata* Maxim. (LE01042811; KPM-NX0001587).



Fig. 74. Syntype of *Mosla grosseserrata* Maxim. (LE01042810; KPM-NX0001588).



Fig. 75. Holotype of *Plectranthus inflexus* (Thunb.) Vahl. var. *umbrosus* Maxim. (LE01042803; KPM-NX0001586).

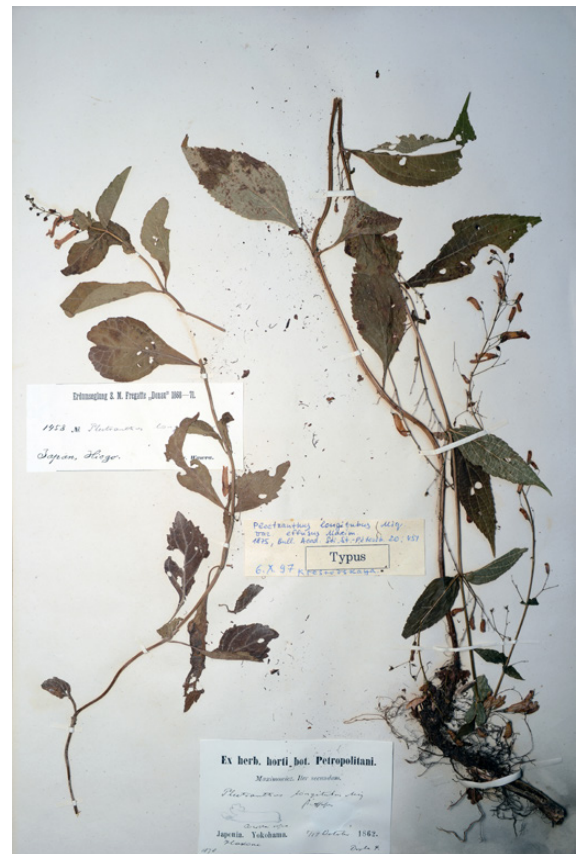


Fig. 76. Holotype of *Plectranthus longitubus* Miq. var. *effusus* Maxim. (LE01042804; KPM-NX0001583).



Fig. 77. Isotype of *Plectranthus longitubus* Miq. var. *effusus* Maxim. (LE01042805; KPM-NX0001582).



Fig. 78. Isotype of *Plectranthus longitubus* Miq. var. *effusus* Maxim. (LE01042806; KPM-NX0001584).

Tsuru-nigakusa]

Japonia, Yokohama, Hakone, ad rivulos silvarum, 6/18 X 1862, Maximowicz [sine num.] [LE01041258] (Fig. 79, KPM-NX0001591). Krestovskaya (2004) treated this specimen as a syntype.

Orobanchaceae

Euphrasia maximowiczii Wettst. in Monor. Gatt.

Euphr.: 87, taf. 11, fig. 4; taf. III, fig. 120–126 (1896).

Accepted name: *Euphrasia maximowiczii* Wettst. [Japanese name: Tachi-kogomegusa]

Nippon, in montibus Hakone, prope Foudgi-Yama, 1864, Tanaka et Yeouchima, no. 102 [LE01042743] (Fig. 80, KPM-NX0001579). Popova (2004) treated this specimen as a syntype.

Asteraceae/Compositae

Artemisia schmidtiana Maxim. in Bull. Acad. Sci. Pétersb. 17: 439 (1872).

Accepted name: *Artemisia schmidtiana* Maxim. [Japanese name: Asagiri-sō]

Japonia, Yokohama, culta, 15/27 IX 1862, Maximowicz, no. 1824 [LE01017282] (Fig. 81, KPM-NX0001600). Raenko (2004) designated this specimen as the lectotype, with two isoelectotypes [LE01017278] (Fig. 82, KPM-NX0001602), [LE01017280] (Fig. 83, KPM-NX0001601).

Artemisia thunbergiana Maxim. in Bull. Acad. Sci. Pétersb. 17: 432 (1872).

Accepted name: *Artemisia apiacea* Hance [Japanese name: Kawara-ninjin]

Japonia, Yokohama, in ruderalis et passim ad vias, 14/26 VIII 1862, Maximowicz [sine num.] [LE01017298] (Fig. 84, KPM-NX0001604). V. Grubov designated this specimen as the lectotype in Raenko (2001b), with five isoelectotypes [LE01017297] (Fig. 85, KPM-NX0001603), [LE01017299] (Fig. 86, KPM-NX0001605), [LE01017300] (Fig. 87, KPM-NX0001606), [LE01018201] (Fig. 88, KPM-NX0001607), [LE01018202] (Fig. 89, KPM-NX0001608).

Aster dimorphophyllus Franch. & Sav. in Enum. Pl. Jap. 1, 2: 223 (1875); id. *ibid.* 2, 2: 395 (1878).

Accepted name: *Aster dimorphophyllus* Franch. & Sav. [Japanese name: Tateyama-giku]

Hakone (Nippon med.) in rupestribus umbrosis regionis alpinae, 30 VII 1871, L. Savatier, no. 602

[LE01017144] (Fig. 90, KPM-NX0001609). Raenko (2004) treated this specimen as an isotype.

Aster rugulosus Maxim. in Bull. Acad. Sci. Pétersb. 15: 226 (1870).

Accepted name: *Aster rugulosus* Maxim. var. *rugulosus* [Japanese name: Sawashiro-giku]

Japonia, Yokohama, 26 VIII/7 IX 1862, Maximowicz [sine num.] [LE01017150] (Fig. 91, KPM-NX0001616). V. Grubov designated this specimen as the lectotype in Raenko (2001b), with two isoelectotypes [LE01017148] (Fig. 92, KPM-NX0001613), [LE01017149] (Fig. 93, KPM-NX0001614).

Japonia, Yokohama, 13/25 IX 1862, Maximowicz [sine num.] [LE01017146] (Fig. 94, KPM-NX0001611). Raenko (2004) treated this specimen as a syntype, with an isosyntype [LE01017145] (Fig. 95, KPM-NX0001610), Japonia, Yokohama, 12/24 IX 1862, Maximowicz [sine num.] [LE01017147] (Fig. 96, KPM-NX0001612). Raenko (2004) treated this specimen as a syntype.

Carpesium glossophyllum Maxim. in Bull. Acad. Sci. Pétersb. 19: 475 (1874).

Accepted name: *Carpesium glossophyllum* Maxim. [Japanese name: Saji-gankubi-sō]

Yokohama, 7/19VIII 1862, Maximowicz [sine num.] [LE01017209] (Fig. 97, KPM-NX0001622). V. Grubov designated this specimen as the lectotype in Raenko (2004).

Japonia, Yokohama, 21 VI/3 VII 1862, Maximowicz [sine num.] [LE01017203] (Fig. 98, KPM-NX0001619), Japonia, Yokohama, 28 VII/9 VIII 1862, Maximowicz [sine num.] [LE01017204] (Fig. 99, KPM-NX0001620), Japonia, Yokohama, 2/14 VIII 1862, Maximowicz [sine num.] [LE01017205] (Fig. 100, KPM-NX0001621). Raenko (2004) treated these specimens as syntypes.

Japon, Yokoska in incultis, 1866–1871, L. Savatier no. 656 [LE01017201] (Fig. 101, KPM-NX0001617). Raenko (2004) treated this specimen as a syntype, with an isosyntype [LE01017202] (Fig. 102, KPM-NX0001618).

Cnicus suffultus Maxim. var. *incomptus* Maxim. in Bull. Acad. Sci. Pétersb. 19: 499 (1874).

Accepted name: *Cirsium nipponicum* (Maxim.) Makino var. *incomptum* (Maxim.) Kitam. ex Kadota [Japanese name: Tai-azami]



Fig. 79. Syntype of *Teucrium stoloniferum* Roxb. var. *miquelianum* Maxim. (LE01041258; KPM-NX0001591).



Fig. 80. Syntype of *Euphrasia maximowiczii* Wettst. (LE01042743; KPM-NX0001579).



Fig. 81. Lectotype of *Artemisia schmidtiana* Maxim. (LE01017282; KPM-NX0001600).

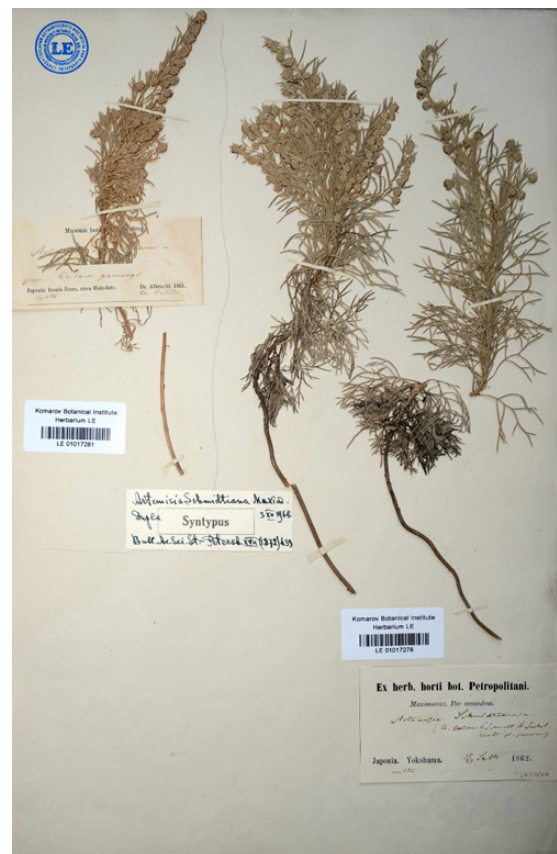


Fig. 82. Isolectotype of *Artemisia schmidtiana* Maxim. (LE01017278; KPM-NX0001602).



Fig. 83. Isolectotype of *Artemisia schmidtiana* Maxim. (LE01017280; KPM-NX0001601).



Fig. 84. Lectotype of *Artemisia thunbergiana* Maxim. (LE01017298; KPM-NX0001604).



Fig. 85. Isolectotype of *Artemisia thunbergiana* Maxim. (LE01017297; KPM-NX0001603).



Fig. 86. Isolectotype of *Artemisia thunbergiana* Maxim. (LE01017299; KPM-NX0001605).



Fig. 87. Isolectotype of *Artemisia thunbergiana* Maxim. (LE01017300; KPM-NX0001606).



Fig. 88. Isolectotype of *Artemisia thunbergiana* Maxim. (LE01018201; KPM-NX0001607).



Fig. 89. Isolectotype of *Artemisia thunbergiana* Maxim. (LE01018202; KPM-NX0001608).

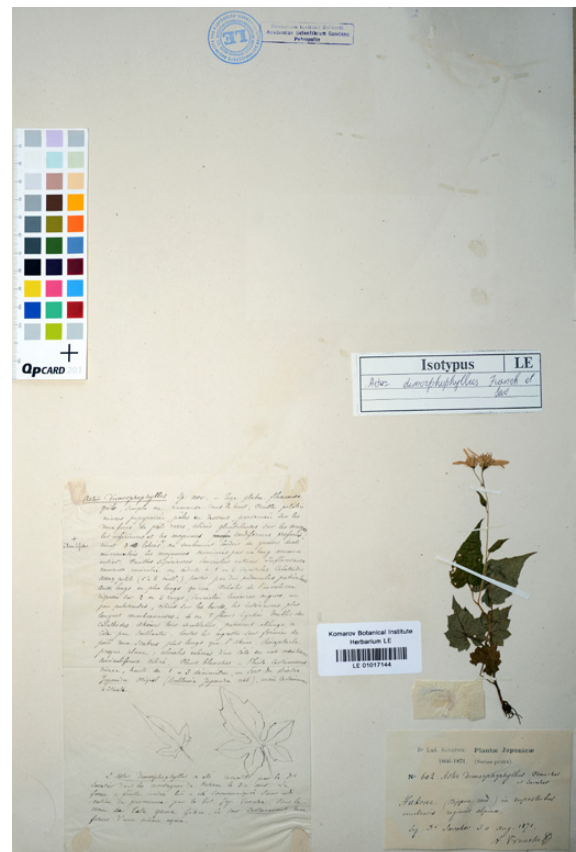


Fig. 90. Isotype of *Aster dimorphophyllus* Franch. & Sav. (LE01017144; KPM-NX0001609).



Fig. 91. Lectotype of *Aster rugulosus* Maxim. (LE01017150; KPM-NX0001616).



Fig. 92. Isolectotype of *Aster rugulosus* Maxim. (LE01017148; KPM-NX0001613).



Fig. 93. Isolectotype of *Aster rugulosus* Maxim. (LE01017149; KPM-NX0001614).



Fig. 94. Syntype of *Aster rugulosus* Maxim. (LE01017146; KPM-NX0001611).



Fig. 95. Isosynty of *Aster rugulosus* Maxim. (LE01017145; KPM-NX0001610).



Fig. 96. Syntyp of *Aster rugulosus* Maxim. (LE01017147; KPM-NX0001612).



Fig. 97. Lectotyp of *Carpesium glossophyllum* Maxim. (LE01017209; KPM-NX0001622).



Fig. 98. Syntyp of *Carpesium glossophyllum* Maxim. (LE01017203; KPM-NX0001619).



Fig. 99. Syntype of *Carpesium glossophyllum* Maxim. (LE01017204; KPM-NX0001620).



Fig. 100. Syntype of *Carpesium glossophyllum* Maxim. (LE01017205; KPM-NX0001621).



Fig. 101. Syntype of *Carpesium glossophyllum* Maxim. (LE01017201; KPM-NX0001617).



Fig. 102. Isosyntype of *Carpesium glossophyllum* Maxim. (LE01017202; KPM-NX0001618).

Yokohama, 1859–1863, Fr. Siebold [LE01024423] (Fig. 103, KPM-NX0001658). Kadota (1993) designated this specimen as the lectotype, two isoelectotypes [LE01024422] (Fig. 104, KPM-NX0001657), [LE01024424] (Fig. 105, KPM-NX0001656).

Japonia, Yokohama, 18/30 VIII 1862, Maximowicz no. 863 [LE01024430] (Fig. 106, KPM-NX0001665), Japonia, Yokohama, 25 VIII/6 IX 1862 [LE01024428] (Fig. 107, KPM-NX0001663), Japonia, Yokohama, 27 IX/9 X 1862 [LE01024429] (Fig. 108, KPM-NX0001664). Raenko (2004) treated these specimens as syntypes.

Japonia, Yokohama, 15 IX/27 IX 1862, Maximowicz [sine num.] [LE01024431] (Fig. 109, KPM-NX0001666). Raenko (2004) treated this specimen as a syntype, with two isosyntypes [LE01024432] (Fig. 110, KPM-NX0001667), [LE01024425] (Fig. 111, KPM-NX0001660).

Macroclinidium robustum Maxim. in Bull. Acad. Sci. Pétersb. 15: 376 (1870).

Accepted name: *Pertya robusta* (Maxim.) Makino [Japanese name: Kashiwa-ba-haguma]

Japonia, Yokohama, 15/27 X 1862, Maximowicz [LE01024460] (Fig. 112, KPM-NX0001677). V. Grubov designated this specimen as the lectotype in Raenko (2001b), with four isoelectotypes [LE01024458] (Fig. 113, KPM-NX0001675), [LE01024459] (Fig. 114, KPM-NX0001676), [LE01024461] (Fig. 115, KPM-NX0001678), [LE01024462] (Fig. 116, KPM-NX0001679).

Japonia, Yokohama, 4/16 X 1862, Maximowicz [LE01024463] (Fig. 118, KPM-NX0001680), [LE01024464] (Fig. 117, KPM-NX0001680), Japonia, Yokohama. 24 X/8 XI 1862, Maximowicz –[LE01024465] (Fig. 118, KPM-NX0001681), [LE01024466] (Fig. 119, KPM-NX0001682), [LE01024467] (Fig. 120, KPM-NX0001683). Raenko (2004) treated these specimens as syntypes.

Pertya ovata Maxim. in Bull. Acad. Sci. Pétersb. 16: 217 (1871).

Accepted name: *Pertya scandens* (Thunb.) Sch. Bip. [Japanese name: Kōya-bōki]

Japonia, Yokohama, 4/16 X 1862, Maximowicz [LE01024447] (Fig. 121, KPM-NX0001686), [LE01024449] (Fig. 122, KPM-NX0001689), [LE01024450] (Fig. 123, KPM-NX0001690), [LE01024451] (Fig. 124, KPM-NX0001692),

Japonia, Yokohama, Hakone, 8/20 X 1862, Maximowicz [LE01024456] (Fig. 125, KPM-NX0001696), Japonia, Yokohama, 5/17 XII 1862, Maximowicz [LE01024452] (Fig. 126, KPM-NX0001693), [LE01024454] (Fig. 127, KPM-NX0001694), [LE01024455] (Fig. 128, KPM-NX0001695), in montibus Hakone prope Foudgi-Yama, Japonia, 1864, Tanaka et Yeouchima, no. 85 [LE01024453] (Fig. 126, KPM-NX0001693). Raenko (2004) treated these specimens as syntypes.

Saussurea tanakae Franch. & Sav. ex Maxim. var. *phyllolepis* Maxim. in Bull. Acad. Sci. Pétersb. 19: 517 (1874).

Accepted name: *Saussurea tanakae* Franch. & Sav. ex Maxim. [Japanese name: Seitaka-Tōhiren]

Japonia, Nippon media, 1866, Tschonoski [LE01025210] (Fig. 129, KPM-NX0001698). Raenko (2001b) designated this specimen as the lectotype, with an isoelectotype [LE01025209] (Fig. 130, KPM-NX0001697).

These specimen labels do not give a detailed locality, but the original description as follows: “Hab. in Nippon: jugo Hakone vel locis finitimis (Tschonoski ! spec. 2 flor.); ...”. Therefore, we report them here as from Kanagawa Prefecture.

Senecio krameri Franch. & Sav. in Enum. Pl. Jap. 1, 2: 248 (1875); id., ibid. 2, 2: 406 (1878).

Accepted name: *Syneilesis palmata* (Thunb.) Maxim. [Japanese name: Yabure-gasa]

Yokoska, in silvaticis, 1866–1874, Savatier, no. 663 [LE01042720] (Fig. 131, KPM-NX0001860), Nippon media, circa Yokoska sat frequens, 1866–1874, Savatier, no. 663 [LE01042851] (Fig. 132, KPM-NX0001871). These specimens are syntypes newly pointed out here.

Senecio stenocephalus Maxim. in Bull. Acad. Sci. Pétersb. 16: 218 (1871).

Accepted name: *Ligularia stenocephala* (Maxim.) Matsum. & Koidz. [Japanese name: Me-takara-ko]

Japonia, Nippon, Hakone, 1866, Tschonoski [LE01018425] (Fig. 133, KPM-NX0001670). Raenko (2004) designated this specimen as the holotype, with six isotypes [LE01018422] (Fig. 134, KPM-NX0001673), [LE01018423] (Fig. 135, KPM-NX0001672), [LE01018424] (Fig. 136, KPM-NX0001671), [LE01018426] (Fig. 137, KPM-NX0001669), [LE01018427] (Fig. 138, KPM-



Fig. 103. Lectotype of *Cnicus suffultus* Maxim. var. *incomptus* Maxim. (LE01024423; KPM-NX0001658).



Fig. 104. Isolectotype of *Cnicus suffultus* Maxim. var. *incomptus* Maxim. (LE01024422; KPM-NX0001657).



Fig. 105. Isolectotype of *Cnicus suffultus* Maxim. var. *incomptus* Maxim. (LE01024424; KPM-NX0001656).



Fig. 106. Syntype of *Cnicus suffultus* Maxim. var. *incomptus* Maxim. (LE01024428; KPM-NX0001663).



Fig. 107. Syntype of *Cnicus suffultus* Maxim. var. *incomptus* Maxim. (LE01024429; KPM-NX0001664).



Fig. 108. Syntype of *Cnicus suffultus* Maxim. var. *incomptus* Maxim. (LE01024430; KPM-NX0001665).



Fig. 109. Syntype of *Cnicus suffultus* Maxim. var. *incomptus* Maxim. (LE01024431; KPM-NX0001666).



Fig. 110. Isosyntype of *Cnicus suffultus* Maxim. var. *incomptus* Maxim. (LE01024432; KPM-NX0001667).



Fig. 115. Isolectotype of *Macroclinidium robustum* Maxim. (LE01024461; KPM-NX0001678).



Fig. 116. Isolectotype of *Macroclinidium robustum* Maxim. (LE01024462; KPM-NX0001679).



Fig. 117. Syntypes of *Macroclinidium robustum* Maxim. (LE01024463 & LE01024464; KPM-NX0001680).



Fig. 118. Syntype of *Macroclinidium robustum* Maxim. (LE01024465; KPM-NX0001681).



Fig. 119. Syntype of *Macroclinidium robustum* Maxim. (LE01024466; KPM-NX0001682).



Fig. 120. Syntype of *Macroclinidium robustum* Maxim. (LE01024467; KPM-NX0001683).



Fig. 121. Syntype of *Pertya ovata* Maxim. (LE01024447; KPM-NX0001686).



Fig. 122. Syntype of *Pertya ovata* Maxim. (LE01024449; KPM-NX0001689).



Fig. 123. Syntype of *Pertya ovata* Maxim. (LE01024450; KPM-NX0001690).



Fig. 124. Syntype of *Pertya ovata* Maxim. (LE01024451; KPM-NX0001692).



Fig. 125. Syntype of *Pertya ovata* Maxim. (LE01024456; KPM-NX0001696).



Fig. 126. Syntypes of *Pertya ovata* Maxim. (LE01024452 & LE01024453; KPM-NX0001693).



Fig. 127. Syntype of *Pertya ovata* Maxim. (LE01024454; KPM-NX0001694).



Fig. 128. Syntype of *Pertya ovata* Maxim. (LE01024455; KPM-NX0001695).



Fig. 129. Lectotype of *Saussurea tanakae* Franch. & Sav. ex Maxim. var. *phyllolepis* Maxim. (LE01025210; KPM-NX0001698).



Fig. 130. Isolectotype of *Saussurea tanakae* Franch. & Sav. ex Maxim. var. *phyllolepis* Maxim. (LE01025209; KPM-NX0001697).



Fig. 131. Syntype of *Senecio krameri* Franch. & Sav. (LE01042720; KPM-NX0001860).



Fig. 132. Syntype of *Senecio krameri* Franch. & Sav. (LE01042851; KPM-NX0001871).



Fig. 133. Holotype of *Senecio stenocephalus* Maxim. (LE01018425; KPM-NX0001670).



Fig. 134. Isotype of *Senecio stenocephalus* Maxim. (LE01018422; KPM-NX0001673).



Fig. 135. Isotype of *Senecio stenocephalus* Maxim. (LE01018423; KPM-NX0001672).



Fig. 136. Isotype of *Senecio stenocephalus* Maxim. (LE01018424; KPM-NX0001671).



Fig. 137. Isotype of *Senecio stenocephalus* Maxim. (LE01018426; KPM-NX0001669).



Fig. 138. Isotype of *Senecio stenocephalus* Maxim. (LE01018427; KPM-NX0001668).



Fig. 139. Isotype of *Senecio stenocephalus* Maxim. (LE01018428; KPM-NX0001674).



Fig. 140. Holotype of *Lonicera ramosissima* Franch. & Sav. ex Maxim. (LE01043810; KPM-NX0001709).

NX0001668), [LE01018428] (Fig. 139, KPM-NX0001674).

Adoxaceae

Lonicera ramosissima Franch. & Sav. ex Maxim. in Bull. Acad. Sci. Pétersb. 24: 47 (1877).

Accepted name: *Lonicera ramosissima* Franch. & Sav. ex Maxim. var. *ramosissima* [Japanese name: Ko-uguisu-kagura]

Japonia, 1866–1871, L. Savatier, no. 2888 [LE01043810] (Fig. 140, KPM-NX0001709). Novosselova (2004) treated this specimen as the holotype.

Patrinia palmata Maxim. in Bull. Acad. Sci. Pétersb. 12: 66 (1867).

Accepted name: *Patrinia palmata* Maxim. [Japanese name: Kin-reika]

Japonia, in m. Hakone, in lapidosis montium altissimorum, 18 X/1 XI 1862, Maximowicz [sine num.] [LE01042831] (Fig. 141, KPM-NX0002020). Imkhanitzkaya (2004) treated this specimen as a syntype.

Valeriana flaccidissima Maxim. in Bull. Acad. Sci. Pétersb. 12: 228 (1867).

Accepted name: *Valeriana flaccidissima* Maxim. [Japanese name: Tsuru-kanoko-sō]

Japonia, Yokohama, 10/22 IV 1862, Maximowicz [sine num.] [LE01042834] (Fig. 142, KPM-NX0001723). Imkhanitzkaya (2002) designated this specimen as the lectotype, with an isolectotype [LE01042835] (Fig. 143, KPM-NX0001720).

Japonia, Yokohama, 12/24 IV 1862, Maximowicz [sine num.] [LE01042836] (Fig. 144, KPM-NX0001721), Japonia, Yokohama, 23 IV/5 V 1862, Maximowicz [sine num.] [LE01042837] (Fig. 145, KPM-NX0001722). Imkhanitzkaya (2004) treated these specimens as syntypes.

Viburnum furcatum Blume ex Maxim. in Bull. Acad. Sci. Pétersb. 26: 483 (1880).

Accepted name: *Viburnum furcatum* Blume ex Maxim. [Japanese name: Ō-kame-no-ki]

Japonia, Nippon, Hakone, silvis montanis, 1864, Tschonoski [LE01042818] (Fig. 146, KPM-NX0001702). Novosselova (2004) treated this specimen as a syntype.



Fig. 141. Syntype of *Patrinia palmata* Maxim. (LE01042831; KPM-NX0002020).



Fig. 142. Lectotype of *Valeriana flaccidissima* Maxim. (LE01042834; KPM-NX0001723).



Fig. 143. IsoLectotype of *Valeriana flaccidissima* Maxim. (LE01042835; KPM-NX0001720).



Fig. 144. Syntype of *Valeriana flaccidissima* Maxim. (LE01042836; KPM-NX0001721).

Araliaceae

Panax repens Maxim. in Bull. Acad. Sci. Pétersb. 12: 64 (1867).

Accepted name: *Panax japonicus* (T.Nees) C.A.Mey. var. *japonicus* [Japanese name: Tochiba-ninjin]

Japonia, Yokohama, Hakone, in sylvis Cryptomeriae, 6/18 X 1862, Maximowicz [sine num.] [LE01029603] (Fig. 180, KPM-NX0001731). Krestovskaya (2004) treated this specimen as a syntype.

Apiaceae/Umbelliferae

Angelica florenti Franch. & Sav. ex Maxim. in Bull. Acad. Sci. Pétersb. 19: 274 (1874).

Accepted name: *Ostericum florenti* (Franch. & Sav. ex Maxim.) Kitag. [Japanese name: Miyama-ninjin]

Japonia, in rupestr. umbrosis montium Hakone (Nippon), 30 VIII 1871, L. Savatier, no. 495 [LE01029685] (Fig. 147, KPM-NX0001799). V. Grubov designated this specimen as the lectotype in Vinogradova (2004).

Angelica hakonensis Maxim. in Bull. Acad. Sci. Pétersb. 19: 277 (1874).

Accepted name: *Angelica hakonensis* Maxim. [Japanese name: Iwa-ninjin]

Japonia, Yokohama, Hakone, 18/30 X 1862, Maximowicz [sine num.] [LE01029703] (Fig. 148, KPM-NX0001746). V. Grubov designated this specimen as the lectotype in Vinogradova (2004) with two isoelectotypes [LE01042667] (Fig. 149, KPM-NX0001748), [LE01029705] (Fig. 150, KPM-NX0001747).

Japonia, Yokohama, Hakone, 4/16 X 1862, Maximowicz [sine num.] [LE01029704] (Fig. 151, KPM-NX0001745). Vinogradova (2004) treated this specimen as a syntype.

Angelica inaequalis Maxim. in Bull. Acad. Sci. Pétersb. 19: 184 (1874).

Accepted name: *Angelica inaequalis* Maxim. [Japanese name: Hanabi-zeri]

Japonia, Yokohama, Hakone, 18/30 X 1862, Maximowicz [sine num.] [LE01029710] (Fig. 152, KPM-NX0001750). Vinogradova (2004) treated this specimen as the holotype, with four isotypes [LE01029707] (Fig. 153, KPM-NX0001749), [LE01029708] (Fig. 154, KPM-NX0001752), [LE01029709] (Fig. 155, KPM-NX0001751), [LE01029711] (Fig. 156, KPM-NX0001753).

Angelica miqueliana Maxim. in Bull. Acad. Sci. Pétersb. 19: 276 (1874).

Accepted name: *Ostericum sieboldii* (Miq.) Nakai [Japanese name: Yama-zeri]

Japonia, Yokohama, 8/20 X 1862, Maximowicz [sine num.] [LE01029723] (Fig. 157, KPM-NX0001825). V. Grubov designated this specimen as the lectotype in Vinogradova (2004), with an isoelectotype [LE01029724] (Fig. 158, KPM-NX0001826).

Japonia, Yokohama, Hakone, X 1862, Maximowicz [sine num.] [LE01029715] (Fig. 159, KPM-NX0001805). Vinogradova (2004) treated this specimen as a syntype, with two isosyntypes [LE01029716] (Fig. 160, KPM-NX0001804), [LE01029717] (Fig. 161, KPM-NX0001803).

Japonia, Yokohama 10/22 IX 1862 Maximowicz [sine num.] [LE01029731] (Fig. 162, KPM-NX0001816), Vinogradova (2004) treated this specimen as a syntype, with seven isosyntypes [LE01029726] (Fig. 163, KPM-NX0001811), [LE01029727] (Fig. 164, KPM-NX0001812), [LE01029728] (Fig. 165, KPM-NX0001813), [LE01029729] (Fig. 166, KPM-NX0001814), [LE01029730] (Fig. 167, KPM-NX0001815), [LE01042785] (Fig. 168, KPM-NX0001817), [LE01029734] (Fig. 169, KPM-NX0001818).

Angelica polymorpha Maxim. in Bull. Acad. Sci. Pétersb. 19: 185 (1874).

Accepted name: *Angelica polymorpha* Maxim. [Japanese name: Shirane-senkyū]

Japonia, Yokohama, Hakone, in silvis acerosis, 18/30 X 1862, Maximowicz, no. 1925 [LE01029755] (Fig. 170, KPM-NX0001777), [LE01029756] (Fig. 171, KPM-NX0001778), [LE01042663] (Fig. 172, KPM-NX0001795), [LE01042666] (Fig. 173, KPM-NX0001798). Vinogradova (2004) treated these specimens as syntypes, with two isosyntypes [LE01042664] (Fig. 174, KPM-NX0001796), [LE01042665] (Fig. 175, KPM-NX0001797). We identified these three specimens [LE01029755] (Fig. 170, KPM-NX0001777), [LE01042663] (Fig. 172, KPM-NX0001795), [LE01029756] (Fig. 175, KPM-NX0001778) of these as *Angelica hakonensis* Maxim.

Angelica pubescens Maxim. in Bull. Acad. Sci. Pétersb. 24: 34 (1877).

Accepted name: *Angelica pubescens* Maxim. var. *pubescens* [Japanese name: Shishi-udo]



Fig. 145. Syntype of *Valeriana flaccidissima* Maxim. (LE01042837; KPM-NX0001722).



Fig. 146. Syntype of *Valeriana flaccidissima* Blume ex Maxim. (LE01042818; KPM-NX0001702).

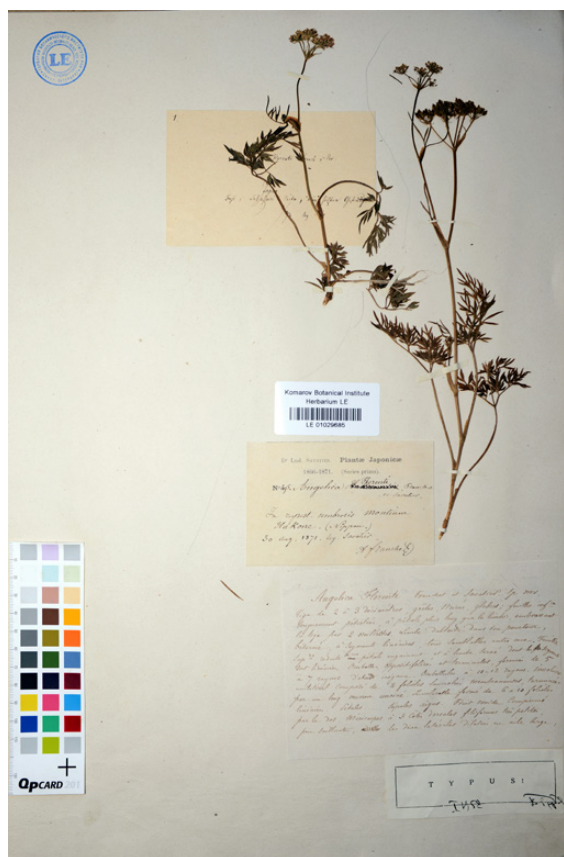


Fig. 147. Lectotype of *Angelica florentii* Franch. & Sav. (LE01029685; KPM-NX0001799).



Fig. 148. Lectotype of *Angelica hakonensis* Maxim. (LE01029703; KPM-NX0001746).



Fig. 149. Isolectotype of *Angelica hakonensis* Maxim. (LE01042667; KPM-NX0001748).



Fig. 150. Isolectotype of *Angelica hakonensis* Maxim. (LE01029705; KPM-NX0001747).



Fig. 151. Syntype of *Angelica hakonensis* Maxim. (LE01029704; KPM-NX0001745).

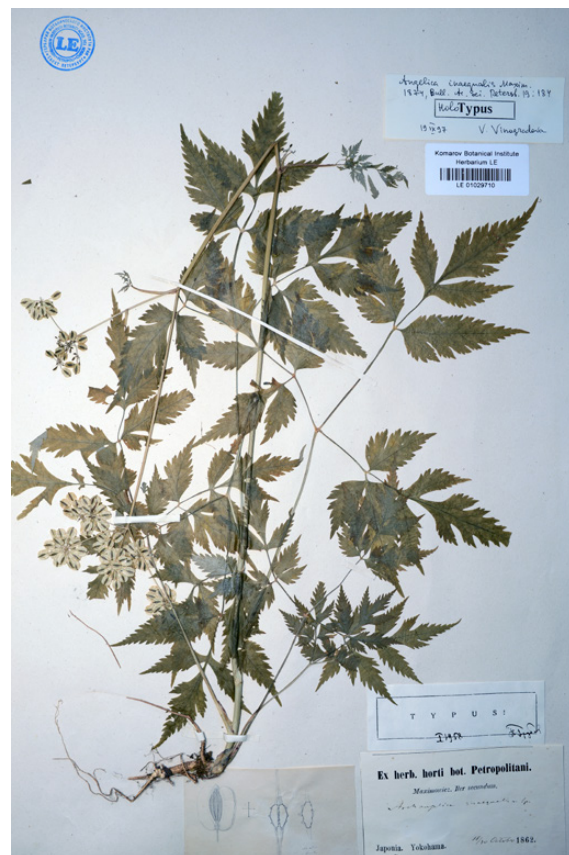


Fig. 152. Holotype of *Angelica inaequalis* Maxim. (LE01029710; KPM-NX0001750).



Fig. 153. Isotype of *Angelica inaequalis* Maxim. (LE01029707; KPM-NX0001749).



Fig. 154. Isotype of *Angelica inaequalis* Maxim. (LE01029708; KPM-NX0001752).



Fig. 155. Isotype of *Angelica inaequalis* Maxim. (LE01029709; KPM-NX0001751).



Fig. 156. Isotype of *Angelica inaequalis* Maxim. (LE01029711; KPM-NX0001753).



Fig. 157. Lectotype of *Angelica miqueliana* Maxim. (LE01029723; KPM-NX0001825).



Fig. 158. Isolectotype of *Angelica miqueliana* Maxim. (LE01029724; KPM-NX0001826).

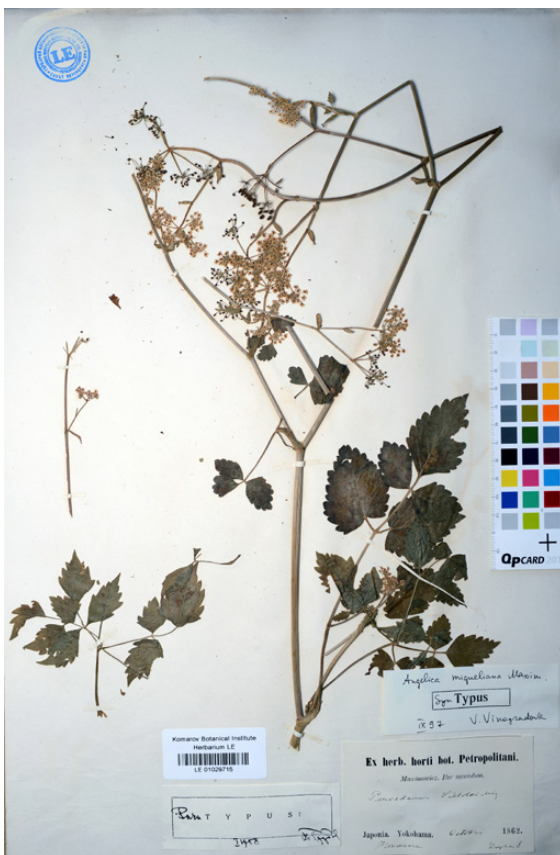


Fig. 159. Syntype of *Angelica miqueliana* Maxim. (LE01029715; KPM-NX0001805).



Fig. 160. Isosyntype of *Angelica miqueliana* Maxim. (LE01029716; KPM-NX0001804).



Fig. 161. Isosyntyte of *Angelica miqueliana* Maxim. (LE01029717; KPM-NX0001803).



Fig. 162. Syntyte of *Angelica miqueliana* Maxim. (LE01029731; KPM-NX0001816).



Fig. 163. Isosyntyte of *Angelica miqueliana* Maxim. (LE01029726; KPM-NX0001811).



Fig. 164. Isosyntyte of *Angelica miqueliana* Maxim. (LE01029727; KPM-NX0001812).



Fig. 165. Isosyntype of *Angelica miqueliana* Maxim. (LE01029728; KPM-NX0001813).



Fig. 166. Isosyntype of *Angelica miqueliana* Maxim. (LE01029729; KPM-NX0001814).



Fig. 167. Isosyntype of *Angelica miqueliana* Maxim. (LE01029730; KPM-NX0001815).



Fig. 168. Isosyntype of *Angelica miqueliana* Maxim. (LE01042785; KPM-NX0001817).



Fig. 169. Isosynty of *Angelica miqueliana* Maxim. (LE01029734; KPM-NX0001818).

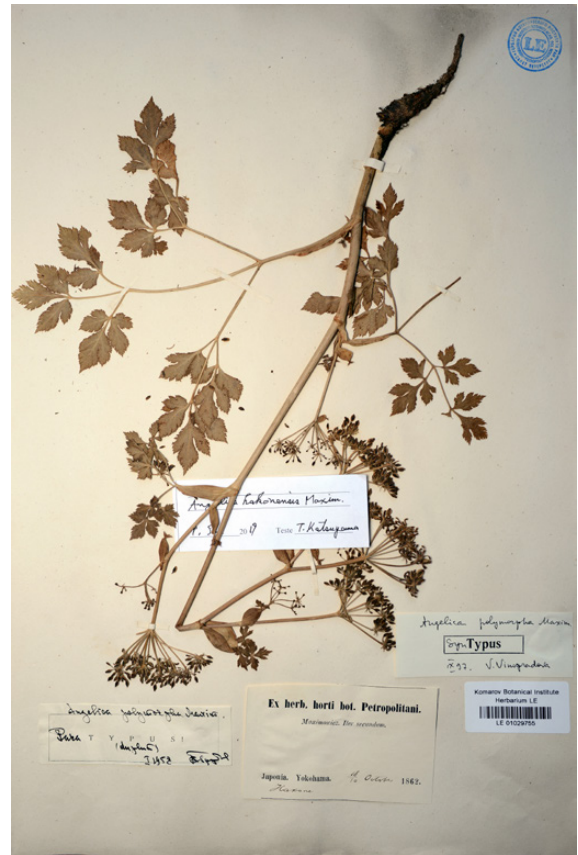


Fig. 170. Synty of *Angelica polymorpha* Maxim. (LE01029755; KPM-NX0001777). It is identified *Angelica hakonensis* in this study.

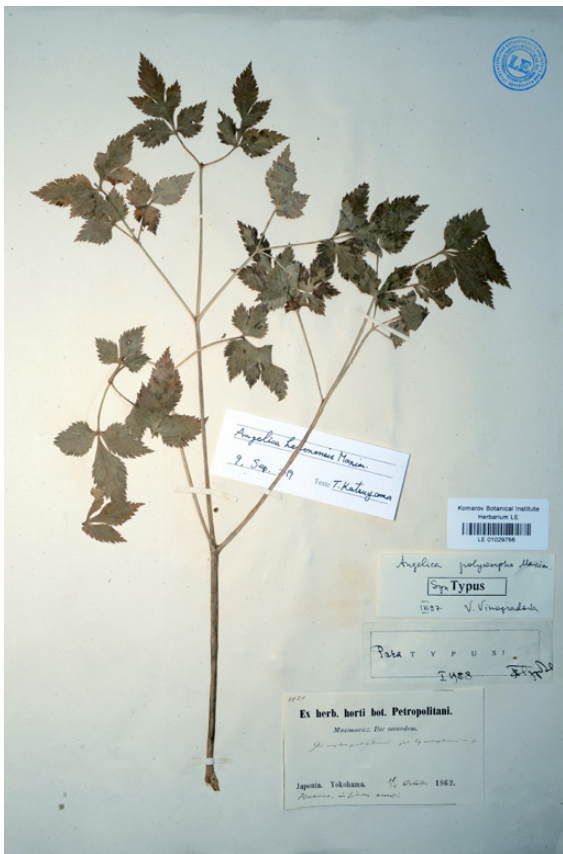


Fig. 171. Synty of *Angelica polymorpha* Maxim. (LE01029756; KPM-NX0001778). It is identified *Angelica hakonensis* in this study.



Fig. 172. Synty of *Angelica polymorpha* Maxim. (LE01042663; KPM-NX0001795). It is identified *Angelica hakonensis* in this study.



Fig. 173. Syntype of *Angelica polymorpha* Maxim.
(LE01042666; KPM-NX0001798).



Fig. 174. Isosyntype of *Angelica polymorpha* Maxim.
(LE01042664; KPM-NX0001796).



Fig. 175. Isosyntype of *Angelica polymorpha* Maxim.
(LE01042665; KPM-NX0001797).



Fig. 176. Lectotype of *Angelica pubescens* Maxim.
(LE01029760; KPM-NX0001768).



Fig. 177. Isolectotype of *Angelica pubescens* Maxim. (LE01029758; KPM-NX0001766).



Fig. 178. Isolectotype of *Angelica pubescens* Maxim. (LE01029759; KPM-NX0001765).



Fig. 179. Isolectotype of *Angelica pubescens* Maxim. (LE01029757; KPM-NX0001767).



Fig. 180. Syntype of *Panax repens* Maxim. (LE01029603; KPM-NX0001731).



Fig. 181. Syntype of *Pimpinella calycina* Maxim. (LE01029657; KPM-NX0001781).



Fig. 182. Isosyntype of *Pimpinella calycina* Maxim. (LE01029655; KPM-NX0001779).



Fig. 183. Isosyntype of *Pimpinella calycina* Maxim. (LE01029656; KPM-NX0001780).



Fig. 184. Lectotype of *Sium nipponicum* Maxim. (LE01029659; KPM-NX0001827).



Fig. 185. Isolectotype of *Sium nipponicum* Maxim. (LE01029660; KPM-NX0001828).



Fig. 186. Isolectotype of *Sium nipponicum* Maxim. (LE01029661; KPM-NX0001829).

Japonia, Yokohama, 20 VII/1 VIII 1862, Maximowicz [sine num.] [LE01029760] (Fig. 176, KPM-NX0001768). Vinogradova (2004) designated this specimen as the lectotype, with three isolectotypes [LE01029758] (Fig. 177, KPM-NX0001766), [sine num.] [LE01029759] (Fig. 178, KPM-NX0001765), [LE01029757] (Fig. 179, KPM-NX0001767).

Pimpinella calycina Maxim. in Bull. Acad. Sci. Pétersb. 19: 182 (1873).

Accepted name: *Spuriopimpinella calycina* (Maxim.) Kitag. [Japanese name: Kanotsume-sō]

Japonia, Yokohama, in silvis montanis, 12/24 VIII 1862, Maximowicz [sine num.] [LE01029657] (Fig. 181, KPM-NX0001781). Vinogradova (2004) treated this specimen as a syntype, with two isosyntypes [LE01029655] (Fig. 182, KPM-NX0001779), [LE01029656] (Fig. 183, KPM-NX0001780).

Sium nipponicum Maxim. in Bull. Acad. Sci. Pétersb. 18: 286 (1873).

Accepted name: *Sium suave* Walter var. *nipponicum*

(Maxim.) H.Hara [Japanese name: Numa-zero] Japonia, Nippon, 1866, Tschonoski [sine num.] [LE01029659] (Fig. 184, KPM-NX0001827). Vinogradova (2004) designated this specimen as the lectotype, with three isolectotypes [LE01029660] (Fig. 185, KPM-NX0001828), [LE01029661] (Fig. 186, KPM-NX0001829), [LE01029662] (Fig. 187, KPM-NX0001830).

These specimen labels do not give a detailed locality, but the original description as follows: “Hab. in Nippon media, probabiliter non procul a Yokohama, unde florens et semina seorsim misit Tschonoski”. Therefore, we report them here as from Kanagawa Prefecture.

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Fig. 187. Isolectotype of *Sium nipponicum* Maxim. (LE01029662; KPM-NX0001830).

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摘 要

田中徳久・アリサ グラボスカヤ - ボロディナ・勝山輝男・福田知子・大西 亘, 2025. コマロフ植物研究所の神奈川県産被子植物(双子葉類)の基準標本と関連標本. 神奈川県立博物館研究報告(自然科学), (54): 9–69. [Tanaka, N., A. Grabovskaya-Borodina, T. Katsuyama, T. Fukuda & W. Ohnishi, 2025. Plant Type Materials from Kanagawa Prefecture (Japan) in the Herbarium of the Komarov Botanical Institute (LE; Russia): Angiosperms (Dicots). Bull. Kanagawa Pref. Mus. (Nat. Sci.), (54): 9–69.]

コマロフ植物研究所 (LE ; ロシア科学アカデミー) に収蔵されている神奈川県が基準産地とされるタイプとその関連の維管束植物標本を調査した。これらの大部分は、ロシアの植物学者であるマキシモヴィッチと助手の須川長之助により採集され、マキシモヴィッチにより記載された。ここでは、被子植物(双子葉植物の大部分) 69 分類群 196 点のタイプとその関連標本について報告した。このうち、ホザキノフサモ *Myriophyllum spicatum* L. var. *muricatum* Maxim. やトキリマメ *Rhynchosia volubilis* Lour. var. *acuminata* Maxim.、ヤマミズ *Achudemia japonica* Maxim.、ウワバミソウ *Elatostema umbellatum* Blume var. *majus* Maxim.、ゴキヅル *Actinostemma lobatum* (Maxim.) Franch. & Sav. var. *japonicum* Maxim. ex Franch. & Sav.、ク リ ン ユ キ フ デ *Polygonum suffultum* Maxim., *Stellaria monosperma* Buch.-Ham. var. *japonica* Maxim.、ベニドウダン *Andromeda cernua* (Siebold & Zucc.) Miq. var. *rubens* Maxim.、リュウキュウツツジ *Rhododendron ledifolium* G. Don var. *purpureum* Maxim.、イヨカズラ *Vincetoxicum japonicum* (C.Morren & Decne.) Decne. var. *grayanum* Maxim.、トウテイラン *Veronica ornata* Monjuschko、ツルカコソウ *Ajuga genevensis* L. var. *pallens* Maxim.、ヤブレガサ *Senecio krameri* Franch. & Sav. のタイプ関連標本は初めての報告である。

Original Article

Taxonomic Study of Japanese Cryptinae (Hymenoptera, Ichneumonidae), with Descriptions of 32 New Species

Kyohei WATANABE¹⁾

Abstract. This paper is the fourth part of taxonomic notes of Japanese Cryptinae (Hymenoptera, Ichneumonidae). In this study, 11 genera of tribe Aptesini Smith & Shenefelt, 1955 and six genera of tribe Cryptini Kirby, 1837 are studied. *Plectocryptus* Thomson, 1873 is new to Japan. The following 32 new species and one new subspecies are described: *Aconias fujiei* **sp. nov.**; *Ac. longisetosus* **sp. nov.**; *Aptesia albicoxalis* **sp. nov.**; *Ap. ezoensis* **sp. nov.**; *Ap. jinbensis* **sp. nov.**; *Ap. minor* **sp. nov.**; *Ap. yamauchii* **sp. nov.**; *Cubocephalus asiaticus* **sp. nov.**; *C. confusus* **sp. nov.**; *C. nanus* **sp. nov.**; *C. sapporensis* **sp. nov.**; *C. uryuensis* **sp. nov.**; *Giraudia kurenai* **sp. nov.**; *Gi. nana* **sp. nov.**; *Javra albotrochantellata* **sp. nov.**; *J. gigantea* **sp. nov.**; *J. japonica* **sp. nov.**; *J. minamiashigarensis* **sp. nov.**; *J. minuta* **sp. nov.**; *J. tenuis* **sp. nov.**; *Megaplectes bicornis* **sp. nov.**; *Meg. konishii* **sp. nov.**; *Parmortha albitarsale* **sp. nov.**; *Pa. gigantea* **sp. nov.**; *Pa. nigra* **sp. nov.**; *Plectocryptus japonicus* **sp. nov.**; *Pleolophus obtusus* **sp. nov.**; *Schenkia alpina* **sp. nov.**; *S. japonica* **sp. nov.**; *S. minuta* **sp. nov.**; *S. uryuensis* **sp. nov.**; *Goryphus albofasciatus erabu* **subsp. nov.**; *Listrognathus* (*Listrognathus*) *octoguttatus* **sp. nov.** The following three species and one subspecies are newly recorded from Japan: *Ap. flagitator* (Rossi, 1794); *Ap. melana* Li & Sheng, 2013; *Idiolispa analis analis* (Gravenhorst, 1807); *L. (L.) yunnanensis* He & Chen, 1996. The following three new synonyms are proposed: *Ac. tarsatus* (Bridgman, 1881) = *Plec. albitarsis* Uchida, 1936 **syn. nov.**; *Parmortha maruyamensis* (Uchida, 1930) = *Cratocryptus microstriatellus* Uchida, 1952 **syn. nov.**; *Nippocryptus alutaceus* (Tschek, 1871) = *Caenocryptus canaliculatus* Momoi, 1968 **syn. nov.** Furthermore, the generic position of *Aptesia opaca* (Cushman, 1937) changed to *Oresbius* Marshall, 1867 (**comb. nov.**) and a new replaced name, *O. cushmani* **nom. nov.** is proposed. Some redescriptions, new distribution records, and keys to species in 10 genera are also provided.

Key words: distribution, Eastern Palearctic region, new record, parasitoid wasps, taxonomy

Introduction

The subfamily Cryptinae is the second largest subfamily of family Ichneumonidae, with 276 genera and over 3100 species of worldwide distribution (Yu *et al.*, 2016; Santos, 2017). In Japan, total of two tribes, 63 genera and 156 species of Cryptinae have been recorded (Watanabe *et al.*, 2024), while many undescribed and unrecorded species were still recognized. Recently I sorted the ichneumonid collection of Kanagawa Prefectural Museum of Natural

History and examined collections of several institutes including types. Then I found some new taxa, a new combination and new distribution records.

This paper is the fourth part (the previous three parts: Watanabe, 2019, 2020, 2022) of taxonomic and zoogeographical notes of Japanese Cryptinae (Hymenoptera, Ichneumonidae). In this study, I treat 11 genera of tribe Aptesini Smith & Shenefelt, 1955, *Aconias* Cameron, 1904, *Aptesia* Förster, 1850, *Cubocephalus* Ratzeburg, 1848, *Giraudia* Förster, 1869, *Javra* Cameron, 1903, *Megaplectes* Förster, 1869, *Oresbius* Marshall, 1867, *Parmortha* Townes, 1962, *Plectocryptus* Thomson, 1873 (new to Japan), *Pleolophus* Townes, 1962, and *Schenkia* Förster, 1869, and six genera of tribe Cryptini Kirby, 1837, *Euchalinus* Townes, 1961, *Goryphus* Holmgren, 1868, *Idiolispa* Förster, 1869, *Listrognathus* Tschek, 1871, *Menaforia* Seyrig, 1952, and *Nippocryptus*

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Uchida, 1936. Some re-descriptions of Japanese species (e.g., species described by Dr. Toichi Uchida (1898–1974)) and keys to species of some genera are also provided.

Materials and methods

In this study, dried specimens deposited in the following collections were examined:

AEIC, the American Entomological Institute of Utah State University, Logan, Utah, USA.

KPM-NK, Insect collection, Kanagawa Prefectural Museum of Natural History, Odawara, Kanagawa, Japan.

LI, Biologiezentrum, Linz, Austria.

MNHAH, Museum of Nature and Human Activities, Sanda, Hyogo, Japan.

NARO, Institute for Plant Protection, National Agriculture and Food Research Organization, Tsukuba, Japan.

NSMT, National Museum of Nature and Science, Tsukuba, Ibaraki, Japan.

OMNH, Osaka Museum of Natural History, Osaka, Japan.

SEHU, Hokkaido University Museum, Sapporo, Japan.

TMNH, Toyohashi Museum of Natural History, Toyohashi, Aichi, Japan.

A Nikon SMZ800N stereomicroscope (Nikon Co. Ltd., Japan) was used for observation. Photographs (Figs. 1–75) were taken using a Canon 7D Mark2 (Canon Co. Ltd., Japan) with Canon 100mmL IS (for the lateral habitus and Figs. 8B, 17B, 23B, 31B, 33B, 35B, 36B, 48B, 51B, 63B, 64B, C, 66A, B, 67B, 70B) and an Olympus TG-5 digital camera (Olympus Co. Ltd., Japan) connected to the stereomicroscope (for the other photographs). All figures were edited using Adobe Photoshop® CC 2024 (Adobe Co. Ltd., USA). The morphological terminology follows Broad *et al.* (2018). Eady (1968) is also used for the description of microsculpture. The following abbreviations are used in the description: holotype (HT), interspace of punctures (ISP), diameter of puncture (PD), segment of antennal flagellum (FL), diameter of lateral ocellus (OD), ocelloocular line (OOL), postocellar line (POL), segment of tarsus (TS) and metasomal tergite (T). The following abbreviations are used for material data: female (F), male (M), flight interception trap (FIT), yellow pan trap (YPT), and Malaise trap (MsT). For the new species and newly recorded species from Japan, I propose standard Japanese names (SJN). The minimum width of face measured by the transverse line just below the antennal sockets. All genera were identified based on generic concepts proposed by Townes (1970).

Results and discussion

By the result of morphological comparison, I found one genus new to Japan, 32 new species, one new subspecies, one new replacement name, three new synonyms, three species new to Japan, and one subspecies new to Japan. In addition, in other species, many new distribution data and morphological information are also recognized. This research has greatly increased the diversity of Japanese Aptesini in particular, almost doubling the number of species.

Subfamily Cryptinae Kirby, 1837

Tribe Aptesini Smith & Shenefelt, 1955

This tribe is one of the poorly taxonomically studied groups in Japan. Previously, 13 genera and 34 species have been recorded (Watanabe *et al.*, 2024). In this study, I revised this group and found 31 new species, one newly recorded genus from Japan, two newly recorded species from Japan, one newly recorded subspecies from Japan, one new combination, and two new synonyms. Totally, 14 genera and 65 species of this tribe are recorded in Japan.

Genus *Aconias* Cameron, 1904

Aconias Cameron, 1904: 345. Type species: *Aconias spinitarsis* Cameron, 1904. Monotypic.

Three species, *Ac. albitarsis* (Uchida, 1936), *Ac. concavopropodeonus* (Uchida, 1952), and *Ac. tarsatus* (Bridgman, 1881), have been recorded from Japan. Uchida (1952) notes that the *Ac. albitarsis* (Uchida, 1936) and *Ac. concavopropodeonus* (Uchida, 1952) by the character states of propodeum, while this difference between both species is intraspecific variation. Sheng & Sun (2008) provided the key for world species and *Ac. albitarsis* is separated from *Ac. tarsatus* (Bridgeman, 1881) by the coloration of face (black in *Ac. albitarsis*; white in *Ac. tarsatus*) and hind tibia (black with pale coloured base in *Ac. albitarsis*; reddish brown with black apex in *Ac. tarsatus*). But the face of *Ac. tarsatus* is misdescription and the coloration of hind tibia of *Ac. tarsatus* is intraspecifically varied and the range of variation overlapped with *Ac. albitarsis*. Thus, I conclude that *Ac. albitarsis* is a junior synonym of *Ac. tarsatus* (**syn. nov.**).

In this study, I newly describe two new species below. Both species are identified as this genus by Townes (1970) and are well accorded the character states of this genus. While the surface sculpture of hind femur and the remarkably long setae on it are largely differed from other

species. The generic position of two new species should be reanalysed by future study.

Key to Japanese species of *Aconias*

1. Female.
..... 2
- . Male.
..... 5
2. Hind femur coriaceous; punctures unclearly defined (Fig. 77D). Hind femur and tibia without long setae (Fig. 77D). Scutellum entirely black.
..... 3
- . Hind femur punctate; punctures well-defined (Figs. 3H, 4H, 77E, F). Hind femur and tibia with many long setae (Figs. 77E, F). Scutellum with reddish-brown to yellow area (Figs. 3B, G, 4B, F).
..... 4
3. Hind tarsus without white area (sometimes tinged with dark yellowish-brown at base) (Fig. 1A). Posterior transverse carina of propodeum complete, inverted U-shaped (Fig. 1G). Ovipositor sheath $0.9\text{--}1.05 \times$ as long as hind tibia. Small species: body length 7.5–9.2 mm.
..... *Aconias concavopropodeonus* (Uchida, 1952)
- . Hind tarsus with white area (usually TS III and IV) (Fig. 5A). Posterior transverse carina sometimes weak medially, inverted V-shaped (Fig. 5F). Ovipositor sheath $1.1\text{--}1.25 \times$ as long as hind tibia. Large species: body length 7.4–10.3 mm.
..... *Aconias tarsatus* (Bridgeman, 1881)
(= *Ac. albitarsis* (Uchida, 1936) **syn. nov.**)
4. Legs black except for base of hind tibia tinged with yellowish-brown (Fig. 3A). Scutellum reddish-brown (Figs. 3B, G). Face black (Fig. 3C). T I $2.4 \times$ as long as maximum width. Distribution: Honshu.
..... *Aconias fujiei* **sp. nov.**
- . Legs reddish-brown to reddish-yellow except for fore and mid coxae, trochanters, and trochantelli white (Figs. 4A, B, H). Scutellum yellow (Figs. 4B, F). Face partly tinged with yellowish-brown (Fig. 4C). T I $2.5\text{--}2.75 \times$ as long as maximum width. Distribution: Ryukyu Islands.
..... *Aconias longisetosus* **sp. nov.**
5. Scutellum with yellow spot apically (Figs. 2B, E). Lateral section of anterior transverse carina complete (Fig. 2E). Hind femur $6.0\text{--}6.25 \times$ as long as maximum depth in lateral view. T I $3.85\text{--}4.15 \times$ as long as maximum width. T II $1.8\text{--}2.0 \times$ as long as maximum width.
..... *Aconias concavopropodeonus* (Uchida, 1952)
- . Scutellum without yellow spot (Fig. 6B). Lateral section of anterior transverse carina absent or incomplete. Hind femur $7.2\text{--}8.0 \times$ as long as maximum depth in lateral view.

T I $4.45\text{--}5.2 \times$ as long as maximum width. T II $2.4\text{--}2.5 \times$ as long as maximum width.

..... *Aconias tarsatus* (Bridgeman, 1881)
(= *A. albitarsis* (Uchida, 1936) **syn. nov.**)

Aconias concavopropodeonus (Uchida, 1952)

[SJN: Munakubo-togari-himebachi]

(Figs. 1A–H, 2A–F, 76A, 77D, 78A)

Plectocryptus concavopropodeonus Uchida, 1952: 21.

Materials examined. JAPAN: [Honshu] KPM-NK

102862, F, Tochigi Pref., Kuroiso Town, Miyama-dam, 8. IX. 2001, E. Katayama leg.; KPM-NK 102889, F, Tochigi Pref., Nasushiobara City, Hakonomori Park, 11. X. 2007, E. Katayama leg.; KPM-NK 81289, F, Tochigi Pref., Nasushiobara City, Shiobara, Oonuma, 6–15. VI. 2008, T. Matsumura leg.; KPM-NK 102888, F, Gunma Pref., Kawaba Vil., Mt. Hotaka-san, 29. VIII. 2006, H. Katahira leg.; KPM-NK 102860, F, Kanagawa Pref., Hakone Town, Mt. Komagatake, 11. VIII. 2000, H. Nagase leg.; KPM-NK 102890, F, Kanagawa Pref., Atsugi City, Funako, 21. VII. 2007, M. Irie leg.; KPM-NK 102892, 102898, F & M, Nagano Pref., Outaki Vil., Mt. Ontake-san, Hakkaisan, 7. VIII. 2010, K. Watanabe leg.; KPM-NK 102899, M, Gifu Pref., Takayama City, Takane Town, Hiwada, 6. VIII. 2010, K. Watanabe leg.; KPM-NK 102876, 102925, 1F & 1M, Toyama Pref., Nanto City, Togamura-kamimomose, 21–28. VII. 2009, M. Watanabe leg. (MsT); KPM-NK 102938, M, ditto, 4–11. VIII. 2009; KPM-NK 102939, M, ditto, 11–18. VIII. 2009; KPM-NK 102877, F, ditto, 8–15. IX. 2009; KPM-NK 102878, M, Toyama Pref., Toyama City, Kamegai, 14–21. VII. 2009, M. Watanabe leg. (MsT); KPM-NK 102879, M, ditto, 25. VIII. – 1. IX. 2009; KPM-NK 102880, M, ditto, 8–15. IX. 2009; KPM-NK 102881–102883 and OMNH, 4M, Toyama Pref., Toyama City, Arimine, Inonedani, 7–14. VII. 2009, M. Watanabe leg. (MsT); KPM-NK 102884 & 103022, 1F & 1M, ditto, 14–21. VII. 2009; KPM-NK 102885, 102886, & OMNH, 3F, ditto, 4–11. VIII. 2009; KPM-NK 102887 & 103024, 2M, ditto, 11–16. VIII. 2009; OMNH & KPM-NK 103025, 1F & 1M, ditto, 16–25. VIII. 2009; KPM-NK 102912, M, ditto, 25. VIII. – 1. IX. 2009; KPM-NK 102913, 102914, & OMNH, 1F & 2M, ditto, 1–8. IX. 2009; KPM-NK 102915–102919 & OMNH, 7M, ditto, 8–15. IX. 2009; KPM-NK 102920–102924 & TMNH, 2F & 6M, ditto, 15–22. IX. 2009; KPM-NK 102875, F, Toyama Pref., Toyama City, Arimine, Jyurodani, 14–21. VII. 2009, M. Watanabe leg. (MsT); KPM-NK 102900, F, ditto, 21–28. VII. 2009; KPM-NK 102901, M, ditto,

4–11. VIII. 2009; KPM-NK 102902, M, ditto, 11–16. VIII. 2009; KPM-NK 102904–102905, 1F & 1M, ditto, 16–25. VIII. 2009; KPM-NK 103023, M, ditto, 25. VIII. – 1. IX. 2009; KPM-NK 102906, F, ditto, 1–8. IX. 2009; KPM-NK 102907–102908 & OMNH, 1F & 2M, ditto, 8–15. IX. 2009; KPM-NK 102909–102911, 102935–102937, 6M, ditto, 15–22. IX. 2009; KPM-NK 102874, M, Fukui Pref., Mt. Kanmuri, 17. VIII. 1973, H. Kurokawa leg.; KPM-NK 102861, F, Fukui Pref., Chinabora, 30. VIII. 1981, T. Murota leg.; KPM-NK 81193, F, Fukui Pref., Mt. Kanakusa-dake, 13. IX. 1981, H. Kurokawa leg.; KPM-NK 102859, F, Fukui Pref., Izumi Vil., Kadonomaesaka, 18. X. 1981, H. Kurokawa leg.; OMNH, 1F, Nara Pref., Yamatokoriyama City, Yata Town, 13. VI. 2012, S. Fujie leg.; KPM-NK 81288, F, Wakayama Pref., Aridagawa Town, Mt. Oishigamine, 26. X. 2012, S. Fujie leg.; SEHU, 1F (holotype), Hyogo Pref., Sakazukiyama, 11. X. 1951, K. Iwata leg. [Sado Is.] KPM-NK 102893–102896, 1F & 3M, Niigata Pref., Sado City, Kanaishinpo to Mt. Hakuunzan, 4. VIII. 2009, K. Watanabe leg.; KPM-NK 102897 & OMNH, 2M, ditto, 10. IX. 2010. [Shikoku] KPM-NK 102891, F, Ehime Pref., Saijo City, Nishinokawatei, Mt. Ishizuchi, Tsuchigoya, 28. VII. 2018, K. Watanabe leg.

Description. Female (n = 30). Body polished; covered with setae; body length 7.5–9.2 mm.

Head $0.6\text{--}0.65 \times$ as long as wide in dorsal view. Clypeus $3.0 \times$ as wide as long; slightly convex in lateral view; sparsely punctate dorsally, transversely rugulose ventrally; punctures partly united into groove-like foveola (Fig. 76A); lower margin subtruncate to slightly rounded; sharp and narrowly reflected in lateral view. Face $0.38\text{--}0.4 \times$ as long as minimum width; slightly convex medially; matt; densely punctate medially; punctures partly united into groove-like foveola medially. Frons weakly concave above antennal sockets; punctate except for narrow smooth area above each antennal socket. POL $1.6\text{--}2.0 \times$ as OD. OOL $1.6\text{--}2.1 \times$ as OD. Gena and occiput densely punctate. Dorsal profile of gena rounded in dorsal view; width gradually narrowing posteriorly (Fig. 1D). Occipital carina complete. Malar space $1.0\text{--}1.1 \times$ as long as basal width of mandible. Mandible flat at base; lower tooth longer than upper tooth. Antenna with 23–25 flagellomeres; not flattened and tapped. FL I $2.1\text{--}2.3 \times$ as long as maximum depth in lateral view, $1.1 \times$ as long as FL II.

Mesosoma. Pronotum rugulose ventrally; densely punctate dorsally. Epomia short; section on border of collar and pronotum present. Mesoscutum densely punctate; without notaulus or slightly defined as trace-like. Scutellum sparsely punctate; weakly convex in lateral view. Mesopleuron longitudinally rugulose and

punctate; punctures largely partly united into groove-like foveola (Fig. 1E); without conspicuous smooth area around speculum. Epicnemial carina present laterally and ventrally. Sternaulus deep in anterior 0.4 of mesopleuron. Metapleuron obliquely rugulose; without juxtacoxal carina. Propodeum rugose or rugulose except for area externa finely and sparsely punctate with smooth ISP; anterior transverse carina absent (Fig. 1G); posterior transverse carina complete, inverted U-shaped (Fig. 1G); lateromedian longitudinal carina weak and partly indistinct in front of posterior transverse carina (Fig. 1G); lateral longitudinal carina complete; pleural carina complete; area superomedia indistinct; apophysis small but pointed; spiracle elliptic. Fore wing length 5.3–7.3 mm. Areolet slightly wider than long; width slightly narrowing anteriorly; received vein 2m-cu at near or slightly beyond middle (Fig. 1F). Fore wing vein 1cu-a interstitial to vein M&RS (Fig. 1F). Nervellus subvertical; intercepted near posterior end of vein. Hind femur reticulate coriaceous; with short setae (Fig. 77D); $4.2\text{--}4.65 \times$ as long as maximum depth in lateral view. Tarsal claws simple.

Metasoma. T I $2.2\text{--}2.3 \times$ as long as maximum width; longitudinally striate except for smooth area of apex (Fig. 1H); latero-median carina absent; dorso-lateral carina complete and weak. T II $1.25\text{--}1.4 \times$ as long as maximum width; smooth; finely punctate laterally. Thyridium present; close to anterior margin of T II; slightly depressed; ca. $2.0 \times$ as wide as length. T III to T V finely punctate. Ovipositor sheath $0.9\text{--}1.05 \times$ as long as hind tibia, $1.5\text{--}1.6 \times$ as long as T I. Ovipositor straight; apex sharp; apex of lower valve with teeth (Fig. 78A).

Colouration (Figs. 1A–H). Body (excluding wings) black to blackish-brown. Setae silver; weakly tinged with brown in head and mesoscutum. Subapical part of mandible and lower part of clypeus tinged with reddish-brown. Labrum, palpi, pair of small spots between antennal socket and eye, postero-dorsal corner of pronotum, and apex of ovipositor sheath yellowish-brown to yellow. FL VII to FL XI with white to ivory markings. Bases of each tibia and tibial spurs brown. Apex of T I narrowly tinged with yellowish-brown to reddish-brown. Wings hyaline. Veins and pterostigma blackish-brown to brown except for yellowish-brown wing base.

Male (n = 49). Similar to female (Figs. 2A–F). Body length 7.4–10.3 mm. Clypeus $2.4\text{--}2.7 \times$ as wide as long. Face $0.5\text{--}0.6 \times$ as long as minimum width. POL $0.8\text{--}1.05 \times$ as OD. OOL $1.0\text{--}1.35 \times$ as OD. Malar space $0.45\text{--}0.6 \times$ as long as basal width of mandible. Antenna with 27–31 flagellomeres; with tyloids on FL XII (or XIII) to FL XVIII (Fig. 2D). FL I $3.05\text{--}3.65 \times$ as long as maximum depth in

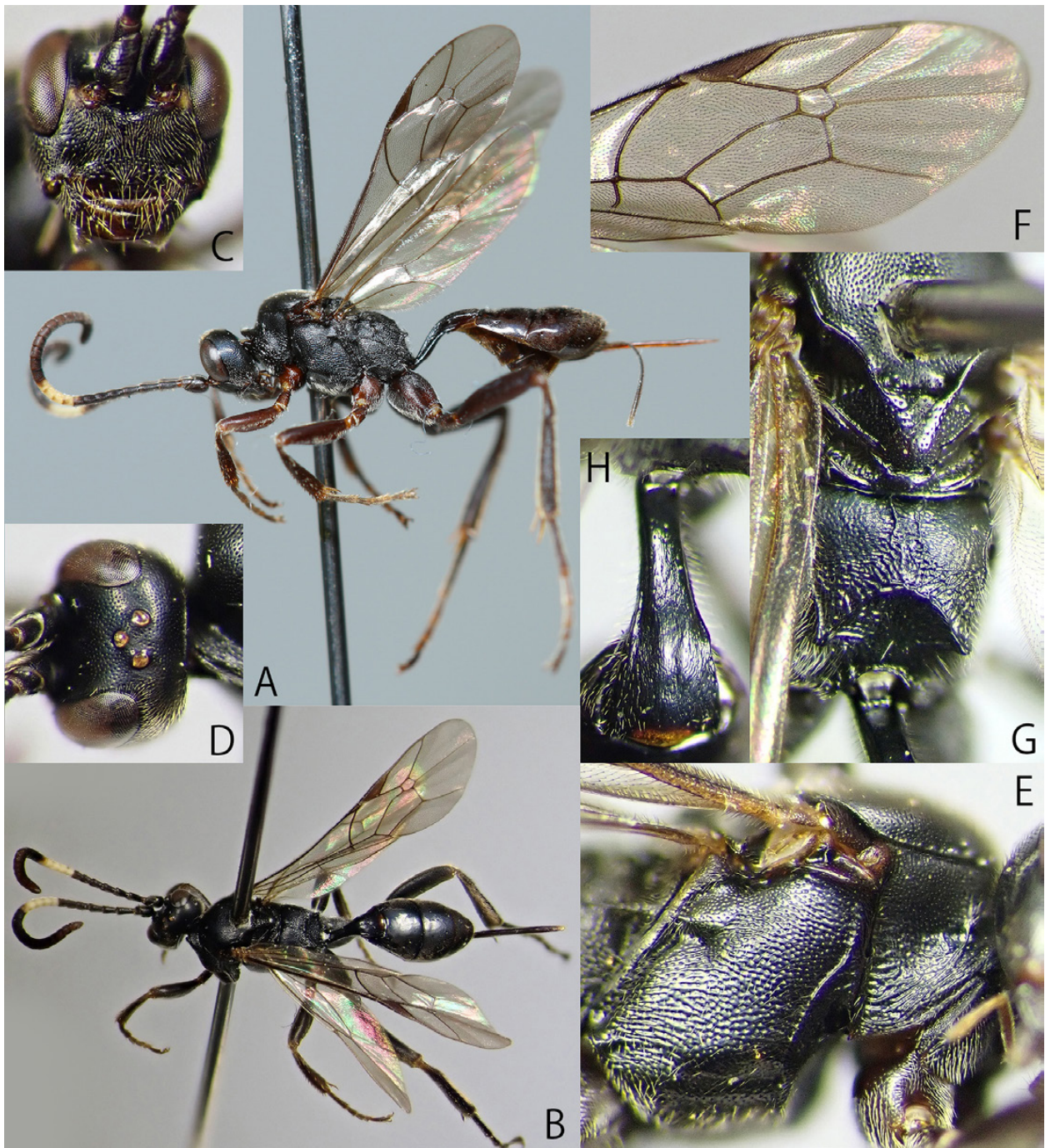


Fig. 1. *Aconias concavopropodeonus* (Uchida, 1952), female (KPM-NK 102888) — A: lateral habitus; B: head, mesosoma, and metasoma, dorso-lateral view; C: head, frontal view; D: head, dorsal view; E: pronotum and mesopleuron, lateral view; F: fore wing; G: scutellum and propodeum, dorsal view; H: T I, dorsal view.

lateral view, $1.25\text{--}1.4 \times$ as long as FL II. Fore wing length $6.0\text{--}7.8$ mm. Lateral section of anterior transverse carina complete (Fig. 2E). Hind femur $6.0\text{--}6.25 \times$ as long as maximum depth in lateral view. T I $3.85\text{--}4.15 \times$ as long as maximum width. T II $1.8\text{--}2.0 \times$ as long as maximum width. Face, ventro-lateral sides of face, malar space, clypeus, mandible except for teeth, and palpi yellow to ivory. Ventral surface of scape usually with yellow marking. Postero-dorsal corner of pronotum, posterior part of scutellum, and subtegular ridge yellow. Fore coxa with yellow marking(s). Fore and mid legs paler than female; trochanters and

trochantelli largely yellow; fore femur and fore and mid tibiae and tarsi except for each TS V yellow to reddish-yellow. Basal part of hind tibia and tibial spurs of hind tibia brown to yellowish-brown. Posterior margins of metasomal tergites narrowly tinged with reddish-brown. Hind TS II to TS IV ivory. Yellow area of mid tarsus usually tinged with ivory. In few males shows following colour variation: fore and mid legs except for mid coxa largely yellowish to reddish-brown; tegula brown; hind trochantellus yellowish-brown; basal yellowish area of hind tibia enlarged; hind tarsus nearly entirely yellowish-brown; posterior part of T

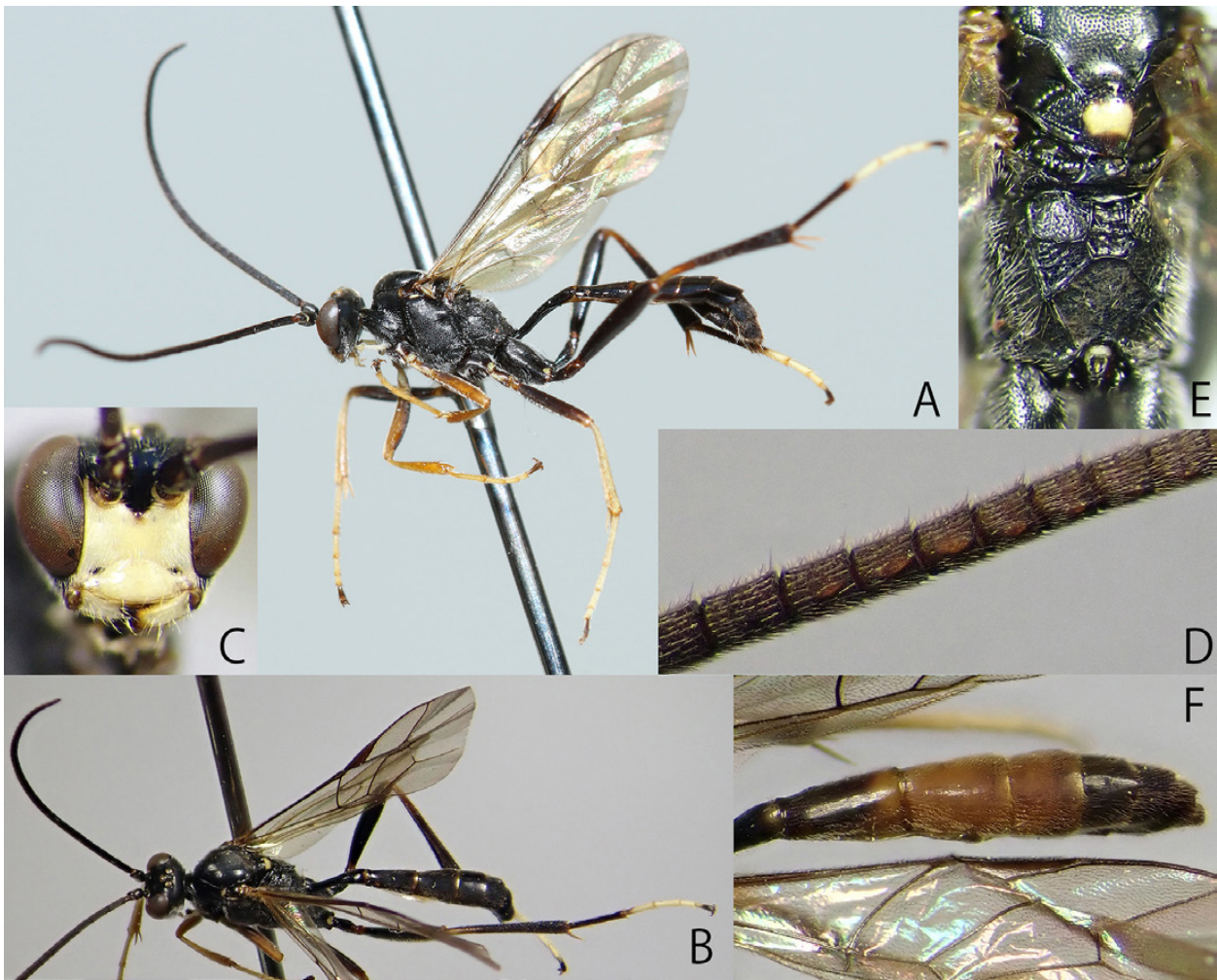


Fig. 2. *Aconias concavopropodeonus* (Uchida, 1952), males (A–E: KPM-NK 102895; F: KPM-NK 103022) — A: lateral habitus; B: head, mesosoma, and metasoma, dorso-lateral view; C: head, frontal view; D: flagellum and tyloids; E: scutellum and propodeum, dorsal view; F: metasoma, dorso-lateral view.

II, T III, and T IV reddish-brown (Fig. 2F).

Distribution. Japan (Hokkaido, Honshu, Sado Is., and Shikoku).

Bionomics. Unknown.

Remarks. This is the first record of male of this species. This is also the first record of this species from Sado Is. and Shikoku.

***Aconias fujiei* sp. nov.**

[New SJN: Fujie-kuro-togari-himebachi]
(Figs. 3A–I, 77E, 78B)

Type series. **Holotype:** JAPAN, KPM-NK 81195, F, Hyogo Pref., Kami Town, Niiya, Mikata-kogen, 26. VI. – 18. VII. 2011, S. Fujie leg. (MsT). **Paratype:** JAPAN, KPM-NK 102903, F, Toyama Pref., Toyama City, Arimine, Jyurodani, 16–25. VIII. 2009, M. Watanabe leg. (MsT).

Description. Female (n = 2). Body polished; covered with setae; body length 6.1–7.1 (HT: 6.1) mm.

Head $0.65 \times$ as long as wide in dorsal view. Clypeus $3.4\text{--}3.7$ (HT: 3.7) $\times$ as wide as long; slightly convex in

lateral view; sparsely punctate dorsally; transversely rugulose ventrally; punctures partly united into groove-like foveola; lower margin weakly rounded; blunt in lateral view. Face $0.35 \times$ as long as minimum width; slightly convex medially; matt; punctate medially; punctures partly united into groove-like foveola medially. Frons weakly concave above antennal sockets; punctate dorsally, transversely rugose ventrally. POL $1.25\text{--}1.5$ (HT: 1.25) $\times$ as OD. OOL $1.4\text{--}1.6$ (HT: 1.4) $\times$ as OD. Gena and occiput densely punctate. Dorsal profile of gena rounded in dorsal view; width not narrowing anteriorly, somewhat abruptly narrowing posteriorly (Fig. 3D). Occipital carina complete. Malar space $0.7 \times$ as long as basal width of mandible. Mandible flat at base; lower tooth longer than upper tooth. Antenna with 24 flagellomeres; not flattened and tapped. FL I $2.1 \times$ as long as maximum depth in lateral view, $1.05\text{--}1.1$ (HT: 1.05) $\times$ as long as FL II.

Mesosoma. Pronotum rugulose. Epomia absent. Mesoscutum densely punctate; punctures partly united into groove-like longitudinal foveola; with short notaulus. Scutellum sparsely punctate; flat in lateral view.

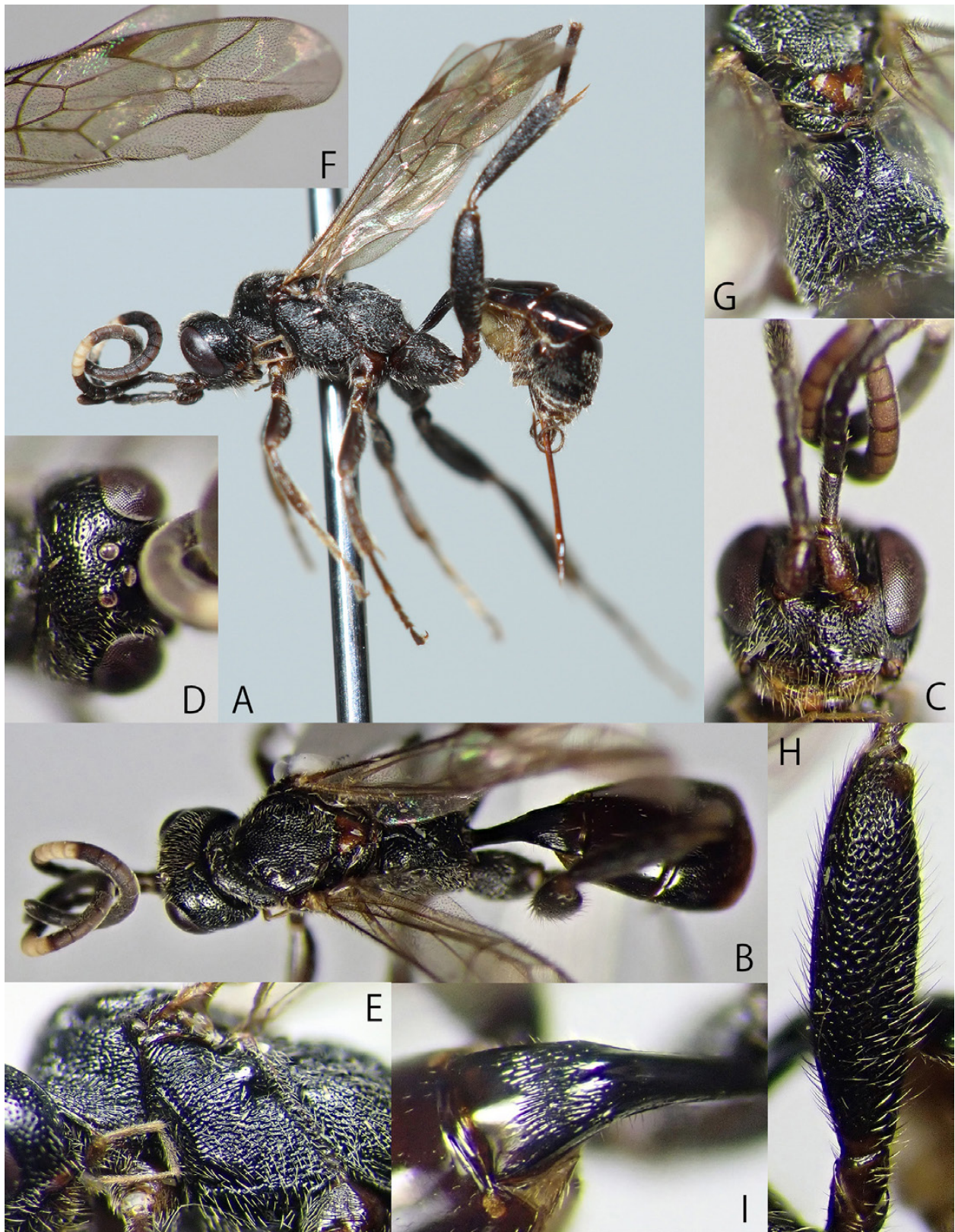


Fig. 3. *Aconias fujiei* sp. nov., female (holotype: KPM-NK 81195) — A: lateral habitus; B: head, mesosoma, and metasoma, dorsal view; C: head, frontal view; D: head, dorsal view; E: pronotum and mesopleuron, lateral view; F: fore wing; G: scutellum and propodeum, dorsal view; H: hind femur, lateral view; I: T I, dorsal view.

Mesopleuron longitudinally rugulose; with conspicuous smooth area around speculum (Fig. 3E). Epicnemial carina present laterally and ventrally. Sternaulus deep in anterior 0.5 of mesopleuron. Metapleuron rugulose; without juxtacoxal carina. Propodeum rugose or rugulose except for area externa and area basalis sparsely punctate with smooth ISP; anterior transverse carina absent; posterior transverse carina present, inverted U-shaped, weak and partly indistinct medially (Fig. 3G); lateromedian longitudinal carina weak and partly or largely indistinct in front of posterior transverse carina; lateral longitudinal carina complete; pleural carina complete; area superomedia partly distinct; apophysis small but pointed; spiracle round. Fore wing length 5.0–5.7 (HT: 5.0) mm. Areolet as long as wide; width gradually narrowing anteriorly; received vein 2m-cu at near or slightly beyond middle (Fig. 3F). Fore wing vein 1cu-a interstitial to vein M&RS. Nervellus subvertical; intercepted near posterior end of vein. Hind femur densely punctate; with long setae (Figs. 3H, 77E); 4.0–4.2 (HT: 4.0) $\times$ as long as maximum depth in lateral view. Tarsal claws simple.

Metasoma. T I 2.4 $\times$ as long as maximum width; smooth; longitudinally striate subapically (Fig. 3I); lateromedian carina absent; dorso-lateral carina complete. T II 0.65 $\times$ as long as maximum width; smooth; finely and sparsely punctate laterally. Thyridium present; close to anterior margin of T II; slightly depressed; ca. 2.0 $\times$ as wide as length. T III to T V finely punctate. Ovipositor sheath 0.9–1.25 $\times$ as long as hind tibia, 1.9–2.15 (HT: 1.9) $\times$ as long as T I. Ovipositor straight; apex sharp; apex of lower valve with teeth (Fig. 78B).

Colouration (Figs. 3A–I). Body (excluding wings) black to blackish-brown. Setae silver. Subapical part of mandible and lower part of clypeus tinged with yellowish-brown. Palpi, membranous part of metasomal sternite, and ovipositor yellowish-brown to brown. FL VII (or VIII) to FL XI (or XII) with ivory markings. Scutellum and postscutellum reddish-brown. Wings hyaline. Veins and pterostigma blackish-brown to brown except for yellowish-brown to yellow wing base.

Male. Unknown.

Distribution. Japan (Honshu).

Bionomics. Unknown.

Etymology. The specific name is from the collector of holotype, Mr. Shunpei Fujie, who is a Japanese taxonomist of Braconidae and my friend.

Remarks. This species resembles *Ac. concavopropodeonus* in black and small-sized body but can be distinguished by the hind femur with long setae (with short setae in *Ac. concavopropodeonus*) and the reddish-brown scutellum

(entirely black in *Ac. concavopropodeonus*).

***Aconias longisetosus* sp. nov.**

[New SJN: Kenaga-togari-himebachi]

(Figs. 4A–H, 77F, 78C)

Type series. **Holotype:** JAPAN, KPM-NK 81196, F, Kagoshima Pref., Tokunoshima Is., Kedoku, 22. V. 2008, A. Sakai leg. **Paratype:** JAPAN: KPM-NK 81197, F, Kagoshima Pref., Amamioshima Is., Yamato Vil., Oodana, 1. VI. 2007, M. Gunji leg.; KPM-NK 81198, 103174, 103175, 3F, same locality of holotype except for 21. V. 2008, K. Watanabe leg.

Description. Female (n = 5). Body polished; covered with setae; body length 5.25–7.4 (HT: 7.1) mm.

Head 0.6–0.65 (HT: 0.63) $\times$ as long as wide in dorsal view. Clypeus 3.4–3.5 (HT: 3.45) $\times$ as wide as long; slightly convex in lateral view; sparsely punctate dorsally; smooth ventrally; punctures partly united into groove-like foveola; lower margin weakly rounded; blunt in lateral view. Face 0.38–0.4 (HT: 0.38) $\times$ as long as minimum width; slightly convex medially; matt; densely punctate medially; punctures partly united into groove-like foveola medially. Frons weakly concave above antennal sockets; irregularly or obliquely rugose except for narrowly matt along orbits. POL 1.1–1.5 (HT: 1.2) $\times$ as OD. OOL 0.95–1.4 (HT: 1.15) $\times$ as OD. Gena and occiput densely punctate. Dorsal profile of gena rounded in dorsal view; width gradually narrowing posteriorly (Fig. 4D). Occipital carina complete. Malar space 0.5–0.6 (HT: 0.5) $\times$ as long as basal width of mandible. Mandible flat at base; lower tooth longer than upper tooth. Antenna with 24 flagellomeres; not flattened and tapped. FL I 2.25–2.5 (HT: 2.5) $\times$ as long as maximum depth in lateral view, 1.15–1.25 (HT: 1.25) $\times$ as long as FL II.

Mesosoma. Pronotum longitudinally rugulose. Epomia absent. Mesoscutum densely punctate; punctures partly united into groove-like longitudinal foveola (Fig. 4F); with short notaulus (Fig. 4D). Scutellum sparsely punctate; flat in lateral view. Mesopleuron longitudinally rugulose dorsally and reticulate rugose ventrally; with conspicuous smooth area around speculum (Fig. 4E). Epicnemial carina present laterally and ventrally. Sternaulus deep in anterior 0.7 of mesopleuron. Metapleuron reticulate rugose; without juxtacoxal carina. Propodeum rugose or rugulose except for area externa and basalis sparsely punctate with smooth ISP; anterior transverse carina present laterally; posterior transverse carina complete, inverted U-shaped (Fig. 4F); lateromedian longitudinal carina present, usually indistinct in front of posterior transverse carina; lateral

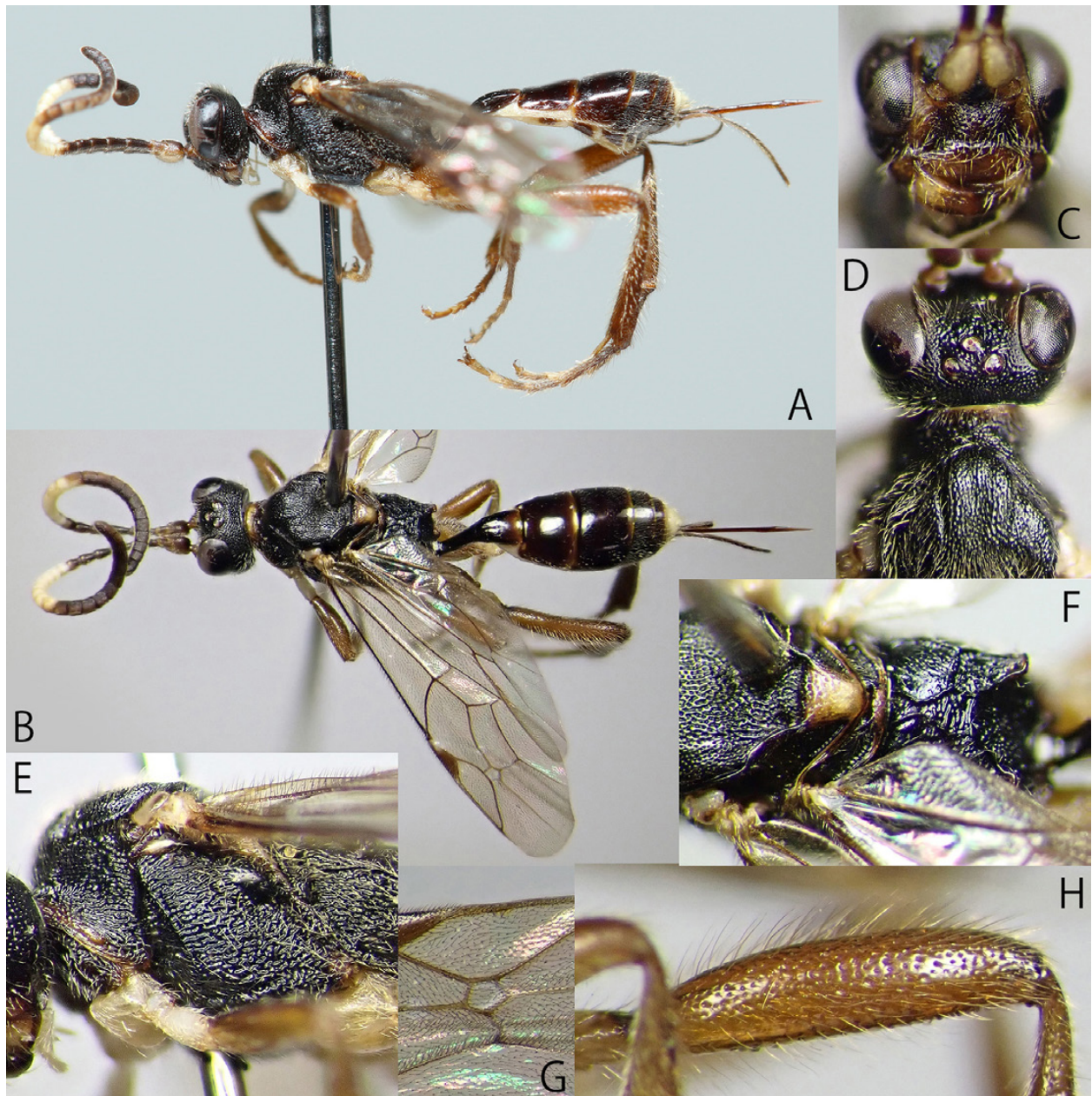


Fig. 4. *Aconias longisetosus* **sp. nov.**, female (holotype: KPM-NK 81196) — A: lateral habitus; B: dorsal habitus; C: head, frontal view; D: head and mesoscutum, dorsal view; E: pronotum and mesopleuron, lateral view; F: scutellum and propodeum, dorsal view; G: areolet; H: hind femur, lateral view.

longitudinal carina complete; pleural carina complete; area superomedia partly distinct, transversely rugose; apophysis large, wide, with obtuse apex (Fig. 4F); spiracle round to oval. Fore wing length 4.25–6.0 (HT: 5.7) mm. Areolet as long as wide; width gradually narrowing anteriorly; received vein 2m-cu at near middle (Fig. 4G). Fore wing vein 1cu-a interstitial to vein M&RS (Fig. 4B). Nervellus subvertical; intercepted posterior to middle. Hind femur densely punctate; with long setae (Figs. 4H, 77F); 4.4–4.6 (HT: 4.4) $\times$ as long as maximum depth in lateral view. Tarsal claws simple.

Metasoma. T I 2.5–2.75 (HT: 2.5) $\times$ as long as maximum width; smooth; longitudinally striate subapically; latero-median carina absent; dorso-lateral carina present but partly

weak. T II 0.7–0.78 (HT: 0.7) $\times$ as long as maximum width; smooth; finely and sparsely punctate laterally. Thyridium present; close to anterior margin of T II; slightly depressed; ca. 2.0 $\times$ as wide as length. T III to T V finely punctate. Ovipositor sheath 1.0–1.1 (HT: 1.05) $\times$ as long as hind tibia, 1.5–1.6 (HT: 1.5) $\times$ as long as T I. Ovipositor straight; apex sharp; apex of lower valve with teeth (Fig. 78C).

Colouration (Figs. 4A–H). Body (excluding wings) black to blackish-brown. Setae silver. Mandible except for teeth, clypeus, facial orbit, frontal orbit, anterior margin of collar, subtegular ridge, scutellum, postscutellum, posterior margins of T I to T III, and ovipositor reddish-brown to yellowish-brown. Subbasal part of mandible, ventral surfaces of scape and pedicel, palpi, tegula, apex of

scutellum, membranous part of metasomal sternites, and apex of metasoma ivory to white. FL V (or VI) to FL XII (or XIII) with white to ivory markings. Legs reddish-brown to brown except for fore and mid coxae, all trochanters, and all trochantelli ivory. Wings hyaline. Veins and pterostigma blackish-brown to brown except for yellowish-brown to ivory wing base.

Male. Unknown.

Distribution. Japan (Amamioshima Is. and Tokunoshima Is.).

Bionomics. Unknown. All species collected in the moist evergreen forest.

Etymology. The specific name is from the Latin “*longi-*” (long) plus “*setosus*” (covered with setae), referring to the long setae on the legs.

Remarks. This species resembles *Ac. ruficoxalis* Sheng & Sun, 2008 in the largely reddish coxae and hind leg and the yellowish face and scutellum but can be distinguished by the hind femur with long setae (with short setae in *Ac. ruficoxalis*), the T I $2.5\text{--}2.75 \times$ as long as maximum width ($2.2 \times$ as long as maximum width in *Ac. ruficoxalis*), and the metasoma largely black (largely reddish-brown in *Ac. ruficoxalis*). This species also resembles *Ac. fujiei* **sp. nov.** in the long setae of hind femur but can be distinguished by the body colouration etc. (see above key).

***Aconias tarsatus* (Bridgman, 1881)**

[SJN: Ashimon-kuro-togari-himebachi]

(Figs. 5A–F, 6A–D, 78D)

Phygadeuon tarsatus Bridgman, 1881: 150.

Plectocryptus pectoralis Thomson, 1896: 2383.

Chaeretymma lateannulata Strobl, 1901: 192.

Plectocryptus digitatus var. *nigrofemorata* Strobl, 1901: 206.

Plectocryptus albitarsis Uchida, 1936a: 45. **Syn. nov.**

Materials examined. JAPAN: [Kunashiri Is.] SEHU, F (holotype of *Plectocryptus albitarsis*), Furukamapu, 29. VII. 1935, T. Uchida leg. [Hokkaido] KPM-NK 102933, 102934, 102940, 3F, Tokachi, Shikaribetsuko, 25–26. VI. 1957, R. Ishikawa leg.; KPM-NK 102928, 102929, 2F, Horokanai Town, Uryu, 11. VII. 2012, M. Ito leg.; KPM-NK 102930, F, ditto, 17. VII. 2012, K. Watanabe leg. [Honshu] KPM-NK 102927 & OMNH, F (OMNH) & M (KPM-NK), Nagano Pref., Outaki Vil., Mt. Ontake-san, Hakkaisan, 16. IX. 2011, S. Fujie leg.; KPM-NK 81194, F, ditto, 22. IX. 2011, K. Watanabe leg.; KPM-NK 102926, F, Toyama Pref., Mt. Jodosan, 4. VII. 1972, M. Watanabe leg.; KPM-NK 102932, M, Toyama Pref., Toyama City, Arimine, Jyurodani, 15–22. IX. 2009, M.

Watanabe leg. (MsT); KPM-NK 102931, M, Fukui Pref., Katsuyama City, Ochozan, 5. IX. 1982, H. Kurokawa leg. **GERMANY:** SEHU, 1M (det. Heinrich; as *Ac. tarsatus*), Berchtesgaden, Jennermassiv, 13. VII. 1947. **AUSTRIA:** LI, 1F (det. Schwarz; as *Ac. tarsatus*), Hochasalm, 1935, M. Priosnor leg.; LI, 1M (det. Schwarz; as *Ac. tarsatus*), Oberösterreich, Maierleiten E Rottenegg, 11. VI. 2000, J. Gusenleitner leg.

Description. Female ($n = 9$). Body polished; covered with setae; body length 7.4–10.3 mm.

Head $0.6 \times$ as long as wide in dorsal view. Clypeus $2.45\text{--}2.75 \times$ as wide as long; slightly convex in lateral view; sparsely punctate dorsally; transversely rugulose ventrally; punctures partly united into groove-like foveola; lower margin weakly rounded in frontal view, sharp and narrowly reflected in lateral view. Face $0.45\text{--}0.48 \times$ as long as minimum width; slightly convex medially; matt; densely punctate medially; punctures partly united into groove-like foveola medially. Frons weakly concave above antennal sockets; punctate except for concavity above antennal sockets. POL $1.4\text{--}1.6 \times$ as OD. OOL $1.4\text{--}1.9 \times$ as OD. Gena and occiput densely punctate. Dorsal profile of gena rounded in dorsal view; width gradually narrowing posteriorly (Fig. 5C). Occipital carina complete. Malar space $1.05\text{--}1.2 \times$ as long as basal width of mandible. Mandible flat at base; lower tooth longer than upper tooth. Antenna with 24–26 flagellomeres; not flattened and tapped. FL I $2.5\text{--}2.6 \times$ as long as maximum depth in lateral view, $1.2\text{--}1.3 \times$ as long as FL II.

Mesosoma. Pronotum rugulose ventrally, densely punctate dorsally. Epomia absent. Mesoscutum densely punctate; with short and indistinct notaulus (Fig. 5C). Scutellum sparsely punctate; weakly convex in lateral view. Mesopleuron longitudinally rugulose and punctate; punctures largely partly united into groove-like foveola; without conspicuous smooth area around speculum (Fig. 5D). Epicnemial carina present laterally and ventrally. Sternaulus deep in anterior 0.5 of mesopleuron. Metapleuron obliquely rugulose; without juxtacoxal carina. Propodeum rugose or rugulose except for area externa finely and sparsely punctate with smooth ISP; anterior transverse carina absent; posterior transverse carina complete, inverted V-shaped (Fig. 5F); lateromedian longitudinal carina weak and usually partly indistinct in front of posterior transverse carina; lateral longitudinal carina complete; pleural carina complete; area superomedia indistinct; apophysis small but pointed; spiracle elliptic. Fore wing length 7.5–9.8 mm. Areolet slightly wider than long; width slightly narrowing anteriorly; received vein 2m-cu at near or slightly beyond middle (Fig. 5E).

Fore wing vein 1cu-a interstitial to vein M&RS (Fig. 5E). Nervellus subvertical; intercepted near posterior end of vein (Fig. 5E). Hind femur reticulate coriaceous; with short setae; $4.2\text{--}4.65 \times$ as long as maximum depth in lateral view. Tarsal claws simple.

Metasoma. T I $1.85\text{--}2.25 \times$ as long as maximum width; smooth and partly weakly coriaceous; latero-median carina absent; dorso-lateral carina complete and weak. T II $1.25\text{--}1.4 \times$ as long as maximum width; smooth; finely punctate laterally. Thyridium present; close to anterior margin of T II; slightly depressed; ca. $2.0 \times$ as wide as length. T III to T V finely punctate except for largely smooth area of middle part of T III. Ovipositor sheath $1.1\text{--}1.25 \times$ as long as hind tibia, $1.85\text{--}2.2 \times$ as long as T I. Ovipositor straight; apex sharp; apex of lower valve with teeth (Fig. 78D).

Colouration (Figs. 5A–F). Body (excluding wings) black to blackish-brown. Setae silver; weakly tinged with brown in head and mesoscutum. Subapical part of

mandible tinged with yellowish-brown. Pair of small spots between antennal socket and eye yellowish-brown to yellow. FL VII (or VIII) to FL X (or XI) with white to ivory markings. Hind TS III to TS IV ivory. Posterior margins of T I to T III narrowly tinged with reddish-brown. Thyridium and ovipositor reddish-brown. Wings hyaline. Veins and pterostigma blackish-brown to brown except for yellowish-brown wing base.

Male ($n=7$). Similar to female (Figs. 6A–D). Body length 7.8–11.0 mm. Clypeus $2.4\text{--}2.5 \times$ as wide as long. Face $0.5\text{--}0.6 \times$ as long as minimum width. POL $0.8\text{--}0.9 \times$ as OD. OOL $0.8\text{--}0.95 \times$ as OD. Malar space $0.45\text{--}0.55 \times$ as long as basal width of mandible. Antenna with 27–34 flagellomeres; with tyloids on FL XII (or XIII) to FL XVIII (or XIX, XX) (Fig. 6D). FL I $2.75\text{--}3.4 \times$ as long as maximum depth in lateral view, $1.1\text{--}1.3 \times$ as long as FL II. Fore wing length 7.8–9.9 mm. Lateral section of anterior transverse carina absent or incomplete. Hind femur 7.2–8.0

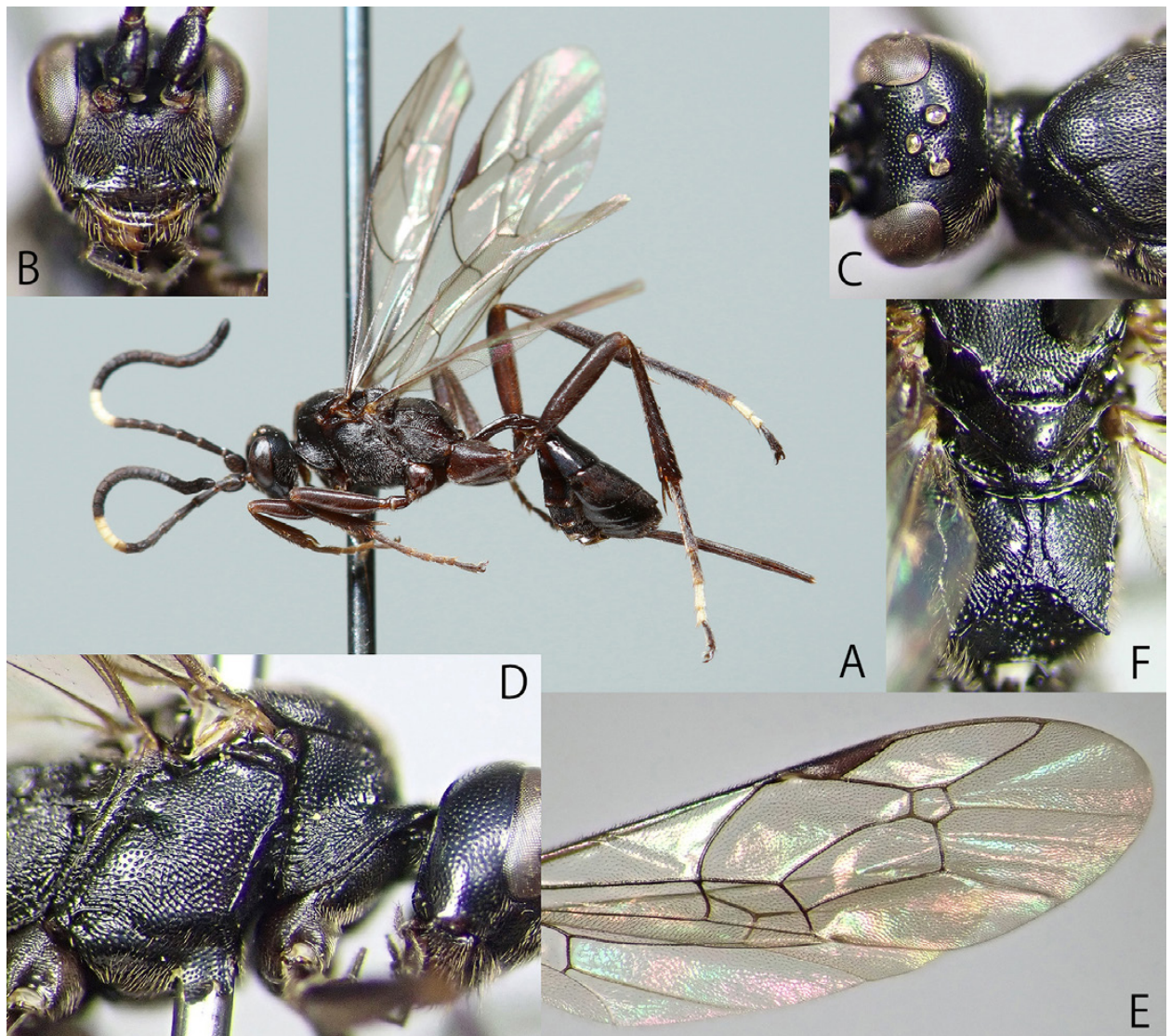


Fig. 5. *Aconias tarsatus* (Bridgman, 1881), females (A: OMNH; B–F: KPM-NK 81194) — A: lateral habitus; B: head, frontal view; C: head and mesoscutum, dorsal view; D: pronotum and mesopleuron, lateral view; E: wings; F: scutellum and propodeum, dorsal view.

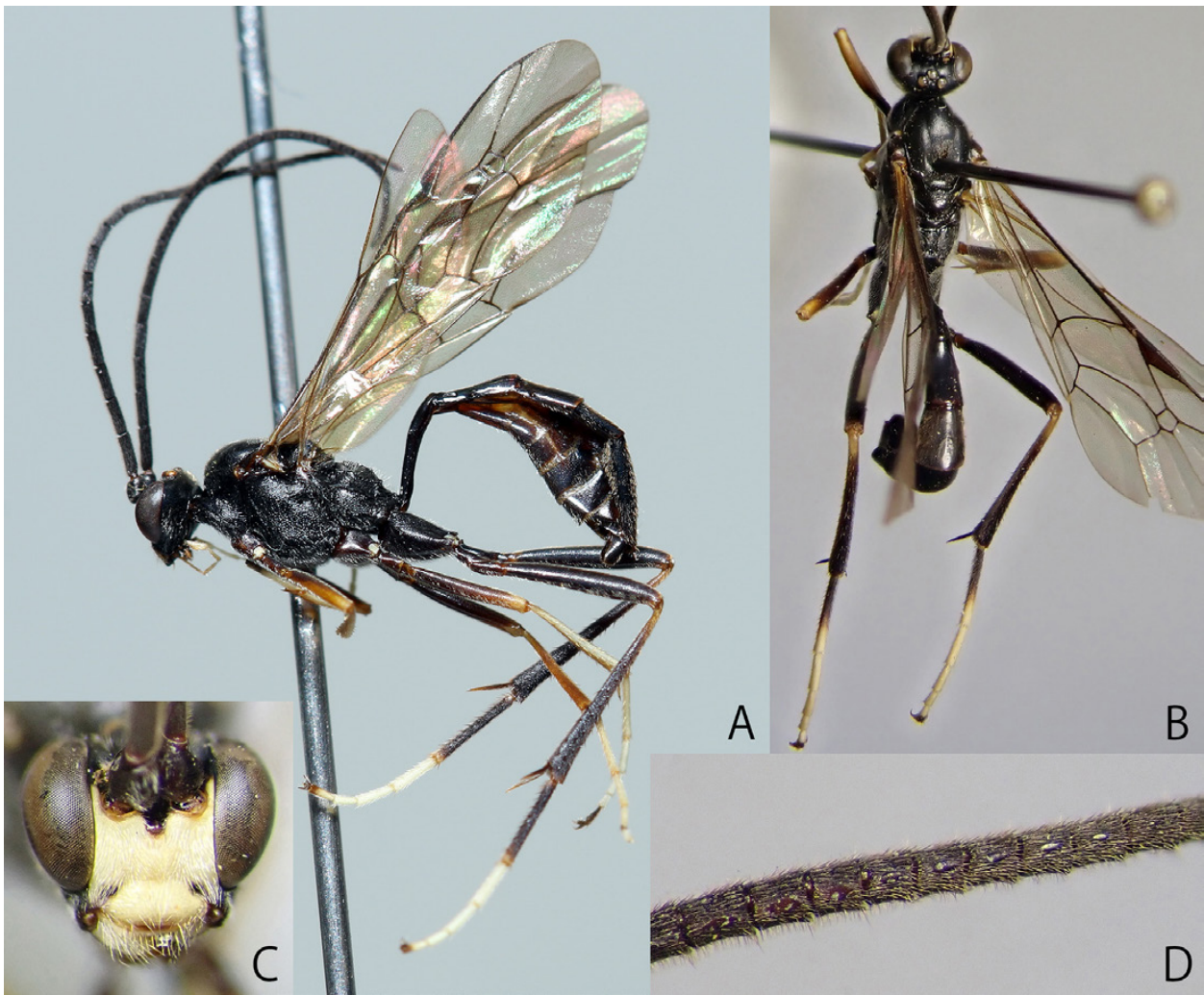


Fig. 6. *Aconias tarsatus* (Bridgman, 1881), males (A: KPM-NK 102927; B–D: KPM-NK 102940) — A: lateral habitus; B: head, mesosoma, and metasoma, dorso-lateral view; C: head, frontal view; D: flagellum and tyloids.

× as long as maximum depth in lateral view. T I 4.45–5.2 × as long as maximum width. T II 2.4–2.5 × as long as maximum width. Face, ventro-lateral sides of face, clypeus, mandible except for teeth, palpi, postero-dorsal corner of pronotum yellow. Fore and mid legs paler than female; fore femur, fore and mid tibiae, and tarsi except for each TS V ivory to reddish-yellow. Basal part of hind tibia tinged with yellowish-brown. Hind tarsus ivory except for TS I.

Distribution. Japan (Kunashiri Is., Hokkaido, Honshu, and Shikoku); widely distributed in Palearctic region.

Bionomics. Unknown.

Genus *Aptesis* Förster, 1850

Aptesis Förster, 1850: 82. Type species: *Ichneumon sudeticus* Gravenhorst, 1815 (= *Ichneumon nigrocinctus* Gravenhorst, 1815). Designated by Viereck (1914).

Pezoporos Förster, 1869: 181. Type species: *Ichneumon nigrocinctus* Gravenhorst, 1815. Designated by Ashmead (1900). Name preoccupied.

Clypeodiodon Aubert, 1968: 7. Type species: *Aptesis (Clypeodiodon) flavifaciator* Aubert, 1968. Monotypic.

Four species, *Ap. albibasalis* (Uchida, 1930), *Ap. albidipes* (Walker, 1874), *Ap. flavitrochanterus* Watanabe & Taniwaki, 2018, and *Ap. opaca* (Cushman, 1937), have been recorded from Japan. Among them, *Ap. albidipes* is known only a single male holotype without apical part of antennae (Shimizu & Broad, 2020).

In this study, I newly describe five new species below. *Aptesis opaca* (Cushman, 1937) is transferred from this genus to *Oresbius*. *Aptesis* sp. C sensu Watanabe & Taniwaki (2018) is not this genus (an undetermined genus of Phygadeuontinae). *Aptesis* sp. D sensu Watanabe & Taniwaki (2018) is *Javra albotrochantellata* **sp. nov.**

Key to Japanese species of *Aptesis* (female only)

1. Base of hind tibia with conspicuous white area (Figs. 7A,

B). Propodeal apophysis well-developed (Figs. 7A, B, G, 77G). Lateral longitudinal carina of T I weak. Ovipositor sheath $0.95\text{--}1.0 \times$ as long as hind tibia. Punctuation of head and mesosoma denser than other species; clypeus largely covered with dense punctures (ISP<PD) (Fig. 76B). Head and mesoscutum largely covered with black setae.

..... *Aptesis albibasalis* (Uchida, 1930)

-. Base of hind tibia at most indistinctly tinged with yellowish-brown (Figs. 10A, 13A, 15A). Propodeal apophysis well- or not developed (Figs. 77H, I). Lateral longitudinal carina of T I strong. Ovipositor sheath with various length. Clypeus at most normally punctate (ISP>PD). Head and mesoscutum without black setae.

..... 2

2. Propodeal apophysis well-developed as teeth (Figs. 10A, B, F, I, 77I). Basal segments of antenna red (Figs. 10A, C, F). Hind femur and tibia red except for both apices blackish-brown to black (Figs. 10A, B). Ovipositor sheath $0.7\text{--}0.75 \times$ as long as hind tibia.

..... *Aptesis flagitator* (Rossi, 1794)

-. Propodeal apophysis not developed (Figs. 12G, 14F, 15G, 77H). Other character states various.

..... 3

3. Face and frontal orbit yellow to yellowish-brown (Fig. 14D). Small species; length shorter than 4.0 mm. Ovipositor sheath $1.0\text{--}1.05 \times$ as long as hind tibia.

..... *Aptesis minor* **sp. nov.**

-. Face largely black, yellow markings at most present on orbits (Figs. 8C, 9C, 12C, 13C, 15C). Frontal orbit with or without yellow markings (Figs. 8D, 9D, 12D, 15D). Large species; length longer than 5.0 mm. Length of ovipositor sheath various.

..... 4

4. Ovipositor sheath $1.2\text{--}1.38 \times$ as long as hind tibia. Hind coxa, trochanter, and trochantellus ivory to yellowish-brown (Figs. 8 A, B). Basal part of hind tibia tinged with yellowish-brown (Figs. 8 A, B). Metasomal tergites without large red area (Figs. 8 A, B). Propodeum with all carinae (Fig. 8G).

..... *Aptesis albicoxalis* **sp. nov.**

-. Ovipositor sheath shorter than $1.05 \times$ as long as hind tibia. Hind leg largely black except for *Ap. ezoensis* **sp. nov.** (area superomedia absent and ovipositor sheath short in this species) (Figs. 12A, 13A, 15A).

..... 5

5. T II and T III entirely reddish-yellow (Figs. 9A, B, 12A, B). Ovipositor sheath $0.8\text{--}0.85 \times$ as long as hind tibia. Basal segments of antenna yellowish-brown to ivory (Figs. 9A, C, 12B).

..... 6

-. Metasomal tergites black except for narrowly reddish-brown posterior margin of each segment (Figs. 13B, 15B). Length of ovipositor sheath various.

..... 7

6. Area superomedia of propodeum absent (Fig. 9G). Anterior section of lateromedian longitudinal carinae of propodeum nearly parallel each other (Fig. 9G). Hind femur and tibia entirely reddish-yellow to yellowish-brown (Fig. 9A).

..... *Aptesis ezoensis* **sp. nov.**

-. Area superomedia of propodeum partly defined (Fig. 12G). Anterior section of lateromedian longitudinal carinae of propodeum unparallel each other (Fig. 12G). Hind femur and tibia largely dark-brown (Fig. 12A).

..... *Aptesis jinbensis* **sp. nov.**

7. Hind trochanter and trochantellus largely white to yellow. Face $0.4 \times$ as long as minimum width. T I $1.4\text{--}1.85 \times$ as long as maximum width. Dorsal surface of propodeum largely rugose posteriorly. Ovipositor sheath $0.9\text{--}1.0 \times$ as long as hind tibia. Inner orbit, coxae and base of hind tibia sometimes tinged with yellowish-brown to whitish-yellow.

..... *Aptesis flavitrochanterus* Watanabe & Taniwaki, 2018

-. Hind trochanter and trochantellus black to brown (Figs. 13A, 15A).

..... 7

8. Propodeal spiracle elongate; length ca. $2.5\text{--}3.0 \times$ as maximum width. Postpetiole roundly margined at least anteriorly.

..... *Polytribax penetrator* (Smith, 1874) (a few specimens)

-. Propodeal spiracle round. Postpetiole sharply margined.

..... 9

9. Ovipositor sheath $0.75 \times$ as long as hind tibia and $1.4 \times$ as long as T I. T I $1.3 \times$ as long as maximum width. Basal part of hind tibia sometimes tinged with reddish- or yellowish-brown (Fig. 13A).

..... *Aptesis melana* Li & Sheng, 2013

-. Ovipositor sheath $0.9\text{--}1.0 \times$ as long as hind tibia and $1.7\text{--}1.9 \times$ as long as T I. T I $1.4\text{--}1.7 \times$ as long as maximum width. Basal part of hind tibia black (Fig. 15A).

..... *Aptesis yamauchii* **sp. nov.**

Aptesis albibasalis (Uchida, 1930)

[SJN: Shiromon-chibi-togari-himebachi]

(Figs. 7A–G, 76B, 77G, 78E)

Plectocryptus albibasalis Uchida, 1930: 327.

Materials examined. JAPAN: [Hokkaido] SEHU, 1F (lectotype), Sapporo, 20. IX. 1929, T. Uchida leg.

[Honshu] KPM-NK 102981, F, Tochigi Pref., Ohtawara City, Shimoishigami, 22. VIII. 2000, E. Katayama leg.; KPM-NK 102985, F, Tochigi Pref., Nasushiobara City, Osonozawa, 5–14. VIII. 2013, T. Matsumura leg. (MsT); KPM-NK 102982, F, Saitama Pref., Yorii City, Gonotsubo, 6. X. 2000, T. Nambu leg.; KPM-NK 102975, F, Kanagawa Pref., Atsugi City, Funako, Campus of Tokyo University of Agriculture, 25. VI. 2010, K. Watanabe leg.; KPM-NK 102977, F, Kanagawa Pref., Fujisawa City, Ishikawa,

Maruyama-yato, 7. VI. 2001, I. Waki leg.; KPM-NK 102976, F, Kanagawa Pref., Miura City, Mito, 21. VI. 2007, K. Watanabe leg.; KPM-NK 102978, F, Kanagawa Pref., Fujino Town, Mt. Jinba-yama, 13. IX. 2009, K. Watanabe leg.; KPM-NK 102986, F, Kanagawa Pref., Odawara City, Kamisoga, 20. VI. 2020, K. Watanabe leg.; KPM-NK 102979, F, Kanagawa Pref., Hakone Town, Sengokuhara, Shissei-kaen, 29. VIII. 2014, K. Watanabe leg.; KPM-NK 81213, F, Yamanashi Pref., Koushu City, Katsunuma Town,



Fig. 7. *Aptesis albibasalis* (Uchida, 1930), females (A: KPM-NK 102976; B–G: KPM-NK 102981) — A: lateral habitus; B: head, mesosoma, and metasoma, dorso-lateral view; C: head, frontal view; D: head, dorsal view; E: pronotum and mesopleuron, lateral view; F: wings; G: scutellum and propodeum, dorso-lateral view.

Ootaki-fudo, 9. VII. 2007, M. Irie leg.; KPM-NK 81296, F, Yamanashi Pref., Koushu City, Yanagisawa-toge, 5. VIII. 2008, K. Watanabe leg.; KPM-NK 81294, F, Shizuoka Pref., Higashiizu Town, Inatori, 25. VII. 2009, T. Muraki leg.; KPM-NK 102988, F, Toyama Pref., Toyama City, Arimine, Jurodani, 25. VIII. – 1. IX. 2009, M. Watanabe leg. (MsT); KPM-NK 102980, F, Fukui Pref., Sanzyusanken, 12. VIII. 1974, H. Kurokawa leg. [Kyushu] KPM-NK 102983, 102984, 2F, Kagoshima Pref., Kagoshima City, Haruyama-cho, 21–22. V. 2016, S. Yamane leg. (YPT). [Tsushima Is.] KPM-NK 102987, F, Nagasaki Pref., Kamiagata Town, Nita-Dam, 21. VII. 2003, T. Tano leg.

Description. Female (n = 18). Body punctate and polished; covered with setae; body length 6.1–8.8 mm.

Head $0.6 \times$ as long as wide in dorsal view; densely punctate (ISP usually shorter than DSP); covered with long setae. Eye setose (Fig. 76B). Clypeus $1.75\text{--}1.8 \times$ as wide as long; weakly convex in lateral view; densely punctate dorsally, transversely rugose ventrally (Fig. 76B); lower margin rounded in frontal view, sharp and narrowly reflected in lateral view. Face $0.35\text{--}0.4 \times$ as long as minimum width; weakly convex medially; punctures partly united into groove-like foveola. Frons with area above antennal sockets narrowly smooth; with median longitudinal carina in front of median ocellus. POL $1.4\text{--}1.8 \times$ as OD. OOL $1.5\text{--}1.6 \times$ as OD. Dorsal profile of gena slightly rounded in dorsal view; width gradually narrowing posteriorly (Fig. 7D). Occipital carina complete. Malar space $1.1\text{--}1.2 \times$ as long as basal width of mandible. Mandible flat at base; lower tooth equal in length of upper tooth. Antenna with 26–30 flagellomeres; not flattened and tapped. FL I $1.7\text{--}1.9 \times$ as long as maximum depth in lateral view, $1.0 \times$ as long as FL II.

Mesosoma densely punctate with long setae. Pronotum rugulose ventrally. Epomia absent. Mesoscutum with short and weak notaulus. Scutellum slightly convex in lateral view. Mesopleuron without conspicuous smooth area around speculum; punctures partly united into groove-like longitudinal foveola (Fig. 7E). Epicnemial carina present laterally and ventrally. Sternaulus deep in anterior 0.5 of mesopleuron. Metapleuron rugose or reticulate rugose; with or without juxtacoxal carina. Propodeum rugose or rugulose (Fig. 7G); with all carinae except for anterior transverse carina absent; area superomedia partly defined, about as long as maximum width; apophysis pointed and strong (Fig. 77G); spiracle elliptic. Fore wing length 4.1–6.35 mm. Areolet as long as maximum width; width gradually narrowing anteriorly; received vein 2m-cu at near middle (Fig. 7F). Fore wing vein 1cu-a interstitial to vein M&RS. Nervellus subvertical; intercepted near

posterior end of vein. Legs covered with long setae. Hind femur densely punctate; $4.1\text{--}4.4 \times$ as long as maximum depth in lateral view. Tarsal claws simple.

Metasoma. T I $1.9\text{--}2.15 \times$ as long as maximum width; foveolate or longitudinally striated except for smooth base and posterior margin; latero-median carina present except for apical part; dorso-lateral carina complete but sometimes weak (Fig. 77G). T II $0.6\text{--}0.7 \times$ as long as maximum width. Thyridium present; close to anterior margin of T II; flat to slightly depressed; ca. $2.0 \times$ as wide as length. Ovipositor sheath $0.95\text{--}1.05 \times$ as long as hind tibia, $1.5\text{--}1.8 \times$ as long as T I. Ovipositor straight; apex sharp; apex of lower valve with teeth (Fig. 78E).

Colouration (Figs. 7A–G). Body (excluding wings) black to blackish-brown. Setae silver except for head and mesoscutum with black setae. Subapical part of mandible tinged with reddish-brown. FL VI to FL X (or XI) with white markings. Ventral surface of apical part of flagellum usually tinged with brown. Apex of scutellum sometimes with small yellow marking. Dorsal face of fore and mid tibiae with ivory marking except for apical part. Base of hind tibia ivory. Membranous part of metasomal sternites and ovipositor yellowish-brown. Posterior margins of each metasomal tergite usually narrowly tinged with red. Thyridium reddish-brown. Wings yellowish-hyaline. Veins and pterostigma blackish-brown except for yellowish-brown to yellow wing base.

Male. No specimen available.

Distribution. Japan (Hokkaido, Honshu, Shikoku, Kyushu, and Tsushima Is.)

Bionomics. Unknown in Japan. In China, *Arge pagana* (Panzer, 1798) (Hymenoptera: Argidae) is recorded as the host (Li *et al.*, 2013).

Remarks. This is the first record of this species from Tsushima Island.

***Aptesis albicoxalis* sp. nov.**

[New SJN: Atsugi-togari-himebachi]

(Figs. 8A–G, 78F)

Aptesis sp. A: Watanabe & Taniwaki, 2018: 75.

Type series. **Holotype:** JAPAN, KPM-NK 81204, F, Honshu, Kanagawa Pref., Atsugi City, Nakaogino, 9. V. 2007, K. Watanabe leg. **Paratype:** JAPAN: [Honshu] KPM-NK 81205, F, same data of holotype; KPM-NK 81206, F, Nagano Pref., Outaki Vil., Mt. Ontake-san, Hakkaisan, 4. VIII. 2017, K. Watanabe leg.

Description. Female (n = 3). Body punctate and polished; covered with setae; body length 5.75–6.2 (HT: 5.75) mm.

Head $0.6 \times$ as long as wide in dorsal view. Clypeus $2.0\text{--}2.15$ (HT: 2.0) $\times$ as wide as long; slightly convex in lateral view; sparsely punctate dorsally; smooth ventrally; lower margin weakly rounded in frontal view, sharp in lateral view. Face $0.4 \times$ as long as minimum width; weakly convex medially, densely punctate; ISP smooth. Frons densely punctate, with pair of weak, smooth concavities above antennal sockets. POL $1.6\text{--}2.0$ (HT: 1.8) $\times$ as OD. OOL $1.4 \times$ as OD. Dorsal profile of gena rounded in dorsal view; width gradually narrowing posteriorly (Fig. 8D). Occipital carina complete. Malar space $1.05\text{--}1.1$ (HT: 1.05) $\times$ as long as basal width of mandible. Mandible flat at base; lower tooth equal in length of upper tooth. Antenna with $22\text{--}23$ (HT: 23) flagellomeres; not flattened and tapped. FL I $2.4\text{--}2.6$ (HT: 2.4) $\times$ as long as maximum depth in lateral view, $0.95\text{--}1.05$ (HT: 0.95) $\times$ as long as FL II.

Mesosoma. Pronotum rugulose ventrally (Fig. 8E). Epomia absent. Mesoscutum with short and weak notaulus; densely punctate medially. Scutellum slightly convex in lateral view. Mesopleuron without conspicuous

smooth area around speculum; punctures partly united into foveola (Fig. 8E). Epicnemial carina present laterally and ventrally. Sternaulus deep in anterior 0.6 of mesopleuron. Metapleuron rugose ventrally, with complete juxtacoxal carina. Propodeum largely rugose; with all carinae; dorsal face shorter than area postero; area superomedia defined, ca. $1.0 \times$ as long as maximum width; apophysis weak and obtuse (Fig. 8G); spiracle round. Fore wing length $4.4\text{--}5.2$ (HT: 4.6) mm. Areolet as long as maximum width; width gradually narrowing anteriorly; received vein $2m\text{--}cu$ basal than middle (Fig. 8F). Fore wing vein $1cu\text{--}a$ slightly postfurcal to vein $M\&RS$ (Fig. 8F). Nervellus inclivous; intercepted near posterior end of vein (Fig. 8F). Hind femur reticulate coriaceous; $4.2\text{--}4.5$ (HT: 4.4) $\times$ as long as maximum depth in lateral view. Tarsal claws simple.

Metasoma finely and sparsely punctate; ISP smooth. T I $1.95\text{--}2.1$ (HT: 1.95) $\times$ as long as maximum width; latero-median carina present except for apical part; dorso-lateral carina complete. T II $0.5\text{--}0.55$ (HT: 0.5) $\times$ as long as maximum width. Thyridium present; close to anterior

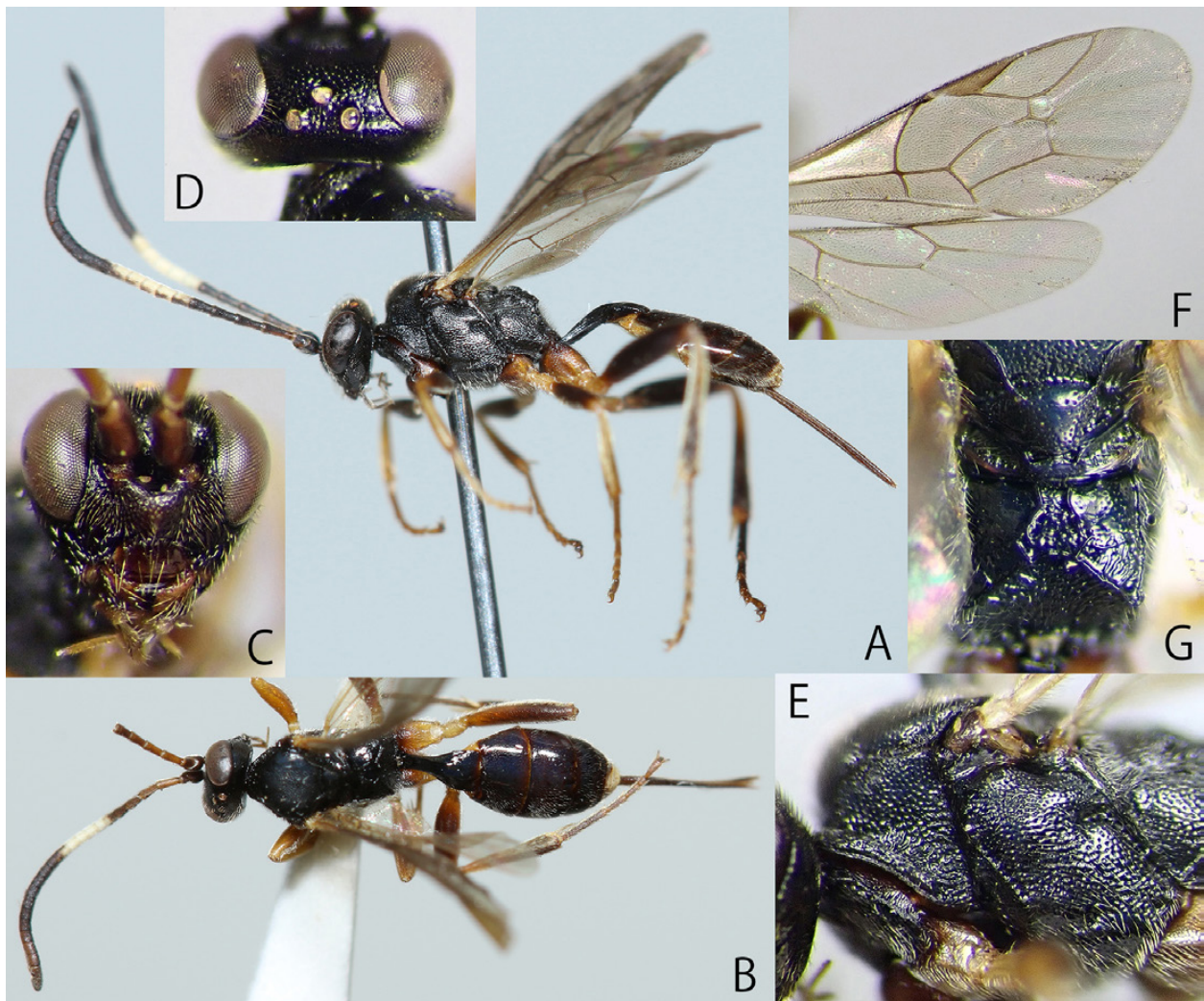


Fig. 8. *Aptesis albicoxalis* sp. nov., females (A: paratype: KPM-NK 81206; B–G: holotype: KPM-NK 81204) — A: lateral habitus; B: head, mesosoma, and metasoma, dorso-lateral view; C: head, frontal view; D: head, dorsal view; E: pronotum and mesopleuron, lateral view; F: wings; G: scutellum and propodeum, dorsal view.

margin of T II; slightly depressed; ca. $3.0 \times$ as wide as length. Ovipositor sheath $1.2\text{--}1.38$ (HT: 1.38) $\times$ as long as hind tibia, $1.9\text{--}2.15$ (HT: 2.15) $\times$ as long as T I. Ovipositor straight or slightly decurved; apex sharp; apex of lower valve with teeth (Fig. 78F).

Colouration (Figs. 8A–G). Body (excluding wings) black to blackish-brown. Setae silver. Mandible except for teeth, clypeus, basal and ventral parts of antenna, palpi, and tegula more or less tinged with reddish-yellow. FL V to FL X with white markings. Fore and mid legs and membranous part of metasomal sternites yellow to yellowish-brown. Hind coxa and basal part of hind femur reddish-yellow. Hind trochanter, trochantellus, and tibial spurs yellow to yellowish-brown. Median parts of T VI and T VII white. Ovipositor reddish-brown. Wings yellowish-hyaline. Veins and pterostigma yellowish-brown except for yellow wing base.

Male. Unknown.

Distribution. Japan (Honshu).

Bionomics. Unknown.

Etymology. The specific name is from Latin “*albi*” (white) plus “*coxalis*” (coxa), which means whitish coxa.

Remarks. This species resembles *Ap. corniculata* Sheng, 2003 in the colouration but can be distinguished by the face $0.4 \times$ as long as minimum width ($0.5 \times$ in *Ap. corniculata*) and the T I $1.95\text{--}2.1 \times$ as long as maximum width ($1.2 \times$ in *Ap. corniculata*).

***Aptesis ezoensis* sp. nov.**

[New SJN: Ezo-akahara-togari-himebachi]

(Figs. 9A–G, 77H, 78G)

Type series. **Holotype:** JAPAN, KPM-NK 81202, F, Hokkaido, Horokanai Town, Uryu, Research Forest of Hokkaido University, 11–17. VII. 2012, K. Watanabe *et al.* leg. (MsT). **Paratype:** JAPAN, KPM-NK 81203, F, same locality of holotype, 17. VII. 2012, M. Ito leg.; KPM-NK 84973, F, same data of holotype.

Description. Female ($n = 3$). Body punctate and polished; covered with setae; body length $5.4\text{--}6.2$ (HT: 6.2) mm.

Head $0.65 \times$ as long as wide in dorsal view. Clypeus $2.4\text{--}2.5$ (HT: 2.5) $\times$ as wide as long; slightly convex in lateral view; sparsely punctate and coriaceous dorsally, smooth ventrally; lower margin slightly rounded in frontal view, sharp in lateral view. Face $0.3\text{--}0.35$ (HT: 0.3) $\times$ as long as minimum width; weakly convex medially; punctate; ISP matt. Frons densely punctate with coriaceous ISP; with pair of weak, smooth concavities above antennal sockets. POL $1.5\text{--}1.6$ (HT: 1.6) $\times$ as OD. OOL $1.1\text{--}1.4$ (HT: 1.1) $\times$ as OD. Dorsal profile of gena slightly rounded

in dorsal view; width gradually narrowing posteriorly (Fig. 9D). Occipital carina complete. Malar space $1.2 \times$ as long as basal width of mandible. Mandible flat at base; lower tooth equal in length of upper tooth. Antenna with 22 flagellomeres; weakly flattened and tapered apically. FL I $2.0 \times$ as long as maximum depth in lateral view, $1.0 \times$ as long as FL II.

Mesosoma. Pronotum rugulose ventrally (Fig. 9E). Epomia short; section on border of collar and pronotum present. Mesoscutum with short and weak notaulus; densely punctate. Scutellum slightly convex in lateral view. Mesopleuron without conspicuous smooth area around speculum; punctures partly united into foveola (Fig. 9E). Epicnemial carina present laterally and ventrally. Sternaulus deep in anterior 0.5 of mesopleuron. Metapleuron rugose posteriorly; with partly indistinct juxtacoxal carina. Propodeum rugose or rugulose; with all carinae except for anterior transverse carina absent; anterior section of lateromedian longitudinal carinae nearly parallel each other; area superomedia defined except for anterior margin, longer than wide; apophysis absent (Fig. 9G); spiracle oval or round (Fig. 77H). Fore wing length $4.75\text{--}5.3$ (HT: 5.3) mm. Areolet as long as maximum width; width gradually narrowing anteriorly; received vein 2m-cu at slightly at near middle (Fig. 9F). Fore wing vein 1cu-a interstitial to vein M&RS (Fig. 9F). Nervellus slightly inclivous; intercepted posterior to middle. Hind femur reticulate coriaceous; $4.4\text{--}4.9$ (HT: 4.4) $\times$ as long as maximum depth in lateral view. Tarsal claws simple.

Metasoma finely and sparsely punctate except for T I; ISP smooth or slightly coriaceous. T I $2.0 \times$ as long as maximum width; latero-median carina present except for apical part; dorso-lateral carina complete (Fig. 77H); largely coriaceous basally and medially, smooth apically. T II $0.75\text{--}0.85$ (HT: 0.85) $\times$ as long as maximum width. Thyridium present; close to anterior margin of T II; slightly depressed; ca. $1.5 \times$ as wide as length. Ovipositor sheath $0.83 \times$ as long as hind tibia, $1.3\text{--}1.35$ (HT: 1.3) $\times$ as long as T I. Ovipositor straight; apex sharp; apex of lower valve with teeth (Fig. 78G).

Colouration (Figs. 9A–G). Body (excluding wings) black to blackish-brown. Setae silver. Mandible except for teeth, scape, pedicel, and legs reddish-yellow. Basal segments of flagellum tinged with brown to ivory. Clypeus and palpi partly tinged with brown. Tibial spurs ivory. Membranous part of metasomal sternites yellow to yellowish-brown. FL V to FL X with white markings. Apical part of T I, T II, and T III reddish-yellow. Posterior margins of T VI to T VIII narrowly white medially. Ovipositor reddish-brown. Wings hyaline. Veins and

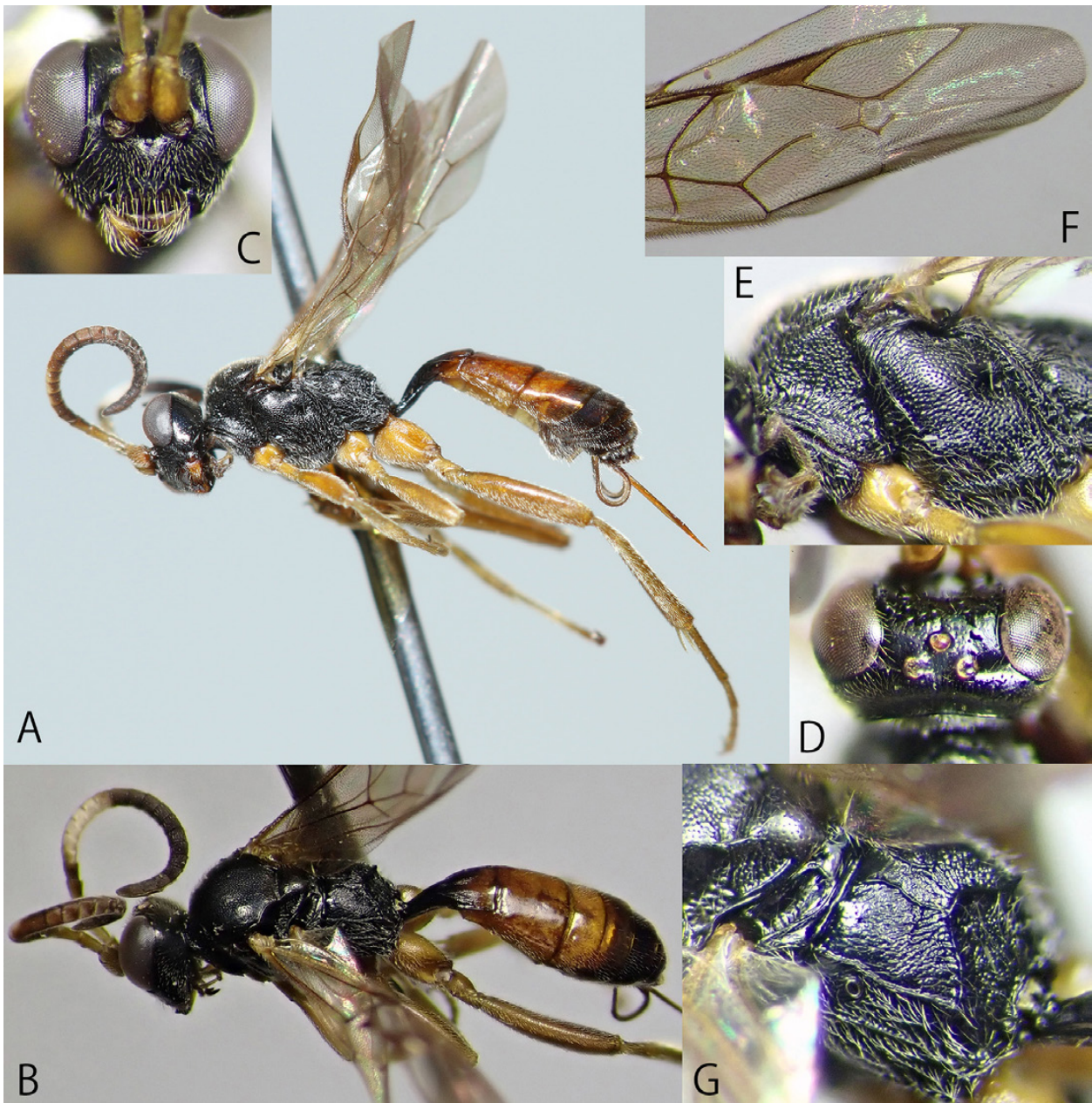


Fig. 9. *Aptesis ezoensis* sp. nov., females (A–C, E–G: holotype: KPM-NK 81202; D: paratype: KPM-NK 81203) — A: lateral habitus; B: head, mesosoma, and metasoma, dorso-lateral view; C: head, frontal view; D: head, dorsal view; E: pronotum and mesopleuron, lateral view; F: fore wing; G: scutellum and propodeum, dorso-lateral view.

pterostigma brown except for yellowish-brown to yellow wing base.

Male. Unknown.

Distribution. Japan (Hokkaido).

Bionomics. Unknown.

Etymology. The specific name is from the old locality name of Hokkaido, Ezo.

Remarks. This species resembles *Ap. improba* (Gravenhorst, 1829) in the largely red legs and metasomal tergites and the propodeum without apophysis but can be distinguished by the black base of T I, T IV, and T V (red in *Ap. improba*), the entirely reddish-yellow hind femur (with black apical part in *Ap. improba*), and the ovipositor

shorter than hind tibia (approximately as long as hind tibia in *Ap. improba*).

***Aptesis flagitator* (Rossi, 1794)**

[New SJN: Toge-hida-togari-himebachi]

(Figs. 10A–I, 11A–D, 77I, 78H)

Ichneumon flagitator Rossi, 1794: 108.

Phygadeuon pumilio Gravenhorst, 1829: 653.

Cryptus tyrannus Gravenhorst, 1829: 630.

Cryptus hopei Desvignes, 1856: 58.

Phygadeuon proximator Costa, 1886: 323.

Microcryptus tricolor Kriechbaumer, 1894a: 243.

Acanthocryptus hopei Morley, 1907: 56.

Acanthocryptus feketei Kiss, 1915: 29.

Acanthocryptus flagitator rufipes Obrtel, 1953: 202.

Materials examined. JAPAN: [Honshu] KPM-NK 102990, F, Kanagawa Pref., Yokosuka City, Nobi, 5. XI. 2012, Y. Suzuki leg.; KPM-NK 91322, F, Kanagawa Pref., Atsugi City, Funako, Campus of Tokyo University of Agriculture, 22. IV. – 16. V. 2016, Y. Kato & S. Koizumi leg. (MsT); KPM-NK 81201, F, ditto, 6. V. – 7. VI. 2016; KPM-NK 102989, F, Kanagawa Pref., Odawara City, Kuno, Suwanohara-park, 21. V. 2017, K. Watanabe leg.; KPM-NK 102991, M, Toyama Pref., Toyama City, Arimine, Inonedani, 11–16. VIII. 2009, M. Watanabe leg. (MsT); KPM-NK 103164, M, Osaka Pref., Osaka City, Taisho-Ku, Chidori-koen, 1. IX. 2019, Y. Ueyama leg.; KPM-NK 103165, M, ditto, 30. X. 2019; KPM-NK 103166, M, ditto, 3. XI. 2020; KPM-NK 103167, M, ditto, 5. XI. 2020; KPM-NK 103168, M, ditto, 3. XI. 2020; KPM-NK 103169–103173, 4F & 1M, ditto, 8. XI. 2020; OMNH, 1M, ditto, 12. XI. 2020; OMNH, 1F, ditto, 16. XI. 2020; OMNH, 1M, ditto, 4. XII. 2020; OMNH, 1M, ditto, 25. XI. 2021; KPM-NK 102992, F, Hyogo Pref., Sayo Town, Nikata, 14. V. 2011, S. Fujie leg. **AUSTRIA:** LI, F (det. M. Schwarz), Purgstall, 28. VII. 1970, Ressel leg.

Description based on Japanese materials. Female (n = 10). Body punctate and polished; covered with setae; body length 4.7–7.1 mm.

Head 0.55–0.6 × as long as wide in dorsal view. Clypeus 2.55–2.9 × as wide as long; slightly convex in lateral view; sparsely to densely punctate dorsally, smooth ventrally; lower margin rounded in frontal view, sharp and narrowly reflected in lateral view. Face 0.33–0.38 × as long as minimum width; weakly convex medially; densely punctate; matt along eye and antennal sockets. Frons densely punctate except for smooth area above antennal sockets; punctures partly united into foveola; POL 2.0–2.3 × as OD. OOL 1.2–1.4 × as OD. Dorsal profile of gena slightly rounded in dorsal view; width gradually narrowing posteriorly (Fig. 10E). Occipital carina complete. Malar space 1.15–1.3 × as long as basal width of mandible. Mandible flat at base; lower tooth equal in length of upper tooth. Antenna with 24–25 flagellomeres; not flattened and tapped. FL I 1.95–2.1 × as long as maximum depth in lateral view, 0.9–1.0 × as long as FL II.

Mesosoma densely punctate. Pronotum rugulose ventrally. Epomia short; dorsal end situated between collar and dorsal margin of pronotum. Mesoscutum with short and weak notaulus. Scutellum punctate; slightly convex in lateral view. Mesopleuron with conspicuous

smooth area around speculum; punctures partly united into groove-like longitudinal foveola (especially area below speculum). Epicnemial carina present laterally and ventrally. Sternaulus deep in entire length of mesopleuron. Metapleuron irregularly rugose or reticulate rugose; with weak or indistinct juxtacoxal carina. Propodeum rugose or rugulose; with all carinae (Fig. 10I); area superomedia defined, as long as maximum width; apophysis pointed and strong (Figs. 10B, C, I, 77I); spiracle round to oval. Fore wing length 4.1–5.5 mm. Areolet as long as maximum width; width gradually narrowing anteriorly; received vein 2m-cu slightly beyond to middle (Fig. 10H). Fore wing vein 1cu-a interstitial to vein M&RS (Fig. 10H). Nervellus slightly inclivous; intercepted near posterior end of vein. Hind femur densely punctate; 4.6–5.0 × as long as maximum depth in lateral view. Tarsal claws simple.

Metasoma. T I 1.75–1.9 × as long as maximum width; smooth; latero-median carina present except for apical part; dorso-lateral carina complete (Fig. 77I). T II 0.5–0.55 × as long as maximum width. Thyridium present; close to anterior margin of T II; flat to slightly depressed; ca. 3.0 × as wide as length. T II to T V finely and sparsely punctate. Ovipositor sheath 0.7–0.75 × as long as hind tibia, 1.15–1.25 × as long as T I. Ovipositor straight; apex sharp; apex of lower valve with teeth (Fig. 78H).

Colouration (Figs. 10A–I). Body (excluding wings) black to blackish-brown. Setae gold to pale yellow. Mandible more or less tinged with reddish-brown except for teeth. Clypeus, facial orbit, and frontal orbit sometimes tinged with reddish-brown. FL IV (or V, VI) to FL IX (or X) with white markings. Basal part of flagellum partly yellowish-brown to reddish-brown. Mesosoma sometimes with several red to reddish-brown area(s) on collar, mesoscutum, mesopleuron, mesosternum, metapleuron, and propodeum (Figs. 10B, F). Tegula yellowish-brown. Scutellum with reddish-brown marking. Legs reddish-brown except for apices of hind femur and tibia and hind tarsus. T I and T II reddish-brown to reddish-yellow. T III sometimes partly reddish-brown to reddish-yellow. Posterior margins of T VI to T VIII narrowly whitish medially. Ovipositor reddish-brown. Wings yellowish-hyaline. Veins and pterostigma blackish-brown except for yellowish-brown to yellow wing base.

Male (n = 10). Similar to female (Figs. 11A–D). Body length 5.6–7.5 mm. Face 0.4 × as long as minimum width. POL 1.9–2.0 × as OD. OOL 1.1–1.4 × as OD. Malar space 0.8–1.0 × as long as basal width of mandible. Flagellum with tyloids on FL X (or XI) to FL XV (XVI, or XVII) (Fig. 11D). FL I 2.0–2.1 × as long as maximum depth in lateral view. T II 0.85–0.9 × as long as maximum width. Antenna

entirely black except for ventral ivory spot of scape. Face with pair of ivory markings along each orbit. Clypeus partly tinged with yellow to ivory. Palpi ivory. Mesosoma black except for ivory areas on tegula, scutellum, and postscutellum. T I to T III with red to reddish-brown to reddish-yellow. Coxae black; fore coxa sometimes with small yellow marking. Trochanters yellow with black area. Trochantellus yellow. Fore and mid femora, tibiae, and tarsi reddish-yellow. Hind femur and tibia reddish-yellow except for darkened apices. Hind tarsus blackish-brown.

Distribution. Japan (Hokkaido and Honshu).

Bionomics. Host: *Agonopterix heracliiana* (Linnaeus, 1758) (Lepidoptera, Depressariidae) (e.g. Boie, 1855); *Athalia spinarum* (Fabricius, 1793) (= *At. rosae* (Linnaeus, 1758)) (Riggert, 1939). The former host is doubtful because the host of this genus is mainly sawfly. Although no host record is recorded in Japan, *Aptesis fragitator* and *Athalia rosae* are at least sympatrically found in Atsugi, Odawara, and Osaka cities of above localities. Thus, this host is potentially the host of *A. fragitator* in Japan.

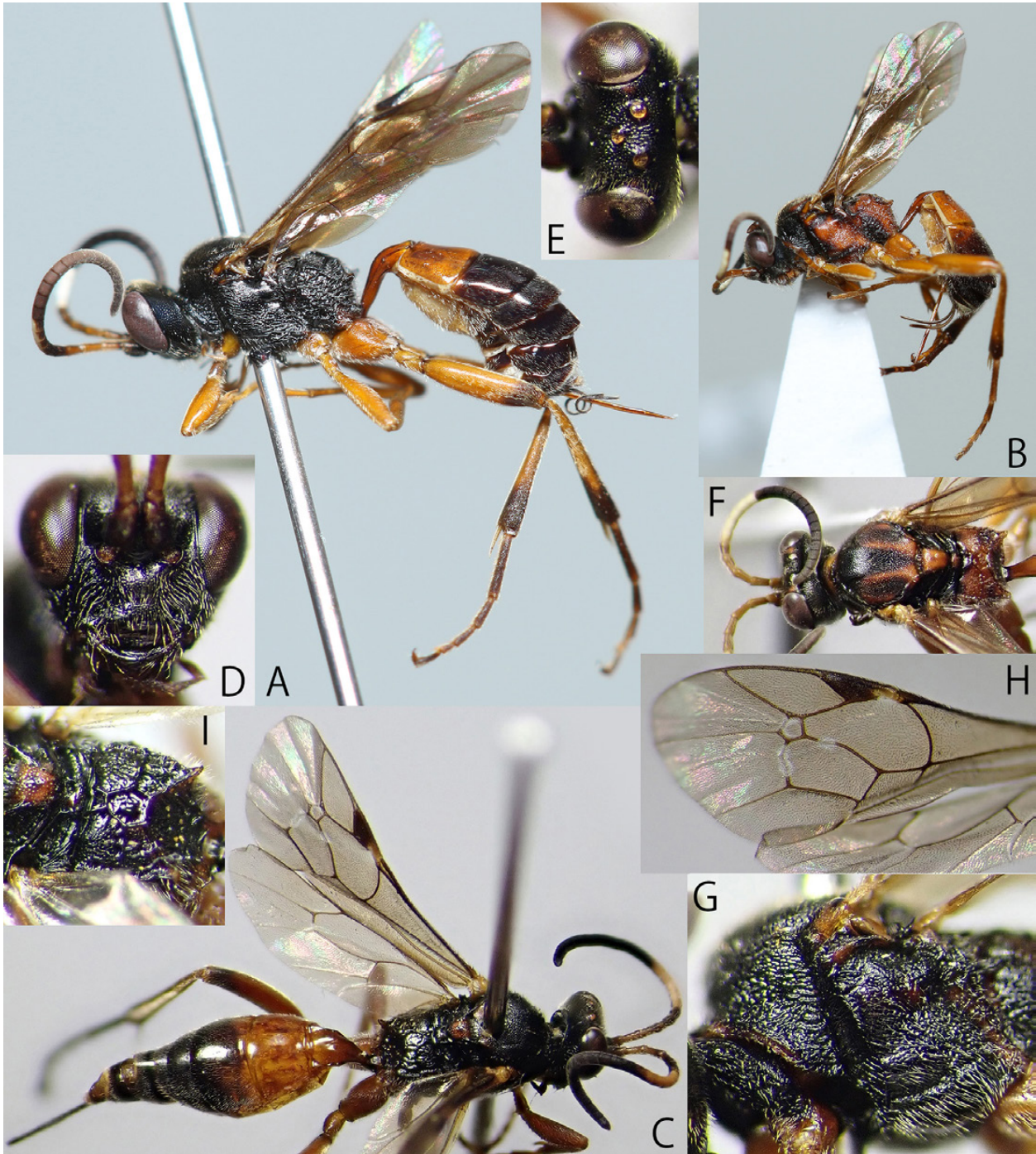


Fig. 10. *Aptesis fragitator* (Rossi, 1794), females (A: KPM-NK 81201; C–E, G–I: KPM-NK 102989; B, F: KPM-NK 91322) — A, B: lateral habitus; C: head, mesosoma, and metasoma, dorso-lateral view; D: head, frontal view; E: head, dorsal view; F: head and mesosoma, dorsal view; G: pronotum and mesopleuron, lateral view; H: fore wing; I: scutellum and propodeum, dorsal view.

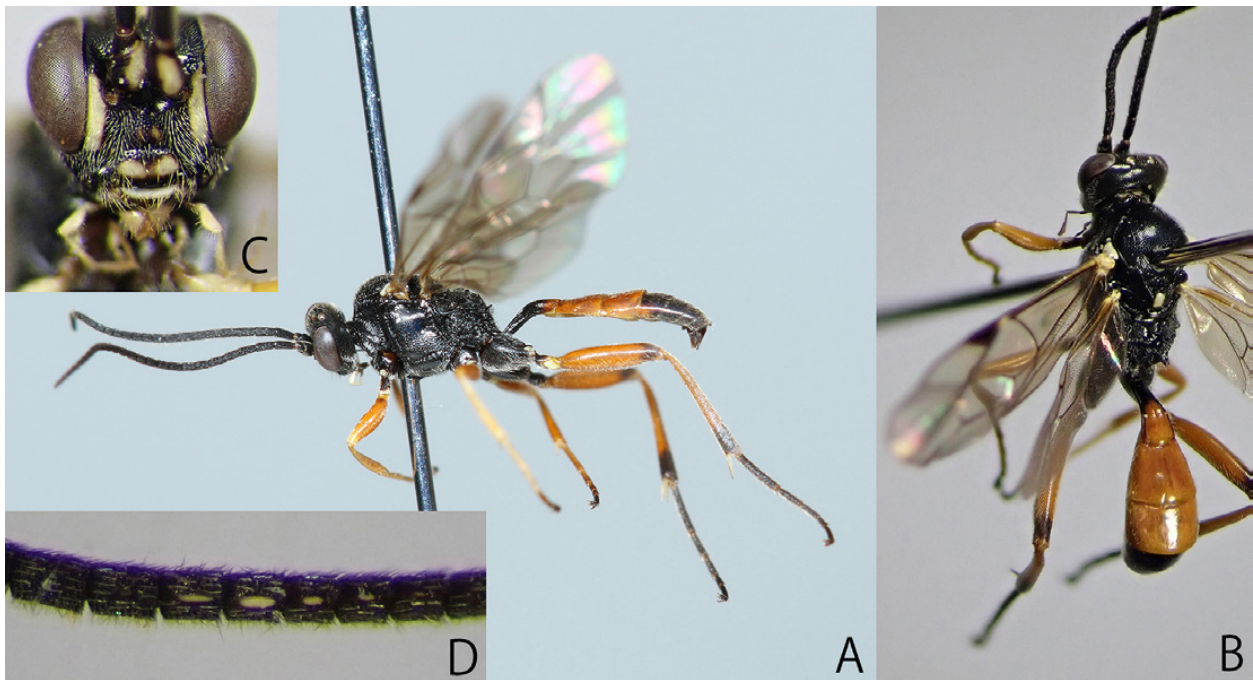


Fig. 11. *Aptesisis flagitator* (Rossi, 1794), males (A: KPM-NK 103168; B–D: KPM-NK 103166) — A: lateral habitus; B: head, mesosoma, and metasoma, dorso-lateral view; C: head, frontal view; D: flagellum and tyloids.

Remarks. Uchida (1930) recorded this species from Sapporo, Hokkaido, as *Acanthocryptus hopei*, while this datum is not mentioned by Townes *et al.* (1965) and Konishi & Matsumoto (2020). The record in this study is the first record of this species from Honshu.

***Aptesisis flavitrochanterus* Watanabe & Taniwaki, 2018**
[SJN: Bunahabachi-togari-himebachi]

Aptesisis sp. A: Taniwaki & Watanabe, 2012: 6.

Aptesisis flavitrochanterus Watanabe & Taniwaki, 2018: 76

Materials examined. JAPAN: [Honshu] KPM-NK 102994, F, Saitama Pref., Yorii Town, Mure, 21. V. 2002, T. Nambu leg.; KPM-NK 5006655 F (holotype), Kanagawa Pref., Kiyokawa Vil., Miyagase, Mt. Tanzawa-san, Tennojone, 24. XII. 2008 (coll. cocoon of *Fagineura crenativora*), 23. II. 2009 (em. from the cocoon), T. Taniwaki leg.; KPM-NK 5006658, M, ditto, 19. II. 2009 (em. from the cocoon); KPM-NK 5006659, 5006660, 2M, ditto, 19. XI. 2008 (coll.), 16. II. 2009 (em. from the cocoon); KPM-NK 5006661, F, ditto, 9. II. 2008 (coll.), 18. III. 2009 (em. from the cocoon); KPM-NK 5006662–5006664, 1F & 2M, ditto, 23. IV. 2008 (coll.), 4 (M), 18 (M), 24 (F). V. 2009 (em. from the cocoon); KPM-NK 5006665, F, ditto, 16. III. 2009 (coll. cocoon of *F. crenativora*), 19. IV. 2009 (em. from the cocoon), T. Taniwaki leg.; KPM-NK 5006666, F, ditto, 30. IV. 2009 (coll. cocoon of *F. crenativora*), 3. V. 2009 (em. from

the cocoon); KPM-NK 5006666, M, ditto, 8. IV. 2009 (coll. cocoon of *F. crenativora*), 3. V. 2009 (em. from the cocoon); KPM-NK 5006669, F, ditto, 8. IV. 2009 (coll. cocoon of *F. crenativora*), 8. V. 2009 (em. from the cocoon); KPM-NK 5006670, M, ditto, 30. IV. 2009 (coll. cocoon of *F. crenativora*), 20. V. 2009 (em. from the cocoon); KPMNK 5004398, F, ditto, 16. V. 2013, T. Taniwaki leg. (FIT); KPM-NK 5004333, F, ditto, 31. V. 2013; KPM-NK 5004320, 5004327, 2F, ditto, 15. VI. 2013; KPM-NK 5004321, F, ditto, 20. VI. 2013; KPM-NK 5004319, F, Kanagawa Pref., Kiyokawa Vil., Miyagase, Mt. Tanzawa-san, 9. V. 2013, T. Taniwaki leg. (FIT); KPM-NK 5004324, 5004329, 5004423, 3F, ditto, 15. VI. 2013; KPMNK 5004328, 5004330, 2F, ditto, 20. VI. 2013; KPM-NK 5004323, F, ditto, 4. VII. 2013; KPM-NK 5006671, M, Kanagawa Pref., Yamakita Town, Kurokura, Mt. Hinokiboramaru, 6. II. 2008 (coll. cocoon of *F. crenativora*), 11. III. 2009 (em. from the cocoon), T. Taniwaki leg.; KPM-NK 5004332, F, ditto, 21. V. 2013, T. Taniwaki leg. (FIT); KPM-NK 5004322, F, ditto, 28. VI. 2013; KPM-NK 5004331, F, same locality and collector, 6. VII. 2013; KPM-NK 5004325, F, Kanagawa Pref., Yamakita Town, Nakagawa, Mt. Komotsurushiyama, 21. VI. 2013, Taniwaki leg. (FIT); KPM-NK 5004326, F, Kanagawa Pref., Yamakita Town, Yoduku, Mt. Mikuniyama, 21. VI. 2013, Taniwaki leg. (FIT); KPM-NK 5004385, F, ditto, 4. VII. 2013; KPM-NK 5006673, F, Yamanashi Pref., Koushu City, Mt. Daibosatsu, Kaminikkawa-toge, 16. VI. 2007, H. Katahira leg.; KPM-

NK 5006674, F, Nagano Pref., Outaki Vil., Mt. Ontakesan, Tanohara 1800 m alt., 8. VIII. 2007, K. Watanabe leg.

Description. See Watanabe & Taniwaki (2018).

Distribution. Japan (Honshu).

Bionomics. Host: *Fagineura crenativora* Vikberg & Zinovjev, 2000 (Hymenoptera, Tenthredinidae) (Taniwaki & Watanabe, 2012, 2014). Adult emerged from host cocoon (Taniwaki & Watanabe, 2012, 2014).

***Aptesis jinbensis* sp. nov.**

[New SJN: Jinba-togari-himebachi]

(Figs. 12A–G, 78I)

Aptesis sp. B: Watanabe & Taniwaki, 2018: 75.

Type series. Holotype: JAPAN, KPM-NK 81207, F, Honshu, Kanagawa Pref., Fujino Town, Mt. Jinba-yama, 7. VI. 2008, K. Watanabe leg.

Description. Female (n = 1). Body punctate and polished; covered with setae; body length 6.8 mm.

Head $0.65 \times$ as long as wide in dorsal view. Clypeus $2.4 \times$ as wide as long; slightly convex in lateral view; sparsely punctate and coriaceous dorsally, smooth ventrally; lower margin subtruncate in frontal view, sharp and narrowly reflected in lateral view. Face $0.3 \times$ as long as minimum width; weakly convex medially; punctate; ISP matt

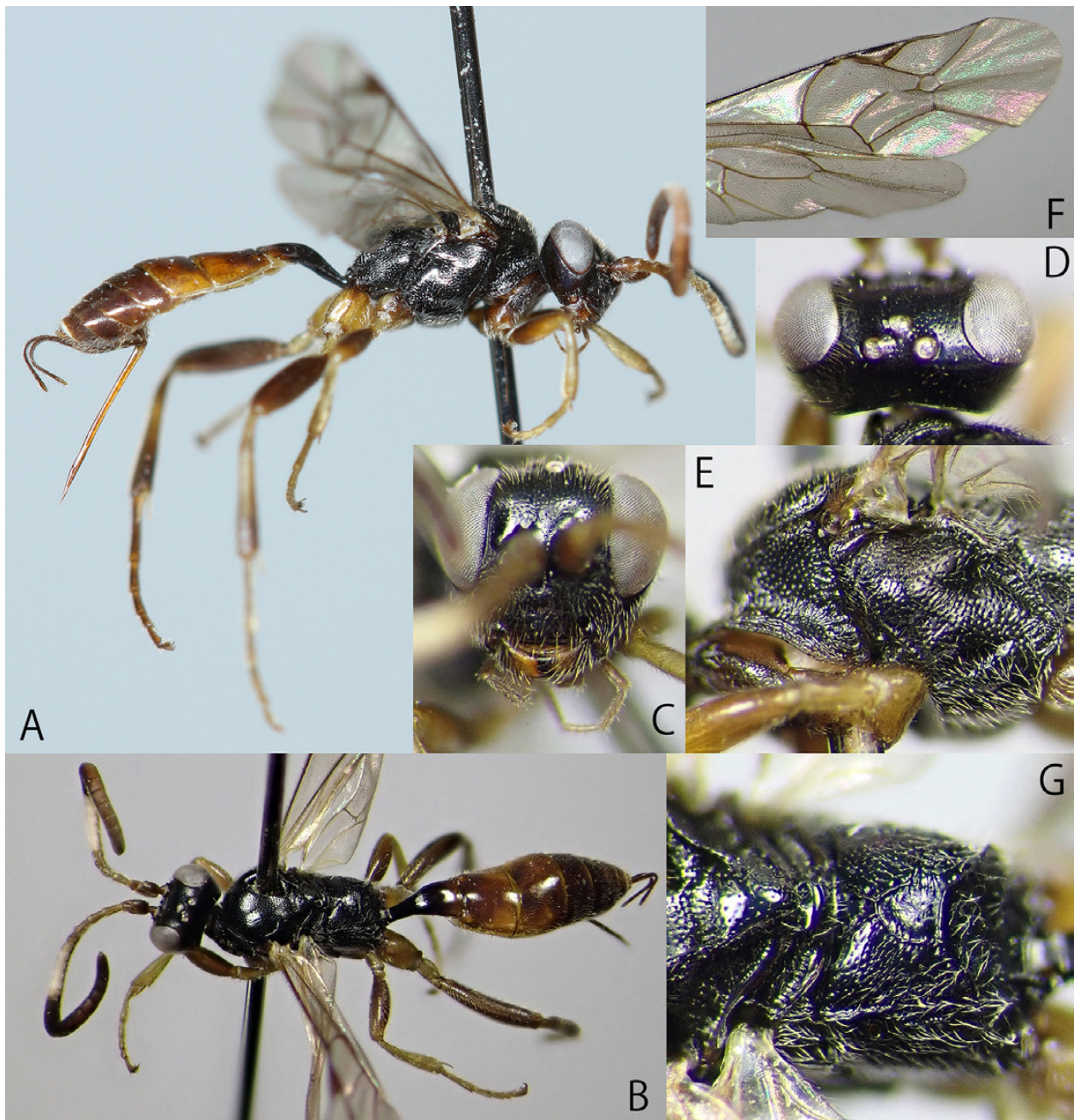


Fig. 12. *Aptesis jinbensis* sp. nov., female (holotype: KPM-NK 81207) — A: lateral habitus; B: head, mesosoma, and metasoma, dorso-lateral view; C: head, frontal view; D: head, dorsal view; E: pronotum and mesopleuron, lateral view; F: wings; G: scutellum and propodeum, dorsal view.

except for median part. Frons densely punctate with coriaceous ISP; with pair of weak, smooth concavities above antennal sockets. POL $1.5 \times$ as OD. OOL $1.4 \times$ as OD. Dorsal profile of gena rounded in dorsal view; width gradually narrowing posteriorly (Fig. 12D). Occipital carina complete. Malar space $1.2 \times$ as long as basal width of mandible. Mandible flat at base; lower tooth equal in length of upper tooth. Antenna with 23 flagellomeres; not flattened and tapped. FL I $1.7 \times$ as long as maximum depth in lateral view, $1.0 \times$ as long as FL II.

Mesosoma. Pronotum rugulose ventrally (Fig. 12E). Epomia absent. Mesoscutum with short and weak notaulus; densely punctate. Scutellum slightly convex in lateral view. Mesopleuron without conspicuous smooth area around speculum; punctures partly united into foveola (Fig. 12E). Epicnemial carina present laterally and ventrally. Sternaulus deep in anterior 0.6 of mesopleuron. Metapleuron rugose ventrally, with partly indistinct juxtacoxal carina. Propodeum rugose laterally and posteriorly; anterior transverse carina absent laterally, present medially; posterior transverse carina complete; lateromedian longitudinal carina present anteriorly, both carinae not parallel each other (Fig. 12G); lateral longitudinal carina present and weak; pleural carina complete; area superomedia partly defined, ca. $1.2 \times$ as long as maximum width; apophysis weak and obtuse (Fig. 12G); spiracle oval. Fore wing length 5.1 mm. Areolet as long as maximum width; width steeply narrowing anteriorly; received vein 2m-cu at slightly beyond to middle (Fig. 12F). Fore wing vein 1cu-a interstitial to vein M&RS (Fig. 12F). Nervellus inclivous; intercepted near posterior end of vein (Fig. 12F). Hind femur reticulate coriaceous; $4.1 \times$ as long as maximum depth in lateral view. Tarsal claws simple.

Metasoma finely and sparsely punctate except for largely smooth in T I and T II; ISP smooth. T I $2.0 \times$ as long as maximum width; latero-median carina weak basally absent apically; dorso-lateral carina complete. T II $0.7 \times$ as long as maximum width. Thyridium present; close to anterior margin of T II; slightly depressed; ca. $2.0 \times$ as wide as length. Ovipositor sheath $0.8 \times$ as long as hind tibia, $1.2 \times$ as long as T I. Ovipositor straight; apex sharp; apex of lower valve with teeth (Fig. 78I).

Colouration (Figs. 12A–G). Body (excluding wings) black to blackish-brown. Setae silver. Subapical part of mandible reddish-yellow. Basal segments of flagellum, fore and mid legs except for mid femur, hind coxa, hind trochanter, hind trochantellus, and membranous part of metasomal sternites yellow to yellowish-brown. FL V to FL X with white markings. Scape, pedicel, palpi,

tegula, mid femur, hind leg except for coxa, trochanter, and trochantellus, T IV to T VIII brown. Apical part of flagellum more or less tinged with brown to reddish-brown (especially ventral surface). Apical part of T I, T II, and T III reddish-yellow. Posterior margins of T VII and T VIII narrowly whitish medially. Ovipositor reddish-brown. Wings hyaline. Veins and pterostigma blackish-brown except for yellowish-brown to yellow wing base.

Male. Unknown.

Distribution. Japan (Honshu).

Etymology. The specific name is from the type locality, Mt. Jinba-yama, Kanagawa Prefecture.

Bionomics. Unknown.

Remarks. This species resembles *Ap. ezoensis* sp. nov. and *Ap. femoralis* (Thomson, 1883) in body colouration but can be distinguished by the well-developed propodeal carinae (less developed in *Ap. ezoensis*; see above key) and the hind femur and tibia darkened (not darkened in *Ap. ezoensis* and *Ap. femoralis*), and the apical part of metasoma black to blackish-brown (red in *Ap. femoralis*).

Aptesis melana Li & Sheng, 2013

[New SJN: Chugoku-togari-himebachi]

(Figs. 13A–G, 78J)

Aptesis melana Li & Sheng, 2013 in Li *et al.*, 2013: 62.

Materials examined. JAPAN: [Hokkaido] KPM-NK 5006656, F, Tomakomai City, Uenae, 19. VI. 2006, K. Watanabe leg. [Honshu] KPM-NK 81211, F, Kanagawa Pref., Hadano City, Mt. Koubou-yama, 29. IV. 2007, G. Oishi leg.; KPM-NK 103001, F, Kanagawa Pref., Yokosuka City, Mt. Miurafuji to Mt. Takeyama, 5. V. 2007, K. Watanabe leg.; KPM-NK 91323, F, Yamanashi Pref., Hokuto City, Masutomi, Biwakubo-sawa, 24. VI. 2007, T. Ban leg.

Description. See Li & Sheng (2013).

Distribution. Japan (Hokkaido and Honshu) and China.

Bionomics. Unknown in Japan. In China, *Neodiprion huizeensis* G.R. Xiao & Zhou, 1984 (Hymenoptera: Diprionidae) and *Pristiphora erichsonii* (Hartig, 1837) (Hymenoptera: Tenthredinidae) are known as the host (Li *et al.*, 2013).

Remarks. This is the first record of this species from Japan.

Aptesis minor sp. nov.

[New SJN: Kasumi-togari-himebachi]

(Figs. 14A–G, 78K)

Type series. Holotype: JAPAN, KPM-NK 103003,

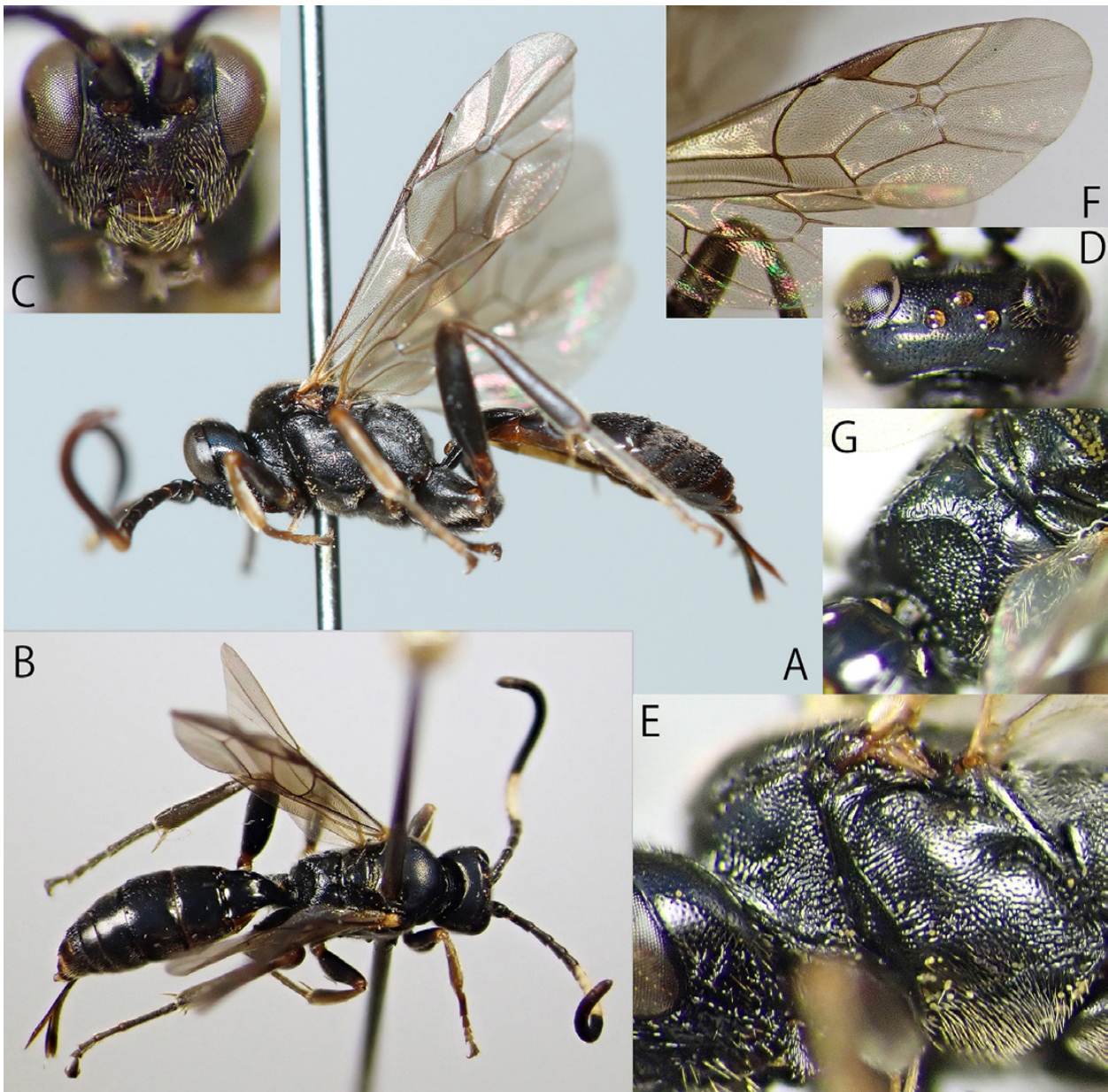


Fig. 13. *Aptesia melana* Li & Sheng, 2013, females (A, B, D–G: KPM-NK 81211; C: KPM-NK 91323) — A: lateral habitus; B: head, mesosoma, and metasoma, dorso-lateral view; C: head, frontal view; D: head, dorsal view; E: pronotum and mesopleuron, lateral view; F: wings; G: scutellum and propodeum, dorsal view.

F, Hokkaido, Yubari City, Oyubari Natural Forest, 31. VIII. – 13. IX. 2007, A. Ueda leg. (MsT). **Paratype:** **JAPAN:** [Hokkaido] KPM-NK 81212, 91324, 103002, 3F, same data of holotype. [Honshu] KPM-NK 103000, F, Kanagawa Pref., Manazuru Town, Manazuru, 30. VI. 2013, K. Watanabe leg.

Description. Female (n = 5). Body punctate and polished; covered with setae; body length 2.6–3.5 (HT: 3.4) mm.

Head $0.6 \times$ as long as wide in dorsal view. Clypeus $2.05\text{--}2.4$ (HT: 2.2) $\times$ as wide as long; slightly convex in lateral view; sparsely punctate dorsally; smooth ventrally; lower margin subtruncate in frontal view, sharp in lateral view. Face $0.45 \times$ as long as minimum width; weakly convex medially; punctate; ISP matt. Frons sparsely punctate with

weakly coriaceous ISP; with large matt area above antennal sockets. POL $1.4\text{--}1.8$ (HT: 1.5) $\times$ as OD. OOL $2.0\text{--}2.4$ (HT: 2.0) $\times$ as OD. Dorsal profile of gena rounded in dorsal view; width gradually narrowing posteriorly (Fig. 14E). Occipital carina complete. Malar space $1.0\text{--}1.2$ (HT: 1.0) $\times$ as long as basal width of mandible. Mandible flat at base; lower tooth equal in length of upper tooth. Antenna with 18–20 (HT: 19) flagellomeres; not flattened and tapped. FL I $1.55\text{--}2.2$ (HT: 1.55) $\times$ as long as maximum depth in lateral view, $1.1\text{--}1.25$ (HT: 1.25) $\times$ as long as FL II.

Mesosoma. Pronotum nearly entirely rugulose. Epomia absent. Mesoscutum with short and weak notaulus; densely punctate; some punctures on median part united into longitudinal foveola. Scutellum flat. Mesopleuron

longitudinally reticulate rugose except for punctate area around speculum (Fig. 14F). Epicnemial carina present laterally and ventrally. Sternaulus deep in anterior 0.3 of mesopleuron. Metapleuron rugose; with partly indistinct juxtacoxal carina. Propodeum rugose or rugulose; with all carinae except for anterior transverse carina absent; area superomedia defined except for anterior margin, ca. as long as maximum width; apophysis weak and obtuse; area postero longitudinally concave medially; spiracle round. Fore wing length 2.7–3.1 (HT: 3.1) mm. Areolet as long as maximum width; width gradually narrowing anteriorly; received vein 2m-cu at slightly at near middle (Fig. 14G). Fore wing vein 1cu-a interstitial to or slightly postfurcal to vein M&RS (Fig. 14G). Nervellus subvertical; intercepted near posterior end of vein. Hind coxa partly reticulate

rugose. Hind femur reticulate coriaceous; 3.7–4.0 (HT: 3.7) $\times$ as long as maximum depth in lateral view. Tarsal claws simple.

Metasoma. T I 1.55–2.15 (HT: 2.15) $\times$ as long as maximum width; latero-median carina absent; dorso-lateral carina complete; smooth. T II smooth with few hairs laterally; 0.55–0.65 (HT: 0.6) $\times$ as long as maximum width. Thyridium present; close to anterior margin of T II; slightly depressed; ca. 2.0 $\times$ as wide as length. T III and T IV largely smooth. T V and T VI finely and sparsely punctate. Ovipositor sheath 1.0–1.05 (HT: 1.0) $\times$ as long as hind tibia, 1.55–1.8 (HT: 1.55) $\times$ as long as T I. Ovipositor straight; apex sharp; apex of lower valve with teeth (Fig. 78K).

Colouration (Figs. 14A–G). Body (excluding wings) black to blackish-brown. Setae silver. Face, clypeus,

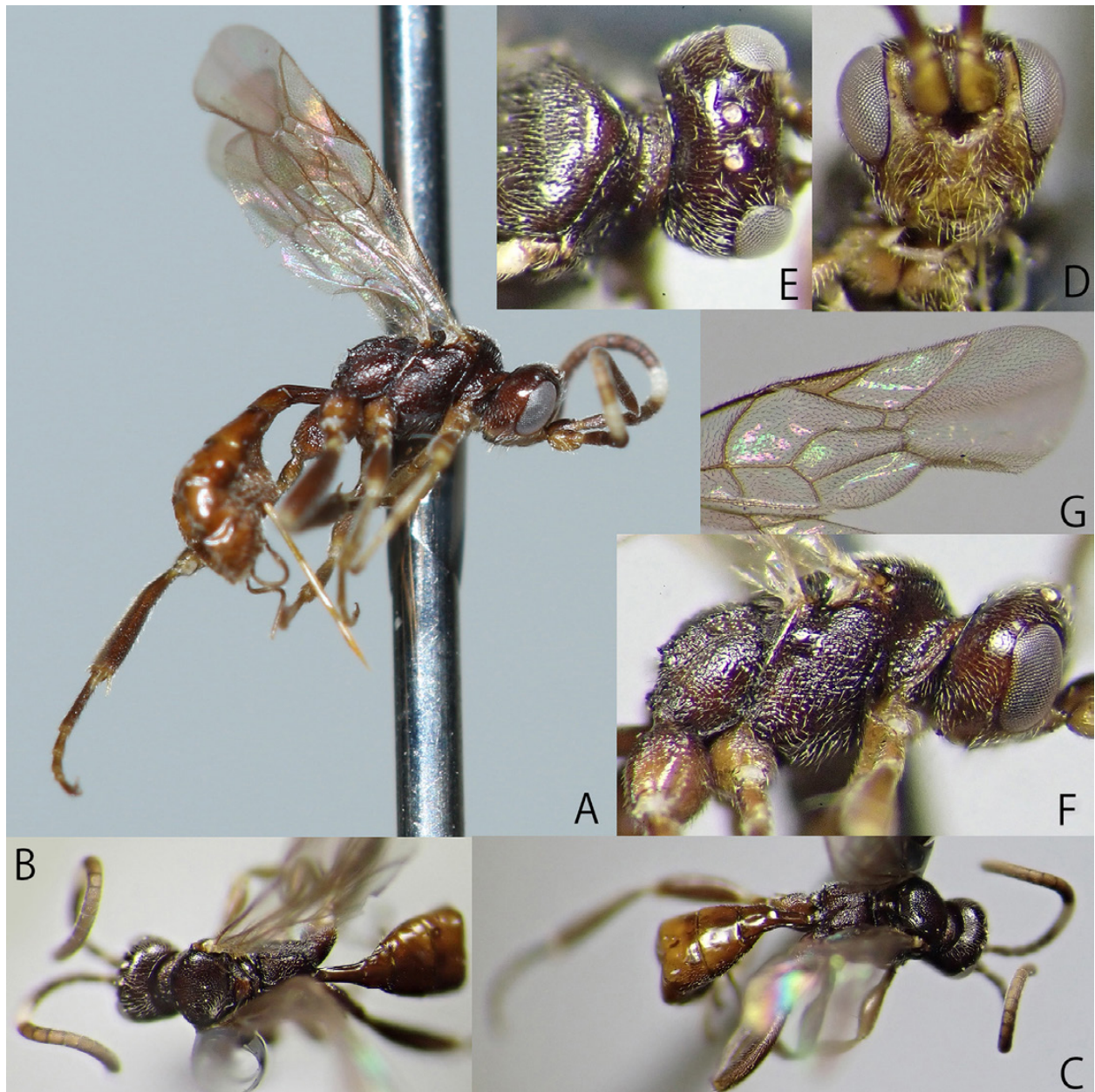


Fig. 14. *Aptesis minor* sp. nov., female (holotype: KPM-NK 103003) — A: lateral habitus; B, C: head, mesosoma, and metasoma, dorso-lateral view; D: head, frontal view; E: head and mesoscutum, dorsal view; F: mesosoma, lateral view; G: fore wing.

mandible except for teeth, malar space, frontal orbit, scape, pedicel, palpi, fore and mid tibiae and tarsi, hind tibial spurs, membranous part of metasomal sternites, and ovipositor yellow to yellowish-brown. Fore and mid legs except for tibiae and tarsi, hind leg except for tibial spurs, collar, scutellum, and metasomal tergites partly or entirely brown to reddish-brown. Base and apex of hind femur narrowly tinged with yellow. FL VI to FL IX with white markings. Wings hyaline. Veins and pterostigma brown except for yellowish-brown to yellow wing base.

Male. Unknown.

Distribution. Japan (Hokkaido and Honshu).

Etymology. The specific name is from the Latin “*minor*” (smaller), referring to the relatively smaller size of this species in the genus.

Bionomics. Unknown.

Remarks. This species resembles *Ap. minor* Aubert, 1968 in the small-sized body with polished metasomal tergites but can be distinguished by the yellow face (black in *Ap. minor*), the mesopleuron longitudinally reticulate

rugose (without such rugae in *Ap. minor*), and the reddish-brown scutellum (black in *Ap. minor*).

***Aptesis yamauchii* sp. nov.**

[New SJN: Yamauchi-togari-himebachi]

(Figs. 15A–G, 78L)

Type series. Holotype: JAPAN, KPM-NK 81208, F, Honshu, Toyama Pref., Toyama City, Arimine, Inonedani, 1–8. IX. 2009, M. Watanabe leg. (MsT). **Paratype:** JAPAN [Honshu] KPM-NK 102997, F, Honshu, Toyama Pref., Toyama City, Arimine, Inonedani, 4–11. VIII. 2009, M. Watanabe leg. (MsT); KPM-NK 81210, F, Toyama Pref., Toyama City, Arimine, Jyurodani, 4–11. VIII. 2009, M. Watanabe leg. (MsT); OMNH, F, 11–16. VIII. 2009; KPM-NK 102827, F, Toyama Pref., Nanto City, Togamura-kamimomose, 21–28. VII. 2009, KPM-NK 81209, F, ditto, 11–18. VIII. 2009, M. Watanabe leg. (MsT); KPM-NK 102999, F, Nagano Pref., Outaki Vil., Mt. Ontake-san, Hakkaizan, 31. VII. 2013, K. Watanabe leg.; KPM-NK

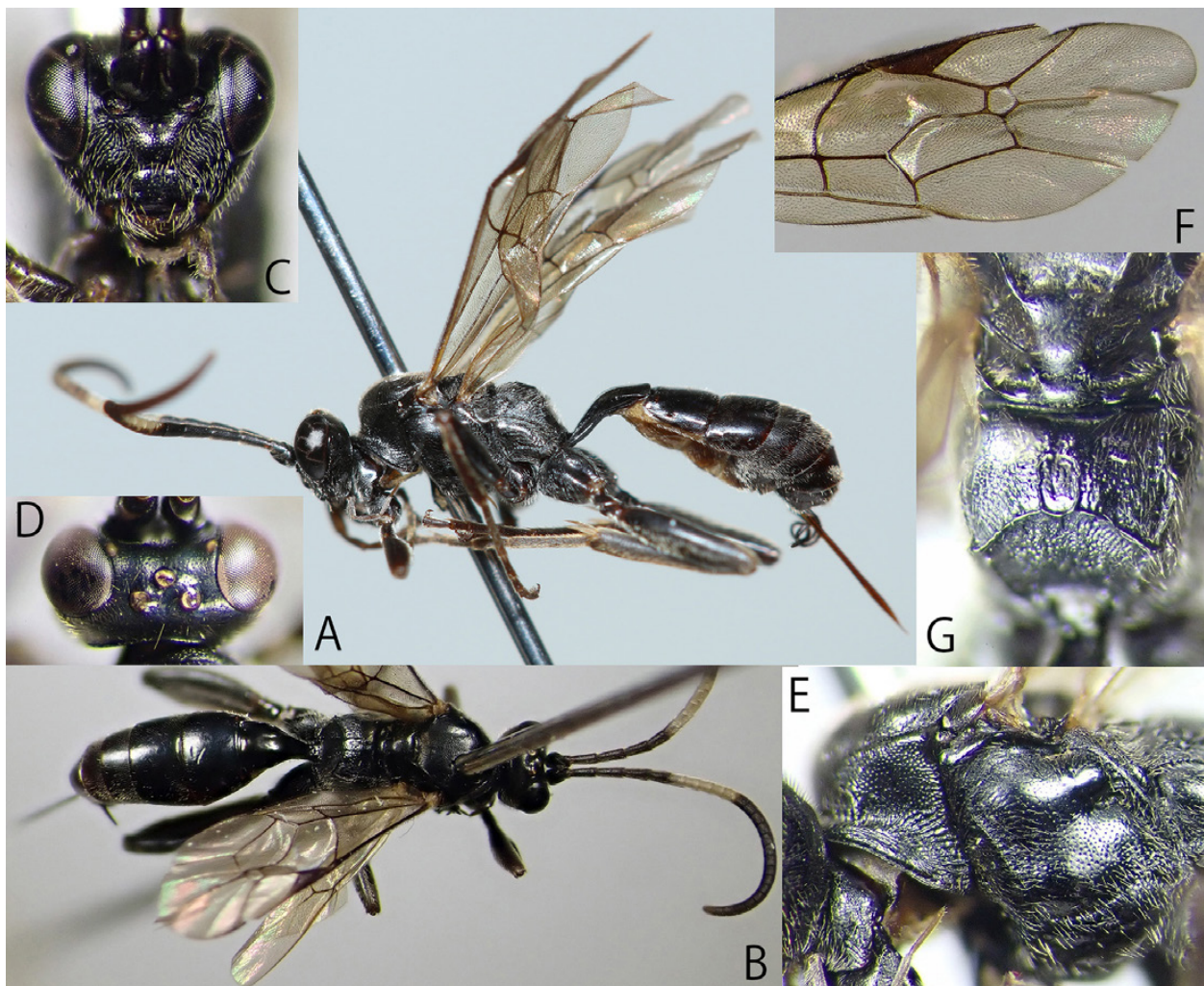


Fig. 15. *Aptesis yamauchii* sp. nov., females (A–C, E–G: holotype: KPM-NK 81208; D: paratype: KPM-NK 102998) — A: lateral habitus; B: head, mesosoma, and metasoma, dorsal view; C: head, frontal view; D: head, dorsal view; E: pronotum and mesopleuron, lateral view; F: fore wing; G: scutellum and propodeum, dorsal view.

102998, F, ditto, 5. VIII. 2017.

Description. Female (n = 7). Body punctate and polished; covered with setae; body length 5.8–7.4 (HT: 7.4) mm.

Head $0.6 \times$ as long as wide in dorsal view. Clypeus 1.9–2.0 (HT: 2.0) $\times$ as wide as long; weakly convex in lateral view; sparsely punctate dorsally; smooth ventrally; lower margin subtruncate in frontal view, sharp and narrowly reflected in lateral view. Face 0.4–0.45 (HT: 0.45) $\times$ as long as minimum width; weakly convex medially; punctate; ISP coriaceous laterally, smooth medially. Frons densely punctate with coriaceous ISP; area above antennal sockets narrowly smooth. POL 1.6–2.2 (HT: 1.6) $\times$ as OD. OOL 1.0–1.4 (HT: 1.1) $\times$ as OD. Dorsal profile of gena slightly rounded in dorsal view; width gradually narrowing posteriorly (Fig. 15D). Occipital carina complete. Malar space 1.25–1.45 (HT: 1.3) $\times$ as long as basal width of mandible. Mandible flat at base; lower tooth equal in length of upper tooth. Antenna with 26–27 (HT: 26) flagellomeres; not flattened and tapped. FL I 2.1–2.4 (HT: 2.4) $\times$ as long as maximum depth in lateral view, 0.95–0.98 (HT: 0.95) $\times$ as long as FL II.

Mesosoma finely punctate. Pronotum rugulose ventrally. Epomia short; section on border of collar and pronotum present. Mesoscutum with short and weak notaulus; densely punctate. Scutellum slightly convex in lateral view. Mesopleuron with conspicuous smooth area around speculum. Epicnemial carina present laterally and ventrally. Sternaulus deep in anterior 0.7 of mesopleuron. Metapleuron with partly indistinct or complete juxtacoxal carina. Propodeum rugose or rugulose; with all carinae except for anterior transverse carina absent; anterior section of lateromedian longitudinal carina sometimes (including holotype) absent anteriorly; area superomedia partly defined; apophysis absent (Fig. 15G); spiracle round. Fore wing length 5.0–6.2 (HT: 6.2) mm. Areolet as long as maximum width; width gradually narrowing anteriorly; received vein 2m-cu at near middle (Fig. 15F). Fore wing vein 1cu-a interstitial to vein M&RS (Fig. 15F). Nervellus subvertical; intercepted near posterior end of vein. Hind femur reticulate coriaceous; 4.6–5.0 (HT: 4.7) $\times$ as long as maximum depth in lateral view. Tarsal claws simple.

Metasoma finely and sparsely punctate; ISP smooth. T I 1.4–1.7 (HT: 1.55) $\times$ as long as maximum width; latero-median carina obtusely present except for apical part; dorso-lateral carina complete; largely slightly coriaceous. T II 0.65–0.7 (HT: 0.7) $\times$ as long as maximum width. Thyridium present; close to anterior margin of T II; flat to slightly depressed; ca. $3.0 \times$ as wide as length. Ovipositor sheath 0.9–1.0 (HT: 1.0) $\times$ as long as hind tibia, 1.7–1.9 (HT: 1.9) $\times$ as long as T I. Ovipositor straight; apex sharp;

apex of lower valve with teeth (Fig. 78L).

Colouration (Figs. 15A–G). Body (excluding wings) black to blackish-brown. Setae silver. Subapical part of mandible yellowish-brown. FL V (or VI) to FL IX (or X) with white markings. Tibial spurs and membranous part of metasomal sternites yellow to yellowish-brown. Face sometimes with pair of dark reddish-brown spots along orbit. Posterior margins of each metasomal tergite usually narrowly tinged with red. Wings brownish-hyaline. Veins and pterostigma blackish-brown except for yellowish-brown to yellow wing base.

Male. Unknown.

Distribution. Japan (Honshu).

Etymology. The specific name is from Dr. Takeo Yamauchi, who kindly offered the valuable materials collected by Dr. Mamoru Watanabe in Toyama Prefecture to me.

Bionomics. Unknown.

Remarks. This species resembles *Ap. melana* in the black body and the shape of areolet but can be distinguished by the longer ovipositor sheath and T I and the colouration of hind tibia (see above key).

Genus *Cubocephalus* Ratzeburg, 1848

Cubocephalus Ratzeburg, 1848: 121. Type species: *Cryptus fortipes* Gravenhorst, 1829 (= *Ichneumon distinctor* Thunberg, 1822). Monotypic.

Ecporthetor Förster, 1869: 184. Type species: *Cryptus fortipes* Gravenhorst, 1829 (= *Ichneumon distinctor* Thunberg, 1822). Designated by Ashmead (1900).

Pammachus Förster, 1869: 185. Type species: *Stenocryptus nigriventris* Thomson, 1874. Designated by Viereck (1914).

Chaeretymma Förster, 1869: 187. Type species: *Cryptus anatorius* Gravenhorst, 1829. Included by Schmiedeknecht (1890).

Stenocryptus Thomson, 1873: 520. Type species: *Stenocryptus nigriventris* Thomson, 1874. Original designation.

Microcryptus Thomson, 1873: 520. Type species: *Cryptus erythrinus* Gravenhorst, 1829 (= *Ichneumon sperator* Müller, 1776). Monotypic.

Planocryptus Heinrich, 1949: 35. Type species: *Planocryptus mirabilis* Heinrich, 1949. Original designation.

Four species, *C. anatorius* (Gravenhorst, 1829), *C. associator* (Thunberg, 1822), *C. atrator* (Walker, 1874), and *C. nigriventris* (Thomson, 1874), have been recorded from

Japan. The generic border of this genus and *Parmortha* is problematic, and the separation of both genera are difficult in the species has intermediate characteristics. Although Townes (1970) separated both genera by the width of areolet, the convergent or parallel conditions of areolet, and the width of clypeus, all of them are somewhat overlapped both genera. In this study, I add two generic borders of them based on the ratio of length of areolet and vein 2m-cu and the length of FL I (see below key).

In this study, I newly describe six new species below and provide the key to Japanese species of *Cubocephalus* and *Parmortha* as a single key below.

Key to Japanese species of *Cubocephalus* and *Parmortha* (female only)

1. Posterior transverse carina of mesosternum with deep notch medially and this carina divided into two teeth near notch (Fig. 77A). Flagellum with slender and long flagellomeres (Fig. 76N); FL I 3.7–4.2 × as long as maximum depth in lateral view. Body and legs nearly entirely black (fore and mid tibiae and tarsi sometimes yellowish-brown). Areolet weakly convergent (Fig. 17F). Area superomedia present, usually obtusely defined (Fig. 17G). Length of ovipositor sheath varied in length, longer than metasoma and shorter than body length (Fig. 17A). Apex of ovipositor with some minute teeth dorsally (Fig. 78N).
..... *Cubocephalus atrator* (Walker, 1874) 3
-. Posterior transverse carina of mesosternum without deep notch and teeth (Fig. 77B). Other characteristics various.
..... 2
2. Flagellum with robust and short flagellomeres (Fig. 76K); FL I ca. 1.2 × as long as maximum depth in lateral view. Ovipositor strongly upcurved (Figs. 20A, 78P). Ovipositor sheath shorter than metasoma (Fig. 20A). Small species, body length shorter than 6 mm.
..... *Cubocephalus Ratzeburg*, 1848 (in part) 3
-. Flagellum with slender and long flagellomeres (Figs. 76M, O–Q); FL I more than 2.0 × as long as maximum depth in lateral view. Ovipositor weakly to strongly upcurved. Ovipositor sheath and body various in length.
..... 4
3. Hind coxa, hind femur, and apical part of hind tibia blackish-brown (Fig. 20A). Ovipositor sheath 1.3 × as long as hind tibia.
..... *Cubocephalus nanus* **sp. nov.**
-. Legs including hind coxa, hind femur, and apical part of hind tibia entirely reddish-yellow. Ovipositor sheath 1.0 × as long as hind tibia.
..... *Cubocephalus nigriventris* (Thomson, 1874) 4
4. Areolet small and not wide on the radial vein; both sides weakly to strongly convergent; anterior width of areolet (= section of vein RS) shorter than half length of vein 2m-cu (Figs. 16F, 19F, 21F, 22H). Clypeus various in width.
..... *Cubocephalus Ratzeburg*, 1848 (in part) 5
-. Areolet large and very wide on the radial vein; both sides parallel or weakly convergent; anterior width of areolet as long as or longer than half length of vein 2m-cu (Figs. 44F, 45F, 46H, 48B, 49F). Clypeus 1.9–2.1 × as wide as long.
..... *Parmortha* Townes, 1962 10
5. Legs red.
..... 6
-. Legs black (Figs. 16A, 19A, 21A, 22A).
..... 7
6. Hind femur ca. 4.0 × as long as maximum depth in lateral view. Ovipositor sheath shorter than combined length of mesosoma and metasoma.
..... *Cubocephalus anatorius* (Gravenhorst, 1829)
-. Hind femur ca. 5.0 × as long as maximum depth in lateral view. Ovipositor sheath ca. as long as combined length of mesosoma and metasoma.
..... *Cubocephalus associator* (Thunberg, 1822)
7. Lower valve of ovipositor with more than 16 teeth (Fig. 78Q). Ovipositor sheath distinctly shorter than metasoma. T II and T III weakly tinged with red (Figs. 21A, B). FL I 3.15 × as long as maximum depth in lateral view.
..... *Cubocephalus sapporensis* **sp. nov.**
-. Lower valve of ovipositor with less than 13 teeth (Figs. 78M, O, R). Ovipositor sheath and FL I with various length. T II and T III black (Figs. 16B, 19B, 22B).
..... 8
8. FL I 5.0–5.15 × as long as maximum depth in lateral view. Ovipositor sheath distinctly longer than metasoma (Fig. 22A). Apex of ovipositor with some minute teeth dorsally (Fig. 78R).
..... *Cubocephalus uryuensis* **sp. nov.**
-. FL I shorter than 3.4 × as long as maximum depth in lateral view. Ovipositor sheath as long as or shorter than metasoma (Figs. 16A, 19A). Apex of ovipositor without minute teeth dorsally (Figs. 78M, O).
..... 9
9. FL I 3.0–3.35 × as long as maximum depth in lateral view. Ovipositor sheath 2.3–2.45 × as long as hind tibia. Clypeus 2.5–2.6 × as wide as long. Malar space 1.0–1.1 × as long as basal width of mandible.
..... *Cubocephalus asiaticus* **sp. nov.**
-. FL I 2.1–2.4 × as long as maximum depth in lateral view. Ovipositor sheath 1.8–2.0 × as long as hind tibia. Clypeus 2.05–2.1 × as wide as long. Malar space 1.35–1.45 × as long as basal width of mandible.

..... *Cubocephalus confusus* **sp. nov.**

10. Spiracle of T I situated near the mid-length of T I (Fig. 77J). TS III to TS V and apical part of TS II of hind tarsus white. Large species; length more than 10 mm. Areolet weakly convergent (Fig. 45F). Apex of ovipositor with some minute teeth dorsally (Fig. 79N). Hind tarsus with white parts (Fig. 45A).

..... *Parmortha gigantea* **sp. nov.**

-. Spiracle of T I situated behind the mid-length of T I (Fig. 77K). Other character states various.

..... 11

11. Base of hind tibia with white part (Figs. 46A–C). Legs various in colouration; black except for white base of hind tibia or sometimes coxae, trochanters, trochantellus, basal part of hind femur, hind tibia, and hind tarsus sometimes variously tinged with red (Figs. 46A–C). Ovipositor sheath 1.3–1.5 × as long as hind tibia. Tegula black (Fig. 46G). Ventral half of lateral part of pronotum covered with longitudinal striae (Fig. 46G). Apex of ovipositor without minute teeth dorsally (Fig. 79O).

..... *Parmortha maruyamensis* (Uchida, 1930)

(= *P. microstriatella* (Uchida, 1952) **syn. nov.**)

-. Base of hind tibia without white part (Figs. 44A, 48A, 49A). Coxae and hind femur black (Figs. 44A, 48A, 49A). Tegula black (Figs. 44E, 48E) or ivory (Fig. 49E). Ventral half of lateral part of pronotum covered with irregular rugae (Figs. 44E, 48E, 49E). Other character states various.

..... 12

12. Tegula ivory (Fig. 49E). Face without distinct punctures. Ovipositor sheath 1.5–1.8 × as long as hind tibia. Apex of ovipositor without minute teeth dorsally (Fig. 79Q).

..... *Parmortha pleuralis albomaculata* (Ashmead, 1906)

-. Tegula black or blackish-brown (Figs. 44E, 48E). Other character states various.

..... 13

13. Anterior transverse carina of propodeum present (Fig. 44H). Area superomedia well-defined (Fig. 44H). TS III, TS IV, and apical part of TS II of hind tarsus white (Fig. 44G). Face without distinct punctures. Ovipositor sheath 1.3 × as long as hind tibia. Apex of ovipositor without minute teeth dorsally (Fig. 79M).

..... *Parmortha albitarsale* **sp. nov.**

-. Anterior transverse carina of propodeum absent (Fig. 48F). Area superomedia not defined (Fig. 48F). Hind tarsus without white part (Fig. 48A). Face with distinct punctures. Ovipositor sheath 2.35–2.4 × as long as hind tibia. Apex of ovipositor with some minute teeth dorsally (Fig. 79P).

..... *Parmortha nigra* **sp. nov.**

Cubocephalus asiaticus **sp. nov.**

[New SJN: Asia-onaga-togari-himebachi]

(Figs. 16A–G, 76M, 78M)

Type series. **Holotype:** JAPAN, KPM-NK 91384, F, Honshu, Nagano Pref., Ueda City, Sugadaira-kogen, 13–26. VII. 2015, S. Shimizu leg. (MsT). **Paratype:** JAPAN: [Honshu] KPM-NK 102955, F, Saitama Pref., Naguri Vil., Shomaru-toge, 10–13. X. 1995, A. Shimizu leg.; KPM-NK 5004434, F, Kanagawa Pref., Yamakita Vil., Mt. Oomuro-yama, 24. VI. 2013, T. Taniwaki leg.; KPM-NK 102958, F, Nagano Pref., Ina City, Hase, Karei-kogen, 30. VII. 2013, S. Yoshizawa leg.; KPM-NK 102956, F, Niigata Pref., Myokou City, Suginosawa, Mt. Sasagamine, 20. IX. 2013, S. Shimizu leg.; KPM-NK 102959, F, Toyama Pref., Nanto City, Togamura-kamimomose, 21–28. VII. 2009, M. Watanabe leg. (MsT); KPM-NK 102960, F, ditto, 28. VII. – 4. VIII. 2009; OMNH, F, ditto, 4–11. VIII. 2009; KPM-NK 102961, F, Toyama Pref., Toyama City, Arimine, Inonedani, 21–28. VII. 2009, M. Watanabe leg. (MsT); KPM-NK 102962, F, ditto, 25. VIII. – 1. IX. 2009; KPM-NK 102963, F, Toyama Pref., Toyama City, Arimine, Jyurodani, 15–22. IX. 2009, M. Watanabe leg. (MsT); KPM-NK 102957, F, Fukui Pref., Ohno City, Kamiuchinami, 29. IX. 1982, T. Murota leg.

Description. Female (n = 12). Body polished; covered with setae; body length 8.9–9.8 (HT: 9.1) mm.

Head 0.6–0.65 (HT: 0.6) × as long as wide in dorsal view. Clypeus 2.5–2.6 (HT: 2.5) × as wide as long; slightly convex in lateral view; punctate dorsally, smooth ventrally; lower margin rounded in frontal view, obtuse in lateral view. Face 0.38–0.4 (HT: 0.38) × as long as minimum width; slightly convex medially; matt with punctures. Frons slightly concave above antennal sockets; coriaceous; punctate dorsally. POL 1.5–2.0 (HT: 2.0) × as OD. OOL 1.4–1.6 (HT: 1.6) × as OD. Gena and occiput finely punctate. Dorsal profile of gena rounded in dorsal view; width not narrowing anteriorly and somewhat abruptly narrowing posteriorly (Fig. 16D). Occipital carina complete. Malar space 1.0–1.1 (HT: 1.1) × as long as basal width of mandible. Mandible flat at base; lower tooth equal in length of upper tooth. Antenna with 23–25 (HT: 25) flagellomeres; not flattened and tapped. FL I 3.0–3.35 (HT: 3.35) × as long as maximum depth in lateral view, 0.9–0.95 (HT: 0.93) × as long as FL II.

Mesosoma. Pronotum rugose ventrally; densely punctate dorsally (Fig. 16E). Epomia short; dorsal end situated on collar. Mesoscutum punctate; punctures on median part denser than outer parts. Notaulus sharp (Fig. 16D); posterior end not reaching centre of

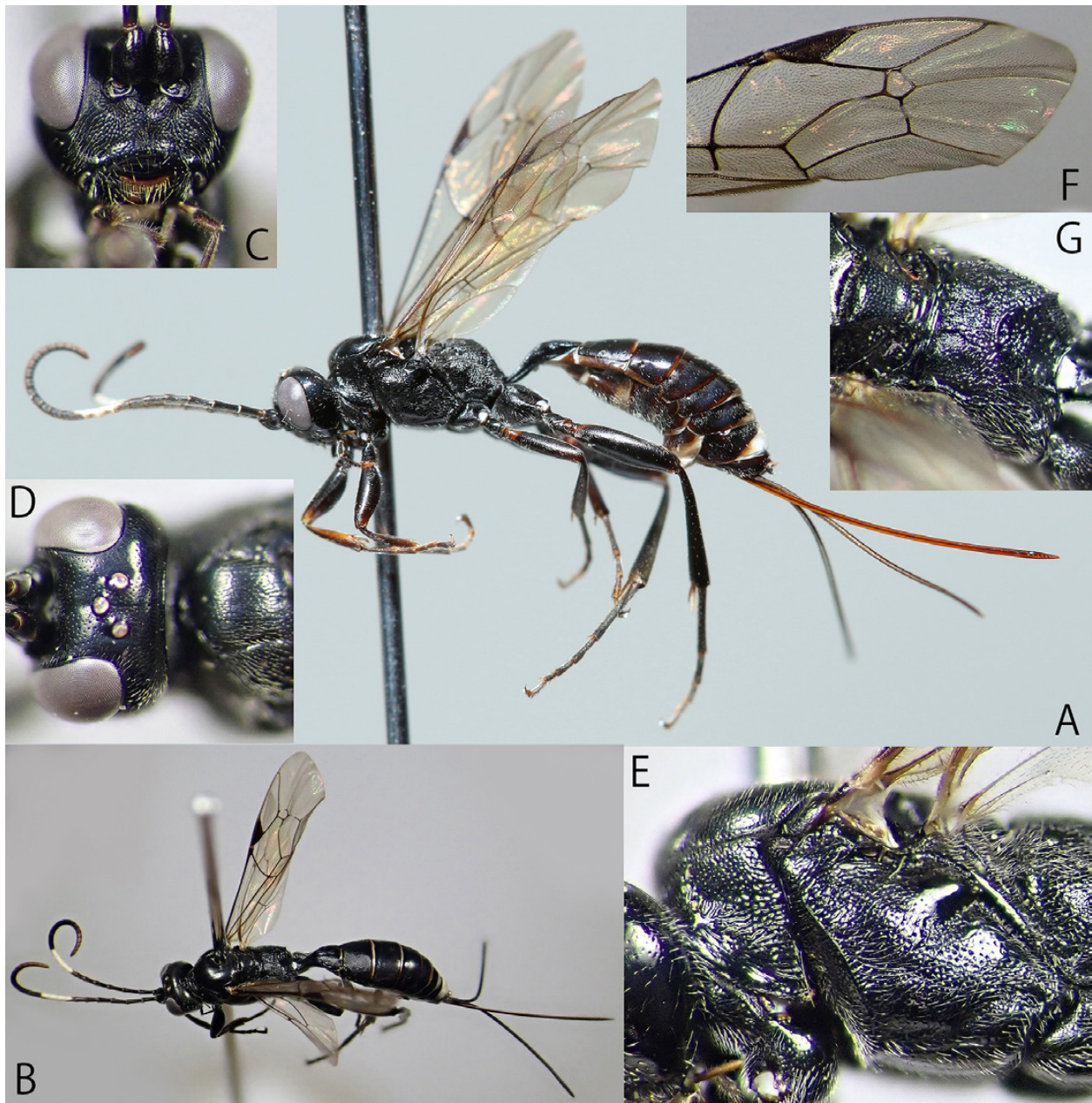


Fig. 16. *Cubocephalus asiaticus* sp. nov., female (holotype: KPM-NK 91384) — A: lateral habitus; B: head, mesosoma, and metasoma, dorso-lateral view; C: head, frontal view; D: head and mesoscutum, dorsal view; E: pronotum and mesopleuron, lateral view; F: fore wing; G: scutellum and propodeum, dorso-lateral view.

mesoscutum. Scutellum punctate; flat in lateral view. Mesopleuron densely punctate and foveolate anteriorly; with conspicuous smooth area around speculum; sparsely punctate postero-ventrally (Fig. 16E). Epicnemial carina present laterally and ventrally. Sternaulus deep in anterior 0.7 of mesopleuron. Posterior transverse carina of mesosternum without deep notch and teeth. Metapleuron reticulate coriaceous anteriorly, rugulose posteriorly; with complete juxtacoxal carina. Propodeum largely irregularly rugose; anterior transverse carina absent; posterior transverse carina complete, inverted U-shaped (Fig. 16G); lateromedian longitudinal carina largely indistinct and trace-like; lateral longitudinal carina partly present anteriorly; pleural carina complete; area

superomedia indistinct; apophysis absent; spiracle oval. Fore wing length 7.0–7.75 (HT: 7.1) mm. Areolet as long as maximum width; longer than half length of vein 2m-cu; width steeply narrowing anteriorly; received vein 2m-cu at near middle; anterior width shorter than half length of vein 2m-cu (Fig. 16F). Fore wing vein 1cu-a interstitial to vein M&RS (Fig. 16F). Nervellus subvertical; intercepted near posterior end of vein. Hind femur reticulate coriaceous; $3.8\text{--}4.2 \times$ as long as maximum depth in lateral view. Tarsal claws simple.

Metasoma matt and coriaceous. T I 1.65–1.75 (HT: 1.75) $\times$ as long as maximum width; latero-median carina absent; dorso-lateral carina complete. Spiracle of T I behind the mid-length of T I. T II 0.7–0.8 (HT: 0.7) $\times$ as long as

maximum width. Thyridium present; close to anterior margin of T II; flat to slightly depressed; ca. $2.0 \times$ as wide as length. Ovipositor sheath $2.3\text{--}2.45$ (HT: 2.45) $\times$ as long as hind tibia, $3.85\text{--}4.25$ (HT: 3.85) $\times$ as long as T I. Ovipositor weakly upcurved; apex sharp and without minute teeth dorsally; apex of lower valve with teeth (Fig. 78M).

Colouration (Figs. 16A–G). Body (excluding wings) black to blackish-brown. Setae silver. Subapical part of mandible tinged with reddish-brown. Labrum reddish-brown. FL VI (or VII) to FL X with white markings. Bases of femora, all tibial spurs, and fore tibia more or less tinged with brown to reddish-brown. Posterior margins of metasomal tergites sometimes narrowly tinged with reddish-brown. Postero-median membranous parts of T V to T VII white. Thyridium and ovipositor reddish-brown. Wings hyaline. Veins and pterostigma blackish-brown to brown except for yellowish wing base.

Male. Unknown.

Distribution. Japan (Honshu).

Bionomics. Unknown.

Etymology. The specific name is from Asia, referring to the distribution of this species, Japan, is a part of Asia.

Remarks. This species resembles *Cu. atrator* and *Cu. confusus* **sp. nov.** in the entirely black legs and almost or entirely black metasomal tergites but can be distinguished by the posterior transverse carina of mesosternum without deep notch and teeth (with deep notch and teeth in *Cu. atrator*), FL I $3.0\text{--}3.35 \times$ as long as maximum depth in lateral view ($3.9 \times$ in *Cu. atrator*; $2.1\text{--}2.4 \times$ in *Cu. confusus*) and the ovipositor sheath $2.3\text{--}2.45 \times$ as long as hind tibia ($1.83\text{--}2.68 \times$ in *Cu. atrator*; $1.8\text{--}2.0 \times$ in *Cu. confusus*).

***Cubocephalus atrator* (Walker, 1874)**

[SJN: Onaga-togari-himebachi]

(Figs. 17A–H, 18A–E, 76N, 77A, 78N)

Echthrus atrator Walker, 1874: 306.

Materials examined. JAPAN: [Honshu] KPM-NK 102947, F, Kanagawa Pref., Hakone Town, Komagatake, 20. VI. 2000, H. Nagase leg.; KPM-NK 102944, F, ditto, 4. VII. 2001; KPM-NK 102941, F, ditto, 23. VIII. 2003; KPM-NK 5004439, F, Kanagawa Pref., Kiyokawa Vil., Mt. Tanzawa-san, 20. VI. 2013, T. Taniwaki leg. (FIT); KPM-NK 103204, F, Yamanashi Pref., Narusawa Vil., Kouyoudai, 13. IX. 2021, K. Watanabe leg.; KPM-NK 91385, F, Shizuoka Pref., Shizuoka City, Umegashima, Abe-toge, 15. VI. 2008, K. Watanabe leg.; KPM-NK 102943, F, Nagano Pref., Outaki Vil., Hakkaisan, 31. VII.

2013, M. Ito leg.; KPM-NK 91379, 102951, 2F, Toyama Pref., Nanto City, Togamura-kamimomose, 21–28. VII. 2009, M. Watanabe leg. (MsT); KPM-NK 102952, F, ditto, 4–11. VIII. 2009; KPM-NK 102954, F, ditto, 8–15. IX. 2009; KPM-NK 102950, F, Toyama Pref., Toyama City, Kamegai, 14–21. VII. 2009, M. Watanabe leg. (MsT); OMNH, F, Toyama Pref., Toyama City, Arimine, Inonedani, 21–28. VII. 2009, M. Watanabe leg. (MsT); KPM-NK 102949, F, Toyama Pref., Toyama City, Arimine, Jyurodani, 7–14. VII. 2009, M. Watanabe leg. (MsT); KPM-NK 102948, M, ditto, 21–28. VII. 2009; KPM-NK 102953, F, ditto, 1–8. IX. 2009; KPM-NK 81286, F, Fukui Pref., Yashagaike, 27–29. VII. 1974, H. Kurokawa leg.; KPM-NK 102945, F, Fukui Pref., Fukui City, Mt. Kunimida-ake, 13. VI. 1981, T. Murota leg.; KPM-NK 102946, F, Fukui Pref., Obama City, Kaminegori, 20. VIII. 1981, H. Kurokawa leg.; KPM-NK 102942, F, Hyogo Pref., Kami Town, Niiya, 12. VII. 2015, S. Fujie leg. [Shikoku] SEHU, 1F (det. Uchida), Ehime Pref., Sasayama, 28. VII. 1916, Matsumura leg.

Description. Female ($n = 20$). Body polished; covered with setae; body length $7.0\text{--}12.2$ mm.

Head $0.6 \times$ as long as wide in dorsal view. Clypeus $2.3\text{--}2.4 \times$ as wide as long; slightly convex in lateral view; punctate dorsally, smooth ventrally; lower margin rounded in frontal view, obtuse in lateral view. Face $0.48 \times$ as long as minimum width; slightly convex medially; matt with punctures. Frons slightly concave above antennal sockets; coriaceous; punctate dorsally. POL $1.2\text{--}1.6 \times$ as OD. OOL $1.2\text{--}1.4 \times$ as OD. Gena and occiput finely punctate. Dorsal profile of gena rounded in dorsal view; width not narrowing anteriorly and somewhat abruptly narrowing posteriorly (Fig. 17D). Occipital carina complete. Malar space $1.2\text{--}1.25 \times$ as long as basal width of mandible. Mandible flat at base; lower tooth equal in length of upper tooth. Antenna with 23–27 flagellomeres; not flattened and tapped. FL I $3.7\text{--}4.2 \times$ as long as maximum depth in lateral view, $0.9\text{--}0.95 \times$ as long as FL II.

Mesosoma. Pronotum rugose ventrally; densely punctate dorsally (Fig. 17E). Epomia short; dorsal end situated on or above collar. Mesoscutum punctate; punctures on median part denser than outer parts. Notaulus sharp (Fig. 17D); posterior end not reaching centre of mesoscutum. Scutellum densely punctate; weakly convex in lateral view. Mesopleuron densely punctate; punctures partly united into groove-like foveola; with conspicuous smooth area around speculum (Fig. 17E). Epicnemial carina present laterally and ventrally. Sternaulus deep in anterior 0.6 of mesopleuron. Posterior transverse carina of mesosternum with deep notch medially; divided into two teeth near notch

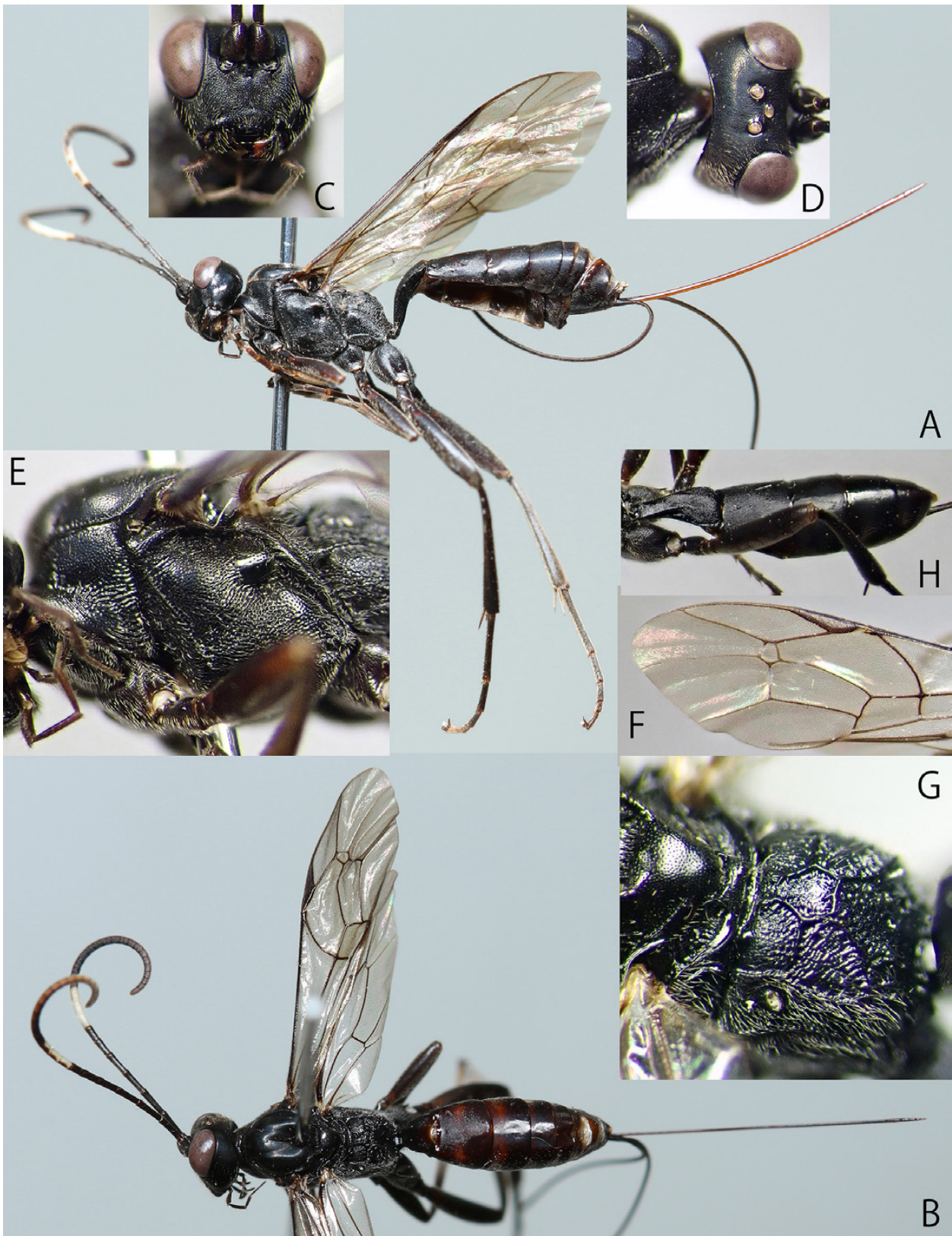


Fig. 17. *Cubocephalus atrator* (Walker, 1874), females (A: KPM-NK 102952; B–E, G: KPM-NK 91379; F, H: KPM-NK 102947) — A: lateral habitus; B: dorsal habitus; C: head, frontal view; D: head, dorsal view; E: pronotum and mesopleuron, lateral view; F: fore wing; G: scutellum and propodeum, dorso-lateral view; H: metasoma, dorso-lateral view.

(Fig. 77A). Metapleuron reticulate coriaceous anteriorly, rugulose posteriorly; with complete juxtacoxal carina. Propodeum largely irregularly rugose; anterior transverse carina weakly present, sometimes trace-like and/or partly absent; posterior transverse carina complete, inverted U-shaped (Fig. 17G); lateromedian longitudinal carina present and sometimes partly indistinct; lateral longitudinal carina complete; pleural carina complete; area superomedia partly distinct, about as long as maximum width; apophysis absent; spiracle oval. Fore wing length 6.3–9.0 mm. Areolet slightly longer than maximum width; longer than half length of vein 2m-cu; width steeply narrowing anteriorly; received vein 2m-cu at near middle; anterior width shorter than half length of vein 2m-cu (Fig. 17F). Fore wing vein 1cu-a interstitial to vein M&RS (Fig. 17F). Nervellus subvertical; intercepted near posterior end of vein. Hind femur reticulate coriaceous; $4.35\text{--}4.6 \times$ as long as maximum depth in lateral view. Tarsal claws simple.

Metasoma matt and coriaceous. T I $1.75\text{--}2.0 \times$ as long as maximum width; latero-median carina absent; dorso-lateral carina complete. Spiracle of T I behind the mid-length of T I. T II $0.8\text{--}0.9 \times$ as long as maximum width. Thyridium present; close to anterior margin of T II; slightly depressed;

ca. $2.0 \times$ as wide as length. Ovipositor sheath $1.83\text{--}2.68 \times$ as long as hind tibia, $3.65\text{--}5.1 \times$ as long as T I. Ovipositor weakly upcurved; apex sharp and with some minute teeth dorsally; apex of lower valve with teeth (Fig. 78N).

Colouration (Figs. 17A–H). Body (excluding wings) black to blackish-brown. Setae silver. Subapical part of mandible tinged with reddish-brown. FL VI (or VII) to FL IX (or X) with white markings. Posterior margins of metasomal tergites sometimes narrowly tinged with reddish-brown. Postero-median membranous parts of T V to T VII white. Thyridium and ovipositor reddish-brown. Wings hyaline. Veins and pterostigma blackish-brown to brown except for yellowish wing base.

Male ($n = 1$). Similar to female (Figs. 18A–E). Malar space $0.9 \times$ as long as basal width of mandible. Antenna with tyloids on FL IX to FL XIV (Fig. 18D). FL I $2.75 \times$ as long as maximum depth in lateral view, $1.1 \times$ as long as FL II. Hind femur $5.0 \times$ as long as maximum depth in lateral view. Anterior transverse carina of propodeum complete. T I $2.6 \times$ as long as maximum width. T II $1.4 \times$ as long as maximum width. Mandible except for teeth, palpi, dorsal parts of malar space and clypeus, face except for median black area, frontal orbits, ventral surfaces of scape and



Fig. 18. *Cubocephalus atrator* (Walker, 1874), male (KPM-NK 102948) — A: lateral habitus; B: head, mesosoma, and metasoma, dorso-lateral view; C: head, frontal view; D: flagellum and tyloids; E: propodeum, dorsal view.

pedicel, postero-dorsal corner of pronotum, tegula, ventral surfaces of fore and mid trochanters, and all tibial spurs yellow to ivory. Fore and mid legs paler than female.

Distribution. Japan (Honshu and Shikoku).

Bionomics. Unknown.

Remarks. This is the first record of the male of this species.

Cubocephalus confusus sp. nov.

[New SJN: Kogata-onaga-togari-himebachi]

(Figs. 19A–G, 76O, 78O)

Type series. Holotype: JAPAN, KPM-NK 91383, F, Honshu, Toyama Pref., Toyama City, Arimine, Inonedani, 8–15. IX. 2009, M. Watanabe leg. (MsT). **Paratype:** JAPAN: [Honshu] KPM-NK 102965, F, Saitama Pref., Ootaki Vil., Mt. Karisaka, 5–15. VI. 1998, M. Hinakura leg. (collision traps baited with chemical attractants); KPM-NK 102964, F, Nagano Pref., Ueda City, Sugadaira-kogen, 27. VII. – 13. IX. 2013, S. Shimizu leg. (MsT); KPM-NK 102974, F, Toyama Pref., Nanto City, Togamura-kamimomose, 8–15. IX. 2009, M. Watanabe leg. (MsT); KPM-NK 102966 F, Toyama Pref., Toyama City, Arimine, Inonedani, 7–14. VII. 2009, M. Watanabe

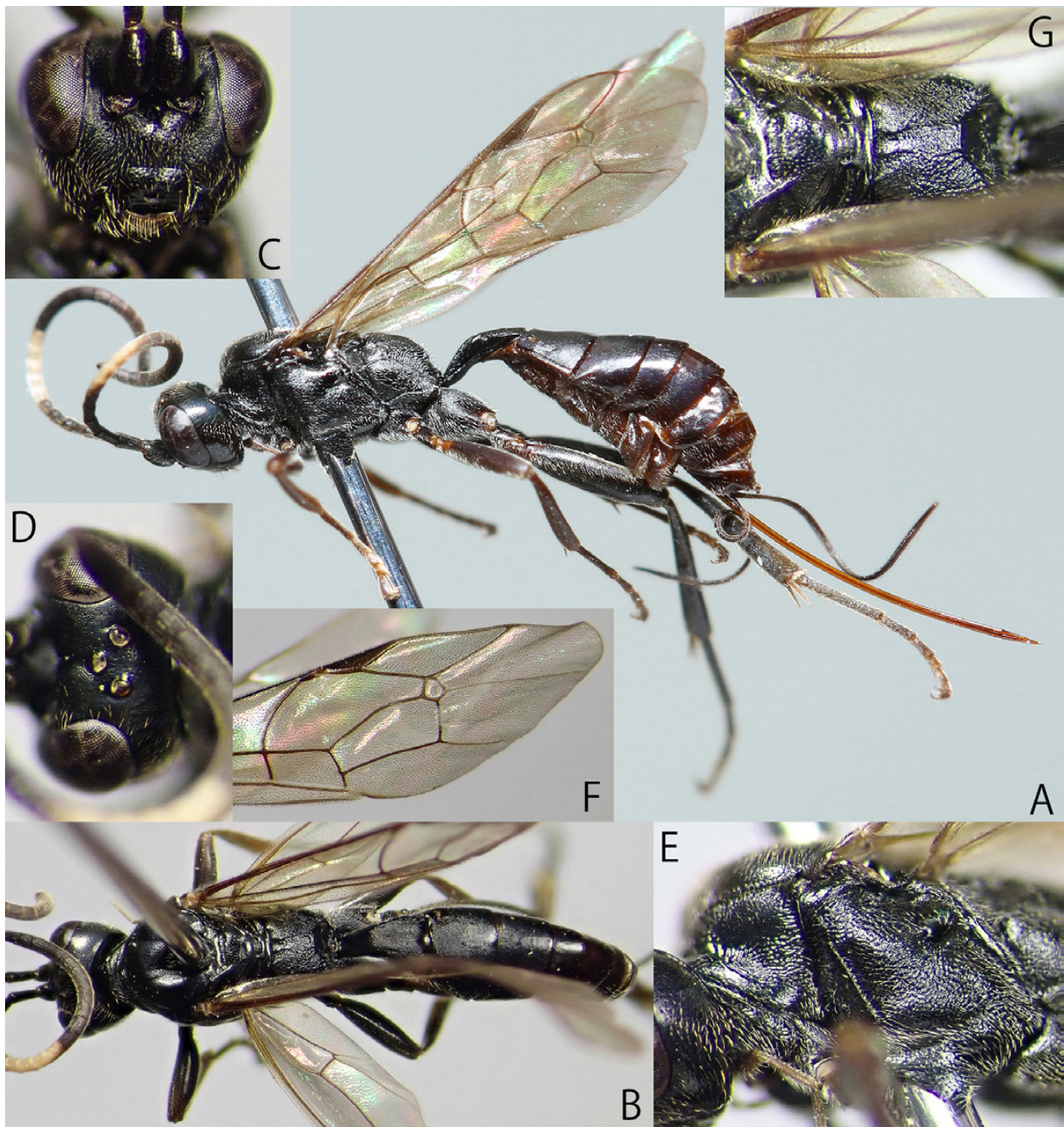


Fig. 19. *Cubocephalus confusus* sp. nov., female (holotype: KPM-NK 91383) — A: lateral habitus; B: head, mesosoma, and metasoma, dorsal view; C: head, frontal view; D: head, dorsal view; E: pronotum and mesopleuron, lateral view; F: fore wing; G: scutellum and propodeum, dorsal view.

leg. (MsT); KPM-NK 102967, F, ditto, 14–21. VII. 2009; KPM-NK 102968 & OMNH, 2F, ditto, 21–28. VII. 2009; KPM-NK 102969, F, ditto, 4–11. VIII. 2009; KPM-NK 102970, F, ditto, 25. VIII. – 1. IX. 2009; KPM-NK 102971 & OMNH, 2F, ditto, 1–8. IX. 2009; KPM-NK 102972, F, ditto, 8–15. IX. 2009; KPM-NK 102973, F, ditto, 15–22. IX. 2009; KPM-NK 102875, F, Toyama Pref., Toyama City, Arimine, Jyurodani, 25. VIII. – 1. IX. 2009, M. Watanabe leg. (MsT).

Description. Female (n = 15). Body polished; covered with setae; body length 7.0–9.0 (HT: 7.3) mm.

Head 0.6–0.65 (HT: 0.63) × as long as wide in dorsal view. Clypeus 2.05–2.1 (HT: 2.1) × as wide as long; slightly convex in lateral view; coriaceous and punctate dorsally, smooth ventrally; lower margin subtruncate in frontal view, obtuse in lateral view. Face 0.4 × as long as minimum width; matt; weakly convex medially; punctures indistinct laterally. Frons slightly concave above antennal sockets; coriaceous; sparsely punctate dorsally. POL 1.4–1.5 (HT: 1.5) × as OD. OOL 1.3–1.5 (HT: 1.5) × as OD. Gena and occiput coriaceous and finely punctate. Dorsal profile of gena rounded in dorsal view; gradually narrowing posteriorly (Fig. 19D). Occipital carina complete. Malar space 1.35–1.45 (HT: 1.35) × as long as basal width of mandible. Mandible flat at base; lower tooth equal in length of upper tooth. Antenna with 22–23 (HT: 23) flagellomeres; not flattened and tapped. FL I 2.1–2.4 (HT: 2.4) × as long as maximum depth in lateral view, 0.95 × as long as FL II.

Mesosoma. Pronotum matt, finely rugulose. Epomia absent. Mesoscutum finely punctate with weakly coriaceous ISP. Notaulus sharp; posterior end not reaching centre of mesoscutum. Scutellum sparsely punctate; flat in lateral view. Mesopleuron finely reticulate rugulose; with conspicuous smooth area around speculum (Fig. 19E). Epicnemial carina present laterally and ventrally. Sternaulus deep in entire length of mesopleuron. Posterior transverse carina of mesosternum without deep notch and teeth. Metapleuron coriaceous; with complete juxtacoxal carina. Propodeum matt (Fig. 19G); anterior transverse carina absent (Fig. 19G); posterior transverse carina complete, inverted U-shaped (Fig. 19G); lateromedian longitudinal carina largely indistinct and trace-like; lateral longitudinal carina complete; pleural carina complete; area superomedia indistinct; apophysis absent; spiracle oval. Fore wing length 6.0–7.2 (HT: 6.4) mm. Areolet slightly longer than maximum width; as long as half-length of vein 2m-cu; width steeply narrowing anteriorly; received vein 2m-cu at near middle; anterior width shorter than half length of vein 2m-cu (Fig. 19F). Fore wing vein

1cu-a interstitial to vein M&RS. Nervellus subvertical; intercepted near posterior end of vein. Hind femur reticulate coriaceous; 4.55–5.2 (HT: 5.2) × as long as maximum depth in lateral view. Tarsal claws simple.

Metasoma matt and coriaceous. T I 1.78–2.0 (HT: 1.78) × as long as maximum width; latero-median carina absent; dorso-lateral carina complete. Spiracle of T I behind the mid-length of T I. T II 0.75–0.8 (HT: 0.75) × as long as maximum width. Thyridium present; close to anterior margin of T II; flat to slightly depressed; ca. 2.0 × as wide as length. Ovipositor sheath 1.8–2.0 (HT: 2.0) × as long as hind tibia, 2.1–2.3 (HT: 2.1) × as long as T I. Ovipositor weakly upcurved; apex sharp and without minute teeth dorsally; apex of lower valve with teeth (Fig. 78O).

Colouration (Figs. 19A–G). Body (excluding wings) black to blackish-brown. Setae silver. Subapical part of mandible tinged with reddish-brown. Labrum reddish-brown. FL V (or VI) to FL X with white markings. Bases of femora, all tibial spurs, and fore tibia more or less tinged with brown to reddish-brown. Posterior margins of metasomal tergites sometimes narrowly tinged with reddish-brown. Postero-median membranous parts of T V to T VII white. Thyridium and ovipositor reddish-brown. Wings brownish-hyaline. Veins and pterostigma blackish-brown to brown except for yellowish wing base.

Male. Unknown.

Distribution. Japan (Honshu).

Bionomics. Unknown.

Etymology. The specific name is from the Latin “*confusus*”, referring to the morphological characteristics of this species is relatively obscure in the genus.

Remarks. This species resembles *Cu. atrator* and *Cu. asiaticus* **sp. nov.** in the entirely black legs and almost or entirely black metasomal tergites but can be distinguished by the character state of mesosternum, and the length of FL I and ovipositor sheath (see remarks of *Cu. asiaticus* and above key).

***Cubocephalus nanus* sp. nov.**

[New SJN: Mame-onaga-togari-himebachi]

(Figs. 20A–H, 76K, 78P)

Type series. **Holotype:** JAPAN, KPM-NK 91381, F, Honshu, Fukui Pref., Oono City, Koike, 31. VII. 1982, H. Kurokawa leg.

Description. Female (n = 1). Body polished; covered with setae; body length 5.1 mm.

Head cubic (Fig. 20A–D); 0.75 × as long as wide in dorsal view. Clypeus 3.0 × as wide as long; slightly convex in lateral view; sparsely punctate dorsally; smooth

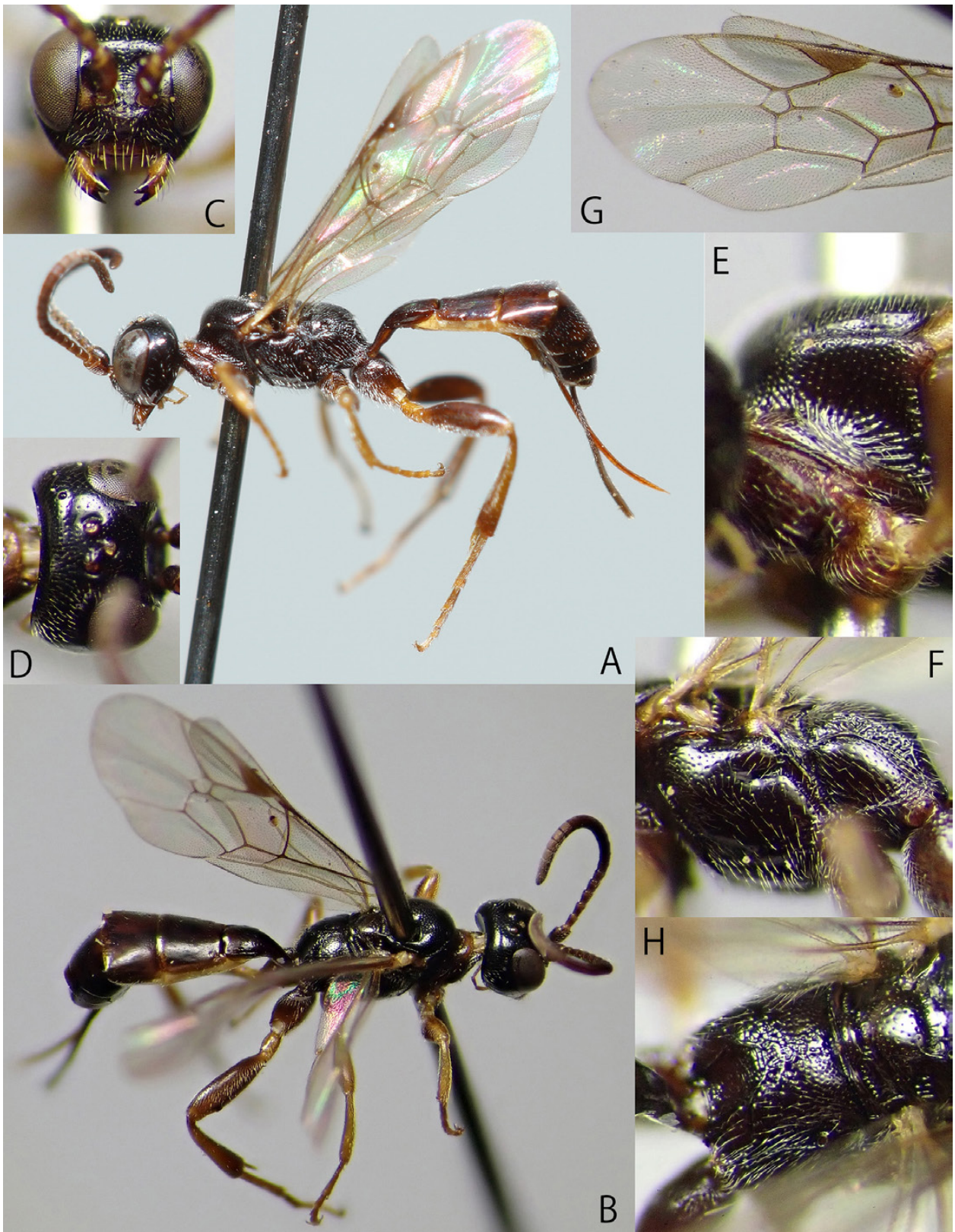


Fig. 20. *Cubocephalus nanus* **sp. nov.**, female (holotype: KPM-NK 91381) — A: lateral habitus; B: head, mesosoma, and metasoma, dorso-lateral view; C: head, frontal view; D: head, dorsal view; E: pronotum, lateral view; F: mesopleuron and metapleuron, lateral view; G: fore wing; H: scutellum and propodeum, dorso-lateral view.

ventrally; lower margin subtruncate in frontal view, obtuse in lateral view. Face $0.35 \times$ as long as minimum width; slightly convex medially; matt and sparsely punctate. Frons slightly concave above antennal sockets; punctate dorsally; ISP smooth medially, matt laterally; area above antennal sockets transversely rugose; with pair of small smooth areas between areas with punctures and transverse rugae. POL $1.6 \times$ as OD. OOL $1.6 \times$ as OD. Gena and occiput densely punctate. Dorsal profile of gena rounded in dorsal view; width gradually narrowing anteriorly and somewhat abruptly narrowing posteriorly (Fig. 20D). Occipital carina complete. Malar space $0.5 \times$ as long as basal width of mandible. Mandible flat at base; lower tooth equal in length of upper tooth. Antenna with 20 flagellomeres; not flattened and tapped. FL I $1.25 \times$ as long as maximum depth in lateral view, $0.75 \times$ as long as FL II.

Mesosoma. Pronotum rugose ventrally; punctate dorsally (Fig. 20F). Epomia absent (Fig. 20F). Mesoscutum punctate. Notaulus short and weak. Scutellum punctate; flat in lateral view. Mesopleuron sparsely to moderately punctate; with conspicuous smooth area around speculum (Fig. 20F). Epicnemial carina present laterally and ventrally. Sternaulus deep in anterior 0.3 of mesopleuron. Posterior transverse carina of mesosternum without deep notch and teeth. Metapleuron sparsely punctate (Fig. 20F); with complete juxtacoxal carina. Propodeum punctate; anterior transverse carina absent; posterior transverse carina complete, inverted U-shaped (Fig. 20H); lateromedian longitudinal carina absent; lateral longitudinal carina absent; pleural carina complete; area superomedia indistinct; apophysis absent; spiracle round. Fore wing length 4.25 mm. Areolet as long as maximum width; longer than half length of vein 2m-cu; width steeply narrowing anteriorly; received vein 2m-cu at near middle; anterior width as long as half-length of vein 2m-cu (Fig. 20G). Fore wing vein 1cu-a interstitial to vein M&RS (Fig. 20G). Nervellus subvertical; intercepted near posterior end of vein. Hind femur reticulate coriaceous; $3.6 \times$ as long as maximum depth in lateral view. Tarsal claws simple.

Metasoma finely coriaceous. T I $1.9 \times$ as long as maximum width; latero-median carina absent; dorso-lateral carina complete. Spiracle of T I behind the mid-length of T I. T II $0.73 \times$ as long as maximum width; finely and sparsely punctate. Thyridium present; close to anterior margin of T II; slightly depressed; ca. $2.0 \times$ as wide as length. Ovipositor sheath $1.3 \times$ as long as hind tibia, $1.8 \times$ as long as T I. Ovipositor strongly upcurved; apex sharp and without minute teeth dorsally; apex of lower valve with teeth (Fig. 78P).

Colouration (Figs. 20A–H). Body (excluding wings)

black to blackish-brown. Setae silver. Mandible except for teeth, tegula, and membranous part of metasomal sternites yellowish-brown. Clypeus, face, ventral surface of antenna, metasomal tergites more or less tinged with brown. Face with pair of yellowish-brown spots between antennal sockets and eye. Flagellum without white marking. Fore and mid legs yellowish-brown (coxae slightly darkened). Hind trochanter, trochantellus, tibia except for apical part, tibial spurs, and tarsus brown. Ovipositor reddish-brown. Wings hyaline. Veins and pterostigma blackish-brown to brown except for yellowish wing base.

Male. Unknown.

Distribution. Japan (Honshu).

Bionomics. Unknown.

Etymology. The specific name is from Latin “*nanus*”, which means the dwarf.

Remarks. This species resembles *Cu. nigriventris* in the small body with cubic head, robust antenna, and strongly upcurved ovipositor but can be distinguished by the colouration of legs and the length of the ovipositor (see above key).

***Cubocephalus sapporensis* sp. nov.**

[New SJN: Sapporo-onaga-togari-himebachi]

(Figs. 21A–G, 76P, 78Q)

Type series. Holotype: JAPAN, KPM-NK 91382, F, Hokkaido, Sapporo City, Mt. Maruyama, 29. VII. 2009, K. Watanabe leg.

Description. Female ($n = 1$). Body matt; covered with setae; body length 12.4 mm.

Head $0.63 \times$ as long as wide in dorsal view. Clypeus $2.0 \times$ as wide as long; slightly convex in lateral view; coriaceous and densely punctate dorsally, sparsely punctate with some transverse foveae ventrally; lower margin subtruncate in frontal view, obtuse in lateral view. Face $0.4 \times$ as long as minimum width; weakly convex and densely punctate medially. Frons slightly concave above antennal sockets; densely punctate except for smooth areas above antennal sockets. POL $1.5 \times$ as OD. OOL $1.5 \times$ as OD. Gena and occiput finely and densely punctate. Dorsal profile of gena rounded in dorsal view; width gradually narrowing posteriorly (Fig. 21D). Occipital carina complete. Malar space $1.2 \times$ as long as basal width of mandible. Mandible flat at base; lower tooth equal in length of upper tooth. Antenna with 25 flagellomeres; not flattened and tapped. FL I $3.15 \times$ as long as maximum depth in lateral view, $1.1 \times$ as long as FL II.

Mesosoma. Pronotum rugose ventrally; rugulose dorsally. Epomia short; dorsal end situated slightly



Fig. 21. *Cubocephalus sapporensis* **sp. nov.**, female (holotype: KPM-NK 91382) — A: lateral habitus; B: head, mesosoma, and metasoma, dorso-lateral view; C: head, latero-frontal view; D: head, dorsal view; E: pronotum and mesopleuron, lateral view; F: fore wing; G: scutellum, propodeum, and basal part of T I, dorso-lateral view.

above collar. Mesoscutum densely punctate. Notaulus sharp; posterior end not reaching centre of mesoscutum. Scutellum punctate; flat in lateral view. Mesopleuron finely and irregularly rugulose; with conspicuous smooth area around speculum (Fig. 21E). Epicnemial carina present laterally and ventrally. Sternaulus deep in entire length of mesopleuron. Posterior transverse carina of mesosternum without deep notch and teeth. Metapleuron reticulate coriaceous anteriorly, rugulose posteriorly; with complete (but weak medially) juxtacoxal carina. Propodeum rugulose to rugose; anterior transverse carina slightly present as trace-like; posterior transverse carina complete, inverted V-shaped (Fig. 21G); lateromedian longitudinal carina complete but entirely weak; lateral longitudinal carina complete; pleural carina complete; area superomedia partly defined, longer than wide; apophysis absent; spiracle oval. Fore wing length 8.5 mm. Areolet as long as maximum width; as long as half-length of vein 2m-cu; width steeply narrowing anteriorly; received vein 2m-cu at near middle; anterior width shorter than half length of vein 2m-cu (Fig. 21F). Fore wing vein 1cu-a interstitial to vein M&RS. Nervellus subvertical; intercepted near posterior end of vein. Hind femur reticulate coriaceous; $4.6 \times$ as long as maximum depth in lateral view. Tarsal claws simple.

Metasoma. T I $2.2 \times$ as long as maximum width; lateromedian carina absent; dorso-lateral carina absent. Spiracle of T I behind the mid-length of T I; base convex (Fig. 21G). T II $0.85 \times$ as long as maximum width. Thyridium present; close to anterior margin of T II; slightly depressed; ca. $2.0 \times$ as wide as length. Ovipositor sheath $1.65 \times$ as long as hind tibia, $3.15 \times$ as long as T I. Ovipositor weakly upcurved; apex sharp and without minute teeth dorsally; apex of lower valve with many (more than 16) teeth (Fig. 78Q).

Colouration (Figs. 21A–G). Body (excluding wings) black to blackish-brown. Setae silver. Subapical part of mandible, lateral sides of clypeus, ventral surface of apical part of flagellum, and postero-dorsal corner of pronotum tinged with reddish-brown. FL V to FL XI with white markings. T II and T III largely tinged with dark reddish-brown. Membranous part of metasomal sternites yellowish-brown. Trochanters, trochantelli, bases of femora, fore femur, fore tibia, fore and mid femora, and fore tibial spurs partly tinged with brown. Median membranous part of T VII white. Thyridium and ovipositor reddish-brown. Wings hyaline. Veins and pterostigma blackish-brown to brown except for yellowish wing base.

Distribution. Japan (Hokkaido).

Bionomics. Unknown.

Etymology. The species name is from the type locality, Sapporo, a city in Hokkaido.

Remarks. This species resembles *Cu. atrator* and *C. uryuensis* **sp. nov.** in the largely black body colouration but can be distinguished by the short ovipositor sheath (see above key).

***Cubocephalus uryuensis* sp. nov.**

[New SJN: Uryu-onaga-togari-himebachi]

(Figs. 22A–I, 76Q, 77B, 78R)

Type series. **Holotype:** JAPAN, KPM-NK 75809, F, Hokkaido, Horokanai Town, Uryu, Research Forest of Hokkaido University, 17. VII. 2012, M. Ito leg. **Paratype:** JAPAN, KPM-NK 75810, F, same locality of holotype, 11–17. VII. 2012, K. Watanabe *et al.* leg. (MsT).

Description. Female (n = 2). Body matt; covered with setae; body length 9.0–9.3 (HT: 9.3) mm.

Head $0.63\text{--}0.65$ (HT: 0.65) $\times$ as long as wide in dorsal view. Clypeus $2.0 \times$ as wide as long; slightly convex in lateral view; densely punctate dorsally; sparsely punctate with some transverse foveae ventrally; smooth along lower margin; lower margin subtruncate in frontal view, obtuse in lateral view. Face $0.45\text{--}0.48$ (HT: 0.45) $\times$ as long as minimum width; slightly convex and densely punctate medially. Frons slightly concave above antennal sockets; densely punctate except for smooth areas above antennal sockets. POL $0.9 \times$ as OD. OOL $1.2\text{--}1.25$ (HT: 1.2) $\times$ as OD. Gena and occiput densely and finely punctate. Dorsal profile of gena rounded in dorsal view; width gradually narrowing posteriorly (Fig. 22D). Occipital carina complete. Malar space $0.9\text{--}1.0$ (HT: 0.9) $\times$ as long as basal width of mandible. Mandible flat at base; lower tooth equal in length of upper tooth. Antenna with 25–26 (HT: 25) flagellomeres; not flattened and tapped. FL I $5.0\text{--}5.15$ (HT: 5.0) $\times$ as long as maximum depth in lateral view, $1.0\text{--}1.05$ (HT: 1.0) $\times$ as long as FL II.

Mesosoma. Pronotum granulate and partly finely rugulose (Fig. 22E). Epomia short; dorsal end situated slightly above collar. Mesoscutum densely punctate; punctures on median part denser than outer parts. Notaulus sharp (Fig. 22E); posterior end not reaching centre of mesoscutum. Scutellum densely punctate (Fig. 22G); weakly convex in lateral view. Mesopleuron coriaceous; with conspicuous smooth area around speculum (Fig. 22F). Epicnemial carina present laterally and ventrally. Sternaulus deep in anterior 0.6 of mesopleuron. Posterior transverse carina of mesosternum without deep notch and teeth (Fig. 77B). Metapleuron coriaceous (Fig. 22F); with complete juxtacoxal carina. Propodeum coriaceous; anterior transverse carina absent; posterior transverse carina complete, inverted U-shaped (Fig. 22G); lateromedian

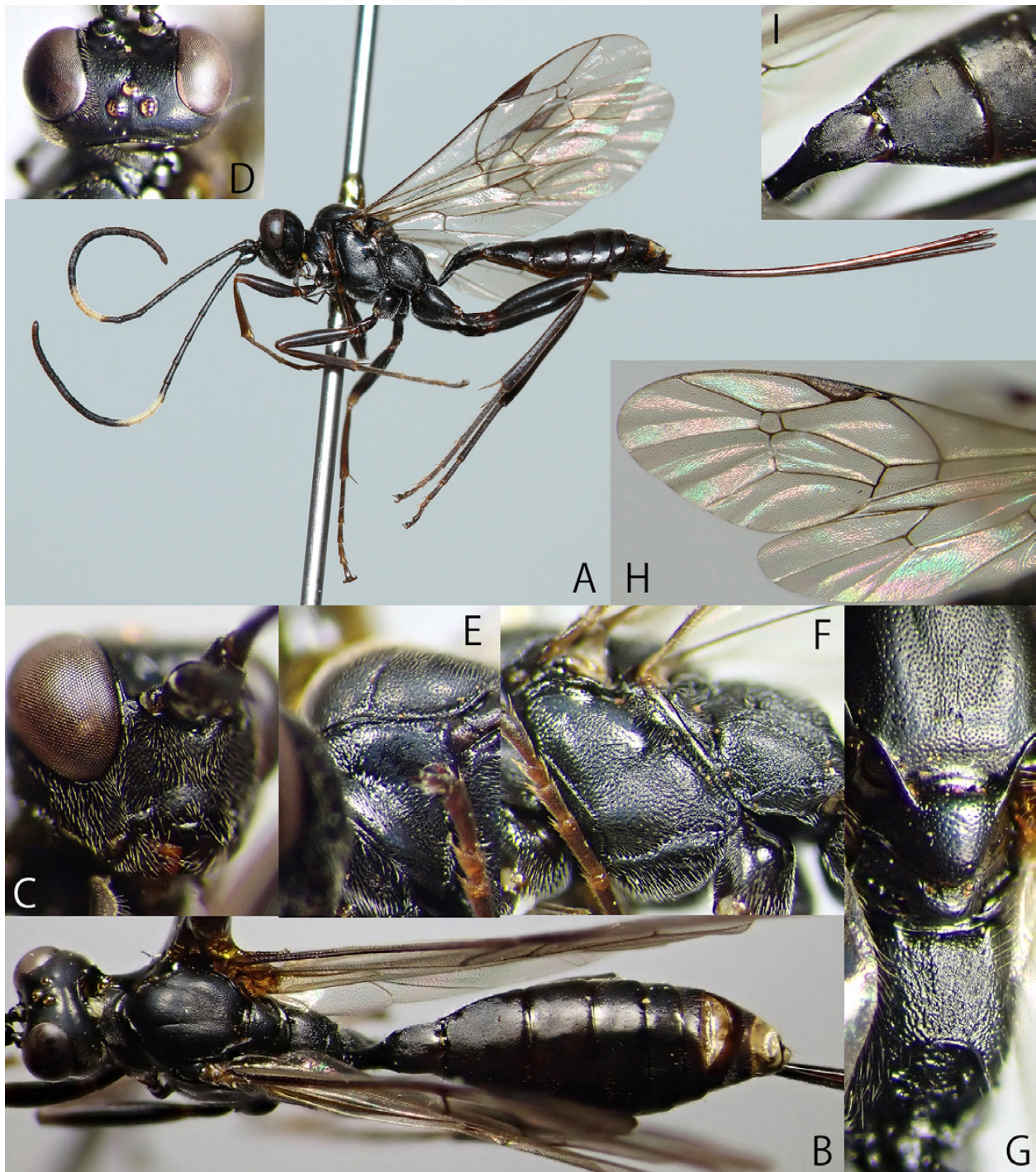


Fig. 22. *Cubocephalus uryuensis* sp. nov., female (holotype: KPM-NK 75809) — A: lateral habitus; B: head, mesosoma, and metasoma, dorso-lateral view; C: head, latero-frontal view; D: head, dorsal view; E: pronotum, lateral view; F: mesopleuron and metapleuron, lateral view; G: mesoscutum, scutellum and propodeum, dorso-lateral view; H: fore wing; I: T I and T II, dorsal view.

longitudinal carina absent; lateral longitudinal carina weakly present and narrowly indistinct posteriorly; pleural carina weakly present and narrowly indistinct posteriorly; area superomedia indistinct; apophysis absent; spiracle oval. Fore wing length 8.0 mm. Areolet as long as maximum width; longer than half length of vein 2m-cu; width steeply narrowing anteriorly; received vein 2m-cu at near middle; anterior width shorter than half length of vein 2m-cu. Fore wing vein 1cu-a interstitial to vein M&RS. Nervellus subvertical; intercepted near posterior end of vein. Hind

femur reticulate coriaceous; 5.3–5.6 (HT: 5.6) $\times$ as long as maximum depth in lateral view. Tarsal claws simple.

Metasoma. T I 2.1–2.3 (HT: 2.3) $\times$ as long as maximum width; latero-median carina absent; dorso-lateral carina present basally. Spiracle of T I behind the mid-length of T I. T II 0.75 $\times$ as long as maximum width. Thyridium present; close to anterior margin of T II; slightly depressed; ca. 2.0 $\times$ as wide as length. Ovipositor sheath 2.43–2.55 (HT: 2.43) $\times$ as long as hind tibia, 5.55–5.65 (HT: 5.55) $\times$ as long as T I. Ovipositor weakly upcurved; apex sharp and

with some minute teeth dorsally; apex of lower valve with teeth (Fig. 78R).

Colouration (Figs. 22A–I). Body (excluding wings) black to blackish-brown. Setae silver. Subapical part of mandible tinged with reddish-brown. FL VI to FL X (or XI) with white markings. Apex and base of femora narrowly tinged with brown to reddish-brown. Fore and mid tibiae and tarsi partly tinged with brown. Tibial spurs brown. Membranous part of metasoma sternites dark yellowish-brown. Median membranous part of T VII white. Thyridium and ovipositor reddish-brown. Wings hyaline. Veins and pterostigma blackish-brown to brown except for yellowish wing base.

Male. Unknown.

Distribution. Japan (Hokkaido).

Bionomics. Unknown.

Etymology. The species name is from the type locality, Uryu, a place in Hokkaido with the research forest of Hokkaido University.

Remarks. This species resembles *Cu. atrator* in the black body with long ovipositor but can be distinguished by the posterior transverse carina of mesosternum without deep notch and teeth (with deep notch and teeth in *Cu. atrator*).

Genus *Giraudia* Förster, 1869

Giraudia Förster, 1869: 184. Type species: *Cryptus congruens* Gravenhorst, 1829 (= *Ichneumon gyratorius* Thunberg, 1824). Designated by Ashmead (1900).

Calocryptus Thomson, 1873: 521. Type species: *Cryptus congruens* Gravenhorst, 1829 (= *Ichneumon gyratorius* Thunberg, 1824). Monotypic.

Pseudocryptus Kriechbaumer, 1893: 120. Type species: *Cryptus griseus* Gravenhorst, 1829. Monotypic.

In Japan, three species, *Gi. japonica*, *Gi. spinosa* Uchida, 1936, and *Gi. teranishii* Uchida, 1930, have been recorded. In this study, I newly describe two new species below.

Key to Japanese species of *Giraudia*

(Males of *Gi. nana* **sp. nov.** and *Gi. kurenai* **sp. nov.** are unknown.)

1. Scutellum without yellow spot (Figs. 26B, H, 27B, 28B, H, 29B). Metasoma and legs largely black in female (Figs. 26B, 28B). Dorsal face of tibiae with robust, large (especially in *Gi. spinosa*), conspicuous setae (Figs. 26G, 28G).

..... 2
-. Scutellum with yellow spot (Figs. 23B, E, 24, B, G,

25B, H). Metasoma and legs sometimes with reddish or yellowish area(s) in female (Figs. 24A, B). Dorsal face of tibiae with or without robust, large, conspicuous setae.

..... 3
2. Body lustre dull (Figs. 26A, E, 27A, E). ISP of mesopleuron and metapleuron not polished (Fig. 26E). Malar space $0.7\text{--}0.75 \times$ as long as basal width of mandible. Robust and large setae on hind tibia strong in female (Fig. 26G). Clypeus and mandible largely blackish-brown to reddish-brown in male (Fig. 27C). Hind tarsus without ivory band in male (Fig. 27A)

..... *Giraudia spinosa* Uchida, 1936
-. Body lustre strong (Figs. 28A, E). ISP of punctures of mesopleuron and metapleuron polished (Fig. 28E). Malar space $0.55\text{--}0.7 \times$ as long as basal width of mandible. Robust and large setae on hind tibia weak in female (Fig. 28G). Clypeus and mandible largely yellow in male (Fig. 29C). Hind tarsus with ivory band in male (Figs. 29A, B).

..... *Giraudia teranishii* Uchida, 1930
3. Propodeum matt (Fig. 23E). Body length longer than 9.0 mm. Dorsal face of tibiae with robust, large, conspicuous setae.

..... *Giraudia japonica* Watanabe, 2019
-. Propodeum polished (Figs. 24G, 25H). Body length shorter than 8.0 mm. Dorsal face of tibiae without robust, large, conspicuous setae (Fig. 25G).

..... 4
3. T I and T II reddish yellow except for base of T I white (Fig. 24A). Coxae whitish yellow to reddish yellow (Fig. 24A). Propodeal carinae complete (Fig. 24G). Anterior tentorial pit large. Lower tooth of mandible shorter than upper tooth.

..... *Giraudia kurenai* **sp. nov.**
-. Metasomal tergites and coxae black (Fig. 25A). Propodeal carinae absent anteriorly (Fig. 25H). Anterior tentorial pit small. Lower tooth of mandible longer than upper tooth.

..... *Giraudia nana* **sp. nov.**

Giraudia japonica Watanabe, 2019

[SJN: Kimon-kuro-chibi-togari-himebachi]

(Figs. 23A–E)

Giraudia japonica Watanabe, 2019: 82.

Materials examined. JAPAN: [Honshu] KPM-NK 69947, F (paratype), Nagano Pref., Karuizawa, 8. VIII. 1952, R. Ishikawa leg.; KPM-NK 103012, F, Nagano Pref., Ueda City, Sugadaira-kogen, 19. X. – 16. XI. 2014, S. Shimizu leg. (MsT); KPM-NK 103017, M, Nagano Pref., Outaki Vil., Mt. Ontake-san, Hakkaisan, 3. VIII. 2019,



Fig. 23. *Giraudia japonica* Watanabe, 2019, males (A, C–E: KPM-NK 103017; B: KPM-NK 103015) — A: lateral habitus; B: dorsal habitus; C: head, frontal view; D: flagellum and tyloids; E: scutellum and propodeum, dorsal view.

H. Kawai leg.; KPM-NK 69946, F (holotype), **JAPAN**, Tochigi Pref., Nasushiobara City, Amayu - Shiobara, 12. X. 2009, E. Katayama leg.; KPM-NK 103015, M, Tochigi Pref., Nasu Town, Nasu-kogen, 26. VIII. 1991, H. Suda leg.; KPM-NK 103013, M, Toyama Pref., Toyama City, Arimine, Jyurodani, 16–25. VIII. 2009, M. Watanabe leg. (MsT); KPM-NK 103014, F, Toyama Pref., Toyama City, Arimine, Inone-dani, 25. VIII. – 1. IX. 2009, M. Watanabe leg. (MsT); KPM-NK 103016, M, ditto, 4–11. VIII. 2009; OMNH, M, ditto, 16–25. VIII. 2009; OMNH, F, ditto, 1–8. IX. 2009.

Description. Female ($n = 5$). See Watanabe (2019).

Male ($n = 5$). Similar to female (Figs. 23A–E). Body

length 9.9–12.4 mm. Face $4.0\text{--}4.5 \times$ as long as minimum width. Malar space $0.5\text{--}0.55 \times$ as long as basal width of mandible. Antenna with 22–24 flagellomeres; not flattened and tapped; with tyloids on FL XII (or XIII) to FL XIV (or XV) (Fig. 23D). FL I $2.45\text{--}2.55 \times$ as long as maximum depth in lateral view, $1.1\text{--}1.15 \times$ as long as FL II. Fore wing length 9.0–10.7 mm. Hind femur $5.75\text{--}6.2 \times$ as long as maximum depth in lateral view. FL VIII to FL XV sometimes with white markings. Face, clypeus, mandible, frontal orbit, gena, collar, postero-dorsal corner of pronotum, tegula, and median spot of mesoscutum yellow. Fore and mid legs largely tinged with yellowish-brown.

Dorsal part of metapleuron, propodeum except for base, hind trochantellus, T I, and T II each with reddish-yellow part. Reddish-yellow areas of mesosoma and metasomal tergites sometimes enlarged. Basal part of antenna, occiput, mesoscutum, and mesopleuron sometimes each with reddish-brown area.

Distribution. Japan (Honshu).

Bionomics. Unknown.

Remarks. This is the first record of the male of this species.

***Giraudia kurenai* sp. nov.**

[New SJN: Kurenai-togari-himebachi]

(Figs. 24A–G, 78S)

Type series. **Holotype:** JAPAN, KPM-NK 91387, F, Honshu, Toyama Pref., Nanto City, Togamura-

kamimomose, 19–29. IX. 2009, M. Watanabe leg. (MsT).

Paratype: JAPAN, KPM-NK 84969, F, Honshu, Fukui Pref., Izumi Vil., Kadonomaesaka, 18. X. 1981, H. Kurokawa leg.

Description. Female (n = 2). Body punctate and polished; covered with setae; body length 6.6–6.8 (HT: 6.8) mm.

Head $0.6 \times$ as long as wide in dorsal view. Clypeus $2.1\text{--}2.35$ (HT: 2.35) $\times$ as wide as long; slightly convex in lateral view; sparsely punctate dorsally; smooth ventrally; lower margin weakly rounded in frontal view, obtuse in lateral view. Face $0.38\text{--}0.4$ (HT: 0.38) $\times$ as long as minimum width; weakly convex medially; matt; sparsely punctate. Anterior tentorial pit large. Frons weakly concave above antennal sockets; matt and punctate dorsally, coriaceous to smooth ventrally except for finely rugose medially. POL $0.9 \times$ as OD. OOL $1.25\text{--}1.6 \times$ as OD. Gena and occiput



Fig. 24. *Giraudia kurenai* sp. nov., female (holotype: KPM-NK 91387) — A: lateral habitus; B: head, mesosoma, and metasoma, dorsal view; C: head, frontal view; D: head and mesoscutum, dorsal view; E: pronotum and mesopleuron, lateral view; F: fore wing; G: scutellum and propodeum, dorsal view.

finely punctate. Dorsal profile of gena rounded in dorsal view; width gradually narrowing posteriorly (Fig. 24D). Occipital carina complete. Malar space 1.05–1.2 (HT: 1.2) $\times$ as long as basal width of mandible. Mandible flat at base; lower tooth shorter than upper tooth. Antenna with 24–25 (HT: 25) flagellomeres; apical part flattened below and tapped to slender apex (Fig. 24A). FL I 2.2–3.0 (HT: 2.2) $\times$ as long as maximum depth in lateral view, 0.9–1.0 (HT: 1.0) $\times$ as long as FL II.

Mesosoma finely punctate. Pronotum foveolate ventrally, smooth dorsally except for dorsal margin (Fig. 24E). Epomia long; dorsal end closed to dorsal margin of pronotum. Mesoscutum with short and sharp notaulus (Fig. 24D). Scutellum punctate anteriorly, smooth posteriorly; weakly convex in lateral view. Mesopleuron with small conspicuous smooth area around speculum (Fig. 24E). Epicnemial carina present laterally and ventrally. Sternaulus deep entire length of mesopleuron. Metapleuron sparsely and finely punctate; with complete juxtacoxal carina. Propodeum finely and sparsely punctate; ISP smooth; with all carinae (Fig. 24G); area superomedia clearly defined, 1.5 $\times$ as long as maximum width; apophysis small and obtuse; spiracle oval. Fore wing length 5.0–5.1 (HT: 5.0) mm. Areolet shorter than maximum width; width slightly narrowing anteriorly; received vein 2m-cu basal than middle (Fig. 24F). Fore wing vein 1cu-a interstitial to vein M&RS (Fig. 24F). Nervellus inclivous; intercepted near posterior end of vein. Hind femur reticulate coriaceous; 5.0–5.1 (HT: 5.0) $\times$ as long as maximum depth in lateral view. Dorsal face of tibiae without robust, large, conspicuous setae. Tarsal claws simple.

Metasoma finely and densely punctate; ISP smooth. T I 3.8–5.1 (HT: 5.1) $\times$ as long as maximum width, sparsely punctate; latero-median carina absent; dorso-lateral carina weakly and partly present. T II 0.9–0.95 $\times$ as long as maximum width. Thyridium present; close to anterior margin of T II; slightly depressed; ca. 1.0 $\times$ as wide as length. Ovipositor sheath 0.8–1.05 (HT: 1.05) $\times$ as long as hind tibia, 1.5–1.9 (HT: 1.9) $\times$ as long as T I. Ovipositor straight; apex sharp; apex of lower valve with teeth (Fig. 78S).

Colouration (Figs. 24A–G). Body (excluding wings) black to blackish-brown. Setae silver. Mandible, clypeus, and membranous part of metasomal sternites partly tinged with dark yellowish-brown except for apex of former. Median part of face slightly tinged with dark yellowish-brown. FL V (or VI) to FL X with white markings. Scutellum yellow. Postscutellum tinged with yellow to dark yellowish-brown. Subtegular ridge and tegula yellowish-brown. Legs yellowish-brown to reddish-brown;

femora, hind coxa, hind tibia, and hind tarsus sometimes darkened. Base of T I white. T I except for white base and T II red to reddish-yellow. Subapical part of T I and basal part of T II sometimes each with brownish area. T III and T IV sometimes slightly tinged with red. Median parts of T VII and T VIII white. Ovipositor reddish-brown. Wings hyaline. Veins and pterostigma yellowish-brown except for yellow wing base.

Male. Unknown.

Distribution. Japan (Honshu).

Bionomics. Unknown.

Etymology. The specific name is a traditional Japanese term “Kurenai”, which means red.

Remarks. Propodeal spiracle of the paratype is situated on the mid-length between pleural carina and lateral longitudinal carina, while the other characters of this specimen are well accorded of the character states of *Giraudia*. This species resembles *Gi. plana* (Provancher, 1874) and *Gi. nana* **sp. nov.**, in the yellow scutellum and the absence of robust, large, conspicuous setae of tibiae, but can be distinguished by the complete propodeal carinae (at least anterior transverse carina absent in *Gi. plana* and *Gi. nana*).

Giraudia nana **sp. nov.**

[New SJN: Murota-togari-himebachi]

(Figs. 25A–H, 78T)

Type series. Holotype: JAPAN, KPM-NK 91388, F, Honshu, Fukui Pref., Katsuyama City, Ohara, 19. VI. 1982, T. Murota leg.

Description. Female (n = 1). Body punctate and polished; covered with setae; body length 7.2 mm.

Head 0.65 $\times$ as long as wide in dorsal view. Clypeus 3.8 $\times$ as wide as long; slightly convex in lateral view; transversely rugose and punctate dorsally; lower margin weakly rounded in frontal view, sharp in lateral view. Face 0.38 $\times$ as long as minimum width; weakly convex medially; matt; sparsely punctate. Anterior tentorial pit small. Frons weakly concave above antennal sockets; matt and punctate dorsally, coriaceous to smooth ventrally. POL 1.1 $\times$ as OD. OOL 1.1 $\times$ as OD. Gena and occiput densely punctate. Dorsal profile of gena rounded in dorsal view; width gradually narrowing posteriorly (Fig. 25D). Occipital carina complete. Malar space 0.8 $\times$ as long as basal width of mandible. Mandible flat at base; lower tooth longer than upper tooth. Antenna with 26 flagellomeres; apical part flattened below and tapped to slender apex (Fig. 25A). FL I 2.1 $\times$ as long as maximum depth in lateral view, 0.95 $\times$ as long as FL II.

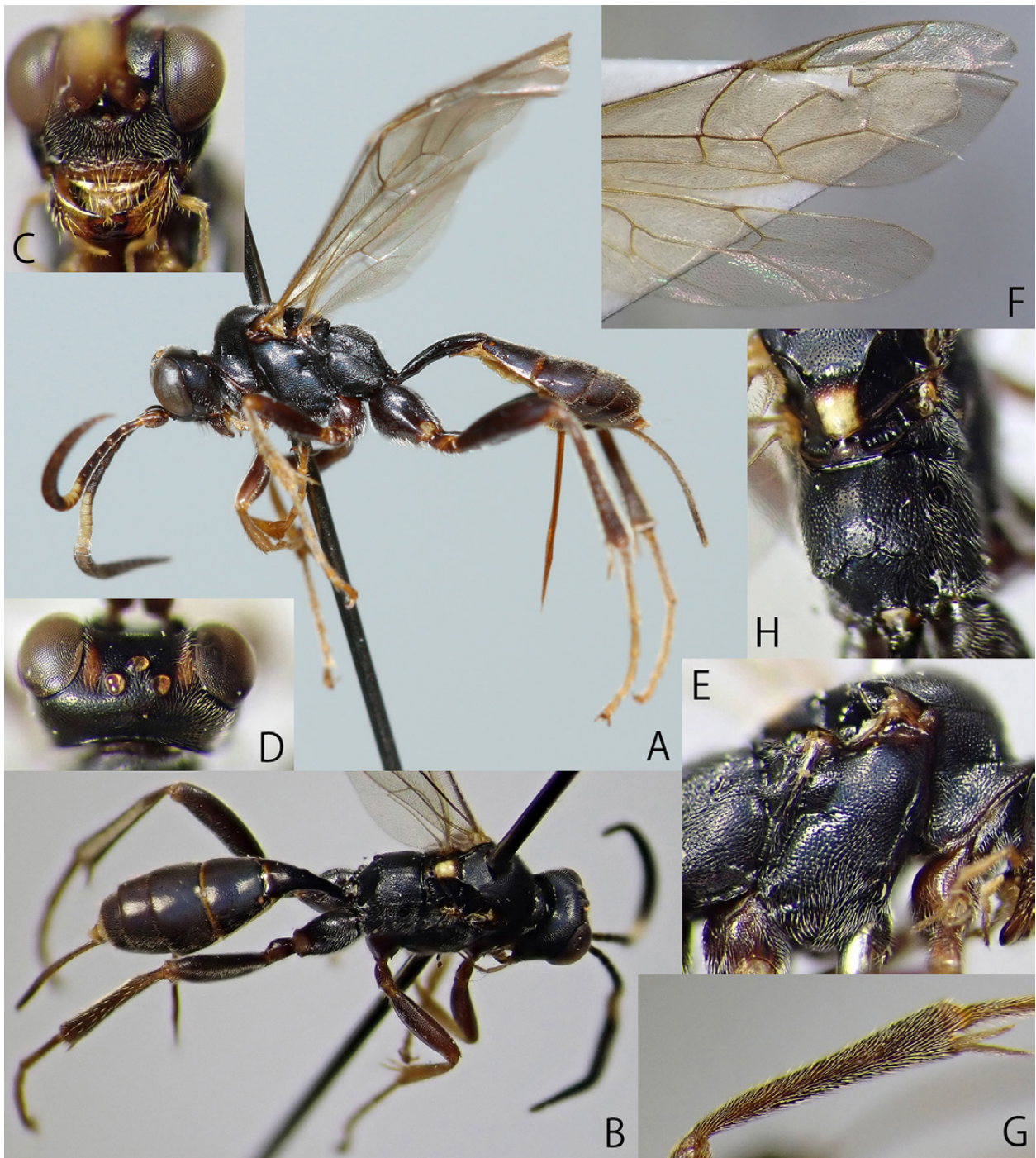


Fig. 25. *Giraudia nana* **sp. nov.**, female (holotype: KPM-NK 91388) — A: lateral habitus; B: head, mesosoma, and metasoma, dorso-lateral view; C: head, frontal view; D: head, dorsal view; E: pronotum and mesopleuron, lateral view; F: wings; G: hind tibia, lateral view; H: scutellum and propodeum, dorso-lateral view.

Mesosoma densely punctate. Epomia short; section on border of collar and pronotum present. Mesoscutum with short and weak notaulus. Scutellum punctate; weakly convex in lateral view. Mesopleuron without conspicuous smooth area around speculum (Fig. 25E). Epicnemial carina present laterally and ventrally. Sternaulus deep in anterior 0.4 of mesopleuron. Metapleuron minutely rugulose ventrally; with anterior part of juxtacoxal carina. Propodeum with long dorsal face (longer than area postero); anterior transverse carina absent (Fig.

25H); posterior transverse carina complete; lateromedian longitudinal carina absent; lateral longitudinal carina complete and weak; pleural carina complete; area supermedia not defined; apophysis absent; spiracle oval. Fore wing length 6.1 mm. Areolet as long as maximum width; width steeply narrowing anteriorly; received vein 2m-cu at near middle. Fore wing vein 1cu-a slightly antefurcal to vein M&RS (Fig. 25F). Nervellus inclivous; intercepted near posterior end of vein (Fig. 25F). Hind femur reticulate coriaceous; $4.0 \times$ as long as maximum

depth in lateral view. Dorsal face of tibiae without robust, large, conspicuous setae (Fig. 25G). Tarsal claws simple.

Metasoma finely punctate; ISP coriaceous. T I $2.4 \times$ as long as maximum width; latero-median carina absent; dorso-lateral carina absent. T II $0.65 \times$ as long as maximum width. Thyridium present; close to anterior margin of T II; slightly depressed; ca. $2.0 \times$ as wide as length. Ovipositor sheath $0.95 \times$ as long as hind tibia, $1.4 \times$ as long as T I. Ovipositor straight; apex sharp; apex of lower valve with teeth (Fig. 78T).

Colouration (Figs. 25A–H). Body (excluding wings) black to blackish-brown. Setae silver. Mandible yellowish-brown except for brown apex. Ventral part of clypeus, scape, pedicel, fore and mid coxae, trochanters, and trochantelli, postscutellum, and hind tarsus tinged with brown. Dorsal part of frons and vertex with pair of reddish-brown markings along orbits. Ventral surface of flagellum partly tinged with brown. Palpi and fore and mid tibiae, tibial spurs, and tarsi yellowish-brown. FL VI to FL XI with white markings. Scutellum yellow except for anterior part. Posterior margin of metasomal tergites narrowly tinged with reddish-brown. Thyridium and ovipositor reddish-brown. Wings hyaline. Veins and pterostigma yellowish-brown except for yellowish wing base.

Male. Unknown.

Distribution. Japan (Honshu).

Bionomics. Unknown.

Etymology. The specific name is from Latin “*nanus*”, which means the dwarf.

Remarks. This species resembles *Gi. japonica* in body coloration but can be distinguished by the polished mesosoma (matt in *Gi. japonica*), the weak notaulus (sharp and strong in *Gi. japonica*), and the small body size (large in *Gi. japonica*; see above key).

***Giraudia spinosa* Uchida, 1936**

[SJN: Niji-tsuya-togari-himebachi]

(Figs. 26A–H, 27A–E, 78U)

Giraudia spinosa Uchida, 1936b: 17.

Materials examined. JAPAN: [Hokkaido] KPM-NK 102778, F, Sobetsu City, Uokyo, Orofure-pass, 11. IX. 2014, S. Shimizu leg. [Honshu] KPM-NK 81290, F, Nagano Pref., Outaki Vil., Mt. Ontake-san, Hakkaisan, 6. VIII. 2010, K. Watanabe leg.; KPM-NK 103036, F, ditto, 18. VIII. 2014, S. Shimizu leg.; KPM-NK 103034, F, Nagano Pref., Outaki Vil., Mt. Ontake-san, Tanohara, 9. VIII. 2007, K. Watanabe leg.; KPM-NK 103037, F, Nagano Pref., Komoro City, Hishidaira, Takamine-kogen,

31. VIII. 2022, K. Watanabe leg.; KPM-NK 103035, F, Yamanashi Pref., Koushu City, Yanagisawa-toge, 5. VIII. 2008, K. Watanabe leg.; KPM-NK 103038, ditto, S. Yoshizawa leg.; KPM-NK 103039, M, Toyama Pref., Toyama City, Arimine, Inone-dani, 21–28. VII. 2009, M. Watanabe leg. (MsT). [Shikoku] SEHU, 1F (holotype), Ehime Pref., Tsuchigoya, 15. VII. 1933, Y. Sugihara leg.; SEHU, 1M (allotype), Ehime Pref., Mt. Kamegamori, 17. VII. 1933, Y. Sugihara leg.

Description. Female ($n = 8$). Body matt; lustre dull; covered with setae; body length 7.8–11.0 mm.

Head $0.6–0.65 \times$ as long as wide in dorsal view. Clypeus $3.0 \times$ as wide as long; slightly convex in lateral view; transversely rugose and punctate dorsally; lower margin weakly rounded in frontal view, obtuse in lateral view. Face $0.45 \times$ as long as minimum width; weakly convex medially; matt; punctate. Anterior tentorial pit small. Frons matt; finely punctate dorsally; weakly concave above antennal sockets; with pair of small tubercles ventrolaterally. POL $1.1–1.3 \times$ as OD. OOL $1.3–1.5 \times$ as OD. Gena and occiput densely punctate. Dorsal profile of gena rounded in dorsal view; width gradually narrowing posteriorly (Fig. 26D). Occipital carina complete. Malar space $0.7–0.75 \times$ as long as basal width of mandible. Mandible flat at base; lower tooth longer than upper tooth. Antenna with 30–33 flagellomeres; apical part flattened below and tapered to slender apex (Fig. 26B). FL I $2.0–2.25 \times$ as long as maximum depth in lateral view, $0.9–0.95 \times$ as long as FL II.

Mesosoma densely and finely punctate (Fig. 26E). Epomia short; section on border of collar and pronotum present (Fig. 26E). Mesoscutum with short and weak notaulus. Scutellum weakly convex. Mesopleuron without conspicuous smooth area around speculum; partly covered with oblique or longitudinal fine striae (Fig. 26E). Epicnemial carina present laterally and ventrally. Sternaulus deep in anterior 0.4 of mesopleuron. Metapleuron finely and sparsely punctate; with complete or partly defined juxtacoxal carina. Propodeum sparsely and finely punctate; with long dorsal face (longer than area postero); anterior transverse carina absent (Fig. 26H); posterior transverse carina largely absent medially, weak and not sharply defined laterally (Fig. 26H); lateromedian longitudinal carina absent; lateral longitudinal carina weak and largely indistinct; pleural carina complete; area superomedia not defined; apophysis absent; spiracle oval. Fore wing length 7.0–9.8 mm. Areolet as long as maximum width; width steeply narrowing anteriorly; received vein 2m-cu received vein 2m-cu at slightly beyond to middle (Fig. 26F). Fore wing vein 1cu-a slightly antefurcal to vein M&RS (Fig.

26F). Nervellus inclivous; intercepted near posterior end of vein. Hind femur reticulate coriaceous; $4.1\text{--}4.25 \times$ as long as maximum depth in lateral view. Dorsal face of tibiae with robust, large, conspicuous setae (Fig. 26G). Tarsal claws simple.

Metasoma finely punctate; ISP weakly coriaceous. T I $2.25\text{--}2.9 \times$ as long as maximum width; latero-median carina absent; dorso-lateral carina absent. T II $0.6\text{--}0.75 \times$ as long as maximum width. Thyridium present; close to anterior margin of T II; slightly depressed to flat; ca. $2.0 \times$ as wide as length. Ovipositor sheath $1.0\text{--}1.2 \times$ as long as hind tibia, $1.75\text{--}1.85 \times$ as long as T I. Ovipositor straight; apex sharp; apex of lower valve with teeth (Fig. 78U).

Colouration (Figs. 26A–H). Body (excluding wings)

black to blackish-brown. Setae silver to pale yellowish-brown. Mandible except for base and apex, clypeus, ventral surfaces of scape and apical part of flagellum, and fore tibia and tarsus partly tinged with brown to yellowish-brown. FL VI to FL X (or XI) with white markings. Posterior margin of metasomal tergites sometimes narrowly tinged with reddish-brown. Thyridium and ovipositor reddish-brown. Wings slightly brownish-hyaline. Veins and pterostigma blackish-brown except for brown wing base.

Male ($n=2$). Similar to female (Figs. 27A–E). Body length 11.6 mm (in KPM-NK 103039). Head $0.55 \times$ as long as wide in dorsal view. Clypeus $3.4 \times$ as wide as long. OOL and POL $1.0 \times$ as OD, respectively. Face $0.5 \times$ as long as minimum width. Malar space $0.3 \times$ as long as basal

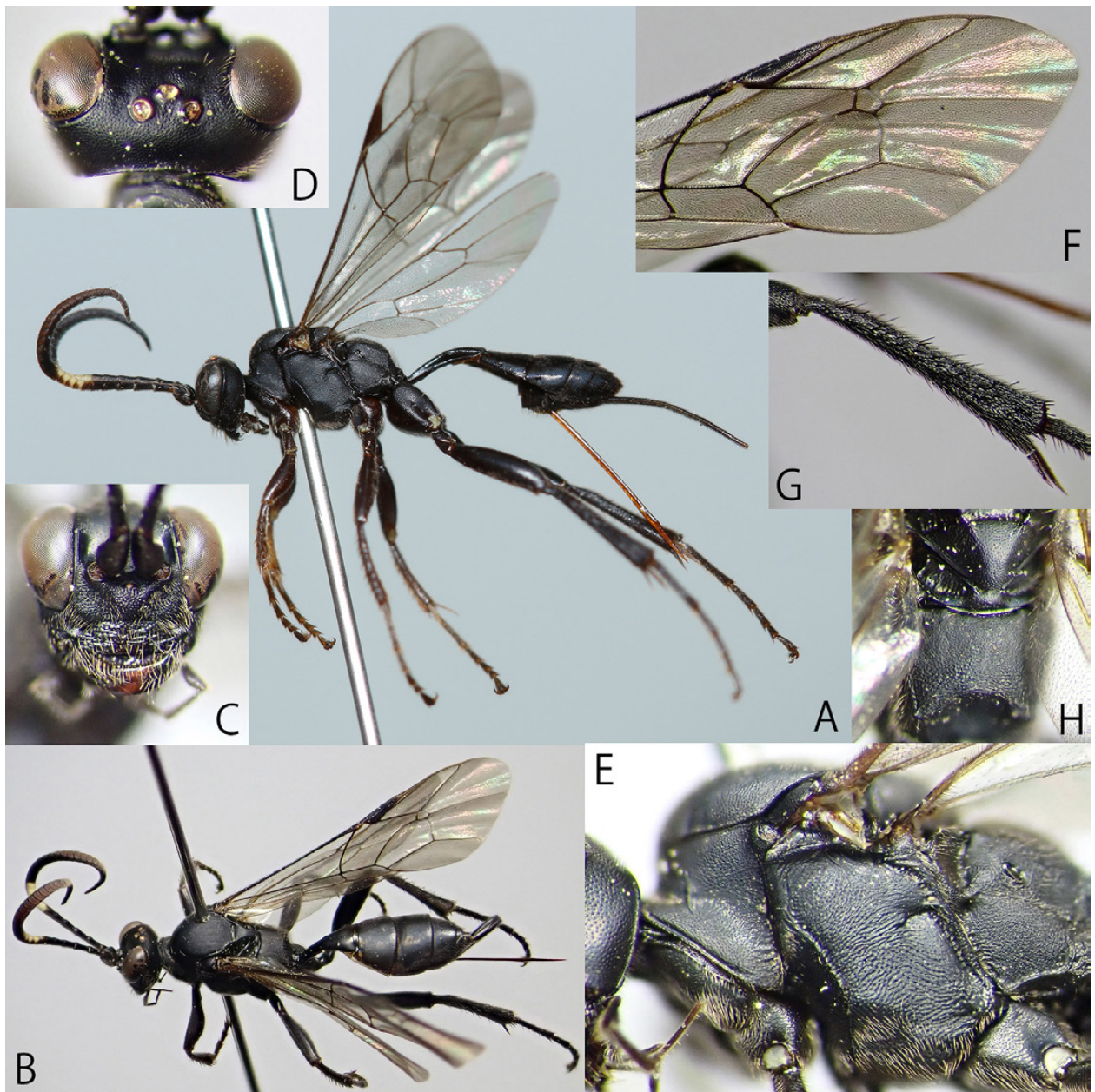


Fig. 26. *Giraudia spinosa* Uchida, 1936, females (A: KPM-NK 81290; B–H: KPM-NK 103037) — A: lateral habitus; B: head, mesosoma, and metasoma, dorso-lateral view; C: head, frontal view; D: head, dorsal view; E: pronotum and mesopleuron, lateral view; F: fore wing; G: hind tibia, lateral view; H: scutellum and propodeum, dorsal view.

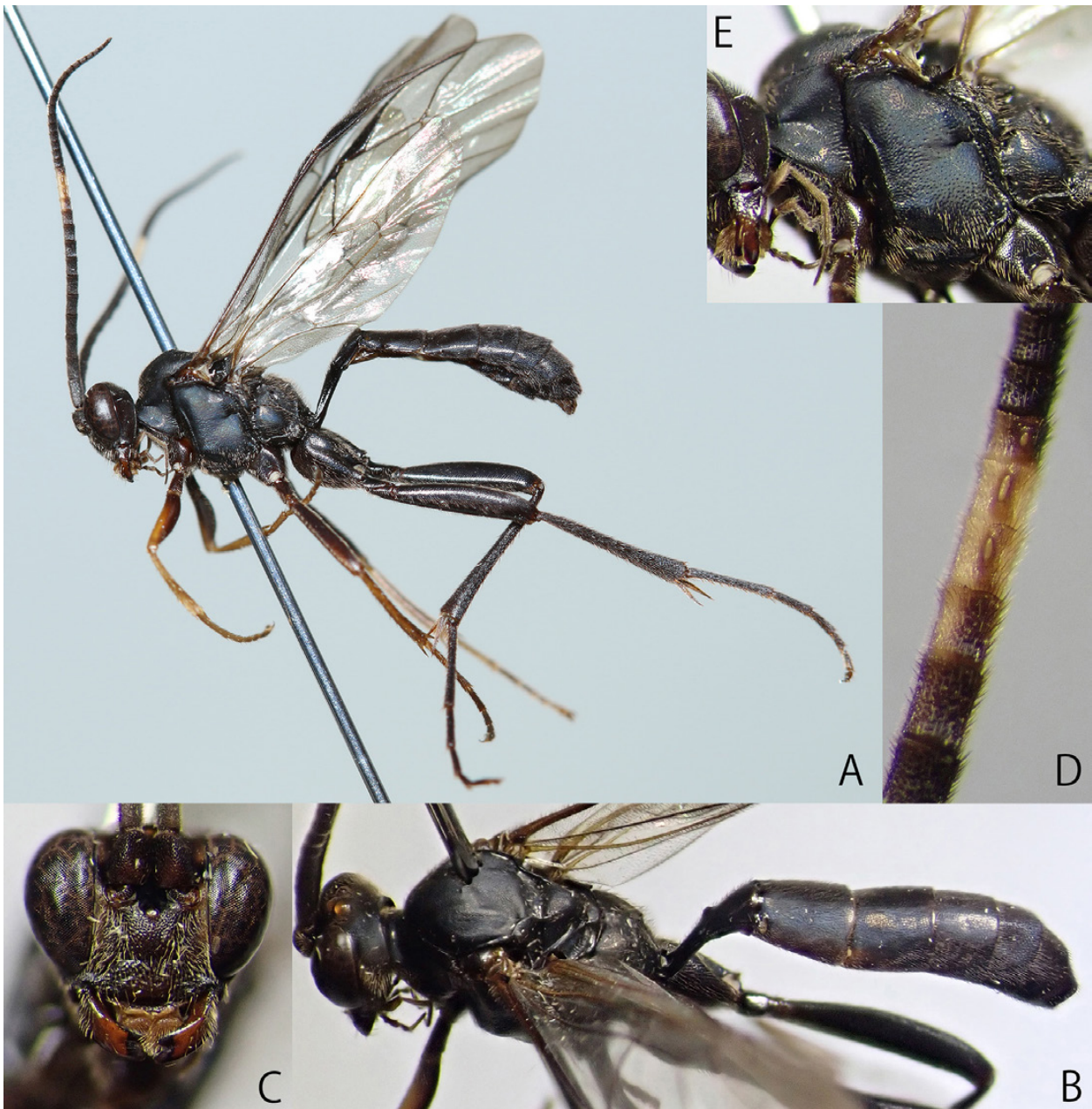


Fig. 27. *Giraudia spinosa* Uchida, 1936, male (KPM-NK 103039) — A: lateral habitus; B: head, mesosoma, and metasoma, dorso-lateral view; C: head, frontal view; D: flagellum and tyloids; E: mesosoma, lateral view.

width of mandible. Antenna not flattened below and tapered to slender apex; with tyloids on FL XII to FL XIV (Fig. 27D). FL I $2.7 \times$ as long as maximum depth in lateral view, $1.35 \times$ as long as FL II. Posterior transverse carina and lateral longitudinal carina of propodeum complete. Hind femur $5.5 \times$ as long as maximum depth in lateral view. T II $1.0 \times$ as long as maximum width. Facial and frontal orbits tinged with yellowish-brown. FL XI to FL XIV with white markings. Palpi yellowish-brown.

Distribution. Japan (Hokkaido, Honshu, and Shikoku).

Bionomics. Unknown.

Giraudia teranishii Uchida, 1930

[SJN: Teranishi-kuro-chibi-togari-himebachi]

(Figs. 28A–H, 29A–E, 78V)

Giraudia teranishii Uchida, 1930: 328.

Materials examined. JAPAN: [Honshu] KPM-NK 103033, M, Tochigi Pref., Nasu, Yumoto, 21–22. V. 1958, R. & F. Ishikawa leg.; KPM-NK 103032, F, Nagano Pref., Ueda City, Sugadaira-kogen, 22. VII. – 8. VIII. 2014, S. Shimizu leg. (MsT); KPM-NK 103030, F, Yamanashi Pref., Hokuto City, Masutomi, Biwakubo-sawa, 24. VI. 2007, H. Katahira leg.; KPM-NK 103027, ditto, 28. VII.

2007, K. Watanabe leg.; KPM-NK 103028, F, Toyama Pref., Toyama City, Kamegai, 14–21. VII. 2009, M. Watanabe leg. (MsT); KPM-NK 103029, F, Toyama Pref., Toyama City, Arimine, Jyurodani, 14–21. VII. 2009, M. Watanabe leg. (MsT); KPM-NK 91386, F, Fukui Pref., Oono City, Mt. Akausagi, 13. VI. 1980, T. Murota leg.; KPM-NK 103026, F, Fukui Pref., Oono City, Arashi, 8. VIII. 1982, T. Murota leg.; KPM-NK 103031, F, Aichi Pref., Toyota City, Nutazawa, 13. VII. 2009, A. Kawazoe leg. (MsT); SEHU, 1F (holotype), Shiga Pref., Mt. Hirasano, 30. VI. 1927, C. Teranishi leg.

Description. Female ($n = 9$). Body punctate and polished; covered with setae; body length 7.0–10.0 mm.

Head $0.6 \times$ as long as wide in dorsal view. Clypeus $3.0 \times$ as wide as long; slightly convex in lateral view; transversely rugose and punctate dorsally; lower margin weakly rounded in frontal view, sharp in lateral view. Face $0.35 \times$ as long as minimum width; strongly convex medially; matt; densely punctate medially. Anterior tentorial pit small. Frons finely and densely dorsally, coriaceous laterally; weakly concave above antennal sockets. POL $1.3\text{--}1.65 \times$ as OD. OOL $1.2\text{--}1.6 \times$ as OD. Gena and occiput densely punctate. Dorsal profile of gena rounded in dorsal view; width gradually narrowing posteriorly (Fig. 28D). Occipital carina complete. Malar space $0.55\text{--}0.7 \times$ as long as basal width of mandible. Mandible flat at base; lower tooth longer than upper tooth. Antenna with 28–31 flagellomeres; apical part flattened below and tapered to slender apex (Fig. 28B). FL I $1.9\text{--}2.0 \times$ as long as maximum depth in lateral view, $0.9 \times$ as long as FL II.

Mesosoma densely punctate (Fig. 28E). Epomia short; section on border of collar and pronotum present. Mesoscutum with short and weak notaulus. Scutellum weakly convex. Mesopleuron with small, conspicuous smooth area around speculum; sometimes partly covered with oblique or longitudinal fine striae. Epicnemial carina present laterally and ventrally. Sternaulus deep in anterior 0.4 of mesopleuron. Metapleuron finely and densely punctate; juxtacoxal carina complete to largely absent. Propodeum with long dorsal face (longer than or as long as area postero); anterior transverse carina absent (Fig. 28H); posterior transverse carina largely absent latero-medially, weak and not sharply defined laterally and medially; lateromedian longitudinal carina absent; lateral longitudinal carina complete and weak; pleural carina complete; area superomedia not defined; apophysis absent; spiracle oval; some fine, transverse striae present on area along posterior transverse carina; area postero with oblique or longitudinal fine striae. Fore wing length 6.6–7.8 mm. Areolet as long

as maximum width; width steeply narrowing anteriorly; received vein 2m-cu received vein 2m-cu at middle or slightly beyond to middle (Fig. 28F). Fore wing vein 1cu-a slightly antefurcal to vein M&RS (Fig. 28F). Nervellus inclivous; intercepted near posterior end of vein. Hind femur reticulate coriaceous; $4.0\text{--}4.5 \times$ as long as maximum depth in lateral view. Dorsal face of tibiae with robust, large, conspicuous setae (weaker than *Gi. spinosa*) (Fig. 28G). Tarsal claws simple.

Metasoma finely punctate; ISP smooth. T I $1.9\text{--}2.4 \times$ as long as maximum width; latero-median carina absent; dorso-lateral carina absent. T II $0.6\text{--}0.7 \times$ as long as maximum width. Thyridium present; close to anterior margin of T II; slightly depressed to flat; ca. $2.0 \times$ as wide as length. Ovipositor sheath $1.0\text{--}1.15 \times$ as long as hind tibia, $1.6\text{--}1.75 \times$ as long as T I. Ovipositor straight; apex sharp; apex of lower valve with teeth (Fig. 28V).

Colouration (Figs. 28A–H). Body (excluding wings) black to blackish-brown. Setae silver. Mandible, ventral surface of apical part of flagellum, and fore and mid tibiae and tarsi partly tinged with brown to yellowish-brown. FL V (or VI) to FL X with white markings. Posterior margin of metasomal tergites sometimes narrowly tinged with reddish-brown. Thyridium and ovipositor reddish-brown. Wings slightly brownish-hyaline. Veins and pterostigma blackish-brown except for brown wing base.

Male ($n = 1$). Similar to female (Figs. 29A–E). POL $1.2 \times$ as OD. Face $0.4 \times$ as long as minimum width. Antenna not flattened below and tapered to slender apex; with tyloids on FL XI to FL XVII (XVI and XVII small) (Fig. 29D). FL I $2.55 \times$ as long as maximum depth in lateral view, $1.3 \times$ as long as FL II. Propodeal carinae present except for lateral sides of anterior transverse carina. Area superomedia of propodeum present (Fig. 29E). Hind femur $5.6 \times$ as long as maximum depth in lateral view. T I $3.1 \times$ as long as maximum width. T II $1.0 \times$ as long as maximum width. Clypeus, facial orbit, labrum, mandible except for teeth, palpi. and postero-dorsal corner of pronotum yellow. Subtegular ridge, tegula, and fore and mid coxae each with yellow marking. Tibiae reddish-brown except for apical part of hind tibia. Fore and mid tarsi except for each TS V ivory. Hind ivory on apex of TS I, TS II to IV, and basal half of TS V.

Distribution. Japan (Honshu).

Bionomics. Unknown.

Remarks. This is the first record of the male of this species.

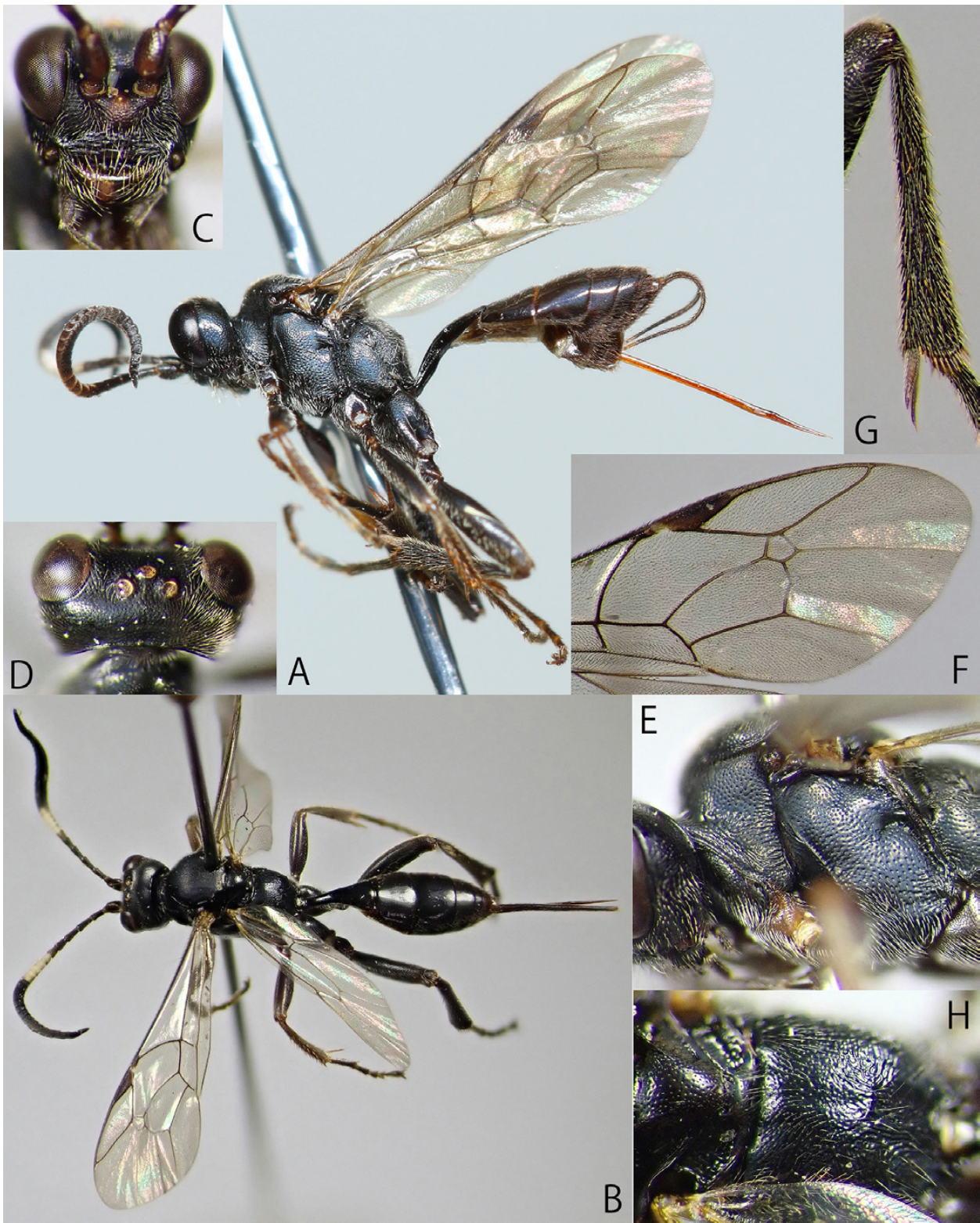


Fig. 28. *Giraudia teranishii* Uchida, 1930, females (A, G: KPM-NK 103032; B–H: KPM-NK 103027) — A: lateral habitus; B: dorsal habitus; C: head, frontal view; D: head, dorsal view; E: pronotum and mesopleuron, lateral view; F: fore wing; G: hind tibia, lateral view; H: scutellum and propodeum, dorsal view.



Fig. 29. *Giraudia teranishii* Uchida, 1930, male (KPM-NK 103033) — A: lateral habitus; B: head, mesosoma, and metasoma, dorso-lateral view; C: head, frontal view; D: flagellum and tyloids; E: scutellum and propodeum, dorso-lateral view.

Genus *Javra* Cameron, 1903

Javra Cameron, 1903: 47. Type species: *Javra parviceps* Cameron, 1903. Monotypic.

Cnemocryptus Cameron, 1903: 38. Type species: *Cnemocryptus validicornis* Cameron, 1903 (= *Javra praveps* Cameron, 1903). Monotypic.

Finchra Cameron, 1907: 463. Type species: *Finchra gracilis* Cameron, 1907. Monotypic.

Diadegma Morley, 1908: 274. Type species: *Diadegma anomala* Morley, 1908. Monotypic. Name preoccupied.

Monocryptus Hellén, 1957: 135. Type species: *Cratocryptus opacus* Thomson, 1873. Monotypic.

Three species, *J. coreensis* (Uchida, 1930), *J. taniguchiae* (Uchida, 1956), and *J. teranishii* (Uchida, 1952), have been recorded from Japan. In this study, I newly describe seven new species below. *Javra* sp. A & E sensu Watanabe & Taniwaki (2018) are *J. japonica* **sp. nov.** *Javra* sp. B and

Aptesis sp. D sensu Watanabe & Taniwaki (2018) are *J. albotrochantellata* **sp. nov.** *Javra* sp. C sensu Watanabe & Taniwaki (2018) is *J. tenuis* **sp. nov.** *Javra* sp. D sensu Watanabe & Taniwaki (2018) is *J. minamiashigarensis* **sp. nov.** *Javra* sp. F sensu Watanabe & Taniwaki (2018) is a variation of *J. coreensis*.

Key to Japanese species of *Javra* (female only)

1. Scutellum with conspicuous yellow to ivory marking (Figs. 32B, H, 34B, H, 37D, G). Lateral sides of areolet (= veins 2rs-m and 3rs-m) convergent anteriorly (Figs. 32F, G, 34G, 37F).

..... 2

-. Scutellum black (Figs. 30B, 31B, H, 32I, J, 33B, G, 35B, G, 36B, G) or weakly tinged with reddish-brown (Fig. 32I). Lateral sides of areolet parallel or convergent.

..... 4

2. Fore and mid coxae, trochanters, and trochantelli white (Fig. 34A). Small species: body length 4.55–4.75 mm. Mesosoma largely polished; finely and sparsely punctate with smooth ISP (Figs. 34E, F, H). T I $2.95 \times$ as long as maximum width. Hind tarsus without white parts (Fig. 34A).

..... *Javra minuta* **sp. nov.**

-. Fore and mid coxae, trochanters, and trochantelli largely blackish brown to black (Figs. 32A, 37A). Large species: body length longer than 5.0 mm. Mesosoma largely matt (Figs. 37E, G) or densely rugulose (Figs. 32E, H). T I less than $2.65 \times$ as long as maximum width. Hind tarsus with or without white parts.

..... 3

3. Body more or less polished (Figs. 32A, E, H). Lateral section of anterior transverse carina of propodeum indistinct (Fig. 32H). Apex of propodeal apophysis not tinged with yellow (Fig. 32H). Hind tarsus without white parts (Fig. 32A).

..... *Javra japonica* **sp. nov.** (in part)

-. Body largely matt (Figs. 37A, E, G). Lateral section of anterior transverse carina of propodeum complete (Fig. 36G). Apex of propodeal apophysis tinged with yellow (Fig. 36G). Hind tarsus with white parts (Fig. 36A).

..... *Javra teranishii* (Uchida, 1952)

4. Hind trochanter and trochantellus ivory to white (Figs. 30A, B). Lateral section of anterior transverse carina of propodeum sometimes largely indistinct (Fig. 30G). Lateral sides of areolet convergent anteriorly (Fig. 30F). Mesopleuron largely longitudinally rugulose (Fig. 30E). Ovipositor sheath $0.85\text{--}1.1 \times$ as long as hind tibia.

..... *Javra albotrochantellata* **sp. nov.**

-. Hind trochanter and trochantellus blackish-brown to black (Figs. 31A, B, 32A, 33A, 35A, 36A, B). Other character states various.

..... 5

5. Hind tarsus with white parts (Figs. 31A, 36A). FL I more than $4.6 \times$ as long as maximum depth in lateral view. Ovipositor sheath more than $1.15 \times$ as long as hind tibia. Body relatively slender and larger: length more than 8.0 mm.

..... 6

-. Hind tarsus entirely black (Figs. 32A, 33A, 35A). FL I less than $4.5 \times$ as long as maximum depth in lateral view except for some specimens of *J. japonica* **sp. nov.** Ovipositor sheath with various length. Body relatively robust and smaller: length less than 8.5 mm.

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6. Areolet slightly longer than wide; lateral sides convergent anteriorly (Fig. 31G). Mesoscutum matt. Malar space $1.1\text{--}1.2 \times$ as long as basal width of mandible. T I $2.0\text{--}2.2 \times$ as long as maximum width.

..... *Javra gigantea* **sp. nov.**

-. Areolet slightly wider than long; lateral sides parallel (Fig. 36F). Mesoscutum polished (Fig. 36D). Malar space $0.8\text{--}0.9 \times$ as long as basal width of mandible. T I $2.5\text{--}2.65 \times$ as long as maximum width.

..... *Javra tenuis* **sp. nov.**

7. Ovipositor sheath $1.43 \times$ as long as hind tibia. Base of hind tibia white (Figs. 35A, B).

..... *Javra taniguchiae* (Uchida, 1956)

-. Ovipositor sheath less than $1.1 \times$ as long as hind tibia. Hind tibia entirely black or sometimes with a white base in *J. japonica* **sp. nov.**

..... 8

8. Ovipositor sheath $0.95 \times$ as long as hind tibia. T I $1.8 \times$ as long as maximum width.

..... *Javra minamiashigarensis* **sp. nov.**

-. Ovipositor sheath at most $1.0 \times$ as long as hind tibia. T I longer than $2.45 \times$ as long as maximum width.

..... 9

9. Ovipositor sheath $0.65\text{--}0.8 \times$ as long as hind tibia. Lateral section of anterior transverse carina of propodeum complete or partly present. Lateral sides of areolet parallel or convergent. Apex of metasoma without conspicuous white area. Base of hind tibia always black.

..... *Javra coreensis* (Uchida, 1930)

-. Ovipositor sheath $0.88\text{--}1.03 \times$ as long as hind tibia. Lateral section of anterior transverse carina of propodeum indistinct (Figs. 32I, J). Lateral sides of areolet convergent anteriorly (Figs. 32F, G). Apex of metasoma with conspicuous white area (Figs. 32A, B). Scutellum sometimes tinged with reddish-brown (Fig. 32I). Base of hind tibia sometimes white.

..... *Javra japonica* **sp. nov.** (in part)

Javra albotrochantellata **sp. nov.**

[New SJN: Ashi-shiromon-togari-himebachi]

(Figs. 30A–H, 79A)

Aptesis sp. D: Watanabe & Taniwaki, 2018: 75.

Javra sp. B: Watanabe & Taniwaki, 2018: 80.

Type series. **Holotype:** JAPAN, KPM-NK 102847, F, Honshu, Saitama Pref., Hanno City, Naguri Vil., Shomaru-toge, 10–13. X. 1995, A. Shimizu leg. **Paratype:** JAPAN: [Hokkaido] OMNH, KPM-NK 102823, and 102850, 3F, Horokanai Town, Uryu, 11–17. VII. 2012, K. Watanabe leg. (MsT). [Honshu] KPM-NK 102848, F, Yamanashi Pref., Koushu City, Sagashio, 16. VI. 2007, K. Watanabe leg.; KPM-NK 102849, F, Nagano Pref., Neba Vil., Chayagawa, 19. IX. 2014, M. Takakuwa leg.; KPM-NK 102822, F,

Toyama Pref., Toyama City, Kamegai, 28. VII. – 4. VIII. 2009, M. Watanabe leg. (MsT).

Description. Female (n = 7). Body polished; covered with setae; body length 5.0–9.8 (HT: 9.8) mm.

Head 0.58–0.6 (HT: 0.58) × as long as wide in dorsal view. Clypeus 1.8–2.0 (HT: 1.9) × as wide as long; slightly

convex in lateral view; sparsely punctate; lower margin subtruncate or slightly concave medially; with transverse shallow groove along lower margin; sharp in lateral view. Face 0.4 × as long as minimum width; matt; finely punctate medially; slightly convex medially. Anterior tentorial pit small. Frons slightly concave above antennal sockets;

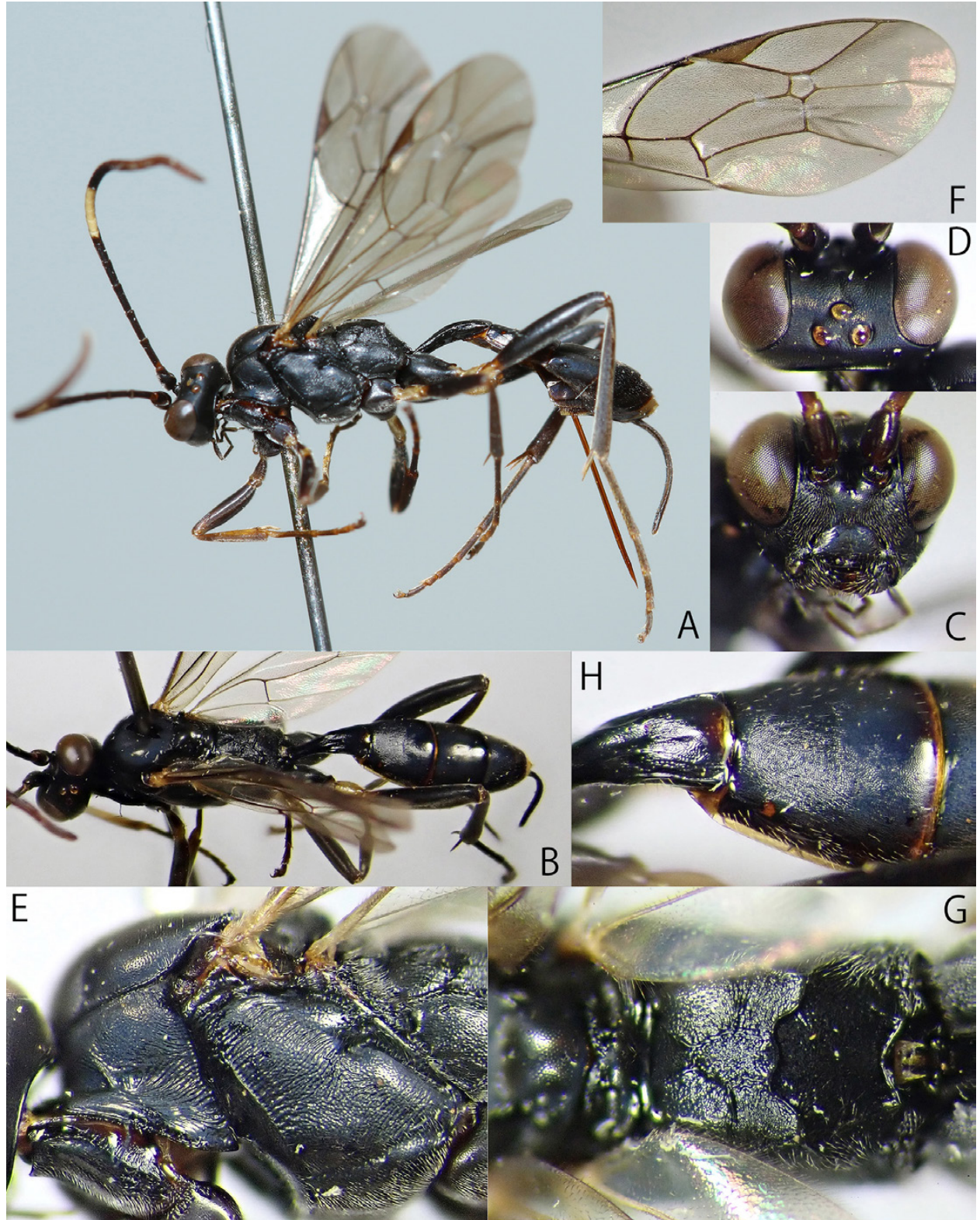


Fig. 30. *Javra albotrochantellata* sp. nov., female (holotype: KPM-NK 102847) — A: lateral habitus; B: head, mesosoma, and metasoma, dorso-lateral view; C: head, frontal view; D: head, dorsal view; E: pronotum and mesopleuron, lateral view; F: fore wing; G: scutellum and propodeum, dorsal view; H: T I and T II, dorso-lateral view.

coriaceous; sparsely punctate dorsally; area above antennal sockets smooth. POL 0.9–1.0 (HT: 0.95) $\times$ as OD. OOL 1.0–1.5 (HT: 1.1) $\times$ as OD. Occiput and vertex finely and densely punctate. Dorsal profile of gena straight in dorsal view; width gradually narrowing posteriorly (Fig. 30D). Occipital carina complete. Malar space 1.0–1.2 (HT: 1.2) $\times$ as long as basal width of mandible. Mandible flat at base; lower tooth equal in length of upper tooth. Antenna with 23–27 (HT: 27) flagellomeres; not flattened and tapped. FL I 3.65–4.0 (HT: 3.65) $\times$ as long as maximum depth in lateral view, 1.0–1.1 (HT: 1.0) $\times$ as long as FL II.

Mesosoma. Pronotum rugulose ventrally; finely and densely punctate dorsally. Epomia short; dorsal end situated slightly above collar. Mesoscutum densely punctate. Notaulus sharp; posterior end not reaching centre of mesoscutum. Scutellum densely punctate; weakly convex in lateral view. Mesopleuron finely punctate; largely longitudinally rugulose; with conspicuous smooth area around speculum (Fig. 30E). Epicnemial carina present laterally and ventrally. Sternaulus deep in anterior 0.6 of mesopleuron. Metapleuron densely punctate anteriorly, coriaceous posteriorly; with complete juxtacoxal carina. Propodeum coriaceous (Fig. 30G); with all carinae but anterior transverse carina, lateromedian longitudinal carina, and lateral longitudinal carina weak and sometimes partly indistinct (anterior transverse carina sometimes largely absent in small specimens); area superomedia at least partly defined, longer than maximum width; apophysis short; apex obtuse; spiracle oval. Fore wing length 4.1–7.8 (HT: 7.8) mm. Areolet as long as maximum width; width gradually to steeply narrowing anteriorly; received vein 2m-cu at near middle (Fig. 30F). Fore wing vein 1cu-a interstitial to vein M&RS (Fig. 30F). Nervellus subvertical; intercepted near posterior end of vein. Hind femur reticulate coriaceous; 4.6–5.1 (HT: 5.1) $\times$ as long as maximum depth in lateral view. Tarsal claws simple.

Metasoma. T I 1.95–2.4 (HT: 2.35) $\times$ as long as maximum width; largely matt (Fig. 30H); latero-median carina obtusely present except for apical part; dorso-lateral carina complete. T II 0.85–0.95 (HT: 0.95) $\times$ as long as maximum width; matt. Thyridium present; somewhat distant from (by more than length of thyridium) anterior margin of T II (Fig. 30H); flat to slightly depressed; ca. 1.0 $\times$ as wide as length. T III to T V slightly coriaceous to smooth; finely punctate. Ovipositor sheath 0.85–1.1 (HT: 0.85) $\times$ as long as hind tibia, 1.6–2.25 (HT: 1.6) $\times$ as long as T I. Ovipositor straight; apex sharp; apex of lower valve with teeth (Fig. 79A).

Colouration (Figs. 30A–H). Body (excluding wings) black to blackish-brown. Setae silver. Subapical part

of mandible and posterior margins of each metasomal tergite tinged with reddish-brown. FL VI to FL X (or IX) with white markings. Trochanters, trochantelli, and apex of metasoma ivory; sometimes fore trochanter weakly darkened. Membranous part of metasomal sternites dark yellowish-brown. Thyridium and ovipositor reddish-brown. Wings hyaline. Veins and pterostigma blackish-brown to brown except for yellowish-brown to yellow wing base.

Male. Unknown.

Distribution. Japan (Hokkaido and Honshu).

Bionomics. Unknown.

Etymology. The specific name is from Latin “*albi*” (white) plus “*trochantellata*” (trochantellus), referring to the white trochantelli of all legs.

Remarks. This species resembles *J. coreensis* and *J. taniguchiae* in the black body but can be distinguished by the whitish hind trochanter and trochantellus (black in *J. coreensis* and *J. taniguchiae*) and the ovipositor sheath 0.85–1.1 $\times$ as long as hind tibia (0.65–0.8 $\times$ in *J. coreensis*; 1.43 $\times$ in *J. taniguchiae*) (see above key).

Javra coreensis (Uchida, 1930)

[SJN: Chosen-kuro-togari-himebachi]

Acanthocryptus coreensis Uchida, 1930: 330.

Javra sp. Taniwaki & Watanabe, 2012: 6. In part (female).

Javra sp. F: Watanabe & Taniwaki, 2018: 80.

Materials examined. JAPAN: [Honshu] KPM-NK 102808, F, Gunma Pref., Minakami Town, Yunokawa-rindo, 13. VI. 1999, U. Jimbo leg.; KPM-NK 5006654, F, Kanagawa Pref., Kiyokawa Vil., Miyagase, Mt. Tanzawasan, Tennojione, 8. IV. 2009 (coll. cocoon of *Fagineura crenativora*), 1. V. 2009 (em. from the cocoon), T. Taniwaki leg.; KPM-NK 5004376, F, ditto, 15. VI. 2013 (FIT); KPM-NK 5004356, 5004358, 5004377, 3F, ditto, 20. VI. 2013; KPM-NK 5004365, F, ditto, 29. VI. 2013; KPM-NK 5004361, 5004380, 5004382, 3F, Kanagawa Pref., Kiyokawa Vil., Miyagase, Mt. Tanzawasan, 20. VI. 2013, T. Taniwaki leg. (FIT); KPM-NK 5004357, 5004360, 5004364, 5004381), 4F, ditto, 29. VI. 2013; KPM-NK 5004359, 5004373, 5004375, 3F, ditto, 29. VI. 2013; KPM-NK 5004353, 5004354, 5004367, 5004370, 5004372, 5004374, 6F, Kanagawa Pref., Yamakita Town, Kurokura, Mt. Hinokiboramaru, 23. V. 2013, T. Taniwaki leg. (FIT); KPM-NK 5004369, F, same locality and collector, 14. VI. 2013; NARO, 2F, ditto, 23. VI. 2013; KPM-NK 5004366, 5004368, 2F, ditto, 28. VI. 2013; KPM-NK 5004350–5004352, 5004362, 5004363,

5004371, 6F, ditto, 6. VII. 2013; KPM-NK 102837, F, Nagano Pref., Outaki Vil., Mt. Ontake-san, Hakkaisan, 4. VIII. 2017, K. Watanabe leg.; OMNH, 1F, ditto, 16. IX. 2011, S. Fujie leg.; KPM-NK 102809, 102836, 2F, Nagano Pref., Outaki Vil., Mt. Ontake-san, Tanohara, 17. VII. 2007, K. Watanabe leg.; KPM-NK 102840, F, ditto, 8. VIII. 2007; KPM-NK 102838, 102839, 2F, ditto, 9. VIII. 2007; OMNH, F, Toyama Pref., Toyama City, Arimine, Inone-dani, 14–21. VII. 2009, M. Watanabe leg. (MsT); KPM-NK 102845, F, ditto, 25. VIII. – 1. IX. 2009; KPM-NK 102842, F, ditto, 1–8. IX. 2009; KPM-NK 102843, 102844, 2F, ditto, 15–22. IX. 2009; KPM-NK 102846, F, Toyama Pref., Toyama City, Arimine, Jyurodani, 15–22. IX. 2009, M. Watanabe leg. (MsT); KPM-NK 102807, Fukui Pref., Katsuyama City, Ochozan, 5. IX. 1982, H. Kurokawa leg.; TMNH, F, Fukui Pref., Ikeda Town, Mt. Heko-san, 5. IX. 2019, S. Morishita leg. [Shikoku] KPM-NK 102841, Ehime Pref., Saijyo City, Nishinokawatei, Mt. Ishizuchi, Tsuchigoya, 28. VII. 2018, K. Watanabe leg. **KOREA:** SEHU, 1F (lectotype), Sambo, 29. VII. 1922, T. Uchida leg.

Description. See Watanabe & Taniwaki (2018).

Distribution. Japan (Honshu and Shikoku) and Korea.

Bionomics. Host: *Fagineura crenativora* (Taniwaki & Watanabe, 2012). Adult emerged from host cocoon (Taniwaki & Watanabe, 2012).

Remarks. This is the first record of this species from Shikoku. *Javra* sp. F sensu Watanabe & Taniwaki (2018) is identified as this species in this study.

***Javra gigantea* sp. nov.**

[New SJN: Katayama-togari-himebachi]
(Figs. 31A–H, 79B)

Type series. **Holotype:** JAPAN, KPM-NK 102819, F, Honshu, Tochigi Pref., Nasushiobara City, Komakigawarindo, 7. IX. 2021, E. Katayama leg. **Paratype:** JAPAN, KPM-NK 102820, F, Honshu, Fukui Pref., Ohno City, Dosai-zan, 23. V. 1982, T. Murota leg.

Description. Female (n = 2). Body matt; covered with setae; body length 9.25–11.3 (HT: 11.3) mm.

Head $0.6 \times$ as long as wide in dorsal view. Clypeus 2.1–2.2 (HT: 2.1) $\times$ as wide as long; slightly convex in lateral view; smooth; sparsely punctate; lower margin subtruncate; sharp in lateral view. Face $0.4 \times$ as long as minimum width; slightly convex medially. Anterior tentorial pit small. Frons slightly concave above antennal sockets; transversely rugulose above antennal sockets; with pair of slight convexities just above mid-height (Fig. 31E). POL 1.3–1.35 (HT: 1.3) $\times$ as OD. OOL 1.3–1.5

(HT: 1.3) $\times$ as OD. Occiput and vertex finely and densely punctate. Dorsal profile of gena weakly rounded in dorsal view; width gradually narrowing posteriorly (Fig. 31D). Occipital carina complete. Malar space 1.1–1.2 (HT: 1.2) $\times$ as long as basal width of mandible. Mandible flat at base; lower tooth equal in length of upper tooth. Antenna with 26–28 (HT: 28) flagellomeres; not flattened and tapped. FL I $5.25 \times$ as long as maximum depth in lateral view, $1.05 \times$ as long as FL II.

Mesosoma. Pronotum rugulose and rugose. Epomia short; dorsal end situated slightly above collar. Mesoscutum densely punctate. Notaulus sharp; posterior end reaching centre of mesoscutum. Scutellum punctate; weakly convex in lateral view. Mesopleuron rugulose (Fig. 31F); with conspicuous smooth area around speculum. Epicnemial carina present laterally and ventrally. Sternaulus deep in entire length of mesopleuron. Metapleuron rugose; with complete juxtacoxal carina. Propodeum rugose except for area basalis and area externa coriaceous; rugose or rugulose posteriorly; with all carinae (Fig. 31H); lateral longitudinal carina partly indistinct; area superomedia defined, slightly longer than maximum width; median part of posterior transverse carina higher than other parts and strongly raised; area postero and area dentipara largely covered with oblique rugae; apophysis short; apex obtuse; spiracle oval. Fore wing length 7.4–9.8 (HT: 9.8) mm. Areolet longer than maximum width; width gradually narrowing anteriorly; received vein 2m-cu at near middle (Fig. 31G). Fore wing vein 1cu-a slightly antefurcal to vein M&RS (Fig. 31G). Nervellus subvertical; intercepted near posterior end of vein. Hind femur reticulate coriaceous; $6.0\text{--}6.2$ (HT: 6.2) $\times$ as long as maximum depth in lateral view. Tarsal claws simple.

Metasoma. T I $2.0\text{--}2.2$ (HT: 2.2) $\times$ as long as maximum width; latero-median carina indistinct; dorso-lateral carina absent or partly present posteriorly. T II $0.75 \times$ as long as maximum width; thyridium indistinct. Ovipositor sheath 1.18–1.23 (HT: 1.23) $\times$ as long as hind tibia, 2.4–2.5 (HT: 2.4) $\times$ as long as T I. Ovipositor straight; apex sharp; apex of lower valve with teeth (Fig. 79B).

Colouration (Figs. 31A–H). Body (excluding wings) black to blackish-brown. Setae silver. Subapical part of mandible weakly tinged with reddish-brown. Face with pair of yellow markings between antennal sockets and eye. FL VI (or VII) to FL IX with white markings. Hind second to fourth tarsomeres ivory. Ovipositor reddish-brown. Wings hyaline. Veins and pterostigma blackish-brown to brown except for yellowish-brown wing base.

Male. Unknown.

Distribution. Japan (Honshu).

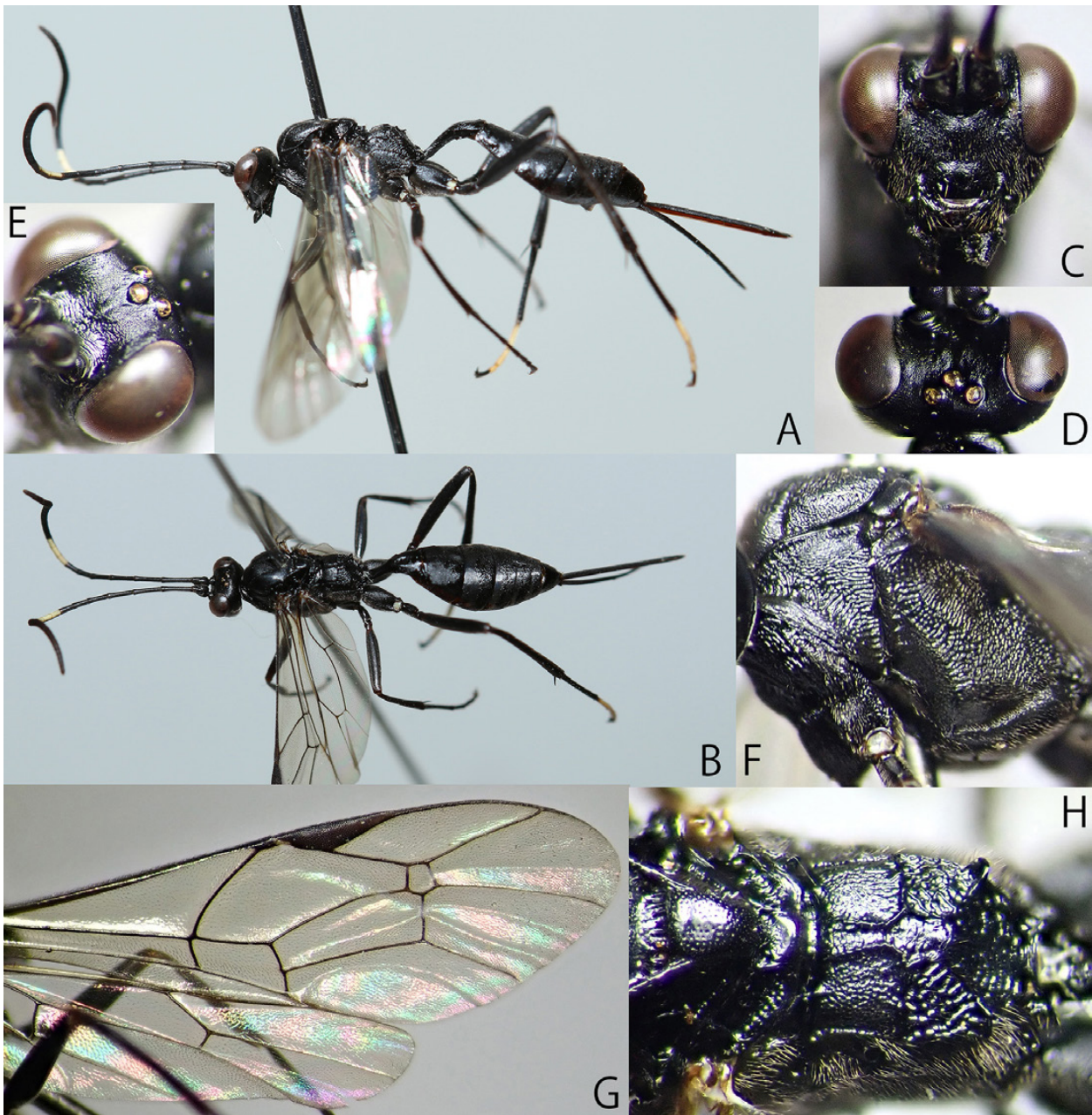


Fig. 31. *Javra gigantea* sp. nov., female (holotype: KPM-NK 102819) — A: lateral habitus; B: head, mesosoma, and metasoma, dorso-lateral view; C: head, frontal view; D: head, dorsal view; E: head, dorso-lateral view; F: pronotum and mesopleuron, lateral view; G: wings; H: scutellum and propodeum, dorsal view.

Bionomics. Unknown.

Etymology. The specific name is from the Latin “*giganteus*” (giant), referring to the largest body size in Japanese species.

Remarks. This species resembles *J. tenuis* sp. nov. in the large body with white banded hind tibia but can be distinguished by the shape of areolet and the surface of mesoscutum (see above key). This species also resembles *J. coreensis* and *J. taniguchiae* in the black body but can be distinguished by the large body size (more than 9.0 mm in this species; less than 8.0 mm in *J. coreensis* and *J. taniguchiae*) and the hind tibia without white base (with white base in *J. taniguchiae*).

***Javra japonica* sp. nov.**

[New SJN: Nippon-kuro-togari-himebachi]
(Figs. 32A–K, 79C)

Javra sp. A & E: Watanabe & Taniwaki, 2018: 80.

Type series. **Holotype:** JAPAN, KPM-NK 102795, F, Honshu, Toyama Pref., Toyama City, Arimine, Jyurodani, 21–28. VII. 2009, M. Watanabe leg. (MsT). **Paratype:** JAPAN [Honshu] KPM-NK 102813, F, Saitama Pref., Tokigawa Town, Oono-toge, 15. X. 2006, T. Mita leg.; KPM-NK 102814, F, Nagano Pref., Ina City, Hase, Karei-kogen, 30. VII. 2013, S. Yoshizawa leg.; OMNH,

1F, Toyama Pref., Nanto City, Togamura-kamimomose, 11–16. VIII. 2009, M. Watanabe leg. (MsT); KPM-NK 102812, ditto, 11–18. VIII. 2009; KPM-NK 102796, F, Toyama Pref., Toyama City, Arimine, Jyurodani, 11–16. VIII. 2009, M. Watanabe leg. (MsT); KPM-NK 102797, F, ditto, 16–25. VIII. 2009; KPM-NK, F, 102810, ditto, 25. VIII. – 1. IX. 2009; KPM-NK 102811, F, ditto, 15–22. IX. 2009; KPM-NK 102817, F, Toyama Pref., Toyama City, Arimine, Inone-dani, 7–14. VII. 2009, M. Watanabe leg. (MsT); KPM-NK 102816, F, Toyama Pref., Toyama City, Kamegai, 28. VII. – 4. VIII. 2009, M. Watanabe leg. (MsT); KPM-NK 102818, F, Fukui Pref., Ikeda Town, Kouchi, 17. VI. 1981, H. Kurokawa leg.

Description. Female (n = 12). Body polished; covered with setae; body length 6.0–8.4 (HT: 7.1) mm.

Head 0.6–0.65 (HT: 0.62) × as long as wide in dorsal view. Clypeus 1.8–1.9 (HT: 1.9) × as wide as long; slightly convex in lateral view; sparsely punctate; lower margin subtruncate; sharp in lateral view. Face 0.5 × as long as minimum width; matt; slightly convex medially. Anterior tentorial pit small. Frons slightly concave above antennal sockets; coriaceous; sparsely punctate except for area above antennal sockets. POL 0.9–1.0 (HT: 0.9) × as OD. OOL 1.0–1.1 (HT: 1.0) × as OD. Dorsal profile of gena straight in dorsal view; width abruptly narrowing posteriorly (Fig. 32D). Occipital carina complete. Malar space 1.2–1.3 (HT: 1.2) × as long as basal width of mandible. Mandible flat at base; lower tooth equal in length of upper tooth. Antenna with 26–28 (HT: 27) flagellomeres; not flattened and tapped. FL I 4.35–5.0 (HT: 5.0) × as long as maximum depth in lateral view, 1.15–1.25 (HT: 1.25) × as long as FL II.

Mesosoma. Pronotum rugulose ventrally; sparsely punctate dorsally. Epomia short; dorsal end situated slightly above collar. Mesoscutum densely punctate. Notaulus sharp; posterior end reaching centre of mesoscutum or slightly shorter. Scutellum densely punctate; weakly convex in lateral view. Mesopleuron longitudinally rugulose dorsally, irregularly rugulose ventrally; with conspicuous small smooth area around speculum (Fig. 32E). Epicnemial carina present laterally and ventrally. Sternaulus deep in entire length of mesopleuron. Metapleuron largely punctate; with partly indistinct or complete juxtacoxal carina. Propodeum punctate anteriorly; rugose or rugulose posteriorly (Figs. 32H–J); with all carinae except for anterior transverse carina largely indistinct; lateral section of anterior transverse carina weak and not clearly defined by transverse rugae on area dentipara; area superomedia defined, slightly longer than maximum width; area superomedia and dentipara largely

covered with transverse rugae; apophysis short; apex obtuse; spiracle oval. Fore wing length 5.1–7.0 (HT: 6.35) mm. Areolet as long as maximum width or sometimes wider than long; width steeply narrowing anteriorly; received vein 2m-cu at near middle (Figs. 32F, G). Fore wing vein 1cu-a interstitial to vein M&RS. Nervellus subvertical; intercepted near posterior end of vein. Hind femur reticulate coriaceous; 5.1–5.5 (HT: 5.2) × as long as maximum depth in lateral view. Tarsal claws simple.

Metasoma coriaceous (Fig. 32K). T I 2.45–2.5 (HT: 2.45) × as long as maximum width; latero-median carina obtusely present except for apical part; dorso-lateral carina complete. T II 0.95–1.0 (HT: 0.95) × as long as maximum width. Thyridium present; somewhat distant from (by more than length of thyridium) anterior margin of T II; flat to slightly depressed; ca. 2.0 × as wide as length. Ovipositor sheath 0.88–1.03 (HT: 0.95) × as long as hind tibia, 1.6–2.05 (HT: 1.9) × as long as T I. Ovipositor straight; apex sharp; apex of lower valve with teeth (Fig. 79C).

Colouration (Figs. 32A–K). Body (excluding wings) black to blackish-brown. Setae silver. Mandible except for teeth, clypeus, and posterior margins of each metasomal tergite tinged with reddish-brown. Ventral surface of scape, pedicel, and apical part of flagellum and tegula sometimes tinged with brown to reddish-brown. FL VI to FL IX with white markings. Scutellum and postscutellum usually each with ivory to yellow marking; marking sometimes changed as reddish-brown marking or reduced. Trochanters, trochantelli, and base of femora sometimes narrowly tinged with yellow. Fore and mid legs except for coxa usually partly tinged with brown. Base of hind tibia brown to ivory. Membranous part of metasomal sternites yellow to yellowish-brown. Thyridium and ovipositor reddish-brown. Wings hyaline. Veins and pterostigma blackish-brown to brown except for yellowish-brown to yellow wing base.

Male. Unknown.

Distribution. Japan (Honshu).

Bionomics. Unknown.

Etymology. The specific name is from Japan.

Remarks. This species has the scutellum with or without ivory to yellow marking. While I found intermediate condition of both character states, reddish-brown coloured marking on scutellum in KPM-NK 102796. I also found no morphological difference between them and thus, I conclude that it is intraspecific variation of this species. This species resembles *J. jemilleri* (Kriechbaumer, 1893) in the body colouration and the length of ovipositor sheath but can be distinguished the anterior transverse carina of propodeum largely absent (present its lateral section in *J.*



Fig. 32. *Javra japonica* **sp. nov.**, females (A–F, H, K: holotype: KPM-NK 102795; G, J: paratype: KPM-NK 102817; I: paratype: KPM-NK 102796) — A: lateral habitus; B: head, mesosoma, and metasoma, dorso-lateral view; C: head, frontal view; D: head, dorsal view; E: pronotum and mesopleuron, lateral view; F: fore wing; G: areolet (variation); H–J: scutellum and propodeum, dorsal (H and I) and dorso-lateral (J) view; K: T I and T II, dorso-lateral view.

jemilleri) and the mesopleuron largely rugulose (largely granulate in *J. jemilleri*).

***Javra minamiashigarensis* sp. nov.**

[New SJN: Ashigara-togari-himebachi]

(Figs. 33A–G, 79D)

Javra sp. D: Watanabe & Taniwaki, 2018: 80.

Type series. **Holotype:** JAPAN, KPM-NK 102821, F, Honshu, Kanagawa Pref., Minamiashigara City, Ashigarashinrinkoen, 26. V. 2004, H. Nagase leg. **Paratype:** JAPAN, [Honshu] KPM-NK 102798, F, Tochigi Pref., Ohtawara City, Ohtawara Jinja, 8. VI. 2000, E. Katayama leg.

Description. Female (n = 2). Body matt; covered with setae; body length 7.1–7.6 (HT: 7.6) mm.

Head $0.6 \times$ as long as wide in dorsal view. Clypeus $2.0 \times$ as wide as long, slightly punctate; lower margin subtruncate; sharp in lateral view. Face $0.35 \times$ as long as minimum width; slightly convex medially. Anterior tentorial pit small. Frons slightly concave above antennal sockets; sparsely punctate dorsally; transversely rugulose above antennal sockets. POL $1.3 \times$ as OD. OOL $1.3\text{--}1.4$ (HT: 1.3) $\times$ as OD. Occiput and vertex finely and densely punctate. Dorsal profile of gena weakly rounded in dorsal view; width gradually narrowing posteriorly (Fig. 33D). Occipital carina complete. Malar space $1.0\text{--}1.1$ (HT: 1.0) $\times$ as long as basal width of mandible. Mandible flat at base; lower tooth equal in length of upper tooth. Antenna with 21–22 (HT: 22) flagellomeres; not flattened and tapped. FL I $3.2 \times$ as long as maximum depth in lateral view, $0.8 \times$ as long as FL II.

Mesosoma. Pronotum coriaceous ventrally; punctate dorsally. Epomia short; dorsal end situated slightly above collar. Mesoscutum densely punctate. Notaulus weak; posterior end not reaching centre of mesoscutum. Scutellum punctate; convex in lateral view. Mesopleuron punctate; punctures partly united into groove-like foveola; with conspicuous small smooth area around speculum (Fig. 33E). Epicnemial carina present laterally and ventrally. Sternaulus deep in anterior 0.6 of mesopleuron. Metapleuron punctate; with complete juxtacoxal carina. Propodeum coriaceous with fine and sparse punctures; anterior transverse carina absent (Fig. 33G); posterior transverse carina complete; lateromedian longitudinal carina weakly present, sometimes partly absent; lateral longitudinal carina weakly present to complete; pleural carina complete; area superomedia weakly defined, more or less triangular-shape; apophysis absent; spiracle round. Fore wing length 5.6–5.9 (HT: 5.9) mm. Areolet slightly



Fig. 33. *Javra minamiashigarensis* sp. nov., female (holotype: KPM-NK 102821) — A: lateral habitus; B: dorsal habitus; C: head, frontal view; D: head, dorsal view; E: pronotum and mesopleuron, lateral view; F: fore wing; G: scutellum and propodeum, dorso-lateral view.

shorter than long; width steeply narrowing anteriorly; received vein 2m-cu basal than middle (Fig. 33F). Fore wing vein 1cu-a interstitial to vein M&RS (Fig. 33F). Nervellus subvertical; intercepted near posterior end of vein (Fig. 33F). Hind femur reticulate coriaceous; 4.3–4.4 (HT: 4.4) $\times$ as long as maximum depth in lateral view. Tarsal claws simple.

Metasoma. T I 1.8 $\times$ as long as maximum width; latero-median carina absent; dorso-lateral carina complete. T II 0.75–0.85 (HT: 0.85) $\times$ as long as maximum width. Thyridium present; somewhat distant from (by more than length of thyridium) anterior margin of T II; flat to slightly depressed; ca. 1.0 $\times$ as wide as length. Ovipositor sheath 0.95 $\times$ as long as hind tibia, 1.7–1.75 (HT: 1.7) $\times$ as long as T I. Ovipositor straight; apex sharp; apex of lower valve with teeth (Fig. 79D).

Colouration (Figs. 33A–G). Body (excluding wings) black to blackish-brown. Setae silver. Subapical part of mandible, lower part of clypeus, ventral surface of apical part of flagellum, posterior margins of T I and T II tinged with brown to reddish-brown. FL VI to FL X with white markings. Apical parts of fore and mid legs more or less tinged with brown. Tibial spurs of all legs yellow to yellowish-brown. Base of each hind tarsomere narrowly tinged with yellowish-brown. Membranous part of metasomal sternites yellow to ivory. Apex of metasoma with ivory marking. Thyridium and ovipositor reddish-brown. Wings hyaline. Veins and pterostigma blackish-brown to brown except for yellowish-brown to yellow wing base.

Male. Unknown.

Distribution. Japan (Honshu).

Bionomics. Unknown.

Etymology. The specific name is from the type locality and my hometown, Minami-ashigara City, a city of Kanagawa Prefecture.

Remarks. This species resembles *J. coreensis* and *J. taniguchiae* in the black body but can be distinguished by the ovipositor sheath 1.1 $\times$ as long as hind tibia (0.65–0.8 $\times$ in *J. coreensis*; 1.43 $\times$ in *J. taniguchiae*), the T I 1.8 $\times$ as long as maximum width (2.05–2.35 $\times$ in *J. coreensis*), and the hind tibia without white base (with white base in *J. taniguchiae*).

***Javra minuta* sp. nov.**

[New SJN: Toyama-kuro-togari-himebachi]

(Figs. 34A–H, 79E)

Type series. **Holotype:** JAPAN, KPM-NK 102805, F, Honshu, Toyama Pref., Nanto City, Togamura-

kamimomose, 15–29. IX. 2009, M. Watanabe leg. (MsT).

Paratype: JAPAN, KPM-NK 84975, F, Honshu, Toyama Pref., Toyama City, Arimine, Jurodani, 15–22. IX. 2009, M. Watanabe leg. (MsT).

Description. Female (n = 2). Body polished (Figs. 34A, E, F, H); covered with setae; body length 4.55–4.75 (HT: 4.55) mm.

Head 0.6–0.63 (HT: 0.63) $\times$ as long as wide in dorsal view. Clypeus 2.0–2.1 (HT: 2.0) $\times$ as wide as long; slightly convex in lateral view; sparsely punctate; lower margin slightly rounded in frontal view, sharp in lateral view. Face 0.5 $\times$ as long as minimum width; coriaceous; nearly flat medially. Anterior tentorial pit large. Frons slightly concave above antennal sockets; slightly coriaceous and sparsely punctate except for area above antennal sockets. POL 1.2–1.4 (HT: 1.2) $\times$ as OD. OOL 1.4–1.5 (HT: 1.5) $\times$ as OD. Gena and vertex finely punctate. Dorsal profile of gena straight in dorsal view; width abruptly narrowing posteriorly (Fig. 34D). Occipital carina complete. Malar space 1.1–1.2 (HT: 1.1) $\times$ as long as basal width of mandible. Mandible flat at base; lower tooth equal in length of upper tooth. Antenna with 23–24 (HT: 23) flagellomeres; not flattened and tapped. FL I 4.6–5.45 (HT: 5.45) $\times$ as long as maximum depth in lateral view, 1.25–1.4 (HT: 1.25) $\times$ as long as FL II.

Mesosoma. Pronotum sparsely and finely punctate; rugulose ventrally in paratype; ISP smooth. Epomia short; dorsal end situated slightly above collar. Mesoscutum sparsely and finely punctate; ISP smooth. Notaulus weak; posterior end not reaching centre of mesoscutum. Scutellum largely smooth; convex in lateral view. Mesopleuron largely smooth with fine and sparse punctures; partly obliquely striate in paratype; with conspicuous small smooth area around speculum (Fig. 34E); sometimes largely striate (Fig. 34F; in paratype). Epicnemial carina present laterally and ventrally. Sternaulus deep in anterior 0.8 of mesopleuron. Metapleuron largely smooth with fine and sparse punctures; with complete juxtacoxal carina. Propodeum largely smooth with fine and sparse punctures (Fig. 34H); with all carinae except for lateromedian longitudinal carina weak and partly indistinct; area superomedia partly defined, longer than wide; apophysis short; apex obtuse; spiracle oval. Fore wing length 4.7 mm. Areolet wider than long; width gradually narrowing anteriorly; received vein 2m-cu basal to middle (Fig. 34G). Fore wing vein 1cu-a interstitial to vein M&RS (Fig. 34G). Nervellus subvertical; intercepted posterior to middle. Hind femur reticulate coriaceous; 5.1–5.2 (HT: 5.2) $\times$ as long as maximum depth in lateral view. Tarsal claws simple.

Metasoma finely and sparsely punctate; ISP smooth.

T I $2.95 \times$ as long as maximum width; longitudinally shallowly foveolate partly; latero-median carina absent; dorso-lateral carina present but obscured posteriorly. T II $0.9 \times$ as long as maximum width. Thyridium present; somewhat distant from (by more than length of thyridium) anterior margin of T II; flat to slightly depressed; ca. $1.0 \times$ as wide as length. Ovipositor sheath $0.88\text{--}0.93$ (HT: 0.93) $\times$ as long as hind tibia, $1.66\text{--}1.75$ (HT: 1.75) $\times$ as long as T I. Ovipositor straight; apex sharp; apex of lower valve with teeth (Fig. 79E).

Colouration (Figs. 34A–H). Body (excluding wings) black to blackish-brown. Setae silver. Mandible except for teeth, clypeus, ventral surfaces of scape and pedicel, ventral surface of apical part of flagellum, postscutellum, and metasomal tergites except for T I tinged with brown to reddish-brown. Palpi, scutellum, and membranous part

of metasomal sternites ivory. FL VII to FL X with white markings. Tegula and posterior margins of T II and T III yellowish-brown. Fore and mid legs reddish-yellow except for ivory coxae, trochanters, and trochantelli. Hind leg blackish-brown; trochanter, trochantellus, tibia except for apical part, and tibial spurs paler than other part. Thyridium and ovipositor reddish-brown. Wings hyaline. Veins and pterostigma brown except for yellowish-brown to yellow wing base.

Male. Unknown.

Distribution. Japan (Honshu).

Bionomics. Unknown.

Etymology. The specific name is from the Latin “*minuta*” (small), referring to the relatively small body size in Japanese species.

Remarks. This species resembles *J. teranishii* in the



Fig. 34. *Javra minuta* sp. nov., females (A–E, G, H: holotype: KPM-NK 102805; F: paratype: KPM-NK 84975) — A: lateral habitus; B: head, mesosoma, and metasoma, dorso-lateral view; C: head, frontal view; D: head, dorsal view; E, F: pronotum and mesopleuron, lateral view; G: fore wing; H: scutellum and propodeum, dorsal view.

yellow scutellum but can be distinguished by the polished body (body largely matt in *J. teranishii*) and the fore and mid coxae, trochanters, and trochantelli white (blackish-brown to black in *J. teranishii*). The character states of holotype and a paratype relatively large in the genus especially FL I and mesopleuron, but I conclude that is intraspecific variation based on the collecting data and other character states.

***Javra taniguchiae* (Uchida, 1956)**

[SJN: Tokunoshima-togari-himebachi]

(Figs. 35A–H, 79F)

Microcryptus taniguchiae Uchida, 1956: 90

Materials examined. JAPAN: [Amamioshima Is.] KPM-NK 102806, F, Kagoshima Pref., Uken Vil., Mt. Yuwan-dake, 26. VI. 2014, K. Watanabe leg. [Tokunoshima Is.] SEHU, 1M (holotype), Sikaura, 18. V. 1954, S. Taniguchi leg.

Description. Female (n = 1). Body polished; covered with setae; body length 7.4 mm.

Head $0.57 \times$ as long as wide in dorsal view. Clypeus $1.9 \times$ as wide as long; slightly convex in lateral view; sparsely punctate; lower margin subtruncate; sharp in lateral view. Face $0.4 \times$ as long as minimum width; matt; slightly convex medially; densely punctate medially. Anterior tentorial pit small. Frons slightly concave above antennal sockets; finely and densely punctate dorsally. POL 1.25

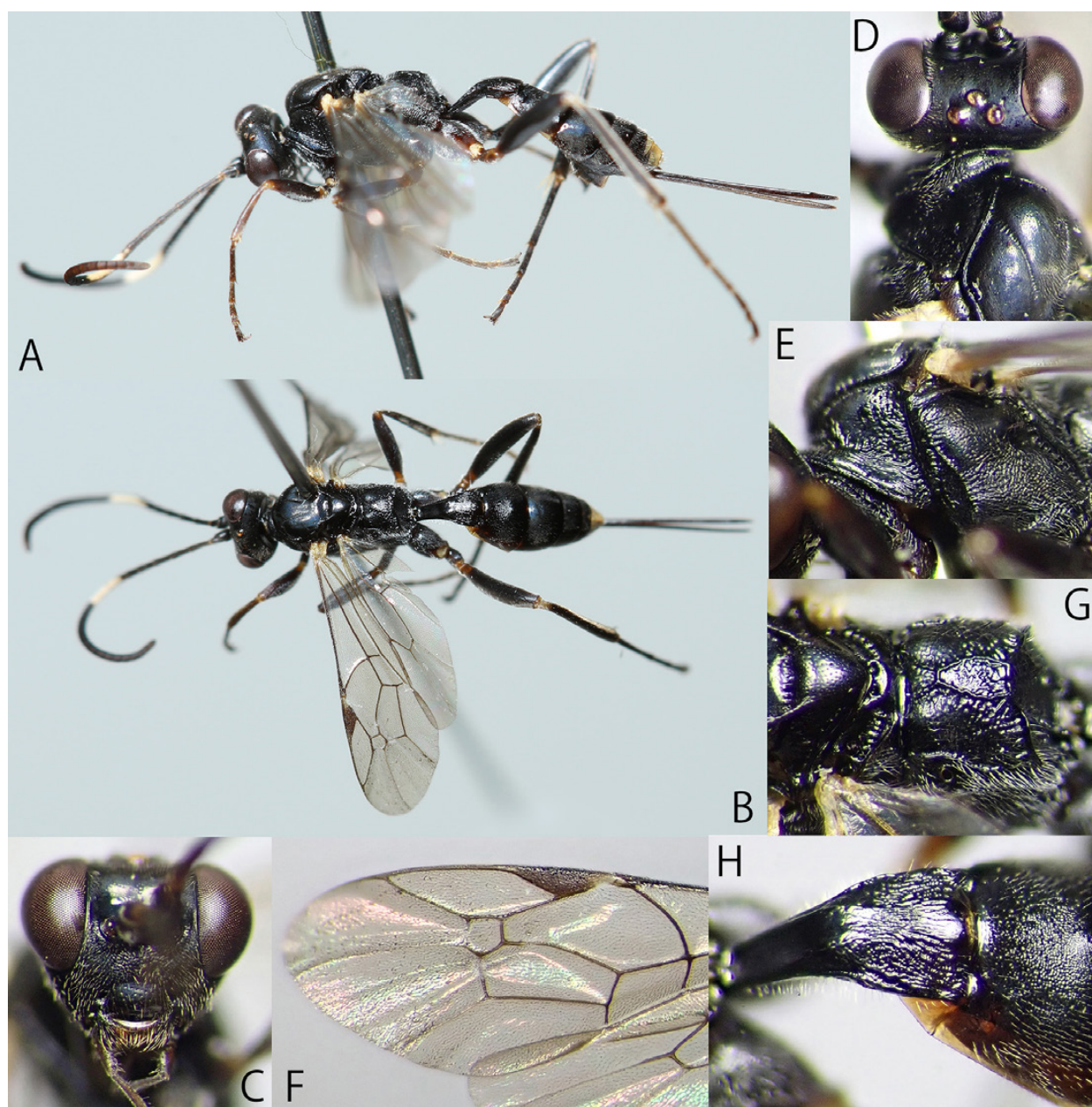


Fig. 35. *Javra taniguchiae* (Uchida, 1956), female (KPM-NK 102806) — A: lateral habitus; B: dorsal habitus; C: head, frontal view; D: head and mesoscutum, dorsal view; E: pronotum and mesopleuron, lateral view; F: fore wing; G: scutellum and propodeum, dorso-lateral view; H: T I and T II, dorso-lateral view.

$\times$ as OD. OOL $1.0 \times$ as OD. Gena and vertex finely and densely punctate. Dorsal profile of gena slightly convex; width abruptly narrowing posteriorly (Fig. 35D). Occipital carina complete. Malar space $1.4 \times$ as long as basal width of mandible. Mandible flat at base; lower tooth equal in length of upper tooth. Antenna with 24 flagellomeres; not flattened and tapped. FL I $4.2 \times$ as long as maximum depth in lateral view, $1.05 \times$ as long as FL II.

Mesosoma. Pronotum rugulose ventrally; finely punctate dorsally (Fig. 35E). Epomia long; dorsal end situated between collar and dorsal margin of pronotum. Mesoscutum densely and finely punctate. Notaulus sharp (Fig. 35D); posterior end reaching centre of mesoscutum. Scutellum densely punctate; convex in lateral view. Mesopleuron punctate dorsally, irregularly rugulose ventrally; with conspicuous smooth area around speculum. Epicnemial carina present laterally and ventrally. Sternaulus deep in anterior 0.6 of mesopleuron. Metapleuron rugose to rugulose; with complete juxtacoxal carina. Propodeum punctate anteriorly; rugose or rugulose posteriorly; with all carinae except for anterior transverse carina absent; area superomedia defined (Fig. 35G), longer than maximum width; apophysis absent; spiracle oval. Fore wing length 5.4 mm. Areolet as long as maximum width; width not narrowing anteriorly; received vein 2m-cu at near middle (Fig. 35F). Fore wing vein 1cu-a slightly antefurcal to vein M&RS. Nervellus subvertical; intercepted near posterior end of vein. Hind femur reticulate coriaceous; $4.6 \times$ as long as maximum depth in lateral view. Tarsal claws simple.

Metasoma matt. T I $1.85 \times$ as long as maximum width; postpetiole partly irregularly rugulose (Fig. 35H); latero-median carina absent; dorso-lateral carina complete. T II $0.8 \times$ as long as maximum width; largely matt (Fig. 35H); thyridium indistinct. T III to T V coriaceous and finely punctate anteriorly, smooth posteriorly. Ovipositor sheath $1.43 \times$ as long as hind tibia, $2.7 \times$ as long as T I. Ovipositor straight; apex sharp; apex of lower valve with teeth (Fig. 79F).

Colouration (Figs. 35A–H). Body (excluding wings) black to blackish-brown. Setae silver. Subapical part of mandible, labrum, and posterior margin of T II tinged with reddish-brown. FL VI to FL X with white markings. Wing base, base of hind tibia, tibial spurs of all legs, and apex of metasoma ivory. Trochantelli paler than other parts of each leg. Ovipositor reddish-brown. Wings hyaline. Veins and pterostigma blackish-brown to brown except for ivory wing base.

Male. No additional specimen available. Malar space $1.0 \times$ as long as basal width of mandible. Antenna with 27 flagellomeres. T I $2.3 \times$ as long as maximum width. FL I slightly longer than FL II. Face with pair of large yellow

markings laterally. Clypeus yellow. Ventral surface of scape and mandible except teeth both largely yellow. Fore and mid trochanter and trochantelli ivory. Base of tibiae ivory.

Distribution. Japan (Amamioshima Is. and Tokunoshima Is.).

Bionomics. Unknown.

Remarks. Momoi (1970) described the female of this species briefly. I could not find the voucher specimen of this species in MNHAH. The following two character states of KPM-NK 102806 described above are largely differed from the description by Momoi (1970): T I $1.85 \times$ as long as maximum width ($1.5 \times$ as long as wide at apex in Momoi's description); ovipositor sheath $2.7 \times$ as long as T I (about $2.0 \times$ in Momoi's description). These may be the intraspecific variation of this species.

***Javra tenuis* sp. nov.**

[New SJN: Hosomi-kuro-togari-himebachi]

(Figs. 36A–H, 79G)

Javra sp. C: Watanabe & Taniwaki, 2018: 80.

Type series. **Holotype:** JAPAN, KPM-NK 102799, F, Honshu, Tokyo, Hachioji City, Uratakaomachi, Kogesawa, 12. IX. 2020, Y. Kato leg. **Paratype:** JAPAN, [Honshu] KPM-NK 102802, F, Saitama Pref., Yorii Town, Gonotsubo, 6. X. 2000, T. Nambu leg.; KPM-NK 102800, F, Toyama Pref., Nanto City, Togamura-kamimomose, 4–11. VIII. 2009, M. Watanabe leg. (MsT); KPM-NK 102801, ditto, 15–29. IX. 2009; KPM-NK 102803, F, Toyama Pref., Toyama City, Arimine, Inone-dani, 15–22. IX. 2009, M. Watanabe leg. (MsT); KPM-NK 102804, F, Toyama Pref., Toyama City, Kamegai, 15–26. IX. 2009, M. Watanabe leg. (MsT).

Description. Female ($n = 6$). Body polished; covered with setae; body length 8.1–10.4 (HT: 9.1) mm.

Head $0.6 \times$ as long as wide in dorsal view. Clypeus 1.8 – 1.95 (HT: 1.8) $\times$ as wide as long; weakly convex in lateral view; sparsely punctate; lower margin subtruncate; sharp in lateral view. Face $0.5 \times$ as long as minimum width; matt; slightly convex medially; finely punctate medially. Anterior tentorial pit small. Frons weakly concave above antennal sockets; coriaceous; concavities above antennal sockets smooth. POL 0.9 – 1.2 (HT: 1.05) $\times$ as OD. OOL 1.1 – 1.35 (HT: 1.2) $\times$ as OD. Dorsal profile of gena slightly convex; width abruptly narrowing posteriorly (Fig. 36D). Occipital carina complete. Malar space 0.8 – 0.9 (HT: 0.9) $\times$ as long as basal width of mandible. Mandible flat at base; lower tooth slightly longer than upper tooth. Antenna with 29–30 (HT: 30) flagellomeres; not flattened and tapped. FL

I 4.68–5.1 (HT: 5.1) $\times$ as long as maximum depth in lateral view, 1.05–1.15 (HT: 1.15) $\times$ as long as FL II.

Mesosoma. Pronotum rugulose ventrally; densely punctate dorsally. Epomia long; dorsal end situated slightly below dorsal margin of pronotum. Mesoscutum densely punctate. Notaulus weak and not sharp; posterior end not reaching centre of mesoscutum (Fig. 36D). Scutellum densely punctate; weakly convex in lateral

view. Mesopleuron obliquely to irregularly rugulose anteriorly, finely and densely punctate posteriorly; without conspicuous smooth area around speculum (Fig. 36E). Epicnemial carina present laterally and ventrally. Sternaulus deep in entire length of mesopleuron. Metapleuron finely punctate anteriorly; weakly rugulose posteriorly; with complete juxtacoxal carina. Propodeum finely and sparsely punctate anteriorly; rugose or rugulose

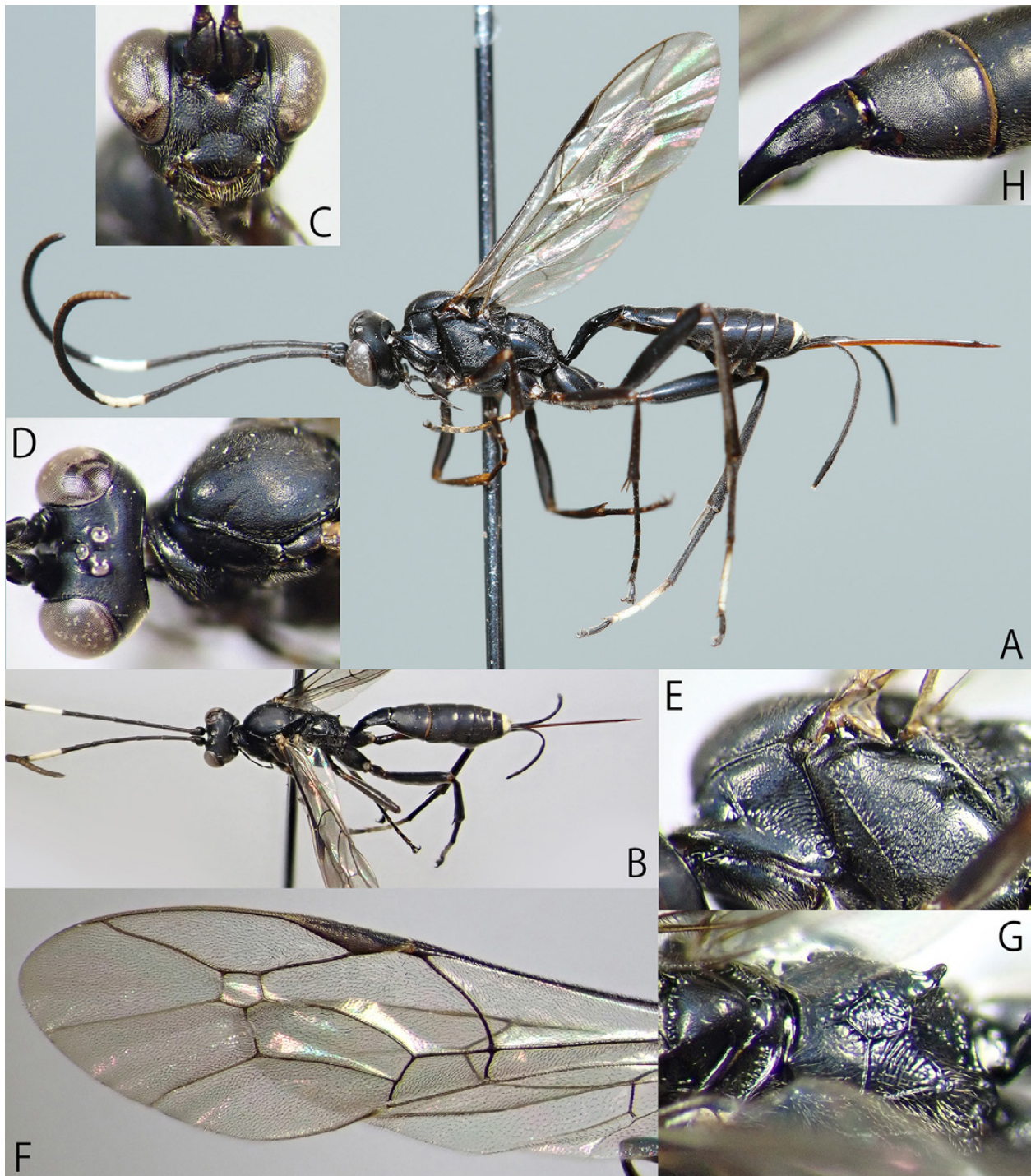


Fig. 36. *Javra tenuis* sp. nov., female (holotype: KPM-NK 102799) — A: lateral habitus; B: head, mesosoma, and metasoma, dorso-lateral view; C: head, frontal view; D: head and mesoscutum, dorsal view; E: pronotum and mesopleuron, lateral view; F: wings; G: scutellum and propodeum, dorso-lateral view; H: T I and T II, dorso-lateral view.

posteriorly; with all carinae (Fig. 36G); lateromedian longitudinal carina sometimes partly indistinct between both transverse carinae; area superomedia at least partly defined, longer than maximum width; area dentipara transversely to obliquely rugose; apophysis long; apex somewhat sharp; spiracle oval. Fore wing length 6.8–8.1 (HT: 7.5) mm. Areolet slightly wider than long; width slightly narrowing anteriorly; received vein 2m-cu basal than middle (Fig. 36F). Fore wing vein 1cu-a interstitial to vein M&RS (Fig. 36F). Nervellus subvertical; intercepted near posterior end of vein (Fig. 36F). Hind femur reticulate coriaceous; 5.2–5.8 (HT: 5.7) $\times$ as long as maximum depth in lateral view. Tarsal claws simple.

Metasoma matt (Fig. 36H). T I 2.5–2.65 (HT: 2.63) $\times$ as long as maximum width; latero-median carina absent; dorso-lateral carina complete. T II 1.0–1.05 (HT: 1.0) $\times$ as long as maximum width. Thyridium present; somewhat distant from (by more than length of thyridium) anterior margin of T II; flat to slightly depressed; ca. 2.0 $\times$ as wide as length. Ovipositor sheath 1.25–1.33 (HT: 1.3) $\times$ as long as hind tibia, 2.5–2.7 (HT: 2.6) $\times$ as long as T I. Ovipositor straight to slightly decurved; apex sharp; apex of lower valve with teeth (Fig. 79G).

Colouration (Figs. 36A–H). Body (excluding wings) black to blackish-brown. Setae silver. Subapical part of mandible and posterior margins of metasomal tergites (especially T II) weakly tinged with reddish-brown. Face with median small yellow marking below antennal sockets. FL VII to FL X with white markings. Hind second to fourth tarsomeres ivory. Membranous part of metasomal sternites dark yellowish-brown. Apex of metasoma white. Ovipositor reddish-brown. Wings hyaline. Veins and pterostigma blackish-brown to brown except for yellowish-brown wing base.

Male. Unknown.

Distribution. Japan (Honshu).

Bionomics. Unknown.

Etymology. The specific name is from the Latin “*tenuis*” (slender), referring to the slender species.

Remarks. This species resembles *J. gigantea* sp. nov. in the large body with white banded hind tibia but can be distinguished by the shape of areolet and the surface of mesoscutum (see above key). This species also resembles *J. coreensis* and *J. taniguchiae* in the black body but can be distinguished by the large body size (more than 8.0 mm in this species; less than 8.0 mm in *J. coreensis* and *J. taniguchiae*), ovipositor sheath 1.25–1.33 $\times$ as long as hind tibia (0.65–0.8 $\times$ in *J. coreensis*; 1.43 $\times$ in *J. taniguchiae*), and the hind tibia without white base (with white base in *J. taniguchiae*).

Javra teranishii (Uchida, 1952)

[SJN: Teranishi-kimon-togari-himebachi]

(Figs. 37A–G, 79H)

Habrocryptoides teranishii Uchida, 1952: 19.

Materials examined. [Hokkaido] KPM-NK 81397, F, Horokanai Town, Uryu, 16. VII. 2012, M. Ito leg. [Honshu] KPM-NK 81293, F, Tochigi Pref., Ohtawara City, Shimoishigami, 4. XI. 2000, E. Katayama leg.; KPM-NK 102793, F, Tochigi Pref., Kuroiso Town, Ohsabigawa F. R., 29. VI. 2000, E. Katayama leg.; KPM-NK 102792, F, Kanagawa Pref., Kiyokawa Vil., Doudaira, 18. VII. 1993, T. Kinoshita leg.; KPM-NK 102794, F, Yamanashi Pref., Hokuto City, Kanayamadaira, 27. IX. 2007, K. Watanabe leg.; SEHU, 1F (holotype), Shiga Pref., Mt. Hira-san, 18. VI. 1929, C. Teranishi leg.

Description. Female (n = 6). Body matt (Figs. 37A, B, E, G); covered with setae; body length 6.3–8.7 mm.

Head 0.6–0.65 $\times$ as long as wide in dorsal view. Clypeus 2.0 $\times$ as wide as long; weakly convex in lateral view; punctate dorsally; smooth ventrally; lower margin weakly rounded in frontal view, sharp in lateral view. Face 0.45–0.5 $\times$ as long as minimum width; matt; slightly convex medially; densely punctate. Anterior tentorial pit small. Frons weakly concave above antennal sockets; coriaceous on concavities weaker than dorsal part. POL 0.9–1.1 $\times$ as OD. OOL 1.05–1.1 $\times$ as OD. Dorsal profile of gena straight in dorsal view; width abruptly narrowing posteriorly (Fig. 37D). Occipital carina complete. Malar space 1.0–1.1 $\times$ as long as basal width of mandible. Mandible flat at base; lower tooth equal in length of upper tooth. Antenna with 27–28 flagellomeres; not flattened and tapped. FL I 3.65–4.6 $\times$ as long as maximum depth in lateral view, 1.0–1.15 $\times$ as long as FL II.

Mesosoma. Pronotum rugulose ventrally. Epomia short; dorsal end situated slightly above collar. Notaulus sharp and short (Fig. 37D); posterior end not reaching centre of mesoscutum. Scutellum densely punctate; weakly convex in lateral view. Mesopleuron largely irregularly rugulose; without conspicuous smooth area around speculum (Fig. 37E). Epicnemial carina present laterally and ventrally. Sternaulus deep in entire length of mesopleuron. Metapleuron rugulose; juxtacoxal carina largely indistinct by rugae. Propodeum rugose to rugulose; with all carinae (Fig. 37G); area superomedia defined, slightly longer than maximum width; apophysis strong; apex obtuse; spiracle elliptic. Fore wing length 5.8–7.0 mm. Areolet as long as maximum width; width steeply narrowing anteriorly; received vein 2m-cu at slightly beyond to middle (Fig.

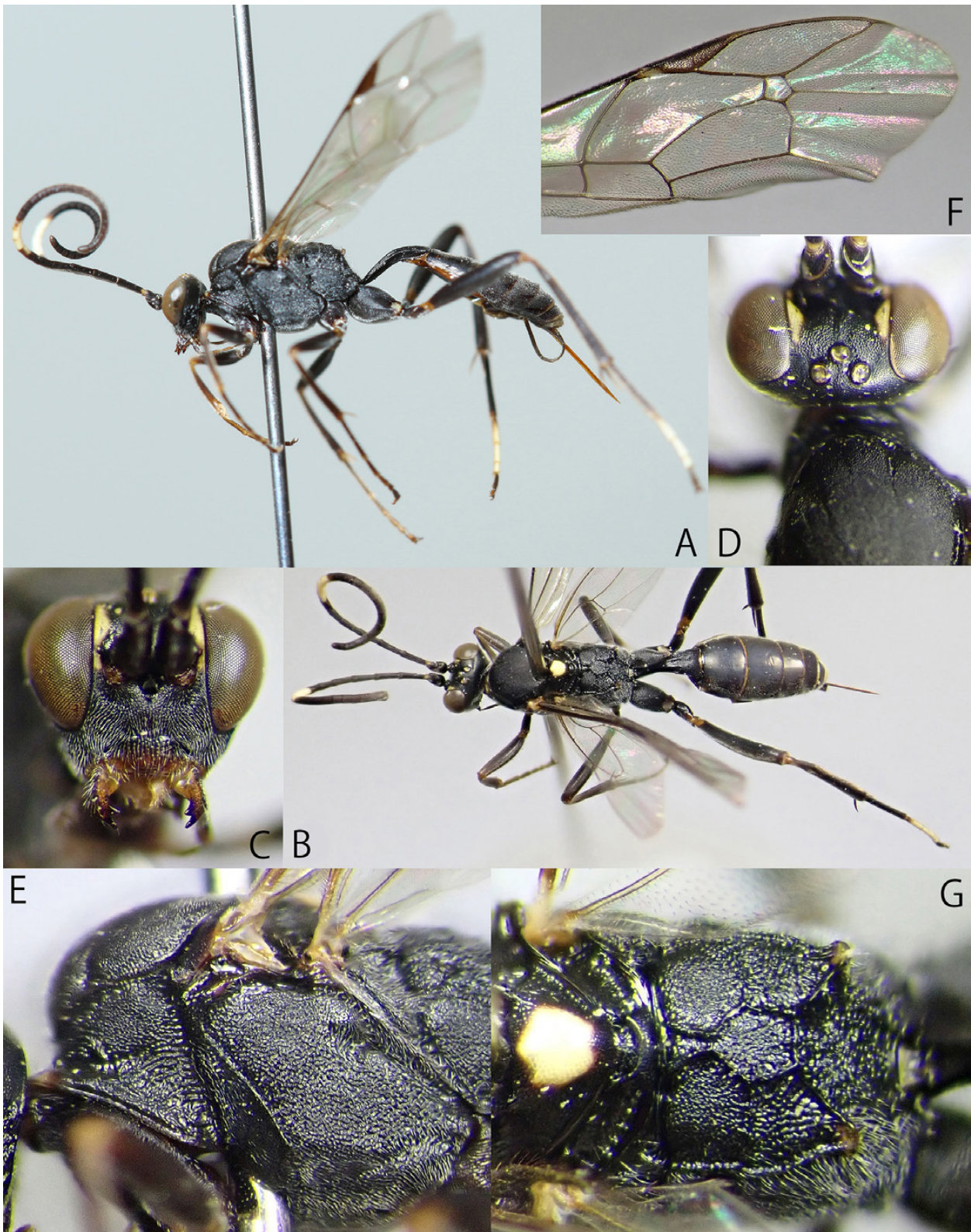


Fig. 37. *Javra teranishii* (Uchida, 1952), female (KPM-NK 81293) — A: lateral habitus; B: head, mesosoma, and metasoma, dorso-lateral view; C: head, frontal view; D: head and mesoscutum, dorsal view; E: pronotum and mesopleuron, lateral view; F: fore wing; G: scutellum and propodeum, dorsal view.

37F). Fore wing vein 1cu-a interstitial to or slightly antefurcal to vein M&RS (Fig. 37F). Nervellus subvertical; intercepted near posterior end of vein. Hind femur reticulate coriaceous; $5.0\text{--}5.6 \times$ as long as maximum depth in lateral view. Tarsal claws simple.

Metasoma. T I $2.5\text{--}2.6 \times$ as long as maximum width; latero-median carina absent; dorso-lateral carina complete. T II $0.75\text{--}0.85 \times$ as long as maximum width. Thyridium present; somewhat distant from (by more than length of thyridium) anterior margin of T II; flat to slightly depressed; ca. $2.0 \times$ as wide as length. Ovipositor sheath $0.85\text{--}0.9 \times$ as long as hind tibia, $1.4\text{--}1.65 \times$ as long as T I. Ovipositor straight; apex sharp; apex of lower valve with teeth (Fig. 79H).

Colouration (Figs. 37A–G). Body (excluding wings) black to blackish-brown. Setae silver. Subapical part of mandible, clypeus, and posterior margins of each metasomal tergite tinged with reddish-brown to brown. Frons with pair of yellow marking along each orbit. Scutellum with yellow marking. FL VII to FL XI with white markings. Median part of collar, apex of propodeal apophysis, and apex of ovipositor sheath tinged with yellow to yellowish-brown. Bases and apices of femora and tibiae narrowly tinged with yellowish-brown. Tibial spurs of all legs yellowish-brown. Hind TS II to IV (base of TS II usually darkened) ivory to white. Membranous part of metasomal sternites yellow to yellowish-brown. Apex of metasoma white. Thyridium and ovipositor reddish-brown. Wings hyaline. Veins and pterostigma blackish-brown to brown except for yellowish-brown to yellow wing base.

Male. Unknown.

Distribution. Japan (Hokkaido and Honshu).

Bionomics. Unknown.

Genus *Megaplectes* Förster, 1869

Megaplectes Förster, 1869: 186. Type species: *Ichneumon monticola* Gravenhorst, 1829. Included by Schmiedeknecht (1890).

Iocryptus Thomson, 1873: 472. *Phygadeuon regius* Taschenberg, 1865 (= *Ichneumon monticola* Gravenhorst, 1829). Monotypic.

Megaloplectes Schulz, 1906: 124. Emendation.

A single species including two subspecies, *Meg. monticola monticola* (Gravenhorst, 1829) and *Meg. monticola dentatus* Uchida, 1930, have been recorded from Japan. Uchida (1936b) recorded *Meg. monticola* (Gravenhorst, 1829) and noted that the specimens from Shikoku have no horn of head. Townes & Gupta (1962)

reviewed the subspecies of this species and noted that the subspecies, *Meg. monticola dentatus* Uchida, 1930, has an intraspecific variation, i.e. horn of frons sometimes absent. According to Townes & Gupta (1962), all Japanese specimens of *Meg. monticola* should be treated as *Meg. monticola dentatus*. Thus, I delete the distribution of *Meg. monticola monticola* from Japanese fauna. In this study, I newly describe two new species and redescribe *Meg. monticola dentatus* below.

Key to Japanese species of *Megaplectes*

(Male of *Meg. konishii* sp. nov. is unknown)

1. Basal part of hind tibia and hind tarsus each with white area (Fig. 40A). Tegula yellow (Fig. 40A). Body with strong blue reflection (Fig. 40A–E). Frons with a pair of large concavities (Figs. 76D, I).

..... *Megaplectes konishii* sp. nov.

-. Body and legs nearly entirely black; at most metasomal tergites slightly tinged with dark blue reflection (Figs. 38A, B, 39A, B, 41A, 43A, B). Tegula black to blackish-brown (Figs. 38A, 39A, 41A, 43A). Frons with horn(s) (Figs. 76C, E, H, J), or if without horn; without pair of large concavities.

..... 2

2. Frons with pair of horns (Figs. 76C, H). Face $0.25 \times$ as high as minimum width. Juxtacoxal carina complete. Propodeal apophysis obtusely produced. Smaller species; body length ca. 12–14 mm. Wings brownish-hyaline. Apex of ovipositor without minute teeth dorsally (Fig. 79I).

..... *Megaplectes bicornis* sp. nov.

-. Frons with (Figs. 76E, J) or without single median horn. Face $0.4\text{--}0.45 \times$ as high as minimum width. Juxtacoxal carina absent. Propodeal apophysis sharply produced. Larger species; body length 13.5–20 mm. Wings dark brownish-hyaline. Apex of ovipositor with some minute teeth dorsally (Fig. 79K).

..... *Megaplectes monticola dentatus* Uchida, 1930

Megaplectes bicornis sp. nov.

[New SJN: Futakobu-oo-togari-himebachi]

(Figs. 38A–I, 39A–D, 76C, H, 79I)

Type series. Holotype: JAPAN, KPM-NK 103052, F, Honshu, Tochigi Pref., Nasushiobara City, Amayu, 2. XI. 2011, E. Katayama leg. **Paratype:** JAPAN: KPM-NK 103053, F, Nagano Pref., Ueda City, Sugadaira-kogen, 3–26. IX. 2014, S. Shimizu leg. (MsT); KPM-NK 103054, M, ditto, 1–23. VIII. 2015.

Description. Female ($n = 2$). Body punctate and polished; covered with setae; body length 13.7 mm.

Head 0.6–0.65 (HT: 0.6) $\times$ as long as wide in dorsal view. Clypeus 2.5–2.55 (HT: 2.5) $\times$ as wide as long; slightly convex in lateral view; densely punctate; punctures partly united into groove-like foveola; lower margin subtruncate or sometimes slightly concave medially in frontal view, blunt in lateral view. Face 0.25 $\times$ as long as minimum width; weakly convex medially; densely punctate; punctures large, ISP shorter than PD. Frons largely concave above antennal sockets; with pair of horns; largely irregularly rugose except for smooth area just above

antennal sockets and median longitudinal groove; horns projected upwards (Figs. 38D, 76C, H). POL 0.8–1.0 (HT: 1.0) $\times$ as OD. OOL 1.3–1.5 (HT: 1.5) $\times$ as OD. Gena and occiput densely punctate. Dorsal profile of gena slightly convex; width gradually narrowing posteriorly (Fig. 38E). Occipital carina complete. Malar space 1.0–1.1 (HT: 1.1) $\times$ as long as basal width of mandible. Mandible flat at base; lower tooth equal in length of upper tooth. Antenna with 34–35 (HT: 35) flagellomeres; apical part flattened below and tapered to slender apex. FL I 1.6–1.7 (HT: 1.7) $\times$ as long as maximum depth in lateral view, 0.8–0.85 (HT: 0.85) $\times$ as long as FL II.

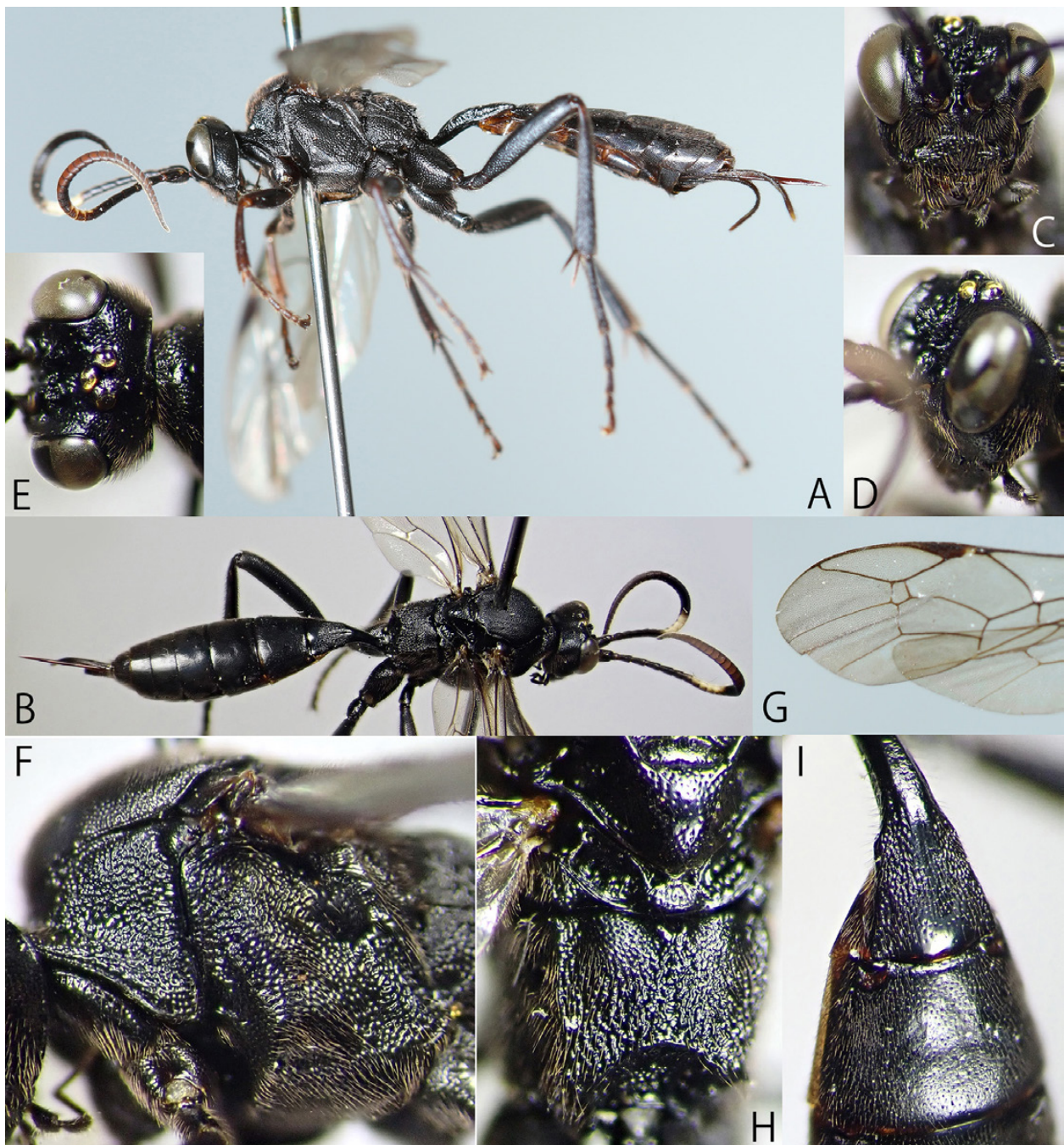


Fig. 38. *Megaplectes bicornis* sp. nov., female (holotype: KPM-NK 103052) — A: lateral habitus; B: head, mesosoma, and metasoma, dorso-lateral view; C: head, frontal view; D: head, lateral view; E: head, dorsal view; F: pronotum and mesopleuron, lateral view; G: fore wing; H: scutellum and propodeum, dorsal view; I: T I and T II, dorso-lateral view.

Mesosoma densely punctate (Fig. 38F). Epomia short; dorsal end situated on collar. Mesoscutum with short and weak notaulus. Mesopleuron with smooth area around speculum; punctures partly united into groove-like foveola. Epicnemial carina present laterally and ventrally. Sternaulus deep in anterior 0.5 of mesopleuron. Metapleuron reticulate rugose; with complete juxtacoxal carina. Propodeum largely irregularly rugose; anterior transverse carina absent; posterior transverse carina complete; lateromedian longitudinal carina largely indistinct; lateral longitudinal carina partly present; pleural carina complete; area superomedia indistinct; apophysis weak and obtusely projected (Fig. 38H); spiracle oval. Fore wing length 11.2–11.3 (HT: 11.2) mm. Areolet as long as maximum width; width gradually narrowing anteriorly; received vein 2m-cu at slightly beyond to middle (Fig. 38G). Fore wing vein 1cu-a antefurcal to vein M&RS (Fig. 38G). Nervellus subvertical; intercepted posterior to middle. Hind femur densely punctate; $5.3\text{--}5.4$ (HT: 5.3) $\times$ as long as maximum depth in lateral view. Tarsal claws simple.

Metasoma finely punctate. T I $1.55\text{--}1.6$ (HT: 1.6) $\times$ as long as maximum width; smooth and finely rugose basally and laterally; apical area densely punctate except for smooth area of postero-median part; punctures of this area partly united into longitudinal or oblique groove-like foveola (Fig. 38I); latero-median carina largely absent except for basal part; dorso-lateral carina largely indistinct. T II $0.65 \times$ as long as maximum width. Thyridium present; close to anterior margin of T II; depressed; ca. $2.0 \times$ as wide as length. Ovipositor sheath $0.8 \times$ as long as hind tibia, $1.35\text{--}1.45$ (HT: 1.35) $\times$ as long as T I. Ovipositor straight; apex sharp and without minute teeth dorsally; apex of lower valve with teeth (Fig. 79I).

Colouration (Figs. 38A–I). Body (excluding wings) black to blackish-brown. Setae brown to blackish-brown. Subapical part of mandible tinged with reddish-brown. FL VI to FL X (or XI) with white markings. Ventral surface of flagellum, fore and mid legs, membranous parts of metasomal sternites partly tinged with reddish-brown. Apex of ovipositor sheath yellowish-brown. Ovipositor



Fig. 39. *Megaplectes bicornis* sp. nov., male (paratype: KPM-NK 103054) — A: lateral habitus; B: head, mesosoma, and metasoma, dorso-lateral view; C: head, frontal view; D: flagellum and tyloids.

reddish-brown. Wings brownish-hyaline. Veins and pterostigma blackish-brown except for yellowish-brown wing base.

Male ($n = 1$). Similar to female (Figs. 39A–D). Body length 12.4 mm. Clypeus $2.9 \times$ as wide as long. Malar space $0.55 \times$ as long as basal width of mandible. Antenna not flattened below and tapped; with tyloids on FL X to FL XIV (Fig. 39D). Lateromedian longitudinal carina of propodeum distinct between base of propodeum and posterior transverse carina; area superomedia with parallel sides. OOL $1.25 \times$ as OD. T I $2.35 \times$ as long as maximum width. T II $0.8 \times$ as long as maximum width. FL IX to FL XII with white markings.

Distribution. Japan (Honshu).

Bionomics. Unknown.

Etymology. The specific name is Latin “*bī*” (two) plus “*cornis*” (horn), referring to a pair of frontal horn.

Remarks. This species can be easily distinguished from other species by the frons with a pair of horns.

***Megaplectes konishii* sp. nov.**

[New SJN: Konishi-oo-ruri-togari-himebachi]

(Figs. 40A–F, 76D, I, 79J)

Type series. Holotype: JAPAN, KPM-NK 103050, F, Honshu, Nagano Pref., Outaki Vil., Mt. Ontake-san, Hakkaisan, 5. VIII. 2010, K. Watanabe leg.

Description. Female ($n = 1$). Body punctate and polished; covered with setae; body length 16.0 mm.

Head $0.63 \times$ as long as wide in dorsal view. Clypeus $2.2 \times$ as wide as long; slightly convex in lateral view; densely punctate; with transverse convexity along lower margin; lower margin subtruncate in frontal view, blunt in lateral view. Face $0.3 \times$ as long as minimum width; weakly convex medially; matt; densely punctate medially, sparsely and shallowly punctate laterally. Frons largely strongly concave above antennal sockets; without horn; with pair of large, deep, margined concavities (Figs. 40D, 76D, I); largely smooth medially, matt laterally. POL $0.8 \times$ as OD. OOL $1.4 \times$ as OD. Gena and occiput densely punctate. Dorsal profile of gena nearly straight in dorsal view; width gradually narrowing posteriorly (Fig. 40D). Occipital carina complete. Malar space $1.2 \times$ as long as basal width of mandible. Mandible flat at base; lower tooth equal in length of upper tooth. Antenna with 40 flagellomeres; apical part flattened below and tapped to slender apex. FL I $3.4 \times$ as long as maximum depth in lateral view, $1.45 \times$ as long as FL II.

Mesosoma finely and densely punctate. Epomia short; dorsal end situated between collar and dorsal margin of

pronotum. Mesoscutum with short and sharp notaulus. Mesopleuron with smooth area around speculum (Fig. 40E); punctures partly united into groove-like foveola. Epicnemial carina present laterally and ventrally. Sternaulus deep in entire length of mesopleuron. Metapleuron reticulate rugose; with complete juxtacoxal carina. Propodeum largely reticulate rugose; anterior transverse carina absent; posterior transverse carina weak, indistinct medially; lateromedian longitudinal carina largely indistinct; lateral longitudinal carina complete but weak; pleural carina complete; area superomedia indistinct; apophysis weak and obtusely pointed; spiracle oval. Fore wing length 14.5 mm. Areolet as long as maximum width; width steeply narrowing anteriorly; received vein 2m-cu at near middle (Fig. 40F). Fore wing vein 1cu-a slightly postfurcal to vein M&RS (Fig. 40F). Nervellus subvertical; intercepted slightly posterior to middle. Hind femur densely punctate; $7.2 \times$ as long as maximum depth in lateral view. Tarsal claws simple.

Metasoma finely punctate. T I $2.45 \times$ as long as maximum width; smooth basally and laterally, canaliculate laterally; apical area densely punctate except for smooth area along posterior margin; latero-median carina largely absent except for basal part; dorso-lateral carina largely weak and partly indistinct. T II $0.87 \times$ as long as maximum width. Thyridium present; close to anterior margin of T II; weakly depressed; ca. $2.0 \times$ as wide as length. Ovipositor sheath $0.55 \times$ as long as hind tibia, $1.05 \times$ as long as T I. Ovipositor straight; apex sharp and with some minute teeth dorsally; apex of lower valve with teeth (Fig. 79J).

Colouration (Figs. 40A–F). Body (excluding wings) metallic blue. Setae goldish-brown. Subapical part of mandible tinged with reddish-brown. Labrum and palpi ivory except for small brown spot of second segment of maxillary palpus. Frontal and facial orbits with pair of longitudinal yellow markings. FL VII to FL XII with white markings. Ventral surface of flagellum and membranous parts of metasomal sternites partly tinged with reddish-brown. Tegula yellow. Apical part of femora tinged with reddish-brown. Apices of femora, bases of tibiae, TS II to TS IV of all legs, and basal part of hind TS V ivory. Tibiae and tarsi blackish-brown to yellowish-brown except for ivory areas. Posterior margins of T I and T II narrowly tinged with reddish-brown. Ovipositor reddish-brown. Wings dark brownish-hyaline. Veins and pterostigma blackish-brown except for yellowish-brown wing base.

Male. Unknown.

Distribution. Japan (Honshu).

Bionomics. Unknown.

Etymology. The specific name is from Dr. Kazuhiko



Fig. 40. *Megaplectes konishii* sp. nov., female (holotype: KPM-NK 103050) — A: lateral habitus; B: head, mesosoma, and metasoma, dorso-lateral view; C: head, frontal view; D: head, dorsal view; E: pronotum and mesopleuron, lateral view; F: fore wing.

Konishi, a Japanese ichneumonologist and one of my teachers of ichneumonology.

Remarks. This is a remarkable species with blue metallic body, and there are many dissimilarities, such as sculpture, compared with other species in the genus, so the generic position may need to be reanalysed in future study.

***Megaplectes monticola dentatus* Uchida, 1930**

[SJN: Futotsuno-togari-himebachi]

(Figs. 41A–G, 42A–D, 76E, J, 79K)

Megaplectes monticola var. *dentatus* Uchida, 1930: 304.

Megaplectes monticola dentatus: Townes & Gupta, 1962: 222.

Megaplectes monticola: Uchida, 1936b: 1.

Materials examined. JAPAN: [Hokkaido] KPM-NK 103056, M, Sapporo City, Teinekanayama, 19. VII. 2012, M. Ito leg.; KPM-NK 103057, F, ditto, 27. VIII. 2010; KPM-NK 103058, F, Engaru Town, Urashimanai path, 13. VII. 2012, M. Ito leg. [Honshu]: KPM-NK 91325, F, Shizuoka Pref., Shizuoka City, Umegashima, Abetoge, 3. VIII. 2015, T. Sasai leg.; KPM-NK 103055, M, Toyama Pref., Toyama City, Arimine, Inonedani, 14–21. VII. 2009, M. Watanabe leg. (MsT); KPM-NK 103059, M, Nagano Pref., Kamikochi, 24–25. VII. 1957, R. Ishikawa leg.; KPM-NK 81279, F, ditto, 4. VIII. 1957; KPM-NK 103060, F, Nagano Pref., Ueda City, Sugadaira-kogen, 22. VII. – 8. VIII. 2014, S. Shimizu leg. (MsT); KPM-NK 103061–103065, 1 F & 4 M, Tochigi Pref., Kuriyama

Vil., Kinunuma, 19. VII. – 1. VIII. 2004, H. Makihara leg. (MsT). **RUSSIA:** SEHU, 1F (lectotype), Sachalin, Ichinosawa, 12. VIII. 1928, H. Furukawa leg.

Description. Female (n = 7). Body punctate and polished; covered with setae; body length 13.5–20.0 mm.

Head 0.6–0.65 (HT: 0.6) × as long as wide in dorsal view. Clypeus 2.25–2.4 × as wide as long; slightly convex in lateral view; densely punctate; punctures partly united each other; lower margin subtruncate or sometimes slightly concave medially in frontal view, blunt in lateral view. Face 0.4 × as long as minimum width; weakly convex medially; densely punctate, ISP matt; punctures large and shallow, its margin not clearly defined. Frons largely weakly concave above antennal sockets; usually with single median horn



Fig. 41. *Megaplectes monticola dentatus* Uchida, 1930, females (A: KPM-NK 81279; B–G: KPM-NK 91325) — A: lateral habitus; B: head, frontal view; C: head, dorsal view; D: pronotum and mesopleuron, lateral view; E: wings; F: scutellum and propodeum, dorsal view; G: T I and T II, dorso-lateral view.

(Figs. 76E, J); largely irregularly rugose medially, punctate laterally; horn projected frontwards. POL $0.8\text{--}1.1 \times$ as OD. OOL $1.25\text{--}1.6 \times$ as OD. Gena and occiput densely punctate. Dorsal profile of gena nearly straight in dorsal view; width gradually narrowing posteriorly (Fig. 41C). Occipital carina complete. Malar space $1.1\text{--}1.25 \times$ as long as basal width of mandible. Mandible flat at base; lower tooth equal in length of upper tooth. Antenna with 37–42 flagellomeres; apical part flattened below and tapered to slender apex. FL I $2.9\text{--}3.15 \times$ as long as maximum depth in lateral view, $1.45\text{--}1.5 \times$ as long as FL II.

Mesosoma densely punctate (Fig. 41D). Epomia short; dorsal end situated between collar and dorsal margin of pronotum. Mesoscutum with short and weak notaulus. Mesopleuron with smooth area around speculum; punctures partly united into groove-like foveola. Epicnemial carina present laterally and ventrally. Sternaulus deep in anterior 0.66 of mesopleuron. Metapleuron reticulate rugose; without juxtacoxal carina. Propodeum largely reticulate rugose; anterior transverse carina absent (Fig. 41F); posterior transverse carina largely absent or partly present; lateromedian longitudinal carina largely indistinct or partly present; lateral longitudinal carina partly present or complete; pleural carina complete; area superomedia indistinct or obtusely defined; apophysis strong and sharply pointed; spiracle oval. Fore wing length

$12.5\text{--}16.0$ mm. Areolet as long as maximum width; width gradually narrowing anteriorly; received vein 2m-cu at near middle (Fig. 41E). Fore wing vein 1cu-a interstitial to or slightly postfurcal to vein M&RS (Fig. 41E). Nervellus subvertical; intercepted near posterior to middle (Fig. 41E). Hind femur densely punctate; $5.7\text{--}6.7 \times$ as long as maximum depth in lateral view. Tarsal claws simple.

Metasoma finely punctate. T I $1.8\text{--}2.1 \times$ as long as maximum width; smooth anteriorly, matt medially, densely punctate and foveolate posteriorly (Fig. 41G); latero-median carina largely present except for apical part indistinct; dorso-lateral carina present except for apex. T II $0.65 \times$ as long as maximum width. Thyridium present; close to anterior margin of T II; depressed; ca. $3.0 \times$ as wide as length. Ovipositor sheath $0.6\text{--}0.7 \times$ as long as hind tibia, $1.1\text{--}1.3 \times$ as long as T I. Ovipositor straight or slightly decurved; apex sharp and with some minute teeth dorsally; apex of lower valve with teeth (Fig. 79K).

Colouration (Figs. 41A–G). Body (excluding wings) black to blackish-brown. Setae brown to blackish-brown. Subapical part of mandible tinged with reddish-brown. FL VI to FL X (or XI or XII) with white markings. Ventral surface of flagellum, fore and mid legs, membranous parts of metasomal sternites partly tinged with reddish-brown. Metasomal tergites sometimes slightly tinged with dark blue reflection. Apex of ovipositor sheath dark brown.



Fig. 42. *Megaplectes monticola dentatus* Uchida, 1930, male (KPM-NK 103059) — A: lateral habitus; B: head, mesosoma, and metasoma, dorso-lateral view; C: head, frontal view; D: flagellum and tyloids.

Ovipositor reddish-brown. Wings dark brownish-hyaline. Veins and pterostigma blackish-brown.

Male ($n = 7$). Similar to female (Figs. 42A–D). Clypeus $2.4\text{--}2.6 \times$ as wide as long. Face $0.4\text{--}0.45 \times$ as long as minimum width. Malar space $0.8\text{--}0.9 \times$ as long as basal width of mandible. Antenna not flattened below and tapped; with tyloids on FL XIII to FL XXII (Fig. 42D). FL I $2.4\text{--}2.7 \times$ as long as maximum depth in lateral view, $1.15\text{--}1.35 \times$ as long as FL II. Propodeal carinae partly present. OOL $1.0\text{--}1.5 \times$ as OD. T I $1.95\text{--}2.85 \times$ as long as maximum width. T II $0.9\text{--}1.05 \times$ as long as maximum width. Face with a pair of yellow markings along orbit. FL IX (or X) to FL XIV (or XV) with white markings.

Distribution. Japan (Hokkaido, Honshu, and Shikoku), China, Korea, Russia, Canada, and USA.

Bionomics. Unknown.

Genus *Oresbius* Marshall, 1867

Oresbius Marshall, 1867: 193. Type species: *Oresbius castaneus* Marshall, 1867. Monotypic.

Opidnus Förster, 1869: 185. Type species: *Aptesis tsugae* Cushman, 1939. Designated by Townes & Townes (1951).

A single species, *O. leucopsis* (Gravenhorst, 1829), has been recorded from Japan. The generic position of *Aptesis opaca* (Cushman, 1937) is clearly accorded with this genus. Thus, I change the generic position of this species from *Aptesis* to this genus (**comb. nov.**). The specific name “*opaca*, -um, -us” is preoccupied by *O. opacus* Taschenberg, 1865. Thus, I propose a new replaced name for this species.

Oresbius cushmani nom. nov.

[SJN: Matsunokurohosi-habachi-togari-himebachi]
(Figs. 43A–G, 76F, 79L)

Pezoporus opaca Cushman, 1937: 33.

Aptesis? opaca: Townes *et al.*, 1965: 165.

Materials examined. JAPAN: [Honshu] NSMT, 4F, Shizuoka Pref., Nagaizumi, 25. III. 1937 (cocoon of *Diprion nipponicus* coll.), IV. 1937 (em.); NSMT, 1F, ditto, no collecting data; KPM-NK 81199, F, Nagano Pref., Ueda City, Takeishi-toge to Utsukushigahara-road, 25. IX. 2011, M. Takakuwa leg.; KPM-NK 81200, F, Gunma Pref., Tsumagoi Vil., Kanbara, Takamine-kogen, 3. IX. 2015, K. Watanabe leg.

Description. Female ($n = 7$). Body polished; covered with setae; body length $8.0\text{--}9.3$ mm.

Head $0.55 \times$ as long as wide in dorsal view. Clypeus $2.0\text{--}2.1 \times$ as wide as long; weakly convex in lateral view; sparsely punctate; ISP partly coriaceous; with transverse convexity; lower margin truncate in frontal view, sharp in lateral view (Fig. 76F). Face $0.4 \times$ as long as minimum width; weakly convex medially; matt; densely punctate except for lateral sides. Frons weakly concave above antennal sockets; matt and punctate except for concavities smooth. POL $1.6\text{--}1.7 \times$ as OD. OOL $1.0\text{--}1.3 \times$ as OD. Gena and occiput densely punctate. Dorsal profile of gena rounded in dorsal view; width gradually narrowing posteriorly (Fig. 43D). Occipital carina complete. Malar space $1.45\text{--}1.55 \times$ as long as basal width of mandible. Mandible weakly convex at base; lower tooth equal in length of upper tooth. Antenna with 30–34 flagellomeres; not flattened and tapped. FL I $2.9\text{--}3.5 \times$ as long as maximum depth in lateral view, $1.15 \times$ as long as FL II.

Mesosoma reticulate rugose (Fig. 43E). Epomia absent. Mesoscutum densely punctate. Notaulus short and weak. Scutellum sparsely punctate anteriorly, densely punctate posteriorly. Mesopleuron with smooth area around speculum (Fig. 43E). Epicnemial carina present laterally and ventrally. Sternaulus shallow in entire length of mesopleuron. Metapleuron with largely indistinct juxtacoxal carina. Propodeum with short dorsal face, ca. $0.4 \times$ as long as area postero; anterior transverse carina partly present, weakly defined by rugae; posterior transverse carina complete; lateromedian longitudinal carina largely indistinct (Fig. 43G); lateral longitudinal carina complete; pleural carina complete; area superomedia indistinct; apophysis weak and small; spiracle oval. Fore wing length $7.1\text{--}8.2$ mm. Areolet as long as maximum width; width steeply narrowing anteriorly; received vein 2m-cu slightly basal than middle (Fig. 43F). Fore wing vein 1cu-a slightly antefurcal to or interstitial to vein M&RS (Fig. 43F). Nervellus subvertical; intercepted posterior to middle. Hind femur reticulate coriaceous; $5.0\text{--}5.6 \times$ as long as maximum depth in lateral view. Tarsal claws simple.

Metasoma matt. T I $1.95\text{--}2.1 \times$ as long as maximum width; apico-median area flat or slightly concave; latero-median carina present except for apical part; dorso-lateral carina complete. T II $0.6\text{--}0.65 \times$ as long as maximum width; sparsely punctate posteriorly. Thyridium present; close to anterior margin of T II; not depressed; ca. $2.0 \times$ as wide as length. T III and T IV finely and densely punctate posteriorly. Ovipositor sheath $0.5 \times$ as long as hind tibia, $0.8\text{--}0.9 \times$ as long as T I. Ovipositor straight; apex sharp; apex of lower valve with teeth (Fig. 79L).

Colouration (Figs. 43A–G). Body (excluding wings) black to blackish-brown. Setae silver. Subapical part of

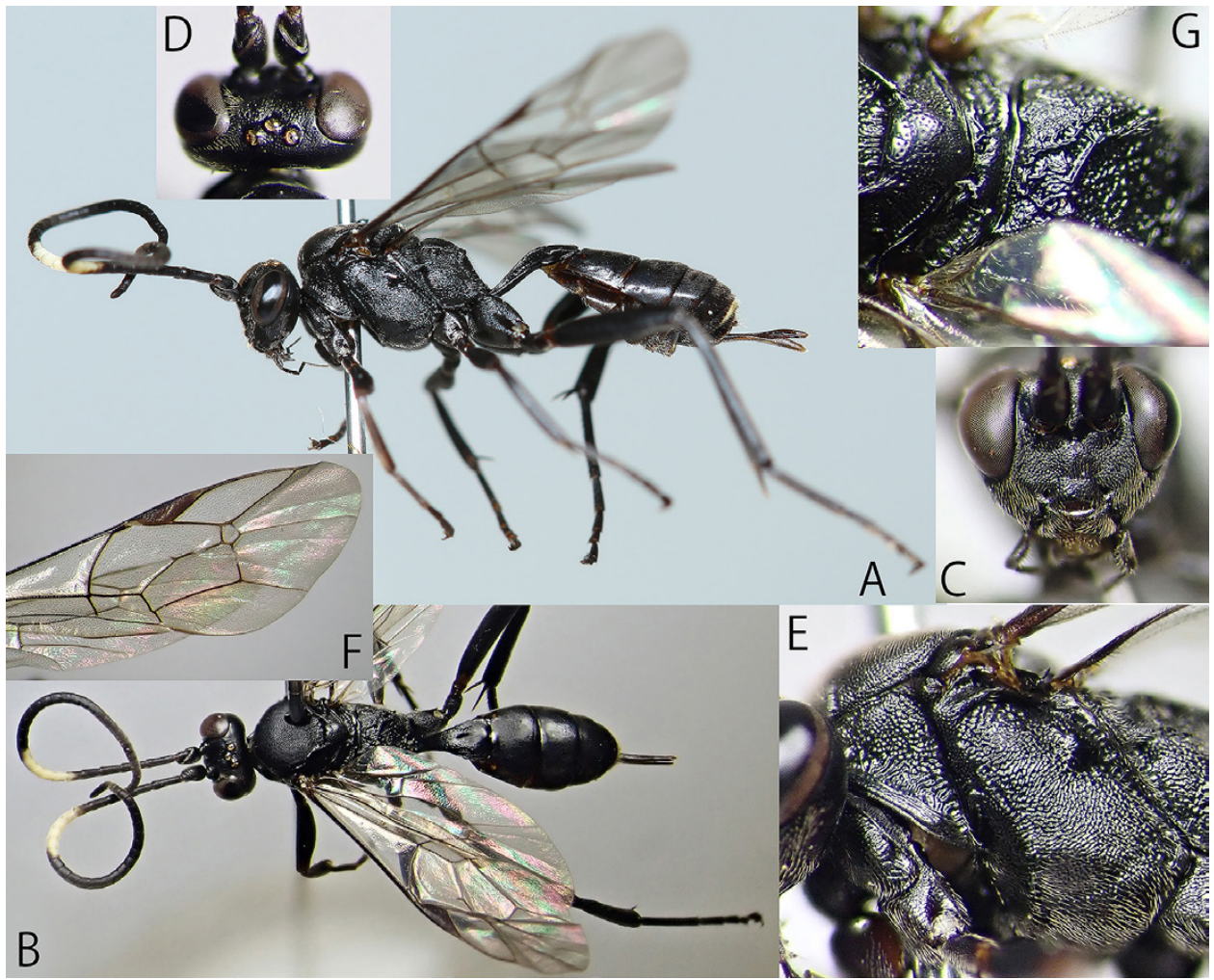


Fig. 43. *Oresbius cushmani* **nom. nov.**, female (KPM-NK 81200) — A: lateral habitus; B: dorsal habitus; C: head, frontal view; D: head, dorsal view; E: pronotum and mesopleuron, lateral view; F: wings; G: scutellum and propodeum, dorsal view.

mandible, lower margin of clypeus, and labrum weakly tinged with reddish-brown. Frontal orbits sometimes with pair of dark reddish-brown markings. FL V to FL X with white markings. Apical parts of trochanters and trochantelli and base of femora narrowly tinged with reddish-brown. Posterior margin of T II narrowly tinged with reddish-brown. T VII with ivory marking medially. Thyridium and ovipositor reddish-brown. Wings hyaline. Veins and pterostigma blackish-brown except for brown wing base.

Male. Unknown.

Distribution. Japan (Honshu).

Etymology. The specific name is from Dr. Robert Asa Cushman (1880–1957), who is a taxonomist of Ichneumonidae in USA and described this species firstly.

Bionomics. Host: *Diprion nipponicus* Rohwer, 1910 (Hymenoptera, Diprionidae) (Cushman, 1937).

Remarks. This species can be easily distinguished from other Japanese species, *O. leucopsis*, by the completely black legs (coxae and hind femur except for apex red in *O. leucopsis*).

Genus *Parmortha* Townes, 1962

Parmortha Townes, 1962 in Townes & Gupta, 1962: 14.

Type species: *Parmortha pleuralis atripes* Townes, 1962 (= *Scinacopus albomaculatus* Ashmead, 1906). Original designation.

Three species, *Pa. maruyamensis* (Uchida, 1930), *Pa. microsriatella* (Uchida, 1952), and *Pa. pleuralis albomaculata* (Ashmead, 1906), have been recorded from Japan. In this study, I newly describe two new species below. Key to Japanese species is see *Cubocephalus*.

Parmortha albitarsale sp. nov.

[New SJN: Koushu-onaga-togari-himebachi]

(Figs. 44A–H, 79M)

Type series. **Holotype:** JAPAN, KPM-NK 75812, F, Yamanashi Pref., Koushu City, Hikawa, 22. V. 2010, M. Gunji leg.

Description. Female ($n=1$). Body matt; covered with setae; body length 7.4 mm.

Head $0.57 \times$ as long as wide in dorsal view. Clypeus $1.9 \times$ as wide as long; slightly convex in lateral view; coriaceous and punctate dorsally, smooth ventrally; lower margin weakly rounded in frontal view, obtuse in lateral view. Face $0.45 \times$ as long as minimum width; weakly convex medially; punctures indistinct. Frons slightly concave above antennal sockets; matt except for smooth areas above antennal sockets. POL $1.2 \times$ as OD. OOL $1.7 \times$ as OD. Gena and occiput densely punctate. Dorsal profile of gena rounded in dorsal view; width gradually narrowing anteriorly and somewhat abruptly narrowing

posteriorly (Fig. 44D). Occipital carina complete. Malar space $1.4 \times$ as long as basal width of mandible. Mandible flat at base; lower tooth equal in length of upper tooth. Antenna with 24 flagellomeres; not flattened and tapped. FL I $4.4 \times$ as long as maximum depth in lateral view, $1.1 \times$ as long as FL II.

Mesosoma irregularly reticulate rugose (Fig. 44E). Epomia absent. Mesoscutum densely punctate except for median area reticulate rugose. Notaulus long and sharp; posterior end reaching centre of mesoscutum (Fig. 44D). Scutellum punctate; weakly convex in lateral view. Mesopleuron with conspicuous smooth area around speculum. Epicnemial carina present laterally and

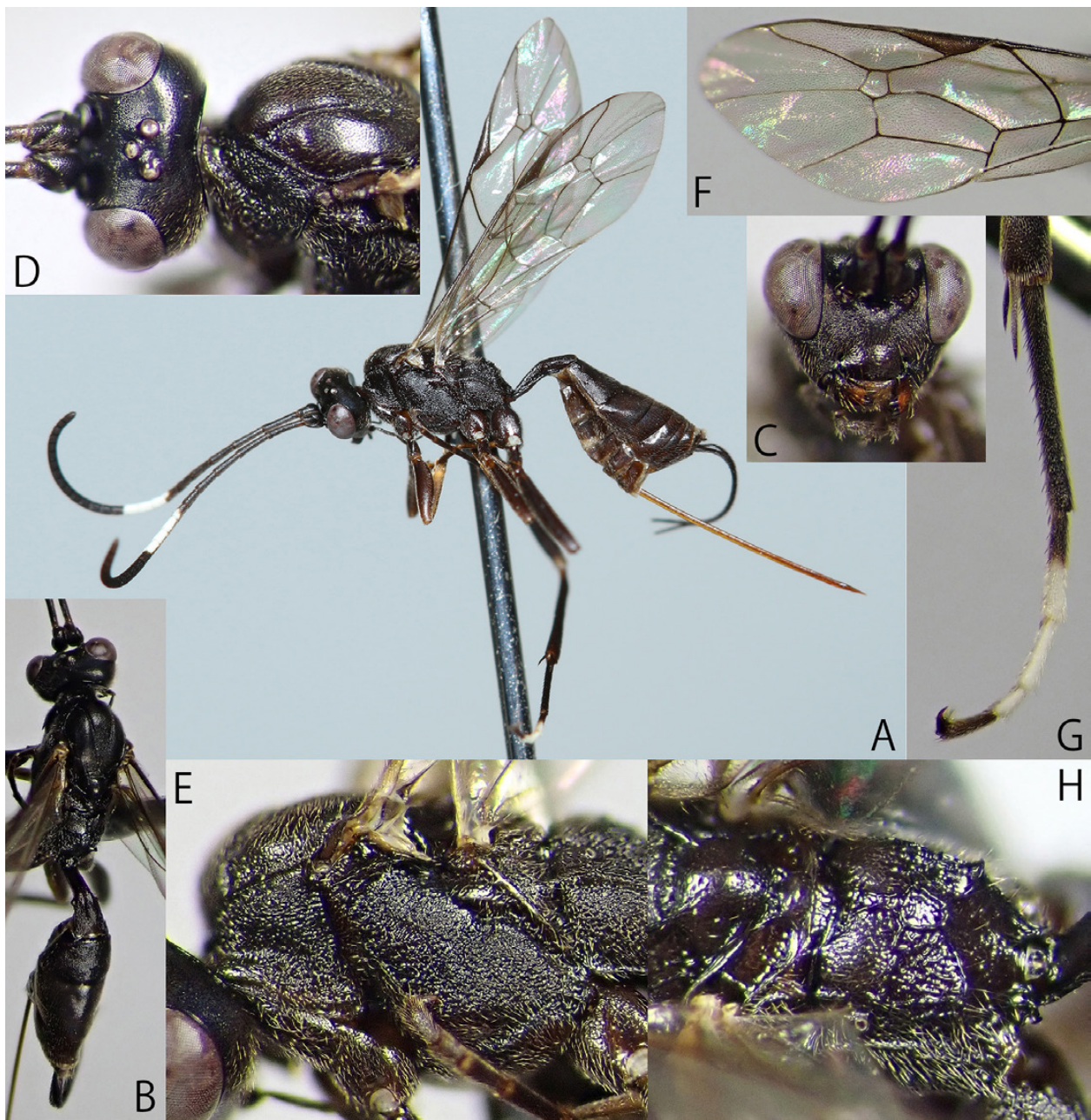


Fig. 44. *Parmortha albitarsale* sp. nov., female (holotype: KPM-NK 75812) — A: lateral habitus; B: head, mesosoma, and metasoma, dorso-lateral view; C: head, frontal view; D: head and mesoscutum, dorsal view; E: pronotum and mesopleuron, lateral view; F: fore wing; G: hind tarsus, lateral view; H: scutellum and propodeum, dorso-lateral view.

ventrally. Sternaulus deep in entire length of mesopleuron. Metapleuron without juxtacoxal carina. Propodeum with all carinae; area superomedia defined, as long as maximum width; apophysis weak and obtuse; spiracle round. Fore wing length 6.5 mm. Areolet as long as maximum width; longer than half length of vein 2m-cu; width gradually narrowing anteriorly; received vein 2m-cu at near middle; anterior width longer than half length of vein 2m-cu (Fig. 44F). Fore wing vein 1cu-a interstitial to vein M&RS. Nervellus subvertical; intercepted near posterior end of vein. Hind femur reticulate coriaceous; $5.6 \times$ as long as maximum depth in lateral view. Tarsal claws simple.

Metasoma. T I $2.35 \times$ as long as maximum width; latero-median carina absent; dorso-lateral carina absent. Spiracle of T I behind the mid-length of T I. T II $0.9 \times$ as long as maximum width. Thyridium present; close to anterior margin of T II; slightly depressed; ca. $3.0 \times$ as wide as length. Ovipositor sheath $1.3 \times$ as long as hind tibia, $2.55 \times$ as long as T I. Ovipositor slightly upcurved (Fig. 44A); apex sharp and without minute teeth dorsally; apex of lower valve with teeth (Fig. 79M).

Colouration (Figs. 44A–H). Body (excluding wings) black to blackish-brown. Setae silver. Subapical part of mandible tinged with reddish-brown. Face with pair of dark yellowish-brown spots between antennal sockets and eye. FL VI to FL IX with white markings. Fore and mid tibiae and tarsi partly tinged with brown. Apical half of hind TS II, hind TS III, and hind TS IV white. Median membranous part of T VII white. Ovipositor reddish-brown. Wings hyaline. Veins and pterostigma blackish-brown to brown except for yellowish wing base.

Male. Unknown.

Distribution. Japan (Honshu).

Bionomics. Unknown.

Etymology. The specific name is from Latin “*albi*” plus “*tarsale*”, referring to the white tarsal segment of hind tarsus.

Remarks. This species resembles *Pa. pleuralis albomaculata* and *Pa. nigra* **sp. nov.** but can be distinguished by the well-developed propodeal carinae (anterior transverse carina absent in *Pa. nigra*), the punctures on face indistinct (distinct in *Pa. nigra*), the ovipositor sheath $1.3 \times$ as long as hind tibia (longer than $1.5 \times$ in *Pa. pleuralis albomaculata* and *Pa. nigra*), the black tegula (ivory in *Pa. pleuralis albomaculata*), and the hind tarsus with white band (entirely black in *Pa. pleuralis albomaculata* and *Pa. nigra*).

***Parmortha gigantea* sp. nov.**

[New SJN: Ito-onaga-togari-himebachi]

(Figs. 45A–G, 77C, J, 79N)

Type series. **Holotype:** JAPAN, KPM-NK 75808, F, Hokkaido, Sapporo City, Teinekanayama, 18. VII. 2012, M. Ito leg. **Paratype:** JAPAN, KPM-NK 103049, F, Honshu, Toyama Pref., Nanto City, Togamura-kamimomose, 28. VII. – 4. VIII. 2009, M. Watanabe leg. (MsT).

Description. Female (n = 2). Body matt; lustre dull; covered with setae; body length 10.5–13.9 (HT: 13.9) mm.

Head $0.6 \times$ as long as wide in dorsal view. Clypeus $2.1 \times$ as wide as long; slightly convex in lateral view; punctate dorsally, sparsely punctate ventrally, ISP smooth; lower margin subtruncate in frontal view, obtuse in lateral view. Face $0.45 \times$ as long as minimum width; slightly convex medially (Fig. 45C); finely and densely punctate. Frons slightly concave above antennal sockets; finely and densely punctate except for smooth areas above antennal sockets. POL 1.0–1.15 (HT: 1.0) $\times$ as OD. OOL 1.3–1.5 (HT: 1.3) $\times$ as OD. Gena and occiput finely punctate. Dorsal profile of gena rounded in dorsal view; width not narrowing anteriorly and somewhat abruptly narrowing posteriorly (Fig. 45D). Occipital carina complete. Malar space 1.0–1.05 (HT: 1.0) $\times$ as long as basal width of mandible. Mandible flat at base; lower tooth equal in length of upper tooth. Antenna with 29 flagellomeres; not flattened and tapped. FL I 5.0–5.7 (HT: 5.0) $\times$ as long as maximum depth in lateral view, $1.0 \times$ as long as FL II.

Mesosoma. Pronotum striate ventrally, finely and densely punctate dorsally (Fig. 45E). Epomia short; section on border of collar and pronotum present. Mesoscutum densely and finely punctate, ISP largely smooth. Notaulus long and sharp; posterior end close to centre of mesoscutum. Scutellum punctate; weakly convex in lateral view. Mesopleuron with conspicuous smooth area around speculum; obliquely or longitudinally striate (Fig. 45E). Epicnemial carina present laterally and ventrally. Sternaulus deep in entire length of mesopleuron. Metapleuron with complete, weak juxtacoxal carina. Propodeum irregularly rugae and reticulate rugulose; anterior transverse carina present as trace-like by rugae; posterior transverse carina complete (Fig. 45G); lateromedian longitudinal carina as trace-like by rugae; lateral longitudinal carina present, weak anteriorly; pleural carina complete; area superomedia defined but partly indistinct; apophysis absent; spiracle oval. Fore wing length 8.5–10.8 (HT: 10.8) mm. Areolet slightly shorter than maximum width; longer than half length of vein 2m-cu; width gradually narrowing anteriorly; received vein 2m-cu basal than middle; anterior width longer than half length of vein 2m-cu (Fig. 45F). Fore wing vein 1cu-a interstitial to vein M&RS (Fig. 45F). Nervellus subvertical; intercepted posterior to middle (Fig. 45F). Hind femur reticulate coriaceous; 5.2 – 5.4 (HT: 5.2) $\times$ as long as

maximum depth in lateral view. Tarsal claws simple.

Metasoma. T I 1.9–2.0 (HT: 2.0) $\times$ as long as maximum width; latero-median carina absent; dorso-lateral carina partly and weakly present. Spiracle of T I situated near the mid-length of T I (Fig. 77J). T II 0.75–0.9 (HT: 0.9) $\times$ as long as maximum width. Thyridium present; close to anterior margin of T II; flat; ca. 2.0 $\times$ as wide as length. Ovipositor sheath 2.6–2.8 (HT: 2.8) $\times$ as long as hind tibia, 5.9–6.4 (HT: 6.4) $\times$ as long as T I. Ovipositor upcurved; apex sharp and with some minute teeth dorsally; apex of lower valve with teeth (Fig. 79N).

Colouration (Figs. 45A–G). Body (excluding wings) black to blackish-brown. Setae silver. FL VI to FL IX (or X) with white markings. Fore and mid tibiae and tarsi partly tinged with dark brown. Apical half of hind TS II, hind TS III, and hind TS IV ivory to white. Posterior margins of T V and T VI each narrowly tinged with ivory to white. Postero-median membranous part of T VII ivory to white. Ovipositor reddish-brown. Wings hyaline. Veins and pterostigma blackish-brown to brown.

Male. Unknown.

Distribution. Japan (Hokkaido and Honshu).

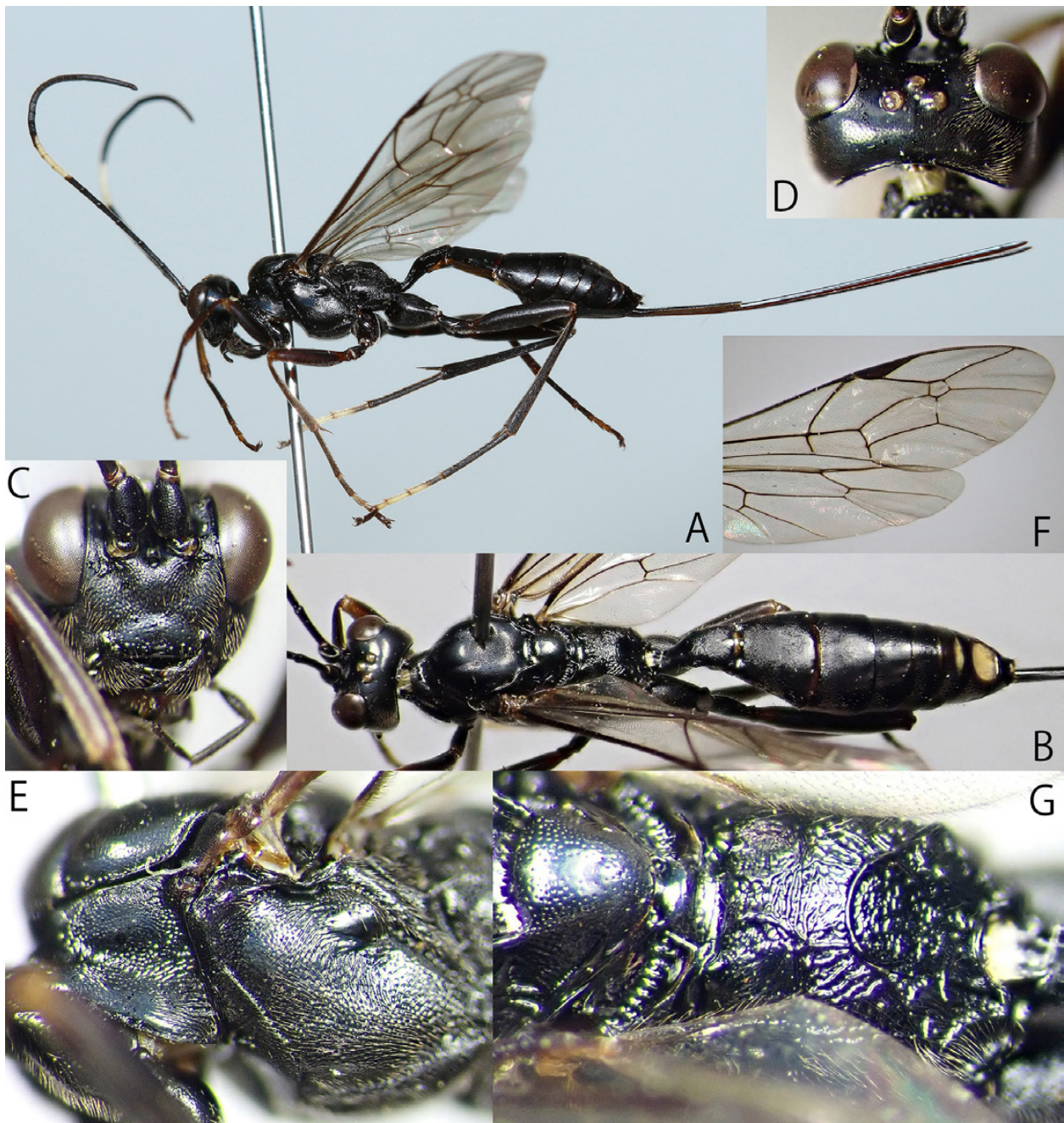


Fig. 45. *Parmortha gigantea* sp. nov., female (holotype: KPM-NK 75808) — A: lateral habitus; B: head, mesosoma, and metasoma, dorso-lateral view; C: head, frontal view; D: head, dorsal view; E: pronotum and mesopleuron, lateral view; F: wings; G: scutellum and propodeum, dorso-lateral view.

Bionomics. Unknown.

Etymology. The specific name is from the Latin “*giganteus*” (giant), referring to the largest body size in Japanese species.

Remarks. This species resembles *Pa. nigra* **sp. nov.** (see remarks of *Pa. nigra*). This species also resembles *Echthrus* species in the spiracle of T I but can be easily distinguished by the normal shaped fore tibia (Fig. 77C) (fore tibia significantly enlarged in *Echthrus*).

***Parmortha maruyamensis* (Uchida, 1930)**

[SJN: Maruyama-hime-togari-himebachi]

(Figs. 46A–I, 47A–D, 79O)

Microcryptus maruyamensis Uchida, 1930: 330.

Cratocryptus microstriatellus Uchida, 1952: 21. **Syn. nov.**

Materials examined. JAPAN: [Hokkaido] SEHU, 1F (holotype of *Mi. maruyamensis*), Sapporo, 6. VIII. 1928, T. Uchida leg.; KPM-NK 91326, F, 15. VI. 2023, K. Watanabe leg. [Honshu] KPM-NK 103091, F, Tochigi Pref., Nasushiobara City, Osonozawa, 13–21. IV. 2011, T. Matsumura leg. (MsT); KPM-NK 103081, Ibaraki Pref., Goka, Riverside of Tonegawa, 12. IV. 1999, M. Uchida leg.; KPM-NK 81285, F, Saitama Pref., Ogano Town, Iida, 28. V. 2006, K. Watanabe leg.; KPM-NK 103074, F, Kanagawa Pref., Ebina City, riverside of Sagami-gawa, 20. IX. 1992, H. Nagase leg.; KPM-NK 103077, F, Kanagawa Pref., Hadano City, Mt. Koubou-yama, 6. IV. 2008, H. Katahira leg.; KPM-NK 103078, M, ditto, 1. V. 2016, K. Watanabe & H. Utsugi leg.; KPM-NK 103079, F, Kanagawa Pref., Hadano City, Chimura, Mt. Zukko-yama, 16. IV. 2017, K. Watanabe leg.; KPM-NK 103087, F, Kanagawa Pref., Atsugi City, Nakaogino, 20. IV. 2008, H. Katahira leg.; KPM-NK 103088, 103089, 1 F & 1 M, ditto, 26. IV. 2008, M. Gunji leg.; KPM-NK 103086, F, ditto, 8. V. 2008, H. Katahira leg.; KPM-NK 103080, Kanagawa Pref., Yokosuka City, Mt. Miurafuji to Mt. Takeyama, 5. V. 2007, K. Watanabe leg.; KPM-NK 81284, F, ditto, 13. VII. 2008; KPM-NK 103072, F, Kanagawa Pref., Fujino Town, Tochtani-rindo, 8. VI. 2008, K. Watanabe leg.; KPM-NK 103092, M, Kanagawa Pref., Kaisei Town, Kanaishima, 22. III. 2016, K. Watanabe leg.; KPM-NK 103082, F, Niigata Pref., Myokou City, Suginosawa, Sugadaira, 19. IX. 2013, S. Shimizu leg.; TMNH, F, Aichi Pref., Toyohashi City, Imure Town, Takayama, 13. V. 2019, S. Morishita leg.; KPM-NK 103093, F, Toyama Pref., Nanto City, Togamura-kamimomose, 11–18. VIII. 2009, M. Watanabe leg. (MsT); KPM-NK 103094 & OMNH, 2 F, ditto, 4–11. VIII. 2009; KPM-NK 103095, 103096,

1 F & 1 M, ditto, 18–25. VIII. 2009; KPM-NK 103097, F, ditto, 1–8. IX. 2009; KPM-NK 103098, F, ditto, 8–15. IX. 2009; KPM-NK 103075, Fukui Pref., Imajo Town, Hachibuse-yama, 14. VIII. 1981, T. Murota leg.; KPM-NK 103076, Fukui Pref., Izumi Vil., Kadonomaesaka, 18. X. 1981, H. Kurokawa leg.; SEHU, 1F (holotype of *Cr. microstriatellus*), Hyogo Pref., Sasayama, 24. XI. 1950, K. Iwata leg.; KPM-NK 103090, F, Hyogo Pref., Sayo Town, Funakoshi, 17–24. IV. 2010 (MsT); KPM-NK 103083, F, Hyogo Pref., Sanda City, Fukushima, Arima-fuji park, 16. V. 2017, K. Watanabe leg. [Hachiojima Is.] KPM-NK 103085, F, Tokyo, Hachio Town, Mitsune, Fujikanjorindo, 18. V. 2012, K. Tsujii leg. [Shikoku] KPM-NK 103084, F, Ehime Pref., Saijo City, Teizui, Kamo-jinja, 4. V. 2012, S. Fujie leg.

Description. Female (n = 30). Body polished; covered with setae; body length 5.5–8.5 mm.

Head 0.55–0.6 (HT: 0.6) × as long as wide in dorsal view. Clypeus 1.9–2.0 × as wide as long; slightly convex in lateral view; punctate dorsally, smooth ventrally; lower margin weakly rounded in frontal view, sharp and narrowly reflecting in lateral view. Face 0.35–0.4 × as long as minimum width; weakly convex medially; matt and punctate. Frons slightly concave above antennal sockets; finely punctate except for smooth areas above antennal sockets. POL 1.5–1.8 × as OD. OOL 1.05–1.6 × as OD. Gena and occiput finely punctate. Dorsal profile of gena rounded in dorsal view; width gradually narrowing posteriorly (Fig. 46F). Occipital carina complete. Malar space 1.2–1.5 × as long as basal width of mandible. Mandible flat at base; lower tooth equal in length of upper tooth. Antenna with 22–24 flagellomeres; not flattened and tapped. FL I 3.8–4.1 × as long as maximum depth in lateral view, 1.05–1.15 × as long as FL II.

Mesosoma. Pronotum longitudinally striate except for finely and densely punctate area along dorsal margin and smooth area of collar (Fig. 46G). Epomia short and indistinct. Mesoscutum finely punctate except for median area densely punctate. Notaulus long and sharp; posterior end reaching centre of mesoscutum. Scutellum punctate (Fig. 46I); weakly convex in lateral view. Mesopleuron obliquely or longitudinally striate or foveolate; with conspicuous smooth area around speculum. Epicnemial carina present laterally and ventrally. Sternaulus deep in entire length of mesopleuron. Metapleuron with complete juxtacoxal carina. Propodeum largely irregularly rugulose; with all carinae; anterior transverse carina sometimes partly indistinct; area superomedia defined (Fig. 46I), ca. 1.5 × as long as maximum width; apophysis absent; spiracle round. Fore wing length 4.75–6.3 mm. Areolet as long as

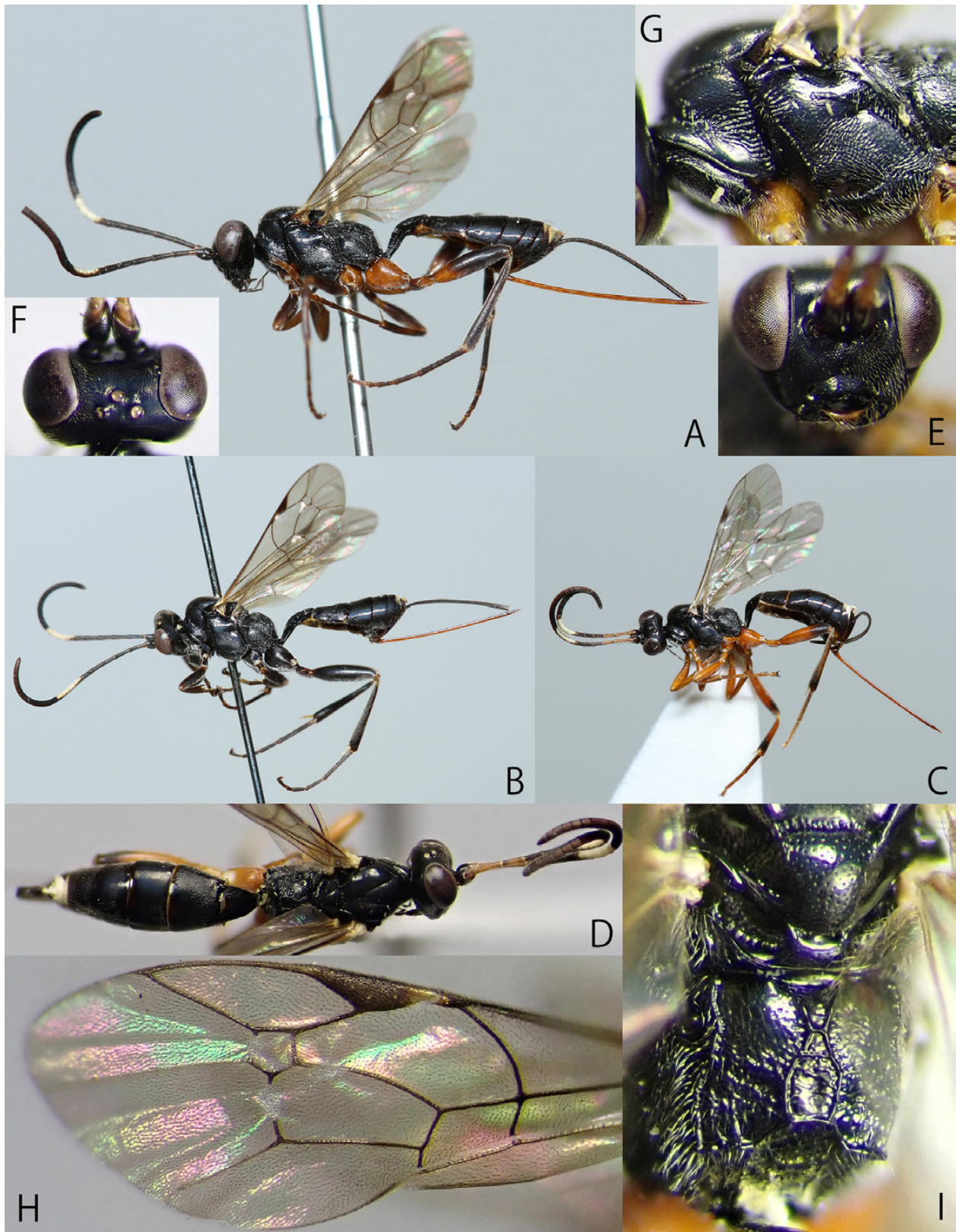


Fig. 46. *Parmortha maruyamensis* (Uchida, 1930), females (A: KPM-NK 81284; B: KPM-NK 103072; C–I: KPM-NK 91326) — A–C: lateral habitus; D: head, mesosoma, and metasoma, dorso-lateral view; E: head, frontal view; F: head, dorsal view; G: pronotum and mesopleuron, lateral view; H: fore wing; I: scutellum and propodeum, dorso-lateral view.

maximum width; longer than half length of vein 2m-cu; width slightly narrowing anteriorly; received vein 2m-cu at near middle; anterior width longer than half length of vein 2m-cu (Fig. 46H). Fore wing vein 1cu-a interstitial to vein M&RS. Nervellus subvertical; intercepted near posterior end of vein. Hind femur reticulate coriaceous; $5.25\text{--}5.8 \times$ as long as maximum depth in lateral view. Tarsal claws simple.

Metasoma. T I $2.0\text{--}2.25 \times$ as long as maximum width; largely coriaceous with longitudinal striae on postpetiole; latero-median carina weakly and partly present; dorso-lateral carina present, section above spiracle indistinct. Spiracle of T I behind the mid-length of T I. T II $0.8\text{--}0.9 \times$ as long as maximum width; matt. Thyridium present; close to anterior margin of T II; slightly depressed; ca. $2.0 \times$ as wide as length. T III to T VII weakly to slightly coriaceous. Ovipositor sheath $1.3\text{--}1.5 \times$ as long as hind tibia, $2.25\text{--}2.6 \times$ as long as T I. Ovipositor upcurved; apex sharp and without minute teeth dorsally; apex of lower valve with teeth (Fig. 79O).

Colouration (Figs. 46A–I). Body (excluding wings) black to blackish-brown. Setae silver. Subapical part of mandible tinged with reddish-brown. FL VI to FL IX (or X) with white markings. Basal part of antenna (baseward than white band; especially from scape to FL II) sometimes tinged with reddish-brown. Tibial spurs of all legs ivory. Fore and mid legs except for tibial spurs sometimes changed colouration; partly/entirely black, brown, reddish-

brown, or reddish-yellow. Hind leg except for tibial spurs also changed colouration like as fore and mid legs but apical parts of femur and tibia always blackish-brown to black, base of tibia always white, and tarsus always darkened. Median part of T VI to T VIII white to ivory. Ovipositor reddish-brown. Wings hyaline. Veins and pterostigma blackish-brown to brown except for yellowish wing base.

Male ($n = 4$). Similar to female except for colouration (Figs. 47A–D). Clypeus $2.0\text{--}2.2 \times$ as wide as long. Face $0.5 \times$ as long as minimum width. Malar space $1.0 \times$ as long as basal width of mandible. Antenna with 26–27 flagellomeres; tyloids on FL X to FL XIV (Fig. 47D). FL I $2.8\text{--}2.95 \times$ as long as maximum depth in lateral view, $1.05\text{--}1.2 \times$ as long as FL II. Fore wing length $5.1\text{--}5.8$ mm. T I $2.4\text{--}2.55 \times$ as long as maximum width. T II $0.9\text{--}1.0 \times$ as long as maximum width. Antenna without white band. Clypeus except for apico-median black area, mandible except for teeth, pair of markings along facial orbit, ventral spot of scape, basal segments of palpi and tegula ivory. Posterior margins of each metasomal tergite narrowly tinged with ivory. Legs black; trochanter and trochantellus partly tinged with yellowish-brown to ivory; fore femur more or less tinged with brown to yellowish-brown; bases of femora and tibiae yellowish-brown to ivory; each tarsal segment of all leg narrowly tinged with brown to yellowish-brown.

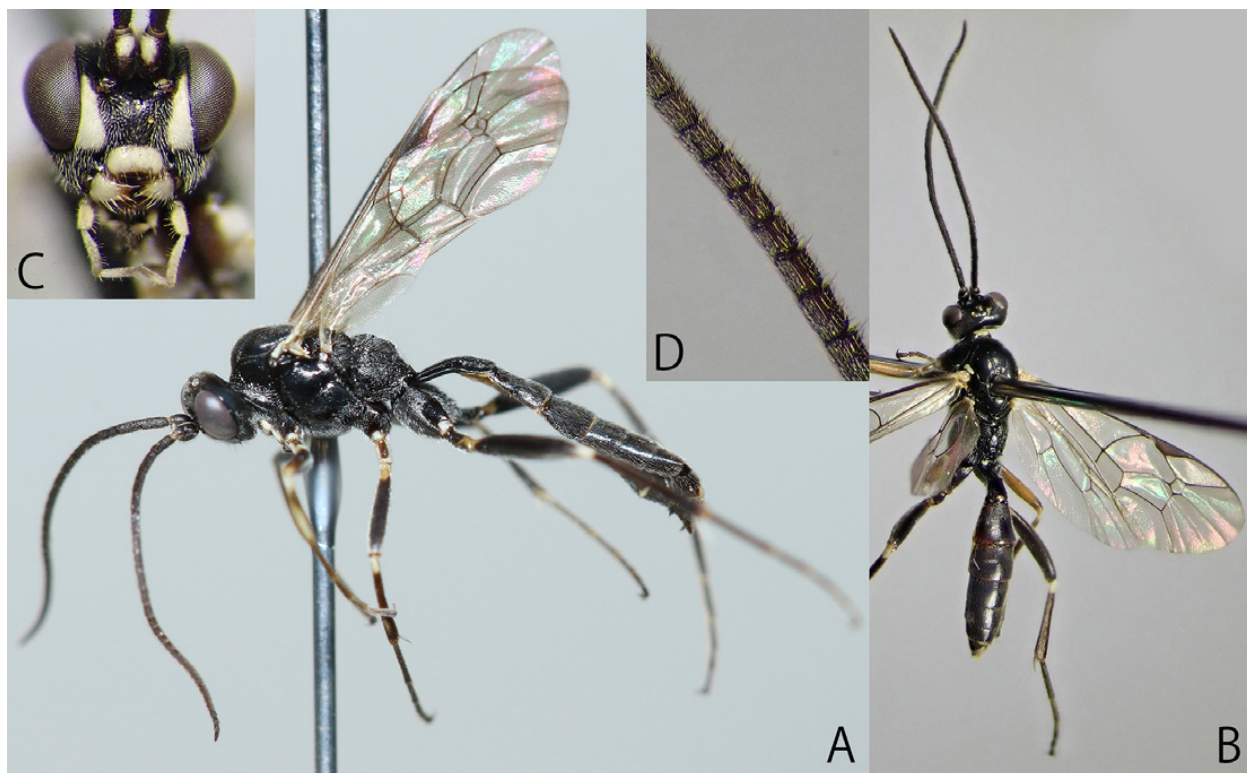


Fig. 47. *Parmortha mariyamensis* (Uchida, 1930), males (A: KPM-NK 103088; B–D: KPM-NK 103078) — A: lateral habitus; B: head, mesosoma, and metasoma, dorso-lateral view; C: head, frontal view; D: flagellum and tyloids.

Distribution. Japan (Hokkaido, Honshu, Hachijojima Is., and Shikoku).

Bionomics. Host unknown. Adult wasps usually collected grassland in open-habitat.

Remarks. This is the first description of the male of this species. The colouration of female legs in *Pa. microstriatella* shows relatively large intraspecific variation in this group, i.e., largely red to largely black. Both specimens with red legs and with black legs are inseparable based on other characters and the colour variation are gradually changed from red to black. Species exhibiting such colour variation are often known to be found in open-habitat (e.g., *Itopectis naranyae* (Ashmead, 1906) and *Thrybius togashii* Kusigemati, 1982) (Shin & Yasumatsu, 1970; Matsumoto & Saigusa, 2001), which may be related to the fact that this species is found in grassland. In addition, the character states of this species with red legs are completely same to that of *Pa. maruyamensis*. Thus, I conclude that *Cratocryptus microstriatellus* Uchida, 1952 under *Microcryptus maruyamensis* Uchida, 1930 (= *Pa. maruyamensis*) (**syn. nov.**).

***Parmortha nigra* sp. nov.**

[New SJN: Miyama-onaga-togari-himebachi]
(Figs. 48A–F, 77K, 79P)

Type series. Holotype: JAPAN, KPM-NK 75811, F, Honshu, Nagano Pref., Outaki Vil., Mt. Ontake-san, Hakkaizan, 8. VIII. 2010, K. Watanabe leg. **Paratype:** JAPAN: [Honshu] KPM-NK 103043, F, Gunma Pref., Katashina Vil., Mt. Hotaka-san, 1. VIII. 2007, M. Irie leg.; KPM-NK 103042, F, Yamanashi Pref., Hokuto City, Masutomi, Biwakubo-sawa, 28. VII. 2007, K. Watanabe leg.; KPM-NK 103040, F, Yamanashi Pref., Koushu City, Yanagisawa-toge, 5. VIII. 2008, M. Gunji leg.; KPM-NK 103041, F, ditto, K. Watanabe leg.; KPM-NK 103044, F, Aichi Pref., Shitara Town, Nishinagura, 26. VII. – 1. VIII. 2015, J. Imura leg. (FIT); KPM-NK 103047 & OMNH, 2F, Toyama Pref., Nanto City, Togamura-kamimomose, 21–28. VII. 2009, M. Watanabe leg. (MsT); KPM-NK 103048, F, ditto, 18–25. VIII. 2009; KPM-NK 103045, F, Toyama Pref., Toyama City, Arimine, Inonedani, 4–11. VIII. 2009, M. Watanabe leg. (MsT); KPM-NK 103046, F, ditto, 11–16. VIII. 2009.

Description. Female (n = 11). Body matt; lustre dull; covered with setae; body length 7.35–10.3 (HT: 10.3) mm.

Head 0.6–0.65 (HT: 0.61) × as long as wide in dorsal view. Clypeus 2.0–2.1 (HT: 2.0) × as wide as long; slightly convex in lateral view; punctate dorsally, sparsely punctate ventrally, ISP smooth; lower margin weakly rounded in

frontal view, obtuse in lateral view. Face 0.45 × as long as minimum width; slightly convex medially; finely and densely punctate. Frons slightly concave above antennal sockets; finely punctate; matt except for smooth areas above antennal sockets. POL 0.8–1.3 (HT: 0.8) × as OD. OOL 1.0–1.4 (HT: 1.1) × as OD. Gena and occiput finely punctate. Dorsal profile of gena rounded in dorsal view; width gradually narrowing anteriorly and somewhat abruptly narrowing posteriorly (Fig. 48D). Occipital carina complete. Malar space 1.0–1.1 (HT: 1.1) × as long as basal width of mandible. Mandible flat at base; lower tooth equal in length of upper tooth. Antenna with 24–27 (HT: 27) flagellomeres; not flattened and tapped. FL I 5.0–5.7 (HT: 5.0) × as long as maximum depth in lateral view, 1.0 × as long as FL II.

Mesosoma. Pronotum striate ventrally, finely punctate dorsally; collar with smooth area (Fig. 48E). Epomia absent. Mesoscutum densely and finely punctate, ISP largely smooth. Notaulus long and sharp (Fig. 48D); posterior end close to centre of mesoscutum. Scutellum punctate; weakly convex in lateral view. Mesopleuron with conspicuous smooth area around speculum; punctures partly united into groove-like foveola (Fig. 48E). Epicnemial carina present laterally and ventrally. Sternaulus deep in anterior 0.75 of mesopleuron. Metapleuron with complete juxtacoxal carina. Propodeum irregularly rugae and reticulate rugulose; anterior transverse carina absent; posterior transverse carina complete (Fig. 48F); lateromedian longitudinal carina absent or slightly present; lateral longitudinal carina present and weak; pleural carina complete; area superomedia not defined; apophysis absent; spiracle oval. Fore wing length 6.5–8.75 (HT: 8.75) mm. Areolet as long as maximum width; longer than half length of vein 2m-cu; width gradually narrowing anteriorly; received vein 2m-cu at near middle; anterior width longer than half length of vein 2m-cu (Fig. 48B). Fore wing vein 1cu-a slightly interstitial to vein M&RS (Fig. 48B). Nervellus subvertical; intercepted near posterior end of vein (Fig. 48B). Hind femur reticulate coriaceous; 4.9–5.4 (HT: 5.4) × as long as maximum depth in lateral view. Tarsal claws simple.

Metasoma. T I 2.0–2.1 (HT: 2.1) × as long as maximum width; latero-median carina absent; dorso-lateral carina partly and weakly present. Spiracle of T I behind the mid-length of T I (Fig. 77K). T II 0.75–0.9 (HT: 0.9) × as long as maximum width. Thyridium present; close to anterior margin of T II; slightly depressed; ca. 3.0 × as wide as length. Ovipositor sheath 2.35–2.4 (HT: 2.35) × as long as hind tibia, 4.9–5.2 (HT: 5.2) × as long as T I. Ovipositor upcurved; apex sharp and with some minute teeth dorsally;



Fig. 48. *Parmortha nigra* sp. nov., females (A: paratype: KPM-NK 103043; B–F: holotype: KPM-NK 75811) — A: lateral habitus; B: dorsal habitus; C: head, frontal view; D: head and mesoscutum, dorsal view; E: pronotum and mesopleuron, lateral view; F: scutellum and propodeum, dorso-lateral view.

apex of lower valve with teeth (Fig. 79P).

Colouration (Figs. 48A–F). Body (excluding wings) black to blackish-brown. Setae silver. Subapical part of mandible tinged with reddish-brown. FL VII to FL X with white markings. Fore and mid tibiae and tarsi partly tinged with dark brown. Median membranous part of T VII white. Ovipositor reddish-brown. Wings hyaline. Veins and pterostigma blackish-brown to brown except for yellowish wing base.

Male. Unknown.

Distribution. Japan (Honshu).

Bionomics. Unknown.

Etymology. The specific name is from Latin “*nigra*”, referring to the black body colouration.

Remarks. This species resembles *Pa. albitarsale* sp. nov. (see remarks of *Pa. albitarsale*) and *Pa. gigantea* sp. nov. but can be distinguished from the latter species by the spiracle of T I situated behind the mid-length of T I (near the mid-length of T I in *Pa. gigantea*) and the ovipositor sheath $2.35\text{--}2.4\times$ as long as hind tibia ($2.6\text{--}2.8\times$ in *Pa. gigantea*).

***Parmortha pleuralis albomaculata* (Ashmead, 1906)**

[SJN: Kuro-hime-togari-himebachi]

(Figs. 49A–G, 79Q)

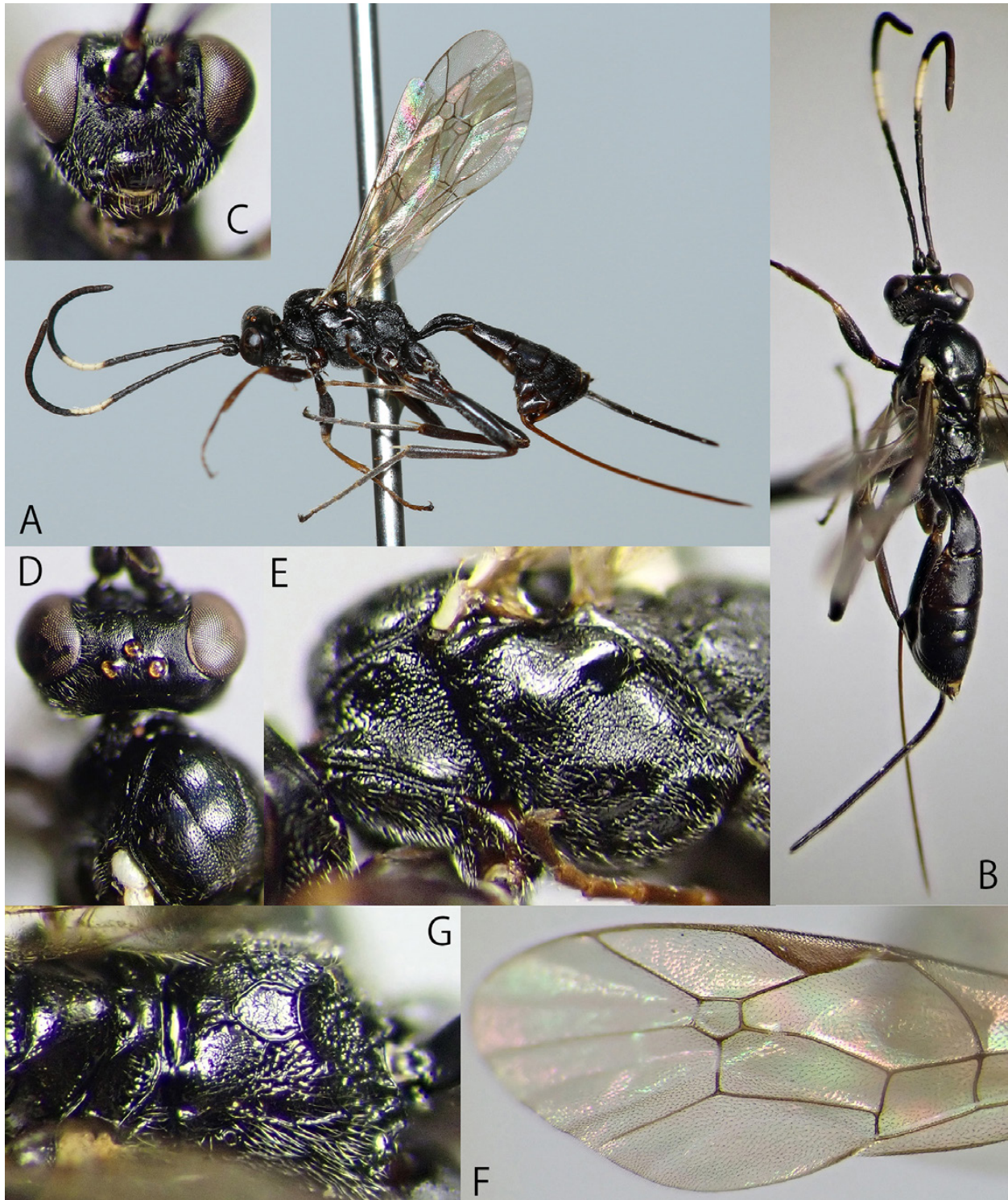
Scinascopus albomaculatus Ashmead, 1906: 173.*Parmortha pleuralis atripes* Townes, 1962 in Townes & Gupta, 1962: 22.*Parmortha pleuralis albomaculata*: Townes *et al.*, 1965: 155.**Materials examined. JAPAN:** [Honshu] OMNH, F, Nagano Pref., Outaki Vil., Mt. Ontake-san, Hakkaisan, 16. IX. 2011, S. Fujie leg.; TMNH, F, Aichi Pref., Toyone Vil., Tsuguhonsawa, 4. VI. – 24. VII. 2020, S. Morishita leg. (MsT); AEI, 1F (holotype of *P. pleuralis atripes*), Nagano

Fig. 49. *Parmortha pleuralis albomaculata* (Ashmead, 1906), female (KPM-NK 91389) — A: lateral habitus; B: head, mesosoma, and metasoma, dorso-lateral view; C: head, frontal view; D: head and mesoscutum, dorsal view; E: pronotum and mesopleuron, lateral view; F: fore wing; G: scutellum and propodeum, dorso-lateral view.

Pref., Kamikochi, 23. VII. 1954, Townes family leg.; KPM-NK 103071, F, Toyama Pref., Toyama City, Arimine, Jurodani, 4–11. VIII. 2009, M. Watanabe leg. (MsT). [Sado Is.] KPM-NK 91389, 103066, & 103067, 3F, Niigata Pref., Sado City, Kanaishinpo, Hakuundai to Mt. Myokenzan, 4. VIII. 2009, K. Watanabe leg.; KPM-NK 103068–103070, 3F, ditto, 10. IX. 2010.

Description. Female ($n = 10$). Body matt; covered with setae; body length 6.0–7.9 mm.

Head $0.6 \times$ as long as wide in dorsal view. Clypeus $1.9\text{--}2.0 \times$ as wide as long; slightly convex in lateral view; punctate dorsally, smooth ventrally; lower margin weakly rounded in frontal view, obtuse in lateral view. Face $0.4 \times$ as long as minimum width; slightly convex medially; punctures indistinct. Frons slightly concave above antennal sockets; matt except for smooth areas above antennal sockets. POL $1.5\text{--}1.6 \times$ as OD. OOL $1.4\text{--}1.6 \times$ as OD. Gena and occiput finely punctate. Dorsal profile of gena rounded in dorsal view; width gradually narrowing posteriorly (Fig. 49D). Occipital carina complete. Malar space $1.35\text{--}1.4 \times$ as long as basal width of mandible. Mandible flat at base; lower tooth equal in length of upper tooth. Antenna with 23–24 flagellomeres; not flattened and tapped. FL I $4.5\text{--}4.9 \times$ as long as maximum depth in lateral view, $1.05\text{--}1.15 \times$ as long as FL II.

Mesosoma irregularly reticulate rugose. Epomia short; section on border of collar and pronotum present. Mesoscutum densely punctate; ISP smooth except for median area reticulate coriaceous. Notaulus long and sharp (Fig. 49D); posterior end close to centre of mesoscutum. Scutellum punctate; weakly convex in lateral view. Mesopleuron partly longitudinally striate; with conspicuous smooth area around speculum (Fig. 49E). Epicnemial carina present laterally and ventrally. Sternaulus deep in anterior 0.7 of mesopleuron. Metapleuron with complete or partly indistinct juxtacoxal carina. Propodeum with all carinae; area superomedia defined (Fig. 49G), as long as maximum width; apophysis absent; spiracle round. Fore wing length 5.7–7.2 mm. Areolet as long as maximum width; longer than half length of vein 2m-cu; width slightly narrowing anteriorly; received vein 2m-cu at near middle; anterior width longer than half length of vein 2m-cu (Fig. 49F). Fore wing vein 1cu-a interstitial to vein M&RS (Fig. 49F). Nervellus subvertical; intercepted near posterior end of vein. Hind femur reticulate coriaceous; $4.8\text{--}5.2 \times$ as long as maximum depth in lateral view. Tarsal claws simple.

Metasoma. T I $1.8\text{--}1.95 \times$ as long as maximum width; latero-median carina absent; dorso-lateral carina present except for section near spiracle. Spiracle of T I behind the mid-length of T I. T II $0.8\text{--}0.85 \times$ as long as maximum

width. Thyridium present; close to anterior margin of T II; slightly depressed; ca. $2.0 \times$ as wide as length. Ovipositor sheath $1.5\text{--}1.8 \times$ as long as hind tibia, $2.7\text{--}3.3 \times$ as long as T I. Ovipositor upcurved; apex sharp and without minute teeth dorsally; apex of lower valve with teeth (Fig. 79Q).

Colouration (Figs. 49A–G). Body (excluding wings) black to blackish-brown. Setae silver. Subapical part of mandible usually tinged with reddish-brown. FL VI to FL IX with white markings. Fore and mid tibiae and tarsi partly tinged with brown. Tegula, wing base, and tibial spurs of all legs ivory. Posterior margin of metasomal tergites usually narrowly tinged with reddish-brown. Median membranous part of T VII white to ivory. Ovipositor reddish-brown. Wings hyaline. Veins and pterostigma blackish-brown to brown except for ivory wing base.

Male. Unknown.

Distribution. Japan (Hokkaido, Honshu, and Sado Is.).

Bionomics. Unknown.

Remarks. This is the first record of this species from Sado Island.

Genus *Plectocryptus* Thomson, 1873

Plectocryptus Thomson, 1873: 599. Type species: *Phygadeuon digitatus* Gravenhorst, 1829 (= *Phygadeuon digitatus* Gmelin, 1790). Designated by Viereck (1914).

In this study, I newly record this genus based on a new species, *Plec. japonicus* **sp. nov.** described below.

Plectocryptus japonicus **sp. nov.**

[New SJN: Taniwaki-togari-himebachi]

(Figs. 50A–I, 76L, 79R)

Type series. Holotype: JAPAN, KPM-NK 5004410, F, Honshu, Kanagawa Pref., Yamakita Town, Mt. Hinokiboramaru, 28. VI. 2013, T. Taniwaki leg. (FIT). **Paratype:** JAPAN: [Honshu] KPM-NK 5004400, 5004430, 2F, Kanagawa Pref., Kiyokawa Vil., Mt. Tanzawa-san, 20. VI. 2013, T. Taniwaki leg. (FIT); KPM-NK 5004392, 5004409, 5004427, 5004431, 4F, ditto, 29. VI. 2013; KPM-NK 5004389, F, ditto, 4. VII. 2013; KPM-NK 5004416, F, Kanagawa Pref., Kiyokawa Vil., Mt. Tanzawa-san, Tennojione, 15. VI. 2013, T. Taniwaki leg. (FIT); KPM-NK 5004386, 5004415, 2F, ditto, 29. VI. 2013; KPM-NK 5004399, F, Kanagawa Pref., Sagamihara City, Midori-Ku, Mt. Oomuro-yama, 16. VI. 2013, T. Taniwaki leg. (FIT); KPM-NK 5004388, 5004396, 5004412, 3F, same data of holotype; KPM-NK 5004384, 5004390,

5004422, 5004426, 4F, Kanagawa Pref., Yamakita Town, Mt. Hinokibora-maru, 23. V. 2013, T. Taniwaki leg. (FIT); KPM-NK 5004407, 5004421, 2F, ditto, 14. VI. 2013; KPM-NK 5004387, 5004405, 5004408, 5004424, 5004432, 5F, ditto, 23. VI. 2013; KPM-NK 5004401–5004404, 5004406, 5004414, 5004428, 5004429, 8F, ditto, 6. VII. 2013; KPM-NK 103011, F, same locality, 16. VI. 2015, K. Watanabe leg.; KPM-NK 103004–103008, OMNH, 6F, Niigata Pref., Nagaoka City, Suyoshi Town, Mt. Nokogiri-yama, 25. V. – 7. VI. 2014, S. Shimizu &

R. Shimizu leg. (MsT); KPM-NK 103009, F, Shizuoka Pref., Fujinomiya City, Mt. Fujisan, Nishiusuzuka, 15. X. 2006, H. Katahira leg.; KPM-NK 103010, F, Fukui Pref., Katsuyama City, Ohara, 5. VI. 1982, T. Murota leg.; KPM-NK 5004393–5004395, 5004419, 4F, Kanagawa Pref., Yamakita Town, Mt. Komotsurushi-yama, 16. VI. 2013, T. Taniwaki leg. (FIT); KPM-NK 5004383, 5004397, 5004411, 5004417, 5004420, 5004433, 6F, ditto, 21. VI. 2013; KPM-NK 5004391, 5004418, 5004425, 3F, ditto, 28. VI. 2013; KPM-NK 5004413, F, ditto, 4. VII. 2013.

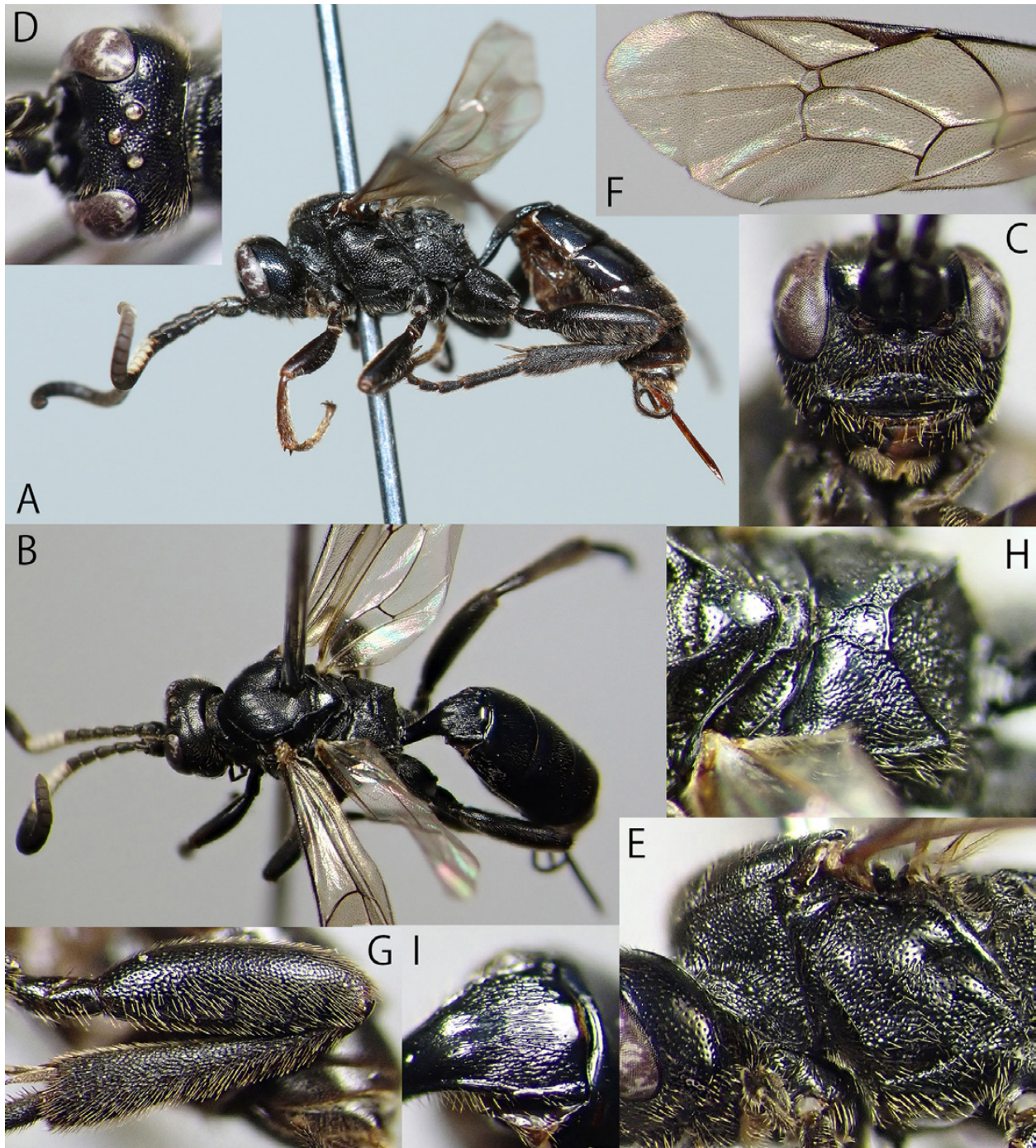


Fig. 50. *Plectocryptus japonicus* sp. nov., female (holotype: KPM-NK 5004410) — A: lateral habitus; B: head, mesosoma, and metasoma, dorso-lateral view; C: head, frontal view; D: head, dorsal view; E: pronotum and mesopleuron, lateral view; F: fore wing; G: hind femur and tibia, lateral view; H: scutellum and propodeum, dorso-lateral view; I: T I, dorso-lateral view.

Description. Female ($n = 57$). Body punctate and polished; covered with setae; body length 4.5–8.3 (HT: 8.3) mm.

Head 0.6–0.65 (HT: 0.6) $\times$ as long as wide in dorsal view. Clypeus 2.9–3.0 $\times$ as wide as long; weakly convex in lateral view; transversely rugose and sparsely punctate dorsally (Fig. 76G); with transverse convexity; lower margin weakly rounded in frontal view, sharp in lateral view. Face 0.25–0.3 (HT: 0.28) $\times$ as long as minimum width; weakly convex medially; densely punctate, ISP matt. Frons weakly concave above antennal sockets; densely punctate dorsally, smooth ventrally except for irregularly rugose medially. POL 1.8–2.2 (HT: 2.0) $\times$ as OD. OOL 1.5–1.8 (HT: 1.5) $\times$ as OD. Gena and occiput densely punctate. Dorsal profile of gena rounded in dorsal view; width not narrowing anteriorly and somewhat abruptly narrowing posteriorly (Fig. 50D). Occipital carina complete. Malar space 0.8–0.95 (HT: 0.95) $\times$ as long as basal width of mandible. Mandible flat at base; lower tooth longer than upper tooth and wider than upper tooth (Fig. 76G, L). Antenna with 22–23 (HT: 23) flagellomeres; not flattened and tapped. FL I 1.5 $\times$ as long as maximum depth in lateral view, 0.9 $\times$ as long as FL II.

Mesosoma densely punctate. Epomia absent. Mesoscutum with short and weak notaulus. Scutellum sparsely punctate (Fig. 50H) and flat. Mesopleuron obliquely rugose anteriorly, longitudinally rugose postero-ventrally; with smooth area around speculum (Fig. 50E). Epicnemial carina present laterally and ventrally. Sternaulus deep in anterior 0.4 of mesopleuron. Metapleuron reticulate rugose except for anterior part punctate; without juxtacoxal carina. Propodeum reticulate rugose except for median part of area externa, area superomedia, and area basalis largely smooth and lateral part of area externa largely punctate (Fig. 50H); anterior transverse carina partly definable by rugae; posterior transverse carina complete (Fig. 50H); lateromedian longitudinal carina weakly present (Fig. 50H); lateral longitudinal carina complete; pleural carina complete; area superomedia present, as long as maximum width; apophysis weak and small; spiracle oval. Fore wing length 4.3–6.7 (HT: 6.4) mm. Areolet longer than maximum width; width gradually narrowing anteriorly; received vein 2m-cu at slightly beyond to middle (Fig. 50F). Fore wing vein 1cu-a slightly postfurcal to vein M&RS (Fig. 50F). Nervellus slightly inclivous; intercepted posterior to middle. Hind femur densely punctate (Fig. 50G); 3.5–3.8 (HT: 3.6) $\times$ as long as maximum depth in lateral view. Tarsal claws simple.

Metasoma. T I 1.6–1.75 (HT: 1.65) $\times$ as long as maximum width; covered with fine longitudinal striae except for narrow, transverse smooth area along posterior

margin (Fig. 50I); latero-median carina indistinct; dorso-lateral carina complete (area above spiracle usually weak). T II 0.5–0.95 (HT: 0.9) $\times$ as long as maximum width; finely and sparsely punctate. Thyridium weakly present close to anterior margin of T II; slightly or not depressed; ca. 2.0 $\times$ as wide as length. T III to T VII finely and sparsely punctate. Ovipositor sheath 0.9–1.0 (HT: 0.9) $\times$ as long as hind tibia, 1.4–1.65 (HT: 1.4) $\times$ as long as T I. Ovipositor straight, shorter than half length of metasoma; apex sharp; apex of lower valve with teeth (Fig. 79R).

Colouration (Figs. 50A–I). Body (excluding wings) black to blackish-brown. Setae yellowish-brown to brown. Subapical part of mandible tinged with reddish-brown. FL V to FL IX (or X) with white markings. Fore and mid tibiae and tarsi tinged with brown. Posterior margin of metasomal tergites usually narrowly tinged with reddish-brown. T VII and T VIII each with ivory marking medially. Thyridium and ovipositor reddish-brown. Wings hyaline. Veins and pterostigma blackish-brown except for brown to yellowish-brown wing base.

Male. Unknown.

Distribution. Japan (Honshu).

Etymology. The specific name is from Japan.

Bionomics. Unknown.

Remarks. This species resembles *Plec. digitatus* (Gmelin, 1790) in the black and polished metasomal tergites, but can be distinguished by the completely black legs (largely red except for black coxae and trochanters in *Plec. digitatus*) and the ovipositor shorter than half length of metasoma (rather longer than half length of metasoma in *Plec. digitatus*).

Genus *Pleolophus* Townes, 1962

Pleolophus Townes, 1962 in Townes & Gupta, 1962: 223.

Type species: *Phygadeuon basizonus* Gravenhorst, 1829. Original designation

Four species, *Pleo. basizonus* (Gravenhorst, 1829), *Pleo. funereoides* (Uchida, 1952), *Pleo. sapporensis* (Uchida, 1930), and *Pleo. setiferae* (Uchida, 1936), have been recorded from Japan. In this study, I describe a new species below.

Key to Japanese species of *Pleolophus* (female only)

1. Hind femur largely reddish-brown to red. Posterior part of T I, T II, and T III largely red. Ovipositor sheath slightly shorter than hind tibia.

..... *Pleolophus basizonus* (Gravenhorst, 1829)

-. Hind femur black (Figs. 51A, 52A, 53A, 55A). Metasomal tergites without red area(s) or with narrow or weak red tinges (Figs. 51B, 52B, 53B, I, 55B).

..... 2

2. Metasomal tergites matt (Figs. 51G, 52H). Body sometimes larger than 9.0 mm. Tibiae and trochanters without white areas (Figs. 51A, 52A). Lateromedian longitudinal carina of propodeum at least partly present in front of posterior transverse carina (Figs. 51F, 52G).

..... 3

-. Metasomal tergites polished (Figs. 53H, I, 55G). Body length usually less than 8.0 mm. Tibiae and/or trochanters sometimes with white areas (Figs. 53A, B, 55A, B). Lateromedian longitudinal carina of propodeum present or absent.

..... 4

3. Apex of ovipositor sharply pointed (Fig. 79S). Ovipositor sheath shorter than hind tibia (Fig. 51A). Metasomal tergites black (Fig. 51B).

..... *Pleolophus funereoides* (Uchida, 1952)

-. Apex of ovipositor obtusely pointed (Fig. 79T). Ovipositor sheath as long as or longer than hind tibia (Fig. 52A). Metasomal tergites partly tinged with red (Fig. 52B).

..... *Pleolophus obtusus* **sp. nov.**

4. Base of hind tibia without white area; black or at most tinged with yellowish-brown (Figs. 53A, B). Hind trochanter and trochantellus usually ivory (especially dorso-lateral view) (Figs. 53A, B). Lateromedian longitudinal carina of propodeum at least distinct anteriorly (Fig. 53G). Antero-lateral part of area basalis of propodeum with conspicuous smooth area (Fig. 53G). FL I $\geq$ FL II. Ovipositor sheath 0.75–0.8 $\times$ as long as hind tibia.

..... *Pleolophus sapporensis* (Uchida, 1930)

-. Base of hind tibia with conspicuous white band (Figs. 55A, B). Hind trochanter and trochantellus brown to black (Figs. 55A, B). Lateromedian longitudinal carina of propodeum indistinct (Fig. 55F). Antero-lateral part of area basalis of propodeum without conspicuous smooth area (Fig. 55F). FL I < FL II. Ovipositor sheath 0.65–0.7 $\times$ as long as hind tibia.

..... *Pleolophus setiferae* (Uchida, 1936)

***Pleolophus basizonus* (Gravenhorst, 1829)**

[SJN: Habachi-futo-togari-himebachi]

Phygadeuon basizonus Gravenhorst, 1829: 748.

Ichneumon larvincola Scharfenberg, 1805 in Bechstein & Scharfenberg, 1805: 962.

Cryptus varicolor Gravenhorst, 1829: 603.

Phygadeuon pteronum Hartig, 1838: 273.

Microcryptus basizonus obscurus Ulbricht, 1913: 5.

Spilocryptus cimbicis nigrinus Fahringer, 1941 in Schimitschek, 1941: 268.

Material examined. No Japanese material is available.

Distribution. Japan? (Honshu); widely distributed in Palearctic region.

Bionomics. The host is *Neodiprion sertiferae* in Japan (Ikuno, 1936).

Remarks. Ikuno (1936) recorded this species from Japan based on the specimens collected from *Neodiprion sertiferae* in “Hino-Goryorin” (Hino, Tokyo). The identification of this study was taken by Dr. T. Uchida while I could not find the voucher specimen of this species anywhere. Uchida (1936c) described *Pleo. setiferae* based on the specimens collected from *N. sertiferae* in Tokyo. According to Ikuno (1936), Uchida identified the materials from his as *Microcryptus basizonus* var. Uchida did not record this species after Ikuno (1936). I consider *Microcryptus basizonus* var. and *Pleo. setiferae* to be same species, but as I cannot be certain without confirming the voucher specimen, I reserve judgement on the records of this species from Japan.

***Pleolophus funereoides* (Uchida, 1952)**

[SJN: Kuro-futo-togari-himebachi]

(Figs. 51A–G, 79S)

Microcryptus funereoides Uchida, 1952: 20.

Materials examined. JAPAN: [Hokkaido] KPM-NK 102832, F, Horokanai Town, Uryu, 11. VII. 2012, M. Ito leg. [Honshu] KPM-NK 81298, F, Kanagawa Pref., Yokosuka City, Mt. Miurafuji, 16. V. 1997, K. Kubo leg.; KPM-NK 91378, F, Osaka Pref., Takatsuki City, Niryou, 9–26. V. 2013, S. Fujie leg.; OMNH, F, Nara Pref., Nara City, Obuchi Town, Obuchiike Park, 13. V. 2012, S. Fujie leg.; SEHU, 1F (holotype), Hyogo Pref., Mitake, 13. V. 1950, K. Iwata leg.

Description. Female (n = 5). Body punctate and polished; covered with setae; body length 7.7–10.4 mm.

Head 0.6 $\times$ as long as wide in dorsal view. Clypeus 2.0 $\times$ as wide as long; slightly convex in lateral view; lower margin slightly rounded; blunt in lateral view. Face 0.4 $\times$ as long as minimum width; weakly convex medially, densely punctate medially; ISP largely coriaceous. Frons densely punctate; with pair of large smooth areas above antennal sockets. POL 1.9–2.0 $\times$ as OD. OOL 1.7–1.9 $\times$ as OD. Dorsal profile of gena slightly rounded in dorsal view; width gradually narrowing posteriorly (Fig. 51D). Occipital



Fig. 51. *Pleolophus funereoides* (Uchida, 1952), females (A: KPM-NK 102832; B–G: KPM-NK 81298) — A: lateral habitus; B: dorsal habitus; C: head, frontal view; D: head, dorsal view; E: pronotum and mesopleuron, lateral view; F: scutellum and propodeum, dorsal view; G: T I and T II, dorsal view.

carina complete. Malar space $1.55\text{--}1.6 \times$ as long as basal width of mandible. Mandible flat at base; lower tooth equal in length of upper tooth. Antenna with 26–28 flagellomeres; not flattened and tapped. FL I $2.2 \times$ as long as maximum depth in lateral view, $1.0\text{--}1.05 \times$ as long as FL II.

Mesosoma densely punctate. Pronotum rugulose ventrally (Fig. 51E). Epomia absent. Mesoscutum without notaulus (only visible as trace-like depression

anteriorly). Scutellum sparsely punctate; slightly convex in lateral view. Mesopleuron with or without conspicuous smooth area around speculum; punctures partly united into groove-like foveola (Fig. 51E). Epicnemial carina present laterally and ventrally. Sternaulus deep in anterior 0.6 of mesopleuron. Metapleuron reticulate rugose; with complete juxtacoxal carina. Propodeum rugose or rugulose; with all carinae except for anterior transverse

carina absent; lateromedian longitudinal carina weak and partly obscured; area superomedia partly defined; posterior transverse carina reverse-V shaped in dorsal view (Fig. 51F); apophysis absent; spiracle oval. Fore wing length 6.1–8.0 mm. Areolet as long as maximum width; width gradually narrowing anteriorly; received vein 2m-cu at near middle (Fig. 51B). Fore wing vein 1cu-a interstitial to vein M&RS (Fig. 51B). Nervellus subvertical; intercepted near posterior end of vein (Fig. 51B). Hind femur reticulate coriaceous; $4.0\text{--}4.35 \times$ as long as maximum depth in lateral view. Tarsal claws simple.

Metasoma largely matt (Fig. 51G). T I $1.2\text{--}1.45 \times$ as long as maximum width; latero-median carina present except for apical part; dorso-lateral carina complete; finely rugulose posteriorly except for smooth area along posterior margin. T II $0.55\text{--}0.65 \times$ as long as maximum width. Thyridium present; close to anterior margin of T II; flat to slightly depressed; ca. $2.0 \times$ as wide as length. Ovipositor sheath $0.78\text{--}0.9 \times$ as long as hind tibia, $1.4\text{--}1.65 \times$ as long as T I. Ovipositor straight; apex sharp; apex of lower valve with teeth (Fig. 79S).

Colouration (Figs. 51A–G). Body (excluding wings) black to blackish-brown. Setae brown to blackish-brown. FL V (or VI) to FL IX (or XI) and middle part of T VII with white marking. Wing yellowish-hyaline. Veins and pterostigma blackish brown to brown. Tibiae and fore and mid tarsi sometimes tinged with brown. Ovipositor brown.

Male. Unknown.

Distribution. Japan (Hokkaido and Honshu).

Bionomics. Unknown.

Remarks. This is the first record of this species from Hokkaido.

***Pleolophus obtusus* sp. nov.**

[New SJN: Sakimaru-futo-togari-himebachi]
(Figs. 52A–H, 79T)

Type series. **Holotype:** JAPAN, KPM-NK 91376, F, Honshu, Gunma Pref., Tsumagoi Vil., Kanbara, Takaminekogen, 3. IX. 2015, K. Watanabe leg. **Paratype:** JAPAN, KPM-NK 84972, F, Honshu, Nagano Pref., Outaki Vil., Mt. Ontake-san, Tanohara, 8. VIII. 2007, K. Watanabe leg.

Description. Female (n = 2). Body punctate and polished; covered with setae; body length 5.9–7.0 (HT: 7.0) mm.

Head $0.6 \times$ as long as wide in dorsal view. Clypeus $2.3 \times$ as wide as long; slightly convex in lateral view; lower margin subtruncate; blunt in lateral view. Face $0.4\text{--}0.45$ (HT: 0.4) $\times$ as long as minimum width; weakly convex medially; sparsely punctate laterally; ISP largely coriaceous. Frons coriaceous; shallowly concave above

each antennal socket. POL $1.8\text{--}2.0$ (HT: 1.8) $\times$ as OD. OOL $1.5 \times$ as OD. Dorsal profile of gena slightly rounded in dorsal view; width gradually narrowing posteriorly (Fig. 52D). Occipital carina complete. Malar space $1.35\text{--}1.4$ (HT: 1.35) $\times$ as long as basal width of mandible. Mandible flat at base; lower tooth equal in length of upper tooth. Antenna with 21–23 (HT: 23) flagellomeres; not flattened and tapped. FL I $2.1\text{--}2.25$ (HT: 2.25) $\times$ as long as maximum depth in lateral view, $0.95 \times$ as long as FL II.

Mesosoma densely and finely punctate (Fig. 52E). Pronotum rugulose ventrally (Fig. 52E). Epomia present; short, obscured and indistinguishable from rugae. Mesoscutum without notaulus (only visible as trace-like depression anteriorly). Scutellum flat in lateral view. Mesopleuron without conspicuous smooth area around speculum (Fig. 52E). Epicnemial carina present laterally and ventrally. Sternaulus deep in anterior 0.6 of mesopleuron. Metapleuron with complete juxtacoxal carina. Propodeum rugose or rugulose except for weakly coriaceous anterior part; with all carinae except for anterior transverse carina absent; lateromedian longitudinal carina weak and partly obscured; area superomedia partly undefined; posterior transverse carina reverse-U shaped in dorsal view (Fig. 52G); apophysis absent; spiracle round. Fore wing length 5.1–5.8 (HT: 5.8) mm. Areolet as long as maximum width; width gradually narrowing anteriorly; received vein 2m-cu at near middle (Fig. 52F). Fore wing vein 1cu-a slightly postfurcal to vein M&RS (Fig. 52F). Nervellus inclivous; intercepted near posterior end of vein. Hind femur reticulate coriaceous; $4.0\text{--}4.2$ (HT: 4.0) $\times$ as long as maximum depth in lateral view. Tarsal claws simple.

Metasoma largely matt (Fig. 52H). T I $1.5 \times$ as long as maximum width; latero-median carina present except for apical part; dorso-lateral carina complete. T II $0.7\text{--}0.95$ (HT: 0.7) $\times$ as long as maximum width. Thyridium present; close to anterior margin of T II; flat; ca. $2.0 \times$ as wide as length. Ovipositor sheath $1.05 \times$ as long as hind tibia, $1.6\text{--}1.85$ (HT: 1.6) $\times$ as long as T I. Ovipositor straight; apex obtuse; apex of lower valve with teeth (Fig. 79T).

Colouration (Figs. 52A–H). Body (excluding wings) black to blackish-brown. Setae silver to brown. Frons with a pair of yellow spots. FL V (HT) or VI to FL IX with white markings. Middle parts of T VI and T VII white. Wing slightly yellowish-brown hyaline. Veins and pterostigma blackish brown to brown except for yellow wing base. Ventral surface of flagellum, tibiae and fore and mid tarsi more or less tinged with dark brown. Tibial spurs ivory. T II tinged with dark reddish brown except for median part. Ovipositor brown.

Male. Unknown.

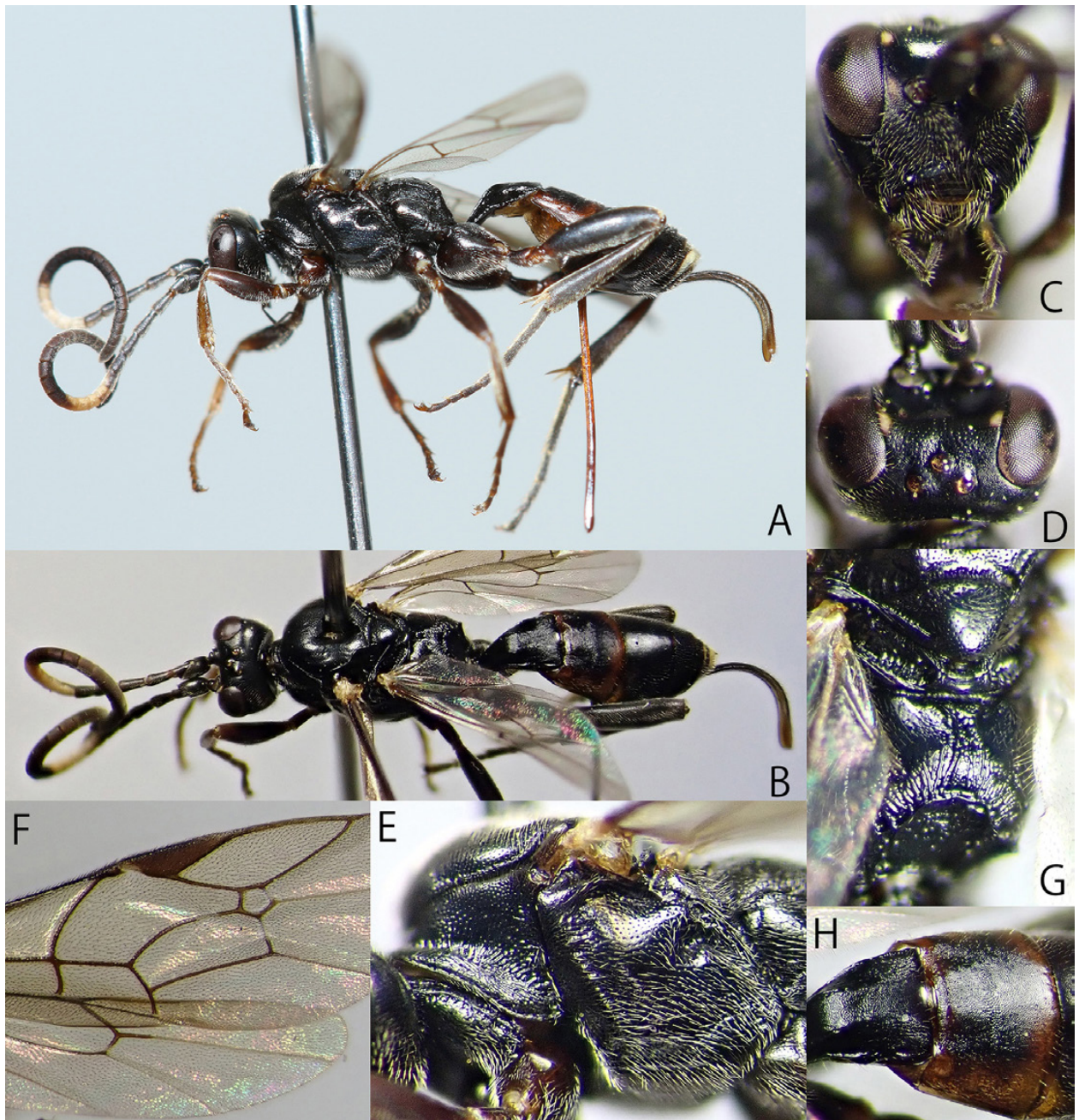


Fig. 52. *Pleolophus obtusus* sp. nov., female (holotype: KPM-NK 91376) — A: lateral habitus; B: head, mesosoma, and metasoma, dorso-lateral view; C: head, frontal view; D: head, dorsal view; E: pronotum and mesopleuron, lateral view; F: fore wing; G: scutellum and propodeum, dorso-lateral view; H: T I and T II, dorso-lateral view.

Distribution. Japan (Honshu).

Bionomics. Unknown.

Etymology. The specific name is from the Latin “*obtusus*” (obtuse), referred to the obtusely pointed apex of ovipositor.

Remarks. This species is rather unusual species from other species by the obtuse apex of ovipositor. This character state is frequently found in *Schenkia* while the antennal shape of this species is largely differed from them. The generic position of this species should be reanalysed in future study. The shape of ovipositor apex rather resembles *Pleo. astrictus* Townes, 1962 but can be distinguished by the slightly convex clypeus (strongly

convex in *Pleo. astrictus*), the fore wing length 5.1–5.8 mm (4.3 mm in *Pleo. astrictus*), and the largely black legs (“fulvoferruginous” in *Pleo. astrictus*).

***Pleolophus sapporensis* (Uchida, 1930)**

[New SJN: Kogata-futo-togari-himebachi]

(Figs. 53A–I, 54A–D, 79U)

Microcryptus sapporensis Uchida, 1930: 329.

Microcryptus pristiphora Uchida, 1955: 2.

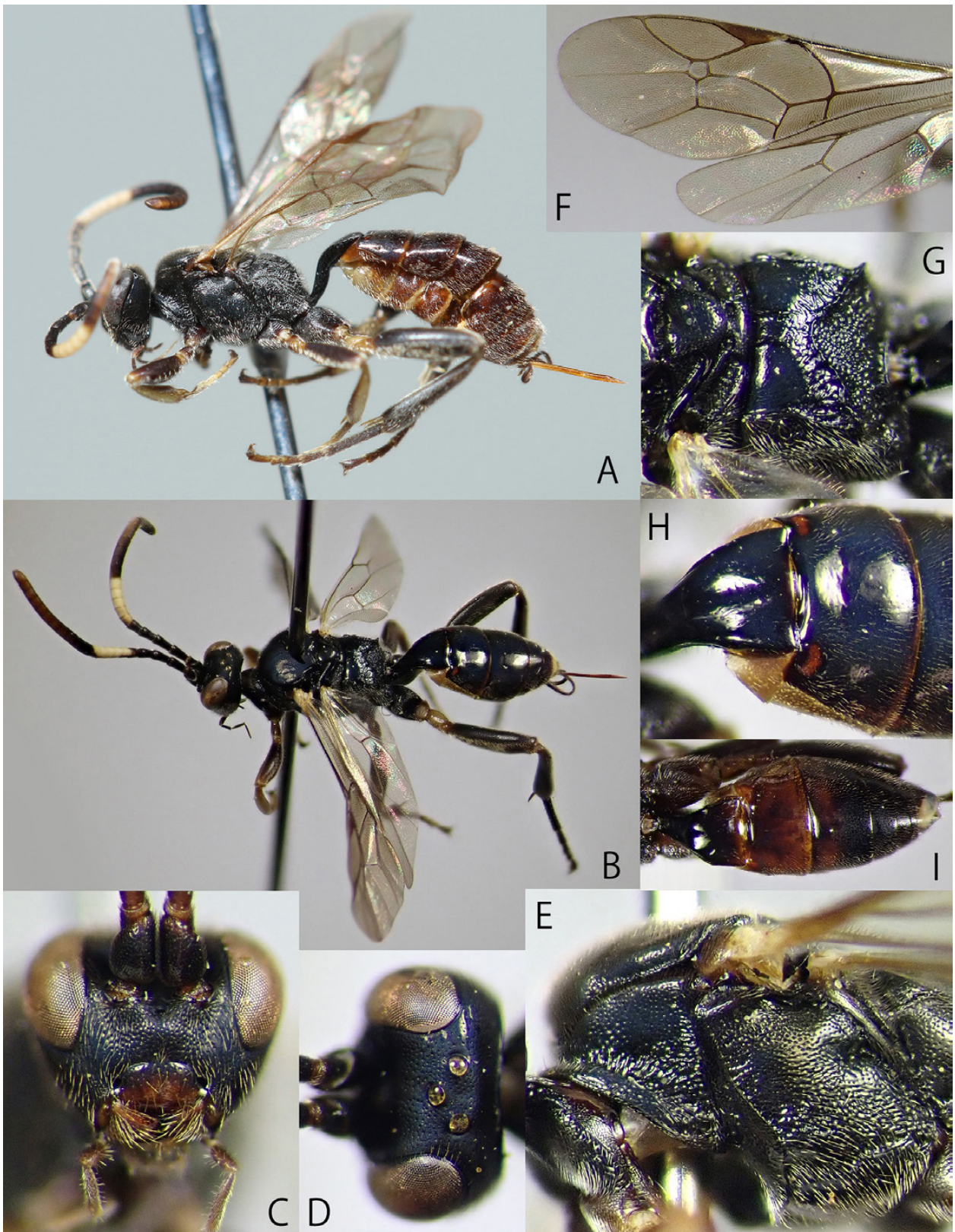


Fig. 53. *Pleolophus sapporensis* (Uchida, 1930), females (A: KPM-NK 102869; B–H KPM-NK 5006657; I: OMNH) — A: lateral habitus; B: head, mesosoma, and metasoma, dorso-lateral view; C: head, frontal view; D: head, dorsal view; E: pronotum and mesopleuron, lateral view; F: wings; G: scutellum and propodeum, dorso-lateral view; H: T I and T II, dorso-lateral view; I: metasoma, dorsal view.

Materials examined. JAPAN: [Hokkaido] SEHU, 1F (lectotype of *Mi. sapporensis*), Sapporo, 7. VII. 1925, T. Uchida leg.; SEHU, 1F (holotype of *Mi. pristiphorae*), Tomakomai, 24. VI. 1935, E. Kinoshita leg. (host: *Pristiphora politivaginata* (Takeuchi, 1933) on *Larix kaempferi*); KPM-NK 102835, F, Chitose City, Bibi, Bibi Park, 26. VI. 2017, K. Watanabe leg.; KPM-NK 102995, F, Horokanai Town, Uryu, 17. VII. 2012, M. Ito leg.; KPM-NK 102824, F, ditto, 11–17. VII. 2012, K. Watanabe *et al.* leg. (MsT); KPM-NK 102829, F, same locality, 17. VII. 2012, K. Watanabe leg. [Honshu] KPM-NK 102866, F, Iwate Pref., Yobesawa-rindo, 11. VII. 2007, T. Ishizaki leg.; KPM-NK 102869, F, Fukushima Pref., Hinoemata Vil., Hirosawa-rindo, 19. VII. 2006, T. Ishizaki leg.; KPM-NK 5006657, F, Tochigi Pref., Kuroiso Town, Miyamadam, 8. IX. 2001, E. Katayama leg.; KPM-NK 102851, 102867, 2F, Gunma Pref., Tsumagoi Vil., Kanbara, Takamine-kogen, 3. IX. 2015, K. Watanabe leg.; KPM-NK 102828, F, Saitama Pref., Okaki, Okuchichibu-rindo, 30. VII. – 7. VIII. 2005, K. & S. Arai leg.; KPM-NK 5006672, F, Yamanashi Pref., Koushu City, Sagashio, 16. VI. 2007, K. Watanabe leg.; KPM-NK 102834, F, Yamanashi Pref., Koushu City, Katsunuma Town, Ootaki-fudo, 4. VIII. 2008, K. Watanabe leg.; KPM-NK 102863, F, Yamanashi Pref., Koushu City, Yanagisawa-toge, 5. VIII. 2008, K. Watanabe leg.; KPM-NK 102833, F, Yamanashi Pref., Hokuto City, Masutomi, Biwakubo-sawa, 28. VII. 2007, T. Ban leg.; KPM-NK 91377, 102831, 2F, Honshu, Tokyo, Okutama Town, Hikawa, 30. VI. 2007, K. Watanabe leg.; KPM-NK 102873, F, Kanagawa Pref., Yokosuka City, Mt. Miurafuji to Mt. Takeyama, 5. V. 2007, K. Watanabe leg.; KPM-NK 102865, F, ditto, 4. V. 2013; KPM-NK 5004344, F, Kanagawa Pref., Kiyokawa Vil., Mt. Tanzawa-san, Tennojione, 29. VI. 2013, T. Taniwaki leg. (FIT); KPM-NK 5004343, F, Kanagawa Pref., Yamakita Town., Mt. Mikuniyama, 4. VII. 2013, T. Taniwaki leg. (FIT); KPM-NK 102852, F, Shizuoka Pref., Izu City, Mt. Amagi-san, 2. VI. 2007, G. Oishi leg.; KPM-NK 102868, F, Nagano Pref., Outaki Vil., Mt. Ontake-san, Hakkaisan, 31. VII. 2013, K. Watanabe leg.; KPM-NK 102825, F, ditto, 5. VIII. 2017, K. Watanabe leg.; KPM-NK 102830, F, ditto, Mt. Ontake-san, Tanohara, 17. VII. 2007; KPM-NK 102853, F, Nagano Pref., Kawakami Vil., Azusayama, 14. VI. 2015, K. Watanabe leg.; KPM-NK 102826, F, Toyama Pref., Nanto City, Togamura-kamimomose, 21–28. VII. 2009, M. Watanabe leg. (MsT); KPM-NK 102854, F, ditto, 11–18. VIII. 2009, M. Watanabe leg. (MsT); KPM-NK 102855, F, ditto, 15–29. IX. 2009; KPM-NK 102856 and OMNH, 2F, Toyama Pref., Toyama City, Arimine, Jyurodani, 21–28. VII. 2009, M. Watanabe leg. (MsT);

KPM-NK 102858, F, Toyama Pref., Toyama City, Arimine, Inone-dani, 1–8. IX. 2009, M. Watanabe leg. (MsT); KPM-NK 102857, F, ditto, 8–15. IX. 2009; KPM-NK 102870, F, Ishikawa Pref., Ichinose, 7. IX. 1982, T. Murota leg.; KPM-NK 102871, F, Fukui Pref., Arashi, 26. VIII. 1975, H. Kurokawa leg.; KPM-NK 102872, F, Fukui Pref., Izumi Vil., Asahimaesaka, 29. VI. 1982, T. Murota leg.; OMNH, 2F & 1M, Nara Pref., Ikoma City, Higashinabata, 17. VI. 2016 (host cocoon coll.), R. Matsumoto leg.; KPM-NK 103099, M, ditto. [Iki Island] KPM-NK 102864, 102993, 2F, Nagasaki Pref., Iki City, Gounoura Town, Komakinishifure, 20. VI. 2021, K. Otsui leg.

Description. Female ($n = 33$). Body densely punctate and polished; covered with setae; body length 4.2–8.7 mm.

Head $0.55\text{--}0.6 \times$ as long as wide in dorsal view. Clypeus $1.8\text{--}2.1 \times$ as wide as long; slightly convex in lateral view; punctate dorsally, smooth ventrally; lower margin slightly rounded; blunt in lateral view. Face $0.38\text{--}0.45 \times$ as long as minimum width; weakly convex medially; sparsely punctate laterally; ISP largely smooth. Frons with pair of large smooth areas above each antennal socket. POL $1.6\text{--}2.0 \times$ as OD. OOL $1.4\text{--}2.0 \times$ as OD. Dorsal profile of gena slightly rounded to nearly straight in dorsal view; width gradually narrowing posteriorly (Fig. 53D). Occipital carina complete. Malar space $1.1\text{--}1.5 \times$ as long as basal width of mandible. Mandible flat at base; lower tooth equal in length of upper tooth. Antenna with 19–24 flagellomeres; not flattened and tapped. FL I $2.0\text{--}2.25 \times$ as long as maximum depth in lateral view, $1.0\text{--}1.1 \times$ as long as FL II.

Mesosoma. Pronotum rugulose ventrally (Fig. 53E). Epomia absent. Mesoscutum finely and sparsely laterally and posteriorly; with short and weak notaulus. Scutellum sparsely punctate (punctures on median part sparser than lateral parts); flat to slightly convex in lateral view. Mesopleuron without conspicuous smooth area around speculum; punctures largely or partly united into groove-like longitudinal foveola (Fig. 53E). Epicnemial carina present laterally and ventrally. Sternaulus deep in anterior 0.5 of mesopleuron. Metapleuron densely punctate to rugulose; with partly indistinct juxtacoxal carina. Propodeum rugose or rugulose except for area externa finely and sparsely punctate with smooth ISP; area externa sometimes partly granulate; anterior transverse carina absent; posterior transverse carina complete, inverted U-shaped (Fig. 53G); lateromedian longitudinal carina present anteriorly but largely indistinct in front of posterior transverse carina; lateral longitudinal carina complete, sometimes indistinct posteriorly; pleural carina complete; antero-lateral part of area basalis of propodeum with conspicuous smooth area (Fig. 53G); area superomedia

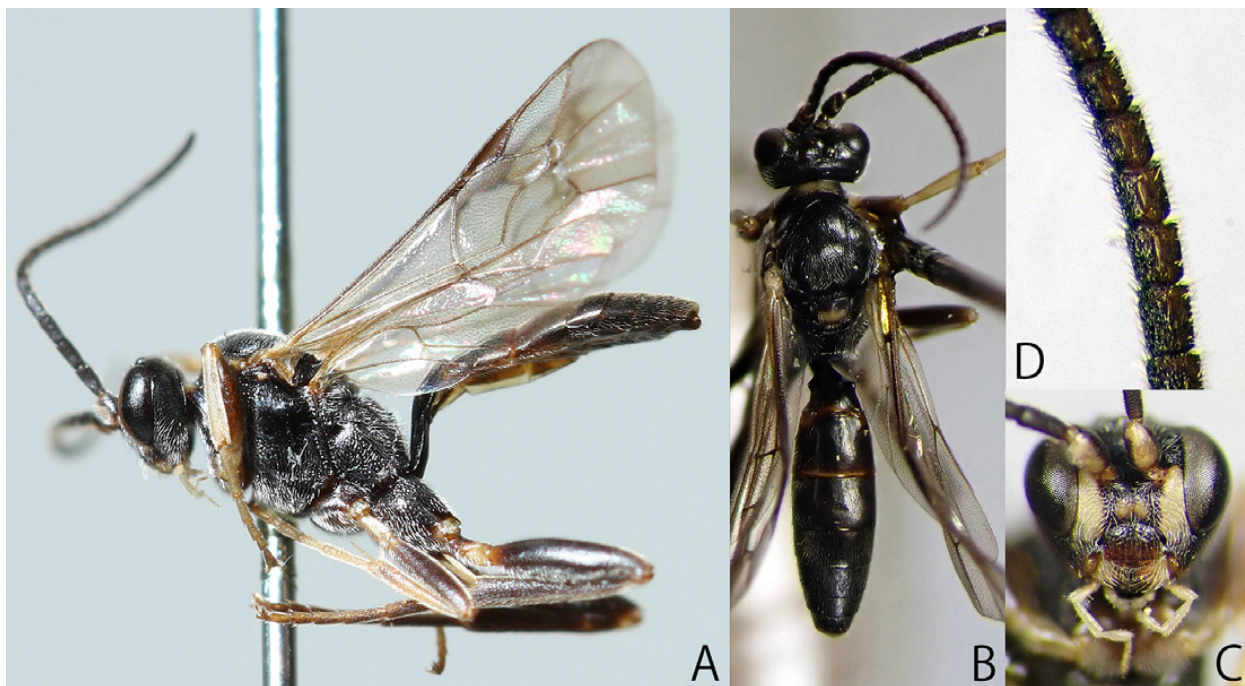


Fig. 54. *Pleolophus sapporensis* (Uchida, 1930), male (KPM-NK 103099) — A: lateral habitus; B: head, mesosoma, and metasoma, dorsal view; C: head, frontal view; D: flagellum and tyloids.

indistinct; apophysis weak and obtusely projected; spiracle round to oval. Fore wing length 3.4–6.6 mm. Areolet as long as maximum width; width gradually narrowing anteriorly; received vein 2m-cu at near middle (Fig. 53F). Fore wing vein 1cu-a postfurcal to vein M&RS. Nervellus subvertical; intercepted near posterior end of vein. Hind femur reticulate coriaceous; $3.9\text{--}4.6 \times$ as long as maximum depth in lateral view. Tarsal claws simple.

Metasoma largely smooth. T I $1.35\text{--}1.8 \times$ as long as maximum width; latero-median carina absent; dorso-lateral carina complete; postpetiole sometimes with some longitudinal striae. T II $0.5\text{--}0.6 \times$ as long as maximum width. Thyridium present; close to anterior margin of T II; flat to slightly depressed; ca. $2.0 \times$ as wide as length. T II to T VI sparsely punctate. Ovipositor sheath $0.75\text{--}0.8 \times$ as long as hind tibia, $1.3\text{--}1.5 \times$ as long as T I. Ovipositor straight; apex sharp; apex of lower valve with teeth (Fig. 79U).

Colouration (Figs. 53A–I). Body (excluding wings) black to blackish-brown. Setae silver except for some blackish-brown setae on head and mesoscutum. Clypeus tinged with reddish-brown. FL V to FL IX or FL X with white marking. Posterior part of T I, T II, and T III sometimes weakly tinged with dark reddish-brown. Middle part of T VII with a white to yellowish brown marking. Wing slightly yellowish-brown hyaline to brownish-hyaline. Veins and pterostigma blackish-brown to brown except for yellow wing base. Ventral surface of flagellum, tibiae and fore and mid tarsi usually tinged with brown. Hind trochanter and trochantellus usually whitish-yellow (but black in a

few specimens). Base of hind tibia sometimes tinged with yellowish-brown. Ovipositor brown.

Male ($n = 2$). Similar to female (Figs. 54A–D). POL $1.2\text{--}1.5 \times$ as OD. OOL $1.4\text{--}1.9 \times$ as OD. Malar space $0.95\text{--}1.0 \times$ as long as basal width of mandible. Antenna with 24–25 flagellomeres; with tyloids on FL X to FL XV (Fig. 54D). FL I $2.25\text{--}2.5 \times$ as long as maximum depth in lateral view, $1.15 \times$ as long as FL II. T I $1.4\text{--}1.75 \times$ as long as maximum width. T II $0.85 \times$ as long as maximum width. Scape and pedicel each with ventral yellow marking. Clypeus tinged with reddish-brown ventrally. Face with pair of yellow markings along orbit and median small yellow marking(s). Mandible tinged with yellowish-brown except for teeth. Palpi ivory. Postero-dorsal corner of pronotum, tegula, and scutellum each with yellow marking. Postscutellum and posterior margins of T I and T II tinged with reddish-brown. Membranous part of metasomal sternites yellowish-brown to brown. Fore and mid trochanters, trochantelli, tibiae except for apical part of mid tibia, and tarsi yellow to yellowish-brown. Fore femur partly tinged with yellow. Bases of each mid tarsal segments weakly tinged with brown. Apices of hind coxa and trochanter, hind trochantellus, base of hind tibia, and tibial spurs yellow to yellowish-brown.

Distribution. Japan (Kunashiri Is., Hokkaido, Honshu, and Iki Is.).

Bionomics. Host: *Pristiphora politivaginata* (Takeuchi, 1933) (Hymenoptera, Tenthredinidae) (Uchida, 1955a); *Aporia crataegi* (Linnaeus, 1758) (Lepidoptera, Pieridae)

(Uchida, 1955b). The letter host is doubtful.

Remarks. Japanese name of this species, Ezoshiro-futo-togari-himebachi, is based on doubtful host record from “Ezoshiro butterfly”, *Aporia crataegi* (Lepidoptera, Pieridae) (Uchida, 1955b). Thus, I propose new SJN of this species in this study. This species has relatively larger intraspecific variation of the body sculptures (e.g., mesopleuron, metapleuron, area externa of propodeum, and T I) and the colouration (e.g., hind trochanter) than other species. In this study I have treated them as a single species, but they need to be re-examined in detail, combining both morphological and molecular information.

***Pleolophus setiferae* (Uchida, 1936)**

[SJN: Matsunoki-futo-togari-himebachi]

(Figs. 55A–G, 56A–E, 79V)

Microcryptus setiferae Uchida, 1936c: 118.

Microcryptus annulaticrus Cushman, 1937: 32.

Materials examined. JAPAN: [Honshu] SEHU, 1F (holotype), Tokyo, 19. X. 1935, M. Hamatake leg. (host: “*Neodiprion sertifera*”); KPM-NK 81297, F, Nagano Pref., Kawakami Vil., Azusayama, 14. VI. 2015, K. Watanabe leg.; NSMT, 2F & 2M, Shizuoka Pref., Nagaizumi, 25. III. 1937 (cocoon of *Diprion nipponicus* coll.), IV. 1937

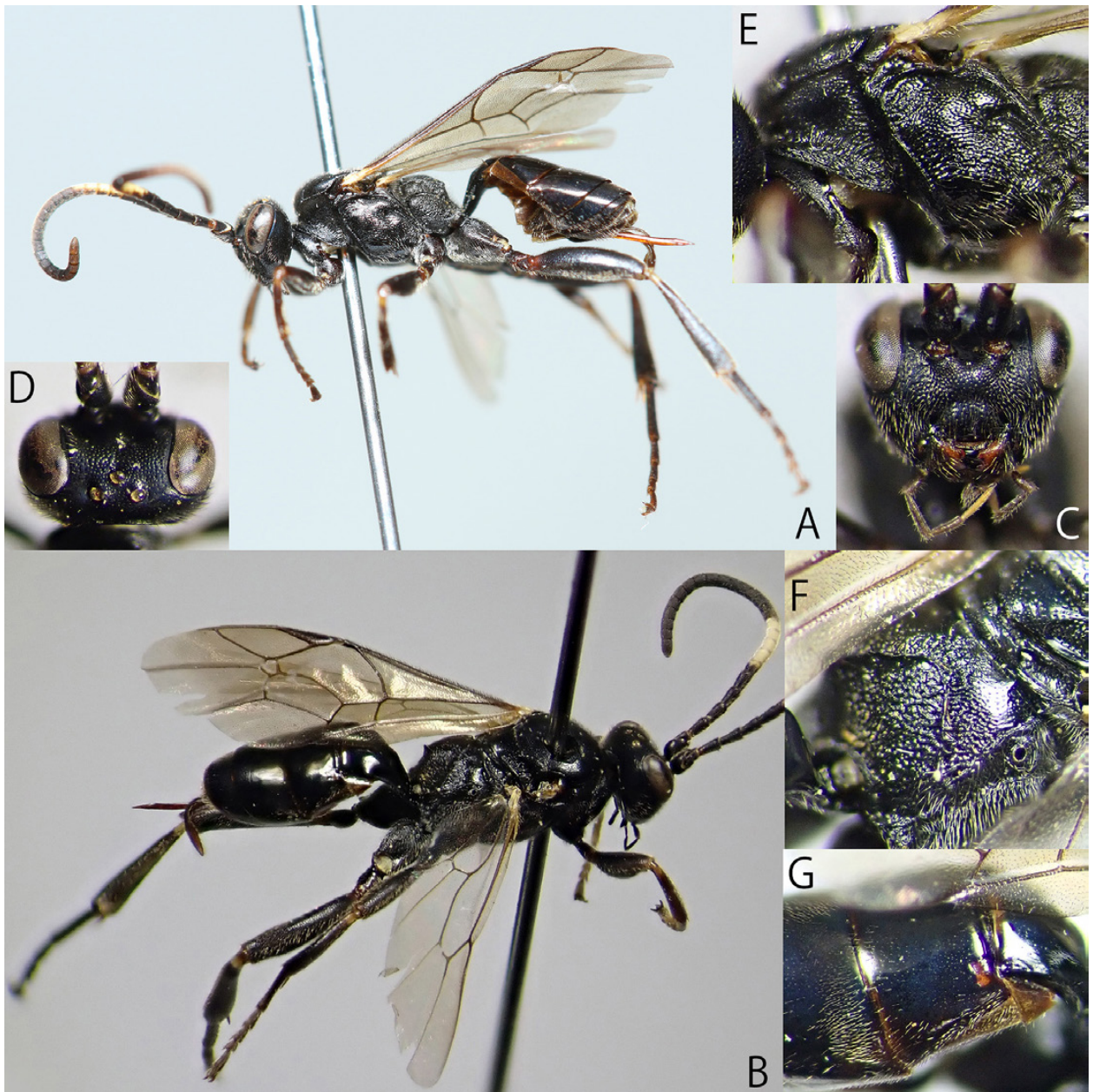


Fig. 55. *Pleolophus setiferae* (Uchida, 1936), female (KPM-NK 81297) — A: lateral habitus; B: head, mesosoma, and metasoma, dorso-lateral view; C: head, frontal view; D: head, dorsal view; E: pronotum and mesopleuron, lateral view; F: scutellum and propodeum, dorso-lateral view; G: T I and T II, dorso-lateral view.

(em.); NSMT, 1F & 1M, ditto, 24–27. III. 1937 (cocoon of *D. nipponicus* coll.), 29. III. 1937 (em.); NSMT, 1M, Shizuoka Pref., Nagaizumi, em. from *D. nipponicus*; NSMT, 1M, no locality data, em. from *D. nipponicus*.

Description. Female ($n = 5$). Body densely punctate and polished; covered with setae; body length 7.9–8.8 mm.

Head $0.6 \times$ as long as wide in dorsal view. Clypeus $1.8\text{--}2.0 \times$ as wide as long; slightly convex in lateral view; punctate dorsally, smooth ventrally; lower margin slightly rounded in frontal view, blunt in lateral view. Face $0.35 \times$ as long as minimum width; weakly convex medially, shallowly punctate laterally; ISP largely coriaceous laterally. Frons with pair of large smooth areas above antennal sockets. POL $1.6\text{--}1.9 \times$ as OD. OOL $1.4\text{--}1.8 \times$ as OD. Dorsal profile of gena slightly rounded in dorsal view; width gradually narrowing posteriorly (Fig. 55D). Occipital carina complete. Malar space $1.4 \times$ as long as basal width of mandible. Mandible flat at base; lower tooth equal in length of upper tooth. Antenna with 25 flagellomeres; not flattened and tapped. FL I $1.9\text{--}2.2 \times$ as long as maximum depth in lateral view, $0.95 \times$ as long as FL II.

Mesosoma. Pronotum rugulose ventrally (Fig. 55E). Epomia absent. Mesoscutum with short and weak notaulus.

Scutellum sparsely punctate (punctures on median part sparser than lateral parts); flat to slightly convex in lateral view. Mesopleuron without conspicuous smooth area around speculum; punctures partly united into groove-like longitudinal foveola (Fig. 55E). Epicnemial carina present laterally and ventrally. Sternaulus deep in anterior 0.5 of mesopleuron. Metapleuron reticulate rugose; juxtacoxal carina absent or indistinct by rugae. Propodeum rugose or rugulose except for smooth area of area externa; anterior transverse carina absent; posterior transverse carina complete, inverted U-shaped (Fig. 55F); lateromedian longitudinal carina largely indistinct; lateral longitudinal carina partly present; pleural carina complete; antero-lateral part of area basalis of propodeum without conspicuous smooth area (Fig. 55F); area superomedia indistinct; apophysis weak and obtusely projected; spiracle oval. Fore wing length 6.2–6.25 mm. Areolet as long as maximum width; width gradually narrowing anteriorly; received vein 2m-cu at slightly beyond to middle (Fig. 55B). Fore wing vein 1cu-a postfurcal to vein M&RS (Fig. 55B). Nervellus subvertical; intercepted posterior to middle. Hind femur reticulate coriaceous; $4.0\text{--}4.3 \times$ as long as maximum depth in lateral view. Tarsal claws simple.

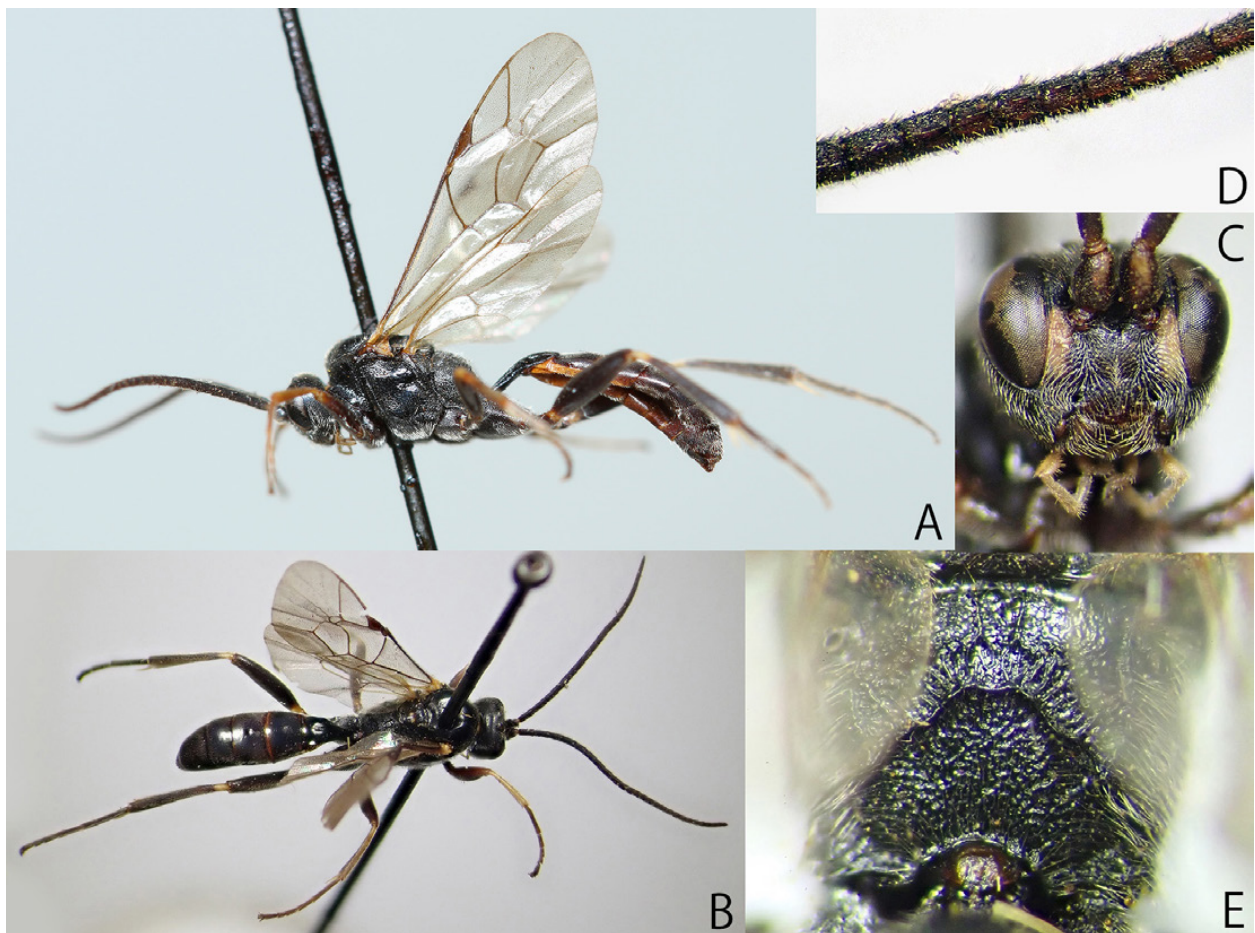


Fig. 56. *Pleolophus setiferae* (Uchida, 1936), male (NHMT) — A: lateral habitus; B: head, mesosoma, and metasoma, dorso-lateral view; C: head, frontal view; D: flagellum and tyloids; E: propodeum, dorsal view.

Metasoma largely smooth. T I 1.35–1.4 × as long as maximum width; latero-median carina absent; dorso-lateral carina complete. T II 0.5 × as long as maximum width. Thyridium present; close to anterior margin of T II; flat to slightly depressed; ca. 2.0 × as wide as length. T II to T VI sparsely punctate. Ovipositor sheath 0.65–0.7 × as long as hind tibia, 1.05–1.25 × as long as T I. Ovipositor straight; apex sharp; apex of lower valve with teeth (Fig. 79V).

Colouration (Figs. 55A–G). Body (excluding wings) black to blackish-brown. Setae silver except for some blackish-brown setae on head and mesoscutum. FL V to FL X with white marking. Middle part of T VII with a white to yellowish brown marking. Wing slightly yellowish-brown hyaline. Veins and pterostigma blackish-brown to brown except for yellow wing base. Base of tibiae white. Ventral surface of flagellum, tibiae and fore and mid tarsi usually tinged with brown. Ovipositor brown.

Male (n = 5). Similar to female (Figs. 56A–E). Body length 7.3–8.75 mm. Head 0.55 × as long as wide in dorsal view. Face 0.4–0.43 × as long as minimum width. POL 1.4–1.5 × as OD. OOL 1.4–1.9 × as OD. Malar space 1.0–1.1 × as long as basal width of mandible. Antenna with 26–27 flagellomeres; with tyloids on FL X to FL XV (Fig. 56D). FL I 2.15–2.3 × as long as maximum depth in lateral view, 1.05–1.1 × as long as FL II. Hind femur 4.3–4.9 × as long as maximum depth in lateral view. Fore wing length 6.25–7.0 mm. T I 1.95–2.0 × as long as maximum width. T II 0.75–0.8 × as long as maximum width. Scape and pedicel each with ventral yellow marking. Face with pair of yellow markings along orbit. Mandible tinged with yellowish-brown except for teeth. Palpi yellowish-brown. Median part of collar and scutellum each with yellow marking. Tegula sometimes tinged with yellow. Fore and mid tibiae and tarsi largely tinged with yellowish-brown. Base of tibiae white to ivory. Tibial spurs ivory.

Distribution. Japan (Honshu), China, and Korea.

Bionomics. Host: *Diprion nipponicus* Rohwer, 1910; *Neodiprion sertifer* (Geoffroy, 1785) (“*serifera*” is misspelling) (Hymenoptera, Diprionidae) (Cushman, 1937).

Genus *Schenkia* Förster, 1869

Schenkia Förster, 1869: 184. Type species: *Phygadeuon graminicola* Gravenhorst, 1829. Designated by Ashmead (1900).

Ecpaglus Förster, 1869: 185. Type species: *Cryptus brevicornis* Gravenhorst, 1829 (= *Phygadeuon graminicola* Gravenhorst, 1829). Designated by Ashmead (1900).

Schenckia Dalla Torre, 1902: 51. Emendation for *Schenkia*.

In Japan, two species, *S. sylvatica* Townes, Momoi & Townes, 1965, and *S. tosaensis* (Uchida, 1936), have been recorded. In this study, I newly describe four new species below with redescrptions of *S. sylvatica* and *S. tosaensis*.

Key to Japanese species of *Schenkia* (female only)

1. Hind coxa largely or entirely yellowish brown to whitish yellow (Fig. 62A). Metasomal tergites partly tinged with reddish-brown to yellowish-brown (Figs. 62A, B).

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-. Hind coxa black (Figs. 57A, 58A, 59A, 60A, 61A). Metasomal tergites various in coloration, usually largely black.

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2. Basal part of hind coxa and base of T I whitish yellow (Fig. 24A). Apex of ovipositor sharply pointed (Fig. 78S). Scutellum yellow (Figs. 24B, G).

..... *Giraudia kurenai* sp. nov. (see remarks of this species)

-. Hind coxa entirely whitish yellow to yellowish brown (Fig. 62A). T I black to blackish-brown except for apex narrowly tinged with yellow (Figs. 62A, B). Apex of ovipositor obtusely pointed (Fig. 79AB). Scutellum black (Figs. 62B, G).

..... *Schenkia uryuensis* sp. nov.

3. Hind tarsus with white parts (Fig. 57A). Apex of ovipositor obtusely pointed (Fig. 79W). Ovipositor sheath 1.2 × as long as hind tibia.

..... *Schenkia alpina* sp. nov.

-. Hind tarsus entirely black (Figs. 58A, 59A, 60A, 61A). Apex of ovipositor obtusely (Figs. 79X, Z, AA) or sharply (Fig. 79Y) pointed. Ovipositor sheath shorter; 0.8–1.1 × as long as hind tibia.

..... 4

4. Hind trochanter and trochantellus ivory to yellowish-brown (Figs. 58A, 59A). Basal part of hind tibia more or less tinged with yellowish brown (Figs. 58A, 59A). Apex of ovipositor sometimes sharply pointed (Fig. 79Y).

..... 5

-. Hind trochanter and trochantellus black to blackish-brown (Figs. 60A, 61A). Hind tibia entirely black (Figs. 60A, 61A). Apex of ovipositor always obtusely pointed (Fig. 79Z, AA).

..... 6

5. Apex of ovipositor obtusely pointed (Fig. 79X). Malar space 1.1–1.2 × as long as basal width of mandible. Antenna with 24–26 flagellomeres. Hind femur 4.3–4.7 × as long as maximum depth in lateral view. Scutellum sometimes tinged with dark brown.

..... *Schenkia japonica* sp. nov.

-. Apex of ovipositor sharply pointed (Fig. 79Y). Malar space $0.9 \times$ as long as basal width of mandible. Antenna with 28–29 flagellomeres. Hind femur $3.7\text{--}3.9 \times$ as long as maximum depth in lateral view. Scutellum black.

..... *Schenkia minuta* **sp. nov.**

6. T II and T III smooth surface with punctures. Malar space $0.8\text{--}0.9 \times$ as long as basal width of mandible. Apical part of upper valve of ovipositor bulge; apex narrowly truncate (Fig. 79Z).

..... *Schenkia sylvatica* Townes, Momoi & Townes, 1965

-. T II and T III coriaceous with punctures. Malar space $1.0\text{--}1.1 \times$ as long as basal width of mandible. Apical part of upper valve of ovipositor not bulge; apex not truncate (Fig. 79AA).

..... *Schenkia tosaensis* (Uchida, 1936)

***Schenkia alpina* sp. nov.**

[New SJN: Ontake-futo-togari-himebachi]

(Figs. 57A–G, 79W)

Type series. Holotype: JAPAN, KPM-NK 84968, F, Honshu, Nagano Pref., Outaki Vil., Mt. Ontake-san, Hakkaisan, 5. VIII. 2017, K. Watanabe leg. **Paratype:** JAPAN, KPM-NK 84974, F, same locality of holotype, 18–20. VIII. 2014, S. Shimizu leg. (MsT).

Description. Female ($n = 2$). Body polished; covered with setae; body length $8.4\text{--}9.5$ (HT: 9.5) mm.

Head $0.6 \times$ as long as wide in dorsal view. Clypeus $2.7 \times$ as wide as long; slightly convex in lateral view; punctate and coriaceous dorsally, smooth ventrally; lower margin subtruncate in frontal view, obtuse in lateral view. Face $0.45 \times$ as long as minimum width; weakly convex medially; matt; finely punctate. Frons weakly concave above antennal sockets; matt and punctate dorsally, coriaceous and partly transversely rugulose ventrally. POL $1.2\text{--}1.3$ (HT: 1.2) $\times$ as OD. OOL $1.0\text{--}1.2$ (HT: 1.0) $\times$ as OD. Gena and occiput finely and densely punctate. Dorsal profile of gena rounded in dorsal view; width gradually narrowing posteriorly (Fig. 57D). Occipital carina complete. Malar space $0.9\text{--}1.0$ (HT: 0.9) $\times$ as long as basal width of mandible. Mandible flat at base; lower tooth equal in length of upper tooth. Antenna with 29–30 (HT: 29) flagellomeres; apical part flattened below and tapered to slender apex. FL I $1.8\text{--}1.9$ (HT: 1.9) $\times$ as long as maximum depth in lateral view, $0.9 \times$ as long as FL II.

Mesosoma. Pronotum rugulose ventrally and posteriorly, densely punctate antero-dorsally (Fig. 57E). Epomia absent. Mesoscutum densely punctate; with short and weak notaulus (Fig. 57D). Scutellum sparsely punctate (Fig. 57G); slightly convex in lateral view. Mesopleuron

punctate; punctures partly united into groove-like foveola; with conspicuous smooth area around speculum (Fig. 57E). Epicnemial carina present laterally and ventrally. Sternaulus deep in anterior 0.5 of mesopleuron. Metapleuron punctate anteriorly, irregularly rugulose posteriorly; with complete juxtacoxal carina. Propodeum rugose or rugulose except for area externa finely and sparsely punctate with smooth ISP (Fig. 57G); anterior transverse carina absent; posterior transverse carina complete, inverted U-shaped; lateromedian longitudinal carina complete; lateral longitudinal carina complete; pleural carina complete; area superomedia distinct except for anterior margin, slightly longer than wide; apophysis absent; spiracle oval. Fore wing length $7.65\text{--}8.5$ (HT: 8.5) mm. Areolet as long as maximum width; width gradually narrowing anteriorly; received vein 2m-cu at near middle (Fig. 57F). Fore wing vein 1cu-a slightly antefurcal to vein M&RS. Nervellus slightly inclivous; intercepted near posterior end of vein. Hind femur reticulate coriaceous; $4.2\text{--}4.6$ (HT: 4.6) $\times$ as long as maximum depth in lateral view. Tarsal claws simple.

Metasoma finely and sparsely punctate; ISP smooth. T I $2.1 \times$ as long as maximum width; latero-median carina absent posteriorly; dorso-lateral carina complete. T II $0.65\text{--}0.75$ (HT: 0.65) $\times$ as long as maximum width. Thyridium present; close to anterior margin of T II; slightly depressed; ca. $3.0 \times$ as wide as length. Ovipositor sheath $1.2 \times$ as long as hind tibia, $1.8\text{--}1.85$ (HT: 1.85) $\times$ as long as T I. Ovipositor slightly decurved; apex obtuse; apex of lower valve with teeth (Fig. 79W).

Colouration (Figs. 57A–G). Body (excluding wings) black to blackish-brown. Setae silver; more or less brownish on head and mesoscutum. Subapical part of mandible, lower part of clypeus, ventral surface of apical part of flagellum, and posterior margin of T II tinged with reddish-brown. Face and frons with pair of longitudinal yellow stripe along each orbit; stripe narrowly absent on frons in HT or largely absent in paratype. FL VI to FL XI (or XII in HT) with white markings. Median part of collar, second to fourth tarsomeres of mid and hind legs, and apex of metasoma ivory. Scutellum and apex of T I narrowly tinged with ivory. Fore tarsus and apex of hind first tarsomere sometimes partly tinged with ivory. Thyridium and ovipositor reddish-brown. Membranous part of metasomal sternites yellowish-brown. Wings hyaline. Veins and pterostigma blackish-brown to brown except for yellowish-brown wing base.

Male. Unknown.

Distribution. Japan (Honshu).

Etymology. The specific name is from Latin “*alpina*”,

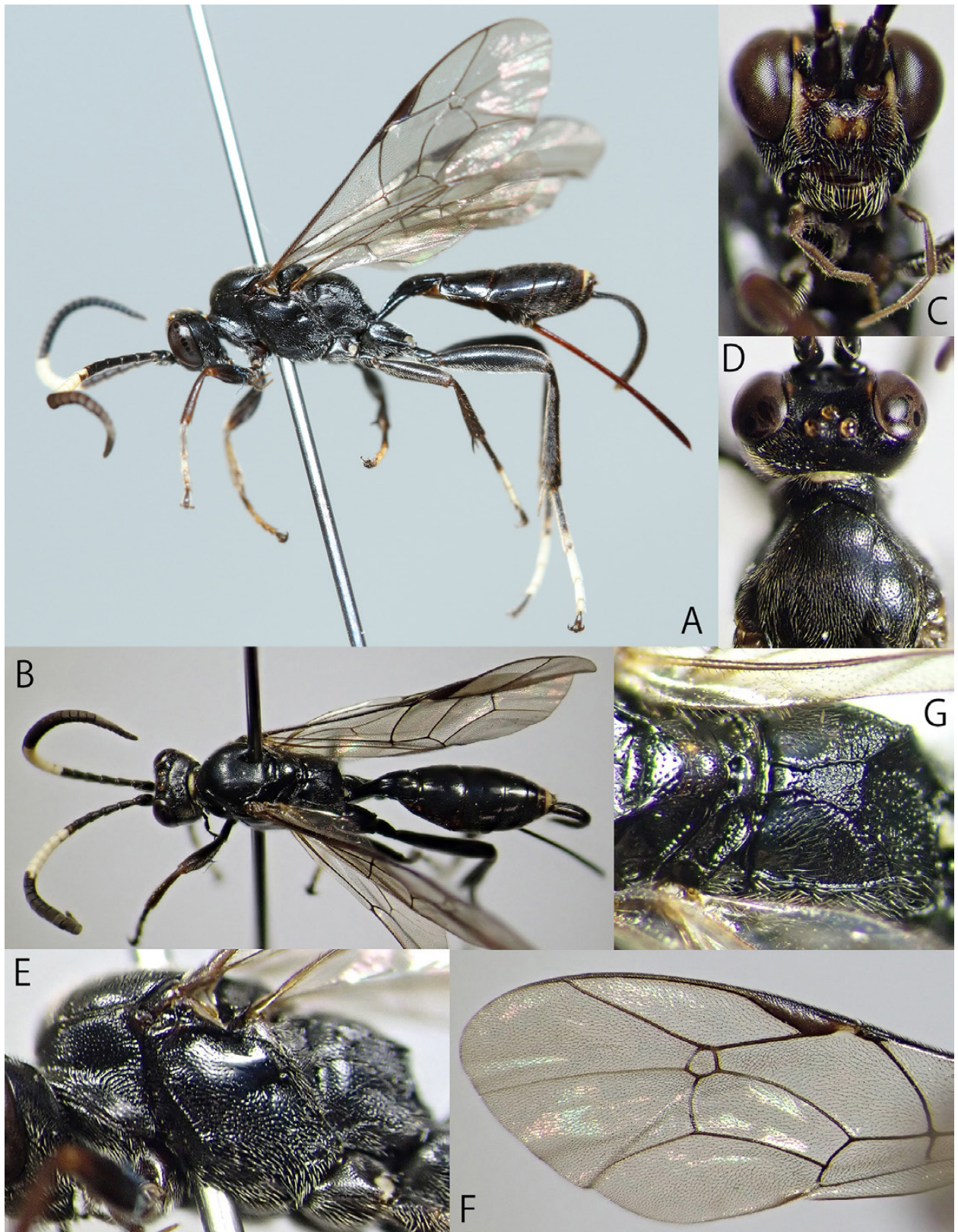


Fig. 57. *Schenkia alpina* **sp. nov.**, female (holotype: KPM-NK 84968) — A: lateral habitus; B: head, mesosoma, and metasoma, dorso-lateral view; C: head, frontal view; D: head and mesoscutum, dorsal view; E: mesosoma, lateral view; F: fore wing; G: scutellum and propodeum, dorsal view.

which means alpine mountains.

Remarks. This species resembles *S. tosaensis* in the black body and the shape of ovipositor apex but can be distinguished by the hind tarsus with white areas (black in *S. tosaensis*), the facial and frontal orbits with yellow markings (without markings in *S. tosaensis*) and the FL I $1.8\text{--}1.9 \times$ as long as maximum depth in lateral view ($2.6 \times$ in *S. tosaensis*)

***Schenkia japonica* sp. nov.**

[New SJN: Hidahige-futo-togari-himebachi]

(Figs. 58A–G, 79X)

Type series. Holotype: JAPAN, KPM-NK 84970, F, Honshu, Nagano Pref., Outaki Vil., Mt. Ontake-san, Tanohara, 17. VI. 2007, K. Watanabe leg. **Paratype:** JAPAN: [Honshu] KPM-NK 102785, F, Fukushima Pref., Hinoemata Vil., 1–14. VIII. 2004, H. Makihara leg. (MsT); KPM-NK 102786, F, Yamanashi Pref., Hokuto City, Masutomi, Biwakubo-sawa, 28. VII. 2007, K. Watanabe leg.; KPM-NK 102788, F, Toyama Pref., Toyama City, Arimine, Jurodani, 21–28. VII. 2009, M. Watanabe leg. (MsT); KPM-NK 102784, F, ditto, 4–11. VIII. 2009; OMNH, 1F, ditto, 1–8. IX. 2009; KPM-NK 102787, F, Fukui Pref., Ikeda Town, Mt. Kanakusayama, 9. VI. 1981, T. Murota leg.; KPM-NK 102789, F, Fukui Pref., Ikeda Town, Mt. Heko-san, 16. VI. 1981, T. Murota leg.

Description. Female ($n = 8$). Body punctate and polished; covered with setae; body length $5.6\text{--}6.9$ (HT: 6.6) mm.

Head $0.6\text{--}0.65$ (HT: 0.65) $\times$ as long as wide in dorsal view. Clypeus $2.2\text{--}2.25$ (HT: 2.25) $\times$ as wide as long; slightly convex in lateral view; sparsely punctate and coriaceous dorsally, smooth ventrally; lower margin truncate in frontal view, sharp in lateral view. Face $0.4\text{--}0.45$ (HT: 0.45) $\times$ as long as minimum width; weakly convex medially; matt; sparsely punctate medially. Frons coriaceous; weakly concave above antennal sockets; punctate dorsally. POL $0.8\text{--}1.05$ (HT: 1.05) $\times$ as OD. OOL $1.2\text{--}1.25$ (HT: 1.2) $\times$ as OD. Gena and occiput finely and densely punctate. Dorsal profile of gena nearly straight in dorsal view; width gradually narrowing posteriorly (Fig. 58D). Occipital carina complete. Malar space $1.1\text{--}1.2$ (HT: 1.2) $\times$ as long as basal width of mandible. Mandible flat at base; lower tooth equal in length of upper tooth. Antenna with 24–26 (HT: 26) flagellomeres; apical part flattened below and tapered to slender apex. FL I $2.0\text{--}2.25$ (HT: 2.25) $\times$ as long as maximum depth in lateral view, $0.9\text{--}0.95$ (HT: 0.9) $\times$ as long as FL II.

Mesosoma. Pronotum rugulose ventrally (Fig. 58E). Epomia absent. Mesoscutum with short and weak

notaulus (Fig. 58D). Scutellum sparsely punctate; weakly convex in lateral view. Mesopleuron with or without small conspicuous smooth area around speculum (Fig. 58E). Epicnemial carina present laterally and ventrally. Sternaulus deep in anterior 0.5 of mesopleuron. Metapleuron with juxtacoxal carina but partly obscured with rugae. Propodeum smooth with punctures, foveolae, and rugae (Fig. 58G); area externa finely and sparsely punctate; anterior transverse carina absent or slightly present as trace-like; posterior transverse carina complete, inverted U-shaped; lateromedian longitudinal carina complete; lateral longitudinal carina complete; pleural carina complete; area superomedia distinct except for anterior margin, distinctly longer than wide, sometimes longitudinally striate; apophysis absent; spiracle round. Fore wing length $5.4\text{--}5.8$ (HT: 5.75) mm. Areolet as long as maximum width; width gradually narrowing anteriorly; received vein 2m-cu at near middle (Fig. 58F). Fore wing vein 1cu-a interstitial to vein M&RS (Fig. 58F). Nervellus subvertical; intercepted near posterior end of vein. Hind femur reticulate coriaceous; $4.3\text{--}4.7$ (HT: 4.4) $\times$ as long as maximum depth in lateral view. Tarsal claws simple.

Metasoma finely and sparsely punctate, ISP smooth. T I $2.05\text{--}2.4$ (HT: 2.4) $\times$ as long as maximum width; lateromedian carina absent; dorso-lateral carina complete. T II $0.85 \times$ as long as maximum width. Thyridium present; close to anterior margin of T II; slightly depressed; ca. $2.0 \times$ as wide as length. Ovipositor sheath $0.8\text{--}0.85$ (HT: 0.83) $\times$ as long as hind tibia, $1.25\text{--}1.4$ (HT: 1.25) $\times$ as long as T I. Ovipositor straight; apex obtuse; apex of lower valve with teeth (Fig. 79X).

Colouration (Figs. 58A–G). Body (excluding wings) black to blackish-brown. Setae silver. Subapical part of mandible, lower part of clypeus, and ventral surface of apical part of flagellum tinged with reddish-brown to brown. FL VII (or VI) to FL X (or XI) with white markings. Fore and mid coxae, all trochanters and trochantelli, mid and hind tibial spurs yellow to ivory. Fore and mid legs except for coxae, trochanters, trochantelli, and mid tibial spurs reddish-brown to brown. Subbasal part of hind tibia largely yellowish-brown. Hind tarsus partly tinged with yellowish-brown. Posterior margins of T II to T IV tinged with reddish-brown. Median part of collar sometimes narrowly tinged with ivory. Median part of face, scutellum, and apex of T I sometimes tinged with reddish-brown. Thyridium and ovipositor reddish-brown. Membranous part of metasomal sternites yellow to yellowish-brown. Apex of metasoma with ivory area. Wings hyaline. Veins and pterostigma brown except for yellowish-brown wing base.



Fig. 58. *Schenkia japonica* **sp. nov.**, females (A, C–E: holotype: KPM-NK 84970; B, F, G: paratype: KPM-NK 102789) — A: lateral habitus; B: head, mesosoma, and metasoma, dorso-lateral view; C: head, frontal view; D: head and mesoscutum, dorsal view; E: pronotum and mesopleuron, lateral view; F: fore wing; G: propodeum, dorso-lateral view.

Male. Unknown.

Bionomics. Unknown.

Etymology. The specific name is from Japan.

Distribution. Japan (Honshu).

Remarks. This species resembles *S. minuta* **sp. nov.** in the body colouration but can be distinguished by the obtusely pointed apex of ovipositor (sharply pointed apex in *S. minuta*), the long malar space and hind femur, and the fewer number of flagellar segments (see above key).

Schenkia minuta* **sp. nov.*

[New SJN: Yamato-futo-togari-himebachi]

(Figs. 59A–G, 79Y)

Type series. **Holotype:** JAPAN, KPM-NK 84971, F, Honshu, Nagano Pref., Outaki Vil., Mt. Ontake-san, Hakkaisan, 13. VI. 2015, K. Watanabe leg. **Paratype:** JAPAN: [Honshu] KPM-NK 102790, F, Tochigi Pref., Nasushiobara City, Shiobara, Oonuma, 6–15. VI. 2008, T. Matsumura leg. (MsT); KPM-NK 5004345, F, Kanagawa

Pref., Yamakita Town, Mt. Komotsurushi-yama, 16. VI. 2013, T. Taniwaki leg. (FIT); KPM-NK 102791, F, Niigata Pref., Nagaoka City, Jyoganji Town, Happodai, 24. V. 2014, S. Shimizu leg.

Description. Female (n = 4). Body punctate and polished; covered with setae; body length 5.9–9.1 (HT: 9.1) mm.

Head 0.55–0.6 (HT: 0.55) × as long as wide in dorsal view. Clypeus 3.0–3.1 (HT: 3.0) × as wide as long; slightly convex in lateral view; punctate and coriaceous dorsally, smooth ventrally; lower margin subtruncate in frontal view, obtuse in lateral view. Face 0.35–0.38 (HT: 0.35) × as long as minimum width; weakly convex medially; matt; densely punctate medially, finely punctate laterally. Frons weakly concave above antennal sockets; smooth except for matt along orbits; punctate dorsally; partly transversely rugulose medio-ventrally. POL 1.2–1.5 (HT: 1.2) × as OD. OOL 1.5–1.6 (HT: 1.6) × as OD. Gena and occiput finely and densely punctate. Dorsal profile of gena rounded in dorsal view; width gradually narrowing posteriorly (Fig. 59D). Occipital carina complete. Malar space 0.9 × as long

as basal width of mandible. Mandible flat at base; lower tooth equal in or slightly longer than length of upper tooth. Antenna with 28–29 (HT: 28) flagellomeres; apical part flattened below and tapered to slender apex. FL I 1.4–1.65 (HT: 1.65) × as long as maximum depth in lateral view, 0.9–1.0 (HT: 1.0) × as long as FL II.

Mesosoma. Pronotum rugulose ventrally (Fig. 59E). Epomia absent. Mesoscutum with short and weak notaulus (Fig. 59D). Scutellum sparsely punctate (Fig. 59G); slightly convex in lateral view. Mesopleuron with conspicuous smooth area around speculum (Fig. 59E). Epicnemial carina present laterally and ventrally. Sternaulus deep in anterior 0.4 of mesopleuron. Metapleuron with juxtacoxal carina but partly indistinct with rugae. Propodeum sparsely punctate with smooth ISP; rugulose area along posterior transverse carina and area postero; anterior transverse carina absent; posterior transverse carina complete or sometimes trace-like posteriorly, trapezoid-shaped; lateromedian longitudinal carina weakly present, partly trace-like; lateral longitudinal carina complete; pleural



Fig. 59. *Schenkia minuta* sp. nov., female (holotype: KPM-NK 84971) — A: lateral habitus; B: head, mesosoma, and metasoma, dorsal view; C: head, frontal view; D: head and mesoscutum, dorsal view; E: pronotum and mesopleuron, lateral view; F: fore wing; G: scutellum and propodeum, dorsal view.

carina complete; area superomedia slightly defined; spiracle oval. Fore wing length 5.75–7.0 (HT: 7.0) mm. Areolet as long as maximum width; width gradually narrowing anteriorly; received vein 2m-cu at near middle (Fig. 59F). Fore wing vein 1cu-a interstitial to vein M&RS (Fig. 59F). Nervellus slightly inclivous; intercepted near posterior end of vein. Hind femur reticulate coriaceous; 3.7–3.9 (HT: 3.7) × as long as maximum depth in lateral view. Tarsal claws simple.

Metasoma finely punctate; ISP smooth. T I 1.85–2.25 (HT: 2.0) × as long as maximum width; latero-median carina absent; dorso-lateral carina complete or sometimes obscured posteriorly. T II 0.7–0.75 (HT: 0.73) × as long as maximum width. Thyridium present; close to anterior margin of T II; flat to slightly depressed; ca. 2.0 × as wide as length. Ovipositor sheath 0.9–1.0 (HT: 0.98) × as long as hind tibia, 1.35–1.55 (HT: 1.5) × as long as T I. Ovipositor straight; apex sharp; apex of lower valve with teeth (Fig. 79Y).

Colouration (Figs. 59A–G). Body (excluding wings) black to blackish-brown. Setae silver. Mandible except for teeth, lower part of clypeus, basal segments of flagellum, ventral surface of apical part of flagellum, tegula, and posterior margin of T II tinged with reddish-brown to brown. FL VI (or VII) to FL XI (or XII) with white markings. Trochantelli and tibial spurs yellowish-brown to brown. Trochanters more or less partly tinged with yellowish-brown. Fore and mid legs largely brown to blackish-brown except for trochantellus and tibial spurs. Base of hind tibia weakly paler than apical part. Thyridium and ovipositor reddish-brown. Membranous part of metasomal sternites yellowish-brown. Apex of metasoma with ivory area. Wings hyaline. Veins and pterostigma blackish-brown to brown except for yellowish-brown wing base.

Male. Unknown.

Bionomics. Unknown.

Etymology. The specific name is from the Latin “*minuta*” (small), referring to the relatively small body size in Japanese species.

Distribution. Japan (Honshu).

Remarks. This species resembles *S. japonica* **sp. nov.** in the body colouration but can be distinguished by the sharply pointed apex of ovipositor (obtusely pointed apex in *S. japonica*), the short malar space and hind femur, and the many numbers of flagellar segments (see above key).

***Schenkia sylvatica* Townes, Momoi & Townes, 1965**

[SJN: Maruyama-kogata-futo-togari-himebachi]

(Figs. 60A–G, 79Z)

Microcryptus maruyamensis Uchida, 1936a: 47. Name preoccupied.

Schenkia sylvatica Townes *et al.*, 1965: 162. New name.

Materials examined. JAPAN: [Hokkaido] SEHU, 1F (holotype of *Mi. maruyamensis*), Sapporo, Mt. Maruyama, 20. VI. 1924, T. Uchida leg.; KPM-NK 102781, F, Akan Town, Akan-lake trail, 10. IX. 2014, S. Shimizu & Y. Saito leg.; KPM-NK 102782, Naie Town, Chasinai, Naiegawarindo, 21. VI. 2017, K. Watanabe leg. [Honshu] KPM-NK 102780, Nagano Pref., Outaki Vil., Mt. Ontake-san, Hakkaisan, 9. VIII. 2007, K. Watanabe leg.; OMNH, 1F, Toyama Pref., Nanto City, Togamura-kamimomose, 21–28. VII. 2009, M. Watanabe leg. (MsT); KPM-NK 102783, F, ditto, 18–25. VIII. 2009; OMNH, 1F, ditto, 8–15. IX. 2009; KPM-NK 81400, F, Toyama Pref., Toyama City, Arimine, Jurodani, 1–8. IX. 2009, M. Watanabe leg. (MsT); KPM-NK 81398, F, Toyama Pref., Toyama City, Arimine, Kamegai, 14–21. VII. 2009, M. Watanabe leg. (MsT); KPM-NK 81399, F, Toyama Pref., Toyama City, Arimine, Inonedani, 11–16. VIII. 2009, M. Watanabe leg. (MsT). [Shikoku] KPM-NK 102779, F, Ehime Pref., Saijyo City, Nishinokawatei, Mt. Ishizuchi-yama, Tsuchigoya, 28. VII. 2018, K. Watanabe leg.

Description. Female (n = 11). Body punctate and polished; covered with setae; body length 6.2–9.5 mm.

Head 0.55 × as long as wide in dorsal view. Clypeus 2.2–2.3 × as wide as long; slightly convex in lateral view; punctate and coriaceous dorsally, smooth ventrally; lower margin subtruncate in frontal view, obtuse in lateral view. Face 0.3–0.38 × as long as minimum width; weakly convex medially; matt laterally, densely punctate and coriaceous medially. Frons weakly concave above antennal sockets; matt and punctate dorsally; coriaceous ventrally. POL 1.15–1.3 × as OD. OOL 1.4–1.7 × as OD. Gena and occiput finely and sparsely punctate. Dorsal profile of gena weakly rounded in dorsal view; width gradually narrowing posteriorly (Fig. 60D). Occipital carina complete. Malar space 0.8–0.9 × as long as basal width of mandible. Mandible flat at base; lower tooth equal in length of upper tooth. Antenna with 27–29 flagellomeres; apical part flattened below and tapered to slender apex. FL I 2.0–2.25 × as long as maximum depth in lateral view, 0.9–0.95 × as long as FL II.

Mesosoma. Pronotum rugulose except for small area of antero-dorsal part punctate (Fig. 60E). Epomia absent. Mesoscutum densely punctate; without notaulus. Scutellum sparsely punctate (Fig. 60G); slightly convex in lateral view. Mesopleuron with conspicuous smooth area around speculum (Fig. 60E). Epicnemial carina

present laterally and ventrally. Sternaulus deep in anterior 0.4 of mesopleuron. Metapleuron with juxtacoxal carina; carina sometimes indistinct by rugae. Propodeum rugose or rugulose except for smooth anterior part; anterior transverse carina absent; posterior transverse carina complete, inverted U-shaped (Fig. 60G); lateromedian longitudinal carina present; lateral longitudinal carina present, sometimes weak posteriorly; pleural carina complete; area superomedia partly indistinct; area externa punctate; apophysis absent; spiracle oval. Fore wing length 5.7–7.1 mm. Areolet slightly longer than wide; width gradually narrowing anteriorly; received vein 2m-cu at slightly beyond to or near middle (Fig. 60F). Fore wing vein 1cu-a interstitial to vein M&RS (Fig. 60F). Nervellus subvertical; intercepted near posterior end of vein. Hind femur reticulate coriaceous; $4.1\text{--}4.5 \times$ as long as maximum depth in lateral view. Tarsal claws simple.

Metasoma finely and sparsely punctate, ISP smooth. T I $1.9\text{--}2.1 \times$ as long as maximum width; latero-median carina absent posteriorly, weak anteriorly; dorso-lateral

carina complete. T II $0.6\text{--}0.8 \times$ as long as maximum width. Thyridium present; close to anterior margin of T II; slightly depressed; ca. $2.0 \times$ as wide as length. Ovipositor sheath $0.95\text{--}1.05 \times$ as long as hind tibia, $1.45\text{--}1.65 \times$ as long as T I. Ovipositor straight; apex obtuse with small truncation; apex of lower valve with teeth (Fig. 79Z).

Colouration (Figs. 60A–G). Body (excluding wings) black to blackish-brown. Setae silver; more or less brownish on head and mesoscutum. Subapical part of mandible, ventral surface of apical part of flagellum, and posterior margin of T II tinged with reddish-brown to yellowish-brown. FL V (or VI, VII) to FL X (or XI, XII) with white markings. Fore femur, tibia, and tarsus partly tinged with brown to dark yellowish-brown. Thyridium and ovipositor dark reddish-brown. Apex of metasoma ivory. Wings hyaline. Veins and pterostigma blackish-brown to brown except for yellowish-brown wing base.

Male. Unknown.

Distribution. Japan (Kunashiri Is., Hokkaido, Honshu, and Shikoku).

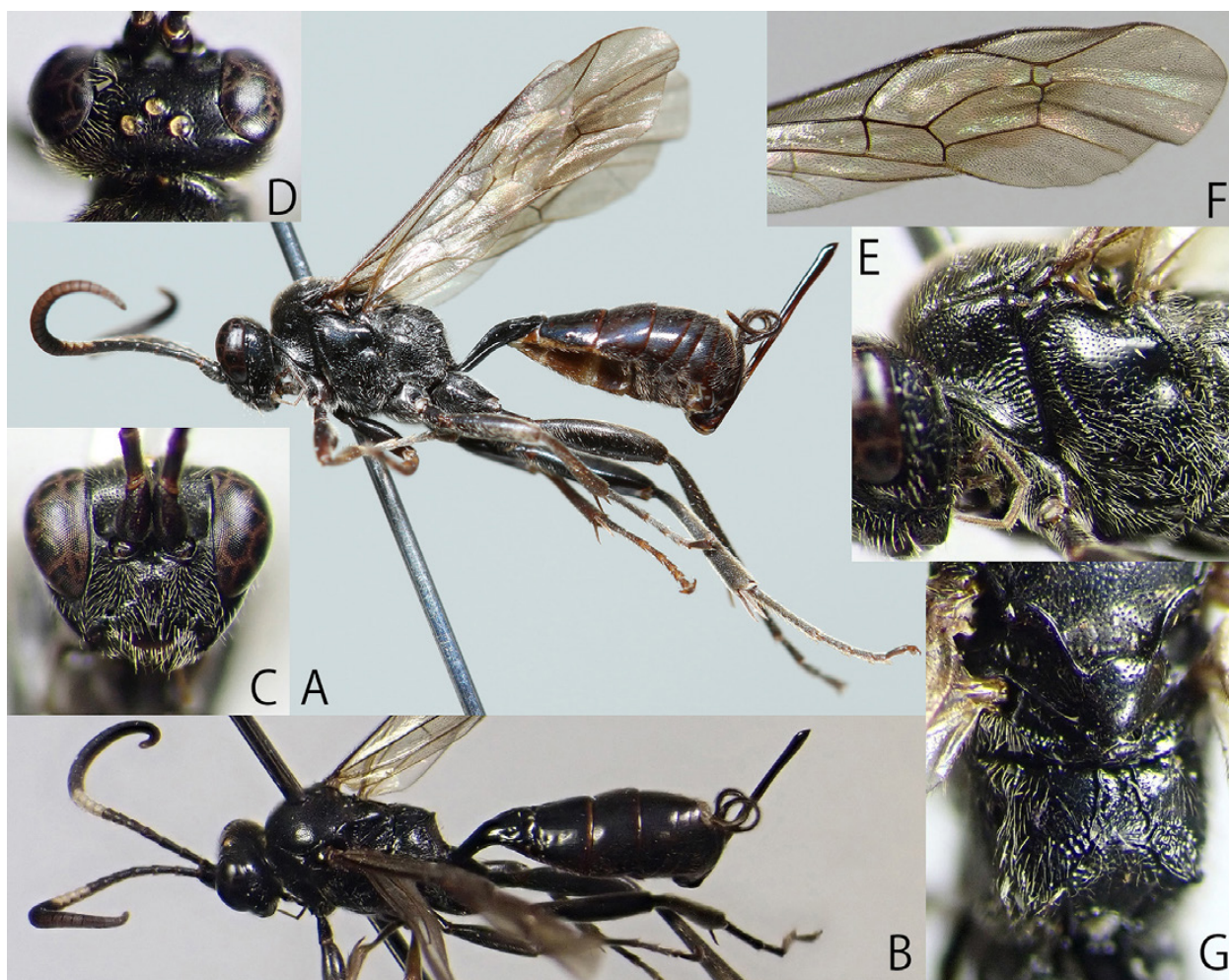


Fig. 60. *Schenkia sylvatica* Townes, Momoi & Townes, 1965, female (KPM-NK 102783) — A: lateral habitus; B: head, mesosoma, and metasoma, dorso-lateral view; C: head, frontal view; D: head, dorsal view; E: pronotum and mesopleuron, lateral view; F: fore wing; G: scutellum and propodeum, dorsal view.

Bionomics. Unknown.

Remarks. This is the first record of this species from Shikoku.

***Schenkia tosaensis* (Uchida, 1936)**

[SJN: Tosa-kogata-futo-togari-himebachi]

(Figs. 61A–G, 79AA)

Microcryptus tosaensis Uchida, 1936b: 17.

Materials examined. JAPAN: [Honshu] KPM-NK 69500, F, Hyogo Pref., Kami Town, Niiya, Mikata-kogen, 26. VI. – 18. VII. 2011, S. Fujie leg. (MsT). [Shikoku] SEHU, 1F (holotype), Kochi Pref., Mt. Kajigamori, 4. VI. 1933, Y. Sugihara leg.; MNHAH, 1M (allotype), Kochi Pref., Teragawa, 18. VII. 1933, Y. Sugihara leg.

Description. Female (n =2). Body punctate and polished; covered with setae; body length 9.5–11.5 mm.

Head $0.6 \times$ as long as wide in dorsal view. Clypeus $2.5 \times$ as wide as long; slightly convex in lateral view; punctate and coriaceous dorsally, smooth ventrally; lower margin subtruncate in frontal view, obtuse in lateral view. Face $0.38 \times$ as long as minimum width; weakly convex medially; matt laterally, densely punctate and coriaceous medially. Frons weakly concave above antennal sockets; matt and punctate dorsally, coriaceous and partly transversely rugulose ventrally. POL $1.25 \times$ as OD. OOL $1.3 \times$ as OD. Gena and occiput finely and sparsely punctate. Dorsal profile of gena nearly straight in dorsal view; width gradually narrowing posteriorly (Fig. 61D). Occipital carina complete. Malar space $1.0\text{--}1.1 \times$ as long as basal width of mandible. Mandible flat at base; lower tooth equal in length of upper tooth. Antenna with 30 flagellomeres; apical part flattened below and tapered to slender apex. FL I $2.6 \times$ as long as maximum depth in lateral view, $0.9 \times$ as long as FL II.

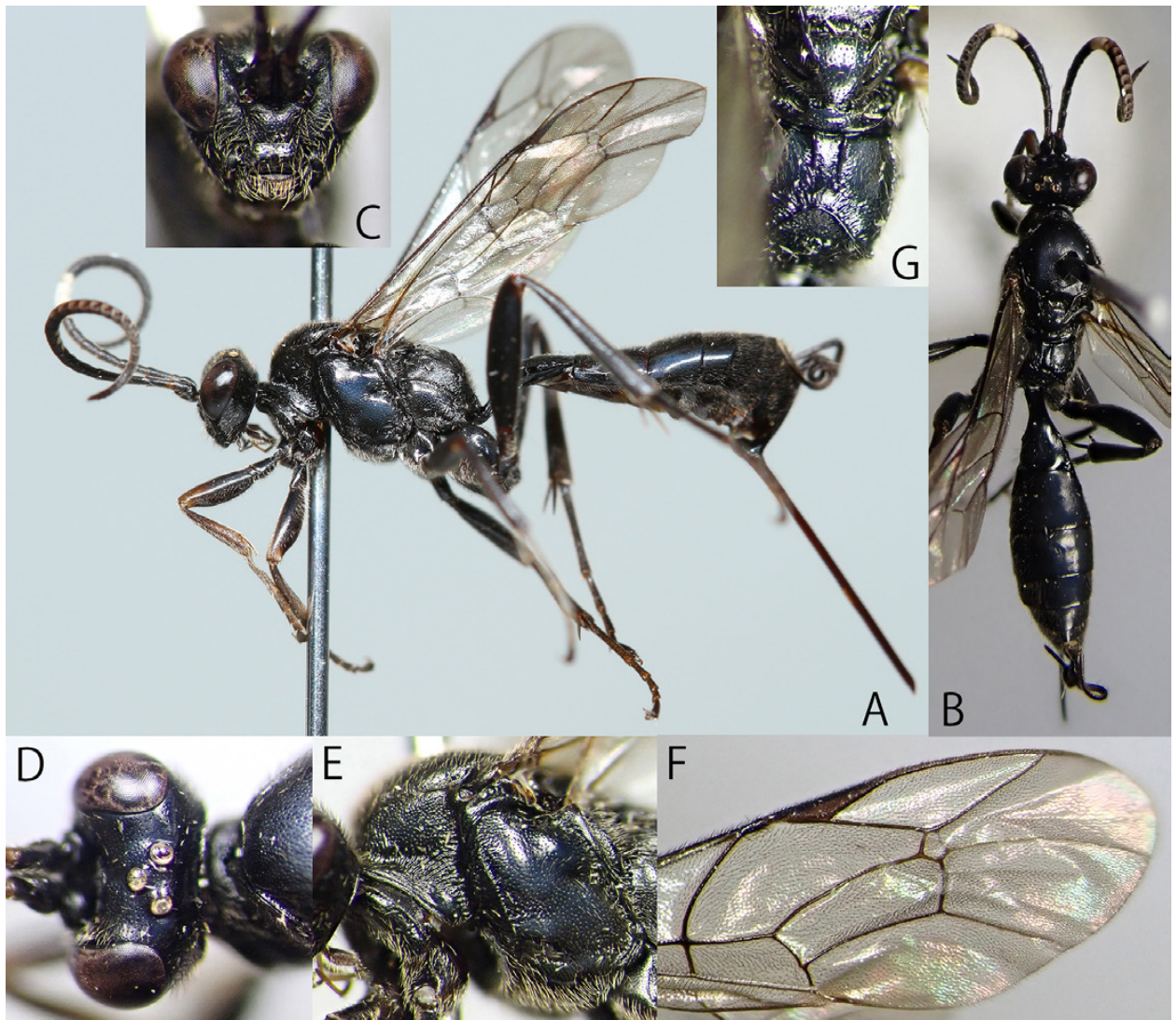


Fig. 61. *Schenkia tosaensis* (Uchida, 1936), female (KPM-NK 69500) — A: lateral habitus; B: head, mesosoma, and metasoma, dorsal view; C: head, frontal view; D: head, dorsal view; E: pronotum and mesopleuron, lateral view; F: fore wing; G: scutellum and propodeum, dorsal view.

Mesosoma. Pronotum rugulose ventrally (Fig. 61E). Epomia absent. Mesoscutum densely punctate; without notaulus (Fig. 61D). Scutellum sparsely punctate; slightly convex in lateral view. Mesopleuron with conspicuous smooth area around speculum (Fig. 61E). Epicnemial carina present laterally and ventrally. Sternaulus deep in anterior 0.4 of mesopleuron. Metapleuron punctate anteriorly, transversely strigose posteriorly; with complete juxtacoxal carina. Propodeum finely and weakly coriaceous; area along posterior transverse carina rugose or rugulose; anterior transverse carina absent; posterior transverse carina complete, inverted V-shaped (Fig. 61G); lateromedian longitudinal carina present anteriorly; lateral longitudinal carina complete; pleural carina complete; area superomedia partly indistinct; area externa punctate; apophysis absent; spiracle oval. Fore wing length 8.3 mm. Areolet slightly longer than wide; width steeply narrowing anteriorly; received vein 2m-cu at slightly beyond to middle (Fig. 61F). Fore wing vein 1cu-a interstitial to vein M&RS (Fig. 61F). Nervellus subvertical; intercepted near posterior end of vein. Hind femur reticulate coriaceous; $4.9 \times$ as long as maximum depth in lateral view. Tarsal claws simple.

Metasoma weakly to slightly coriaceous except for posterior smooth area of T I; finely and sparsely punctate. T I $1.85\text{--}1.95 \times$ as long as maximum width; lateromedian carina absent posteriorly; dorso-lateral carina complete except for area near spiracle. T II $0.8 \times$ as long as maximum width. Thyridium present; close to anterior margin of T II; slightly depressed; ca. $2.0 \times$ as wide as length. Ovipositor sheath $0.95\text{--}1.1 \times$ as long as hind tibia, $1.85\text{--}1.9 \times$ as long as T I. Ovipositor straight; apex obtuse; apex of lower valve with teeth (Fig. 79AA).

Colouration (Figs. 61A–G). Body (excluding wings) black to blackish-brown. Setae silver; more or less brownish on head and mesoscutum. Subapical part of mandible, ventral surface of apical part of flagellum, and posterior margin of T II tinged with reddish-brown to yellowish-brown. FL VII to FL X with white markings. Fore femur, tibia, and tarsus partly tinged with brown to dark yellowish-brown. Thyridium and ovipositor reddish-brown. Apex of metasoma ivory. Wings hyaline. Veins and pterostigma blackish-brown to brown except for yellowish-brown wing base.

Male. No additional material is available.

Distribution. Japan (Hokkaido, Honshu, and Shikoku).

Bionomics. Unknown.

***Schenkia uryuensis* sp. nov.**

[New SJN: Kitaguni-futo-togari-himebachi]

(Figs. 62A–G, 79AB)

Type series. Holotype: JAPAN, KPM-NK 84967, F, Hokkaido, Horokanai Town, Uryu, Research Forest of Hokkaido University, 11–17. VII. 2012, K. Watanabe *et al.* leg. (MsT).

Description. Female ($n = 1$). Body polished; covered with setae; body length 6.7 mm.

Head $0.6 \times$ as long as wide in dorsal view. Clypeus $2.3 \times$ as wide as long; slightly convex in lateral view; sparsely punctate dorsally; smooth ventrally; lower margin subtruncate in frontal view, obtuse in lateral view. Face $0.38 \times$ as long as minimum width; weakly convex medially; matt; finely punctate. Frons weakly concave above antennal sockets; matt and punctate dorsally, coriaceous ventrally. POL $1.2 \times$ as OD. OOL $1.4 \times$ as OD. Gena and occiput finely punctate. Dorsal profile of gena rounded in dorsal view; width gradually narrowing posteriorly (Fig. 62D). Occipital carina complete. Malar space $1.1 \times$ as long as basal width of mandible. Mandible flat at base; lower tooth equal in length of upper tooth. Antenna with 24 flagellomeres; apical part flattened below and tapered to slender apex. FL I $2.0 \times$ as long as maximum depth in lateral view, $0.85 \times$ as long as FL II.

Mesosoma. Pronotum rugulose ventrally and posteriorly, punctate antero-dorsally (Fig. 62E). Epomia absent. Mesoscutum punctate; with short and weak notaulus. Scutellum sparsely punctate (Fig. 62G); weakly convex in lateral view. Mesopleuron punctate; punctures partly united into groove-like foveola; without conspicuous smooth area around speculum (Fig. 62E). Epicnemial carina present laterally and ventrally. Sternaulus deep in anterior 0.4 of mesopleuron. Metapleuron finely punctate; with complete juxtacoxal carina; area around and below juxtacoxal carina rugose. Propodeum rugose or rugulose except for area externa finely and sparsely punctate with smooth ISP (Fig. 62D); anterior transverse carina absent (Fig. 62D); posterior transverse carina complete, inverted V-shaped (Fig. 62D); lateromedian longitudinal carina weak; lateral longitudinal carina complete; pleural carina complete; area superomedia indistinct; apophysis absent; spiracle oval. Fore wing length 5.9 mm. Areolet as long as maximum width; width gradually narrowing anteriorly; received vein 2m-cu at near middle (Fig. 62F). Fore wing vein 1cu-a postfurcal to vein M&RS (Fig. 62F). Nervellus subvertical; intercepted posterior to middle. Hind femur reticulate coriaceous; $4.3 \times$ as long as maximum depth in lateral view. Tarsal claws simple.

Metasoma finely and sparsely punctate, ISP smooth. T I $2.15 \times$ as long as maximum width; latero-median carina absent; dorso-lateral carina complete. T II $0.8 \times$ as long as maximum width. Thyridium present; close to anterior

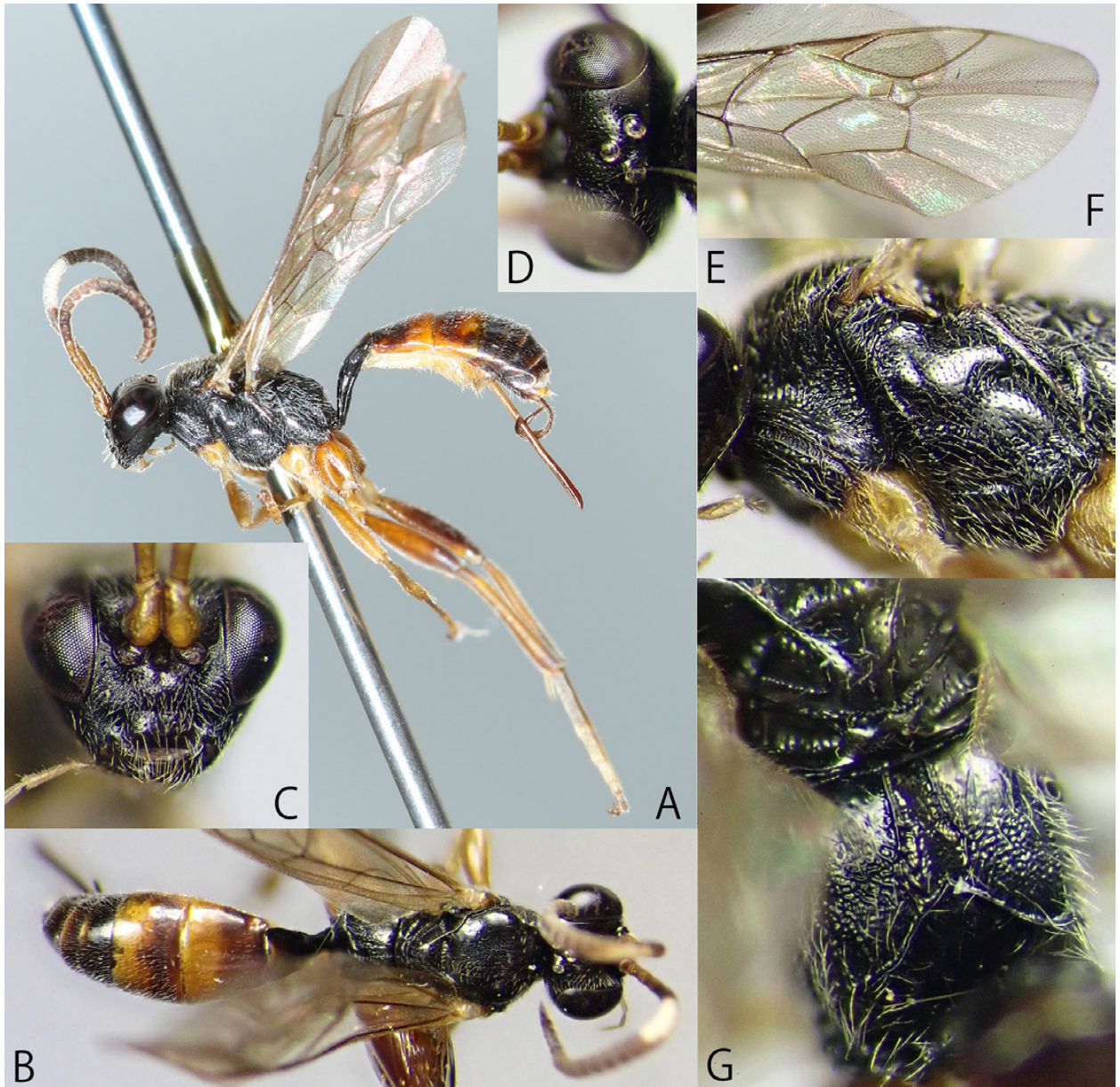


Fig. 62. *Schenkia uryuensis* sp. nov., female (holotype: KPM-NK 84967) — A: lateral habitus; B: head, mesosoma, and metasoma, dorsal view; C: head, frontal view; D: head, dorsal view; E: pronotum and mesopleuron, lateral view; F: fore wing; G: scutellum and propodeum, dorsal view.

margin of T II; slightly depressed; ca. $2.0 \times$ as wide as length. Ovipositor sheath $0.85 \times$ as long as hind tibia, $1.35 \times$ as long as T I. Ovipositor straight; apex obtuse; apex of lower valve with teeth (Fig. 79AB).

Colouration (Figs. 62A–G). Body (excluding wings) black to blackish-brown. Setae silver. Mandible tinged with dark brown except for teeth. Labrum, palpi, scape, pedicel, FL I to FL III, and ovipositor yellowish-brown. FL VI to FL X with white markings. Fore and mid coxae, trochanters, trochantelli, tibial spurs, and second to fourth hind tarsomeres ivory to yellowish-brown. Hind coxa, femora, tibiae, and tarsi except second to fourth hind tarsomeres reddish-yellow. Apices of hind femur and tibia and hind first and fifth tarsomeres tinged with brown. Membranous part of metasomal sternites yellow. Apex

of T I narrowly tinged with reddish-brown. T II and T III largely tinged with reddish-brown to red. Posterior margins of T II to T VI narrowly tinged with red. Wings brownish-hyaline. Veins and pterostigma brown to yellowish-brown except for yellow wing base.

Male. Unknown.

Distribution. Japan (Hokkaido).

Bionomics. Unknown.

Etymology. The species name is from the type locality, Uryu, a place in Hokkaido with the research forest of Hokkaido University.

Remarks. This species resembles *S. aries* (Thomson, 1883) and *S. spinolae* (Gravenhorst, 1829) in the body colouration and the obtusely pointed ovipositor but can be distinguished by the black T I and T IV (both red in *S.*

aries and *S. spinolae*), the fore wing vein 1cu-a postfurcal to vein M&RS (interstitial in *S. aries* and *S. spinolae*), the apex of ovipositor not bulged dorsally (bulged dorsally in *S. aries*), and the entirely black face (with reddish markings in *S. aries* and *S. spinolae*).

Tribe Cryptini Kirby, 1837

This group has been studied more than Aptesini in Japan, but there are still many unknown species identified. Previously, 50 genera and 122 species have been recorded (Watanabe *et al.*, 2024). In this paper, I study six genera, including the descriptions of a new species and a new subspecies. I also report a new synonym, a species new to Japan and a subspecies new to Japan.

Genus *Euchalinus* Townes, 1961

Euchalinus Townes, 1961 in Townes *et al.* 1961: 471.

Type species: *Skeattia balteata* Cameron, 1905.

Original designation.

A single species, *Euc. multimaculatus* Kusigemati, 1986, has been recorded from Japan. In this study, I record

the additional specimens of this species collected from Amamioshima Island (new record) and Okinawajima Island below.

Euchalinus multimaculatus Kusigemati, 1986

[SJN: Okinawa-madara-togari-himebachi]

(Figs. 63A–F)

Euchalinus multimaculatus Kusigemati, 1986: 421.

Materials examined. JAPAN: [Amamioshima Is.] MNHAH, 1F, Kagoshima Pref., Sumiyo Vil., Yakkachi, 17. VII. 1933, T. Esaki & K. Yasumatsu leg. [Okinawajima Is.] SEHU, 1F (holotype), Motobu, Izumi, 29. VI. 1982, K. Ohara leg.; SEHU, 1M (paratype), Kunigami, Yona, 1. VII. 1982, K. Kusigemati leg.; OMNH, 1F, Okinawa Pref., Sueyoshikoen, 18. X. 1994, R. Matsumoto leg.; OMNH, 1F, ditto, 16. VII. 1995; KPM-NK 103100, F, Okinawa Pref., Nago City, Mt. Nago-dake, 8. V. 2021, N. Tokushige leg.

Description. See Kusigemati (1986).

Distribution. Japan (Tanegashima Is., Amamioshima Is., and Okinawajima Is.).

Bionomics. Unknown.

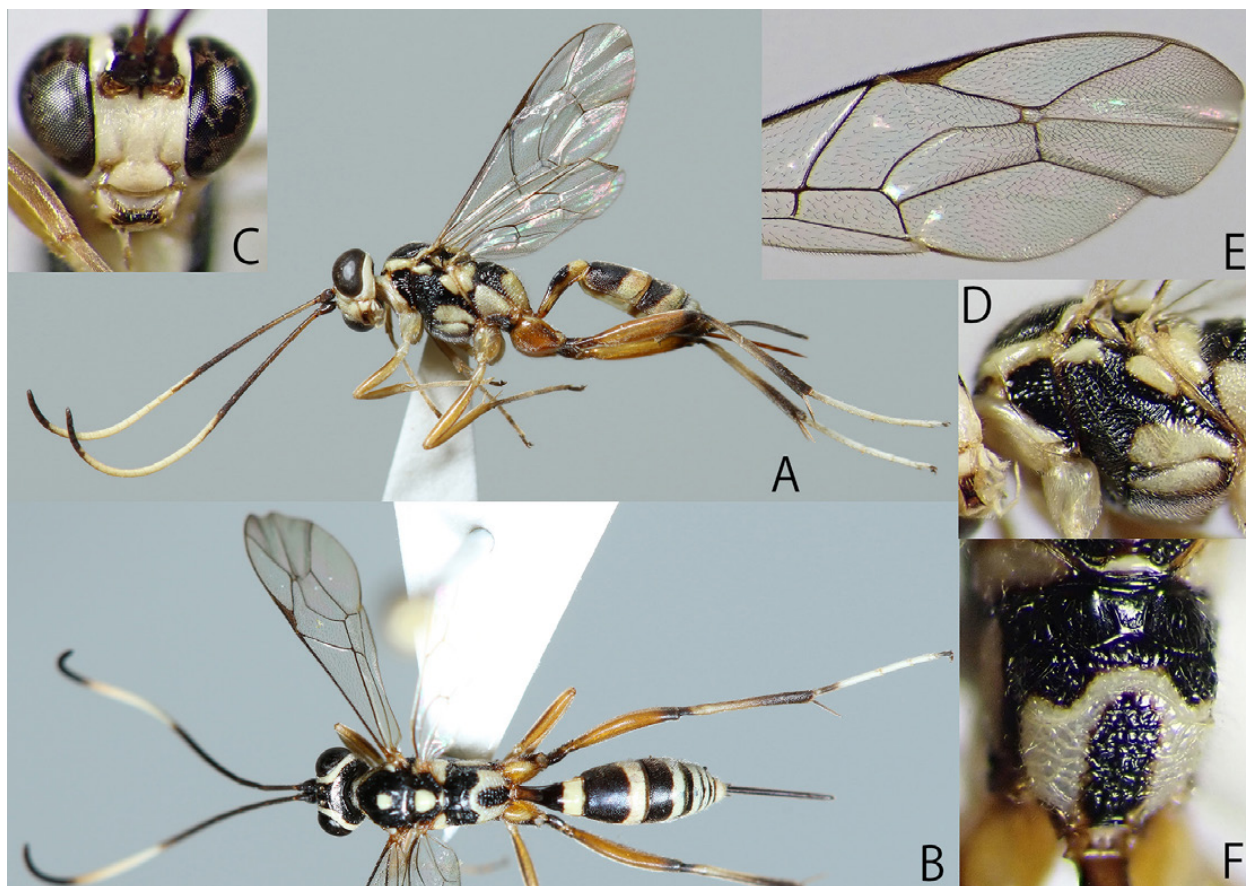


Fig. 63. *Euchalinus multimaculatus* Kusigemati, 1986, females (A, D: OMNH; B, C, E, F: KPM-NK 103100) — A: lateral habitus; B: dorsal habitus; C: head, frontal view; D: pronotum and mesopleuron, lateral view; E: fore wing; F: propodeum, dorsal view.

Remarks. This is the first record of this species from Amamioshima Island.

Genus *Goryphus* Holmgren, 1868

Goryphus Holmgren, 1868: 398. Type species: *Goryphus basilaris* Holmgren, 1868. Designated by Viereck (1914).

Psacus Holmgren, 1868: 400. Type species: *Goryphus* (*Psacus*) *areolaris* Holmgren, 1868. Designated by Viereck (1914). Name preoccupied.

Brachycoryphus Kriechbaumer, 1894b: 46. Type species: *Brachycoryphus calabaricus* Kriechbaumer, 1894. Designated by Viereck (1914).

Fislistina Cameron, 1902a: 56. Type species: *Fislistina maculipennis* Cameron, 1902. Monotypic.

Fenenias Cameron, 1902b: 211. Type species: *Fenenias albomaculatus* Cameron, 1902. Monotypic.

Cratocryptus Cameron, 1905a: 141. Type species: *Cratocryptus maculiceps* Cameron, 1905. Monotypic. Name preoccupied.

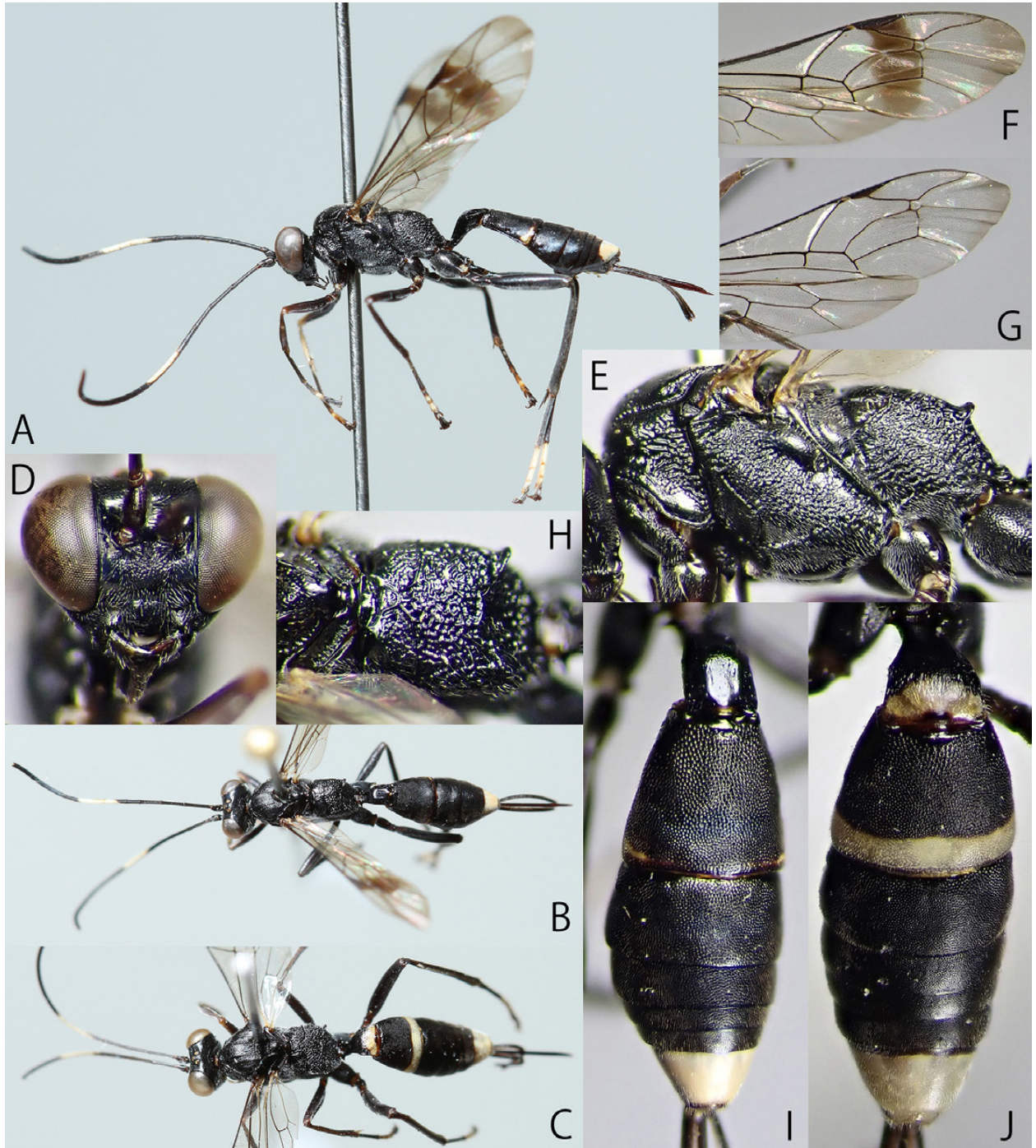


Fig. 64. *Goryphus albofasciatus erabu* **subsp. nov.** (holotype: KPM-NK 103202) and *Go. a. albofasciatus* (Matsumura & Uchida, 1926) (KPM-NK 103200), females — A: lateral habitus; B, C: head, mesosoma, and metasoma, dorsal view; D: head, frontal view; E: mesosoma, lateral view; F, G: wings; H: scutellum and propodeum, dorsal view; I, J: metasoma, dorsal view.

Loiada Cameron, 1905b: 166. Type species: *Loiada maculiceps* Cameron, 1905 (= *Cratocryptus maculiceps* Cameron, 1905). Monotypic.

Cratocryptodes Schulz, 1906: 123. New name for *Cratocryptus*.

Cratocryptoides Schmiedeknecht, 1908: 62. New name for *Cratocryptus*.

Scenopathus Enderlein, 1914: 215. Type species: *Scenopathus ferrugineus* Enderlein, 1914. Original designation.

Miramilia Seyrig, 1952: 179. Type species: *Miramilia communis* Seyrig, 1952. Original designation.

Two species, *Go. albofasciatus* (Matsumura & Uchida, 1926) and *Go. basilaris* Holmgren, 1868, have been recorded from Japan. In this study, I newly describe a new subspecies of the former species below.

***Goryphus albofasciatus* (Matsumura & Uchida, 1926)**

[SJN: Shiro-yokojima-togari-himebachi]

(Figs. 64A–J, 65A–F, 80F)

Gambrus albofasciatus Matsumura & Uchida, 1926: 75.

Description. Female (n = 10). Body polished; covered with setae; body length 7.3–11.2 mm.

Head $0.6\text{--}0.65 \times$ as long as wide in dorsal view. Clypeus $1.8\text{--}2.0 \times$ as wide as long; weakly convex in lateral view; densely punctate dorsally; smooth ventrally; lower margin rounded in frontal view, narrowly reflected in lateral view. Face $0.5\text{--}0.55 \times$ as long as minimum width; slightly convex medially; punctate laterally; foveola rugose medially. Anterior tentorial pit small. Frons weakly concave above antennal sockets; rugose dorsally except for coriaceous lateral sides; smooth on concavity. POL $0.6\text{--}1.0 \times$ as OD. OOL $1.0\text{--}1.3 \times$ as OD. Gena and occiput finely and densely punctate, ISP coriaceous. Dorsal profile of gena slightly rounded to straight in dorsal view; width abruptly narrowing posteriorly. Occipital carina complete. Malar space $0.7\text{--}0.75 \times$ as long as basal width of mandible. Mandible slightly convex at base; lower margin not widened as lamella; lower tooth shorter than upper tooth. Antenna with 25–27 flagellomeres; apical part slightly widened. FL I $8.8\text{--}10.5 \times$ as long as maximum depth in lateral view, $1.05\text{--}1.1 \times$ as long as FL II.

Mesosoma. Pronotum reticulate rugose. Epomia long; dorsal end closed to dorsal margin of pronotum and strongly raised as convexity. Mesoscutum densely and finely punctate; rugulose posteromedially; with long and strong notaulus. Scutellum punctate; convex in lateral view; with lateral carina on anterior half. Mesopleuron largely irregularly rugose; with smooth area around

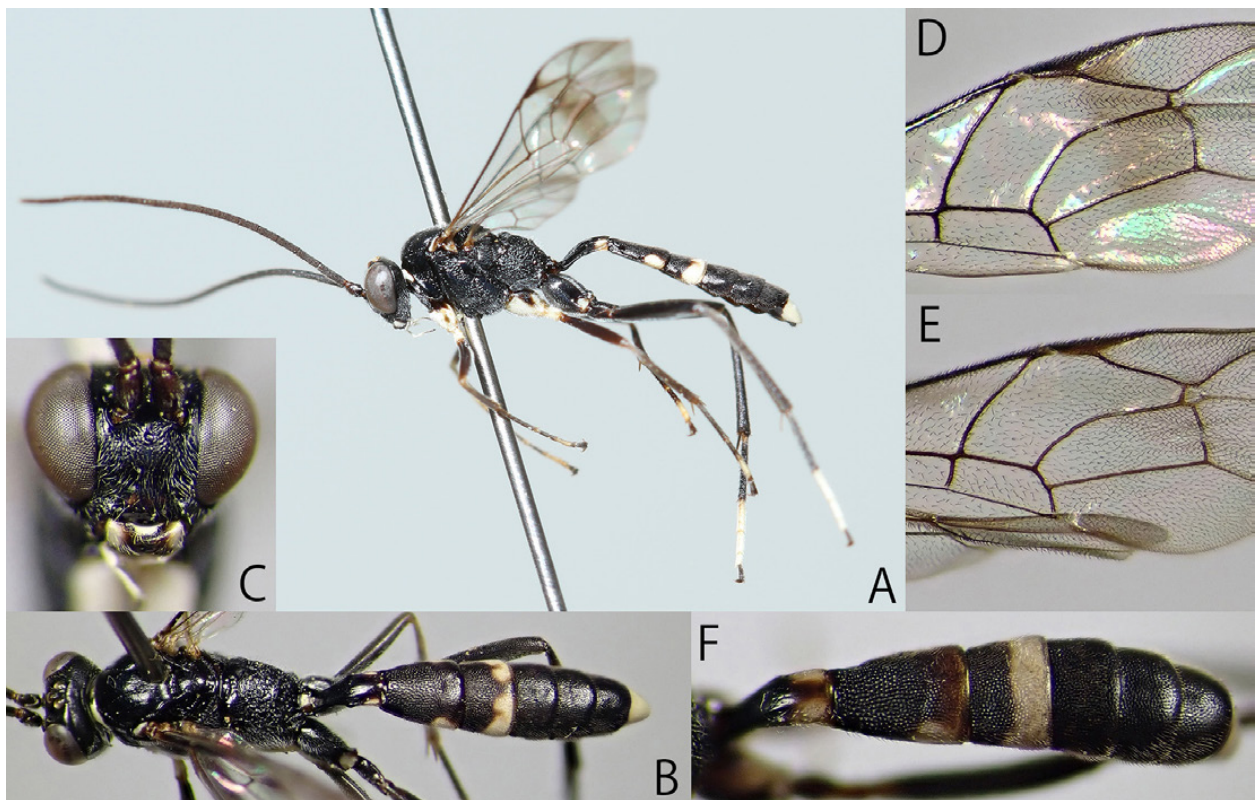


Fig. 65. *Goryphus albofasciatus erabu* subsp. nov. (paratype: KPM-NK 103203) and *Go. a. albofasciatus* (Matsumura & Uchida, 1926) (KPM-NK 103201), males — A: lateral habitus; B: head, mesosoma, and metasoma, dorso-lateral view; C: head, frontal view; D, E: fore wing; F: metasoma, dorsal view.

speculum (Fig. 64E). Epicnemial carina present laterally and ventrally; dorsal end reaching below subtegular ridge. Sternaulus deep in entire length of mesopleuron. Metapleuron irregularly rugose; with complete juxtacoxal carina. Propodeum rugose (Fig. 64H): anterior transverse carina complete; posterior transverse carina largely indistinct; lateral longitudinal carina absent; pleural carina present; lateromedian longitudinal carina present only anterior to anterior transverse carina; apophysis large and ear-like (Figs. 64E, H); spiracle oval. Fore wing length 5.6–8.5 mm. Areolet small; as long as maximum width; width slightly narrowing anteriorly; received vein 2m-cu near middle (Figs. 64F, G). Fore wing vein 1cu-a slightly antefurcal to vein M&RS (Figs. 64F, G). Nervellus subvertical; intercepted posterior to middle (Fig. 64F). Hind 5.2–5.75 × as long as maximum depth in lateral view. Tarsal claws simple.

Metasoma densely punctate except for T I (Figs. 64I, J). T I 1.55–1.75 × as long as maximum width; sparsely punctate except for smooth basal part; latero-median carina present except for posterior part; dorso-lateral carina complete; with pair of lateral triangular teeth at base. T II 0.9–0.95 × as long as maximum width; thyridium weakly present close to anterior margin of T II; slightly depressed; ca. 2.0 × as wide as length. Ovipositor sheath 0.85–0.9 × as long as hind tibia, 1.7–2.05 × as long as T I. Ovipositor straight; apex sharp; nodus slightly present; apex of lower valve with teeth (Fig. 80F).

Colouration (Figs. 64A–J). Body (excluding wings) black to blackish-brown. Setae silver. FL V (or VI) to FL XI with white markings. T II and T VII with white marking(s). Palpi, fore and mid legs, and membranous parts of metasomal sternites sometimes tinged with ivory. Ovipositor reddish-brown. Some tarsal segment(s) of legs ivory. Wings hyaline; with clouded area. Veins and pterostigma blackish-brown except for brown to yellowish-brown wing base. Some intersubspecific variation of coloration present; see description of *G. a. erabu* **ssp. nov.**

Male (n = 15). Similar to female (Figs. 65A–F). Body length 6.0–10.7 mm. Head 0.55 × as long as wide in dorsal view. Face 0.6–0.65 × as long as minimum width. Antenna with 26–31 flagellomeres; with tyloids on FL XIV (or XIII) to FL XV (or XVI). FL I 3.55–3.85 × as long as maximum depth in lateral view, 1.25 × as long as FL II. Fore wing length 4.3–7.3 mm. T I 2.0–2.6 × as long as maximum width. T II 1.0–1.5 × as long as maximum width. Antenna without white band. Mandible, median part of collar, and fore and mid coxae and trochanters with ivory area. T III with white posterior band. Clouded area of fore wing weaker than female. Whitish parts of legs larger than female.

Distribution. Japan (Okinawajima Is. and Okinoerabujima Is.).

Bionomics. Unknown. Adults were collected in evergreen forests.

Remarks. This species is easily distinguished from other Japanese species by the black and white body colouration. Matsumura & Uchida (1926) described this species based on the specimens collected from Okinawajima Island. Momoi (1970) recorded additional data of this species based on the specimens collected in Okinawajima Island and Okinoerabujima Island. I found some additional materials of this species from both islands and recognized stable differences of body colouration. In this study, I newly describe a new subspecies of this species based on the specimens collected from Okinoerabujima Is.

Goryphus albofasciatus albofasciatus

(Matsumura & Uchida, 1926)

(Figs. 64C, G, J, 65E, F)

Materials examined. JAPAN: [Okinawajima Is.] KPM-NK 103222, M, Okinawa Pref., Nago City, Mt. Nago-dake, 7. VII. 2003, H. Irei & H. Makihara leg. (MsT); KPM-NK 103223, F, ditto, 12–16. IX. 2004; KPM-NK 103224, F, same locality, 16. IV. 2022, A. Tokushige leg.; KPM-NK 103201, 103211, 2M, Okinawa Pref., Kunigami Vil., Ginama, 19. VII. 2001, H. Irei & H. Makihara leg. (MsT); KPM-NK 103212, M, ditto, 26. VII. 2001; KPM-NK 103213, M, ditto, 23. IV. 2002; KPM-NK 103214, M, ditto, 2. V. 2002; KPM-NK 103215, F, same locality, 7. X. 2019, T. Amano leg.; KPM-NK 103216, M, Okinawa Pref., Kunigami Vil., Uka, 26. VII. 2001, H. Irei & H. Makihara leg. (MsT); KPM-NK 103217, M, ditto, 23. VIII. 2001; KPM-NK 103218, M, ditto, 18. V. 2002; KPM-NK 103219, M, Okinawa Pref., Kunigami Vil., Oku, 2. V. 2002, H. Irei & H. Makihara leg. (MsT); KPM-NK 103220, F, ditto, 22. X. 2019, T. Amano leg.; KPM-NK 103221, F, Okinawa Pref., Kunigami Vil., Mt. Nishime-dake, 29. V. 2021, N. Tokushige leg.; KPM-NK 103225, F, Okinawa Pref., Kunigami Vil., Aha, 28. VI. 2013, M. Ito leg.; KPM-NK 103226, 103227, 2M, Okinawa Pref., Kunigami Vil., Yona, 21. V. 2007, K. Watanabe leg.; KPM-NK 103228, 103229, 2M, ditto, 20–23. V. 2007 (YPT); KPM-NK 103200, F, same locality, 29. VI. 2013, S. Fujie leg.; KPM-NK 103230, F, Okinawa Pref., Kunigami Vil., Benoki, 6. X. 2019, T. Amano leg.

Distribution. Japan (Okinawajima Is.).

***Goryphus albofasciatus erabu* subsp. nov.**

(Figs. 64A, B, D–F, H, I, 65A–D, 80F)

Type series. Holotype: JAPAN, [Okinoerabujima Is.] KPM-NK 103202, F, Kagoshima Pref., China Town, Ashikiyora, Mt. Oyama, 25. IV. 2016, K. Watanabe leg.

Paratype: JAPAN: [Okinoerabujima Is.] KPM-NK 91360, F, Kagoshima Pref., China Town, Oyama, 28. VI. 2001, T. Nambu leg. (YPT); MNHAH, 1F, Kagoshima Pref., Okinoerabu, 19. III. 1970, H. Takizawa leg.; KPM-NK 103203, M, Kagoshima Pref., China Town, Tamina, Mt. Oyama, 26. IV. 2016, K. Watanabe leg.

Description. This subspecies has no morphological difference from *Go. albofasciatus albofasciatus*, while their body colorations are clearly differed, i.e., fore wing with a broad, conspicuous clouded band in *Go. a. erabu* (Figs. 64A, B, F, 65A, D) (without a band in *Go. a. albofasciatus* as in Figs. 64G, 65E), T I entirely black in female of *Go. a. erabu* (Figs. 64A, B, I) (with a broad white posterior band in female of *Go. a. albofasciatus* as in Figs. 64C, J), posterior white band of T II narrow and partly indistinct in female of *Go. a. erabu* (Figs. 64A, B, I) (with a broad white posterior band in female of *Go. a. albofasciatus* as in Figs. 64C, J), and the ivory markings of T I and T II narrow and divided into a pair of small lateral spots, respectively, in male of *Go. a. erabu* (Figs. 65A, B) (T I and T II each with broad white posterior band in male of *Go. a. albofasciatus* as Fig. 65F).

Distribution. Japan (Okinoerabujima Is.).

Etymology. The subspecific name is from the local name of Okinoerabujima Island, “Erabu”.

Remarks. This subspecies is endemic in Okinoerabujima Island.

Genus *Idiolispa* Förster, 1869

Idiolispa Förster, 1869: 188. Type species: *Bassus analis* Gravenhorst, 1807. Designated by Viereck (1914).

Liocryptus Thomson, 1873: 471. Type species: *Bassus analis* Gravenhorst, 1807. Monotypic.

Paracryptus Szépligeti, 1916: 251. Type species: *Paracryptus hungaricus* Szépligeti, 1916. Monotypic.

A single species, *I. analis nigra* Uchida, 1930, has been recorded from Japan. In this study, I newly record another subspecies of *I. analis* (Gravenhorst, 1807) from Japan below.

***Idiolispa analis* (Gravenhorst, 1807)**

[SJN: Munebuto-togari-himebachi]

(Figs. 66A–F)

***Idiolispa analis analis* (Gravenhorst, 1807)**

(Figs. 66A–F)

Bassus analis Gravenhorst, 1807: 266.

Ichneumon cursor Thunberg, 1822: 256.

Cryptus elevatus Zetterstedt, 1838: 370.

Cryptus limatus Cresson, 1864: 298.

Ischnus lentus Provancher, 1875: 110.

Spilocryptus dubiosus Kiss, 1924: 57.

Idiolispa fusca Constantineanu, 1929: 497.

Materials examined. JAPAN: [Yonagunijima Is.] NARO, 6M, 5–8. IV. 1999, K. Konishi leg. (YPT); KPM-NK 103136, F, Mt. Kubura-dake, 29. V. 2003, T. Mita leg.; KPM-NK 103137–103140, 1F & 3M, ditto, 30. IV. 2004; KPM-NK 103141, N, Kubura, 28. III. 2011, T. Kawano leg.; KPM-NK 103142, 103143, 2M, Tarumai-shitsugen, 17. III. 2007, J. Imura leg.; KPM-NK103144, M, Tabarugawa-shitsugen, 8. IV. 2013, T. Sasai leg. **GERMANY:** MNHAH, 1F (det. by Momoi), Sternberg, 12. VIII. 1937. **ITALY:** MNHAH, 2M, Naturns, 14. VII. 1958, D. Townes leg. **AUSTRIA:** MNHAH, 1F (det. by Townes), Admont, Kaiserau, VI. 1950; LI, 1F (det. by Schwarz), Oberosterreich, Kraftwerk Wallsee, S-Ufer, 19. VI. 1996, J. Gusenleitner leg.; LI, 1M (det. by Schwarz), Perchtoldsdorfer Heide, 8. VI. 2013. **USA:** MNHAH, 1F (det. Townes as *I. analis imata*), Michigan, Ann Arbor, 12. V. 1959, H. & M. Townes leg.

Description. See Townes & Townes (1962) and Schwarz (1988).

Distribution. Japan (Yonagunijima Is.); widely distributed in Holarctic region and India (Oriental region).

Bionomics. According to Yu *et al.* (2016), several spiders, sawfly, moths, and cerambycid beetle have been recorded as host.

Remarks. This is the first record of this species from Japan while this distribution may be based on the introduced population. This subspecies can be easily distinguished from *I. analis nigra* by the conspicuous red T II and T III (Figs. 66A, B) (black in *I. analis nigra*).

Genus *Listrognathus* Tschek, 1871

Listrognathus Tschek, 1871: 153. Type species: *Listrognathus cornutus* Tschek, 1871 (= *Cryptus pubescens* Fonscolombe, 1850). Monotypic.

Mesostenoides Ashmead, 1900: 45. Type species: *Mesostenus albomaculatus* Cresson, 1864. Original designation.

Mesostenidea Viereck, 1914: 93. Type species: *Mesostenus*

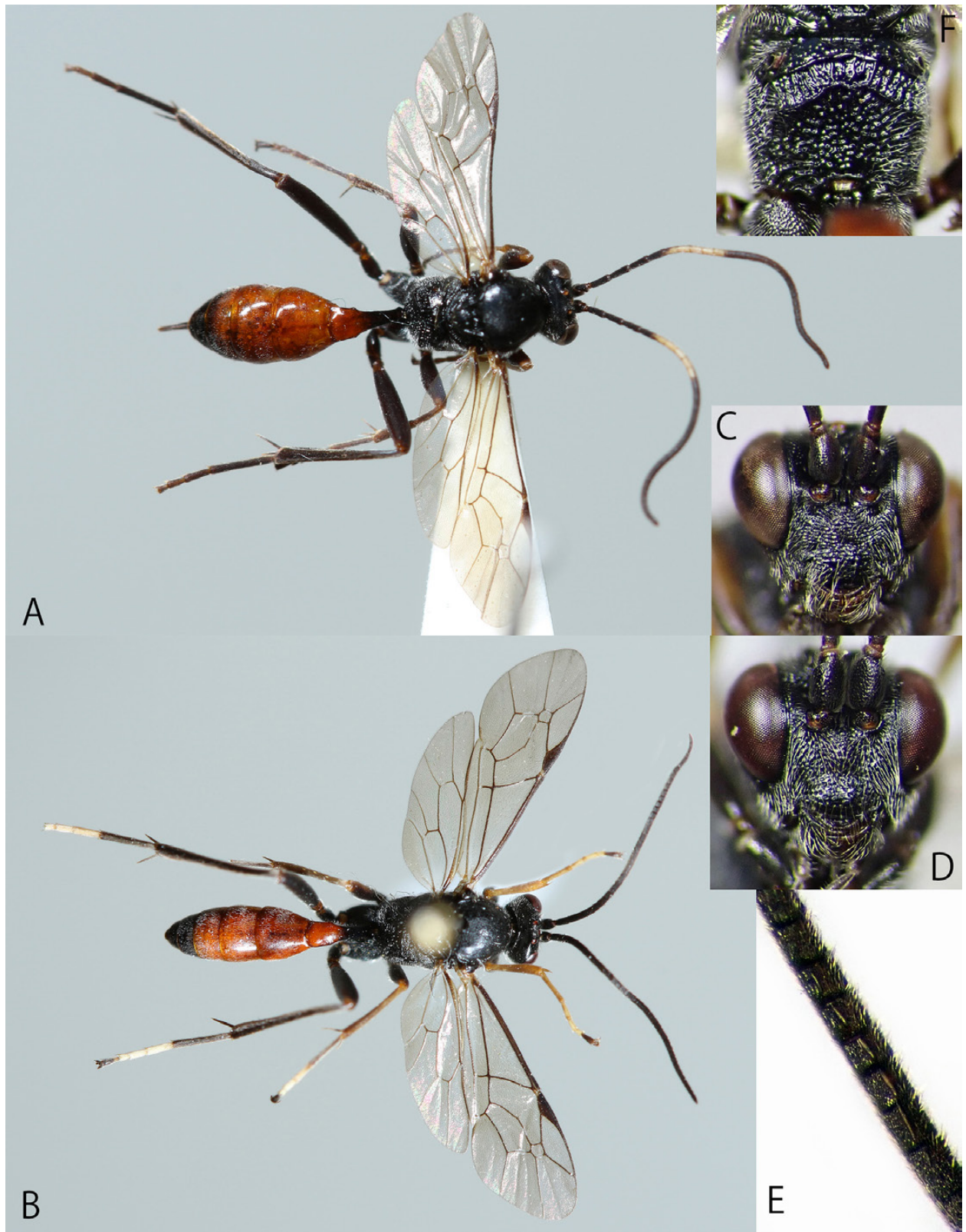


Fig. 66. *Idiolispa analis analis* (Gravenhorst, 1807), female (A, C, F: KPM-NK 103136) and male (B, D, E: KPM-NK 103144) — A, B: dorsal habitus; C, D: head, frontal view; E: flagellum and tyloids; F: propodeum, dorsal view.

ligator Gravenhorst, 1829 (= *Ichneumon firmator* Fabricius, 1798). Original designation.

Five species of two subgenera, *L. (Fenestula) aequabilis* Uchida, 1952, *L. (F.) alticarinatus* Momoi, 1966, *L. (Listrognathus) coreensis coreensis* Uchida, 1930, *L. (L.) eccopteromus* Uchida, 1930, and *L. (L.) punctator* (Smith, 1874), have been recorded from Japan. In this study, I describe a new species, report newly recorded species from Japan, and record some new data below.

Key to Japanese species of *Listrognathus*

1. Thyridium narrow, about $0.8 \times$ as wide as its distance from base of T II. Clypeus in profile moderately convex, not sharply pyramidal. Posterior transverse carina of propodeum complete medially.

..... Subgenus *Fenestula* Townes, 1962 2

-. Thyridium wide, about $1.3\text{--}2.5 \times$ as wide as its distance from base of T II. Clypeus in profile sharply pyramidal or very strongly convex (Fig. 80B). Posterior transverse carina of propodeum complete, weak, or absent.

..... Subgenus *Listrognathus* Tschek, 1871 3

2. Antero-lateral corner of pronotum not produced in dorsal view. Areolet large, its length longer than $0.33 \times$ as long as vein 2m-cu. T II sparsely punctate; ISP distinctly longer than PD. Frons weakly concave. Frontal horn without dorsal tooth in female.

..... *Listrognathus (Fenestula) aequabilis* Uchida, 1952

-. Antero-lateral corner of pronotum produced in dorsal view (weak in male). Areolet small, its length approximately $0.33 \times$ as long as vein 2m-cu. T II densely punctate; ISP as long as PD. Frons strongly concave. Basal part of frontal horn with small dorsal tooth in female.

..... *Listrognathus (Fenestula) alticarinatus* Momoi, 1966

2. Antero-ventral part of mesopleuron large yellow marking (Fig. 70A). Posterior margins of T II to T IV each with yellow band (Figs. 70A, B). Hind tibia bicolour: base and apex black and median part largely reddish-yellow (Figs. 70A, B). Propodeum with pair of large yellow markings (Fig. 70E).

..... *Listrognathus (Listrognathus) yunnanensis* He & Chen, 1996

-. Antero-ventral part of mesopleuron without yellow marking (Figs. 67A, F, 68A, 69A, F). Posterior margins of T II to T IV at most narrowly tinged with reddish-brown. Hind femur largely blackish-brown to black (Figs. 67A, 68A, 69A). Propodeum with (Figs. 67I, 68E, 69H) or without (Fig. 69I) pair of yellow markings.

..... 3

3. Punctures of T II shallow and sparse; interspace of punctures distinctly longer than diameter of puncture (Fig. 67L). T II strongly coriaceous. Large species; body length longer than 8.5 mm (usually longer than 10 mm). Posterior margin of T I sometimes with white band in male. Postero-lateral corner of T II with whitish-yellow markings in male. White band of antenna small; at most three flagellomeres white in female. Posterior transverse carina of propodeum absent medially in female.

.... *Listrognathus (Listrognathus) eccopteromus* Uchida, 1930

-. Punctures of T II deep and dense; interspace of punctures largely distinctly shorter than diameter of puncture (Fig. 67J). T II weakly coriaceous. Small species; body length sometimes shorter than 8.5 mm. Posterior margin of T I without white band (Fig. 68B). Postero-lateral corner of T II without whitish-yellow markings in male (Fig. 68B). White band of antenna large in female; usually more than four flagellomeres white. Posterior transverse carina of propodeum present or absent medially in female.

..... 4

4. Posterior transverse carina of propodeum inverted V-shaped; straight between lateral sides and median part; median part of carina sometimes absent (Figs. 69H, I, 80E). Posterior margins of T IV to T VII each with pair of transverse white markings (Figs. 69A, B, J). Hind tarsus with white bands on apical half of TS I, TS II, TS III, and TS IV (Fig. 69A). Hind tibia with large yellowish-brown part subbasally (Fig. 69A). Scutellum sometimes with yellow spot (Fig. 69H). Propodeum sometimes with pair of yellow markings (Fig. 69H). Ovipositor sheath $0.65\text{--}0.7 \times$ as long as hind tibia. T V and T VI with white marking(s) (Figs. 69A, B, J). Fore wing without clouded area (Figs. 69A, G). Male unknown.

..... *Listrognathus (Listrognathus) octoguttatus* **sp. nov.**

-. Posterior transverse carina of propodeum inverted wide U-shaped; sinuate between lateral sides and median part; median part of carina complete (Figs. 67I, 68E, 80D). Posterior margins of T IV and T VII black in female (Figs. 67B, K). Posterior margins of T V and T VI, if with white markings, tergite(s) (each) with single median white marking in female (Figs. 67B, K). Posterior margins of T IV to T VII each with single median white marking in male (Figs. 68A, B). Other character states various.

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5. Hind tibia with small white marking at subbasal part; it sometimes reduced (Figs. 67A, B, 68A, B). T V and T VI each with single median white marking in female (Figs. 67B, K). T IV to T VII each with single median white marking in male (Figs. 68A, B). Base of hind TS I usually narrowly white (Fig. 68A). Fore wing usually

with clouded area in female (Figs. 67A, B, G, H) (this area sometimes indistinct as in Fig. 67H). Scutellum sometimes with yellow spot (Fig. 67I; sometimes scutellum entirely yellow). Propodeum sometimes with pair of yellow markings (Figs. 67I, 68E).

..... *Listrognathus (Listrognathus)*
coreensis coreensis Uchida, 1930

-. Hind tibia yellowish-brown except for blackish-brown apical part. T IV to T VII without white marking. Fore wing without clouded area. Scutellum and propodeum entirely black.

..... *Listrognathus (Listrognathus) punctator* (Smith, 1874)

Subgenus *Listrognathus* Tschek, 1871

In this study, a new species are described is described below and a newly recorded species is reported below. In addition, I recognise the large intraspecific colour variation of *L. (L.) coreensis coreensis* and therefore I redescribe this species below.

Listrognathus (Listrognathus) coreensis coreensis

Uchida, 1930

[SJN: Chosen-tsuno-togari-himebachi]

(Figs. 67A-K, 68A-E, 80D, G)

Listrognathus coreensis Uchida, 1930: 316.

Listrognathus punctator: Iwata, 1958: 70. Misidentification.

Listrognathus punctator: Iwata, 1960: 159. Misidentification.

Materials examined. JAPAN: [Hokkaido] MNHAH, 1F (det. by Momoi), Nukabira, 14. VII. 1959, S. Momoi leg.; MNHAH, 1M (det. by Momoi), Bibai, 20. VIII. 1962, K. Kamijo leg., em. from *Nycteola asiatica*; MNHAH, 1F, ditto, 23. VIII. 1962; KPM-NK 103176, F, Horokanai Town, Uryu, 11–17. VII. 2012, K. Watanabe *et al.* leg. (MsT). [Honshu] NARO, 1F, Aomori Pref., Shiura Vil., Midori, 18. VIII. 1996, T. Ichita leg.; KPM-NK 103177, F, Niigata Pref., Myouko City, Suginosawa, Otomi-toge, 10. VIII. 2013, S. Shimizu leg.; NARO, 1F, Tochigi Pref., Fujioka Town, Watarase-yusuichi, 20. IX. 1992, H. Ohkawa leg.; KPM-NK 75869, F, Tochigi Pref., Kuroiso Town, Enna-Skyline, 13. VII. 2000, E. Katayama leg.; KPM-NK 75871, F, ditto, 30. VIII. 2000; KPM-NK 103178, F, Saitama Pref., Saito City, Makinoji, 8. IX. 2009, S. Yoshizawa leg.; NARO, 1F, Tokyo, Fuchu, 30. V. 1936, T. Ishii leg.; NARO, 1F, Tokyo, Mt. Takao, J. Minamikawa leg.; KPM-NK 103179, F, Kanagawa Pref., Kamakura, 4. X. 1981, H. Nagase leg.; KPM-NK M, Kanagawa Pref., Miura City, Misaki Town, Koajiro,

28. V. 2004, I. Kawashima leg.; KPM-NK 75873, F, Kanagawa Pref., Fujino Town, Mt. Jinba-yama, 7. VI. 2008, K. Watanabe leg.; KPM-NK 103181, 1F, Kanagawa Pref., Yokosuka City, Nagasawa, Muraoka, 23. VII. 2011, Y. Saito leg.; NARO, 1F, Shizuoka Pref., Kanaya, 15. VII. 1952, J. Minamikawa leg.; KPM-NK 103182, F, Nagano Pref., Outaki Vil., Mt. Ontake-san, Hakkaisan, 18–20. VIII. 2014, S. Shimizu leg.; KPM-NK 103183, F, Toyama Pref., Toyama City, Arimine, Inonedani, 11–16. VIII. 2009, M. Watanabe leg. (MsT); KPM-NK 75868, F, Toyama Pref., Toyama City, Arimine, Jurodani, 21–28. VII. 2009, M. Watanabe leg. (MsT); KPM-NK 75867, F, Toyama Pref., Nanto City, Togamura-kamimomose, 8–15. IX. 2009, M. Watanabe leg. (MsT); KPM-NK 75865, F, Fukui Pref., Mt. Asuwa, 15. VIII. 1980, T. H. Nakagon leg.; KPM-NK 103196, M, Fukui Pref., Izumi Vil., Itoshiro river, 15. V. 1982, T. Murota leg.; KPM-NK 103184, F, Fukui Pref., Kadonomaesaka, 10. X. 1995, C. Nozaka leg.; KPM-NK 75872, F, Mie Pref., Kameyama City, Seki Town, Kutsukake, Suzuka-toge, 4. VII. 2012, Y. Shinoki leg.; KPM-NK 103187, F, Nara Pref., Nara City, Naka Town, Kindai University, 10. V. 2015, M. Ito leg.; KPM-NK 75870, F, Osaka Pref., Higashiosaka City, Hiraoka-park, 13. V. 2012, M. Ito leg.; MNHAH, 1F, Hyogo Pref., Tajima, Ikoda, 10. VI. 1951, K. Iwata leg.; MNHAH, 1F, Hyogo Pref., Tanba, Higashihamadani, 7. VII. 1952, M. Miki leg. [Sado Is.] KPM-NK 75866, F, Niigata Pref., Sado City, Kanaishinpo, Hakuundai to Mt. Myokenzan, 4. VIII. 2009, K. Watanabe leg. [Kyushu] KPM-NK 75863, 75864, 2F, Fukuoka Pref., Kurume City, Chikugogawa, 1. V. 2007, T. Mita leg.; MNHAH, 1F (det. by Uchida as *Listrognathus punctata*), Miyazaki Pref., Omata, 16. VII. 1954, K. Iwata leg.; KPM-NK 103185, F, Kagoshima Pref., Sakurajima, Yogan-Nagisa Road, 20. IV. 2022, Sk. Yamane leg. [Iki Is.] KPM-NK 103186, F, Nagasaki Pref., Iki City, Katsumoto Town, Yurihatafure, 19. VI. 2021, K. Otsui leg. [Yakushima Is.] KPM-NK 103188, F, Kagoshima Pref., Han-yama, 1. V. – 5. VI. 2007, T. Yamauchi leg. (MsT); OMNH, 1F, ditto, 28. VI. – 30. VII. 2007; KPM-NK 5000270, F, ditto, 22. VII. – 22. VIII. 2006; KPM-NK 103189, F, Kagoshima Pref., Aiko-dake, 2. V. – 5. VI. 2007, T. Yamauchi leg. (MsT); KPM-NK 103190, M, Kagoshima Pref., Kurio, 10. VI. 2007, T. Maeda leg. **CHINA:** MNHAH, 1F, Manshuria, Kaigen (= Liaoning Province, Tieling), 23. VII. 1936, K. Okada leg. **KOREA:** SEHU, 1F (holotype), Suigen, 21. VIII. 1925, K. Sato leg.

Description. Female (n = 38). Body polished; covered with setae; body length 5.9–10.9 mm.

Head 0.55 × as long as wide in dorsal view. Clypeus 1.7–2.0 × as wide as long; strongly convex as pyramid-

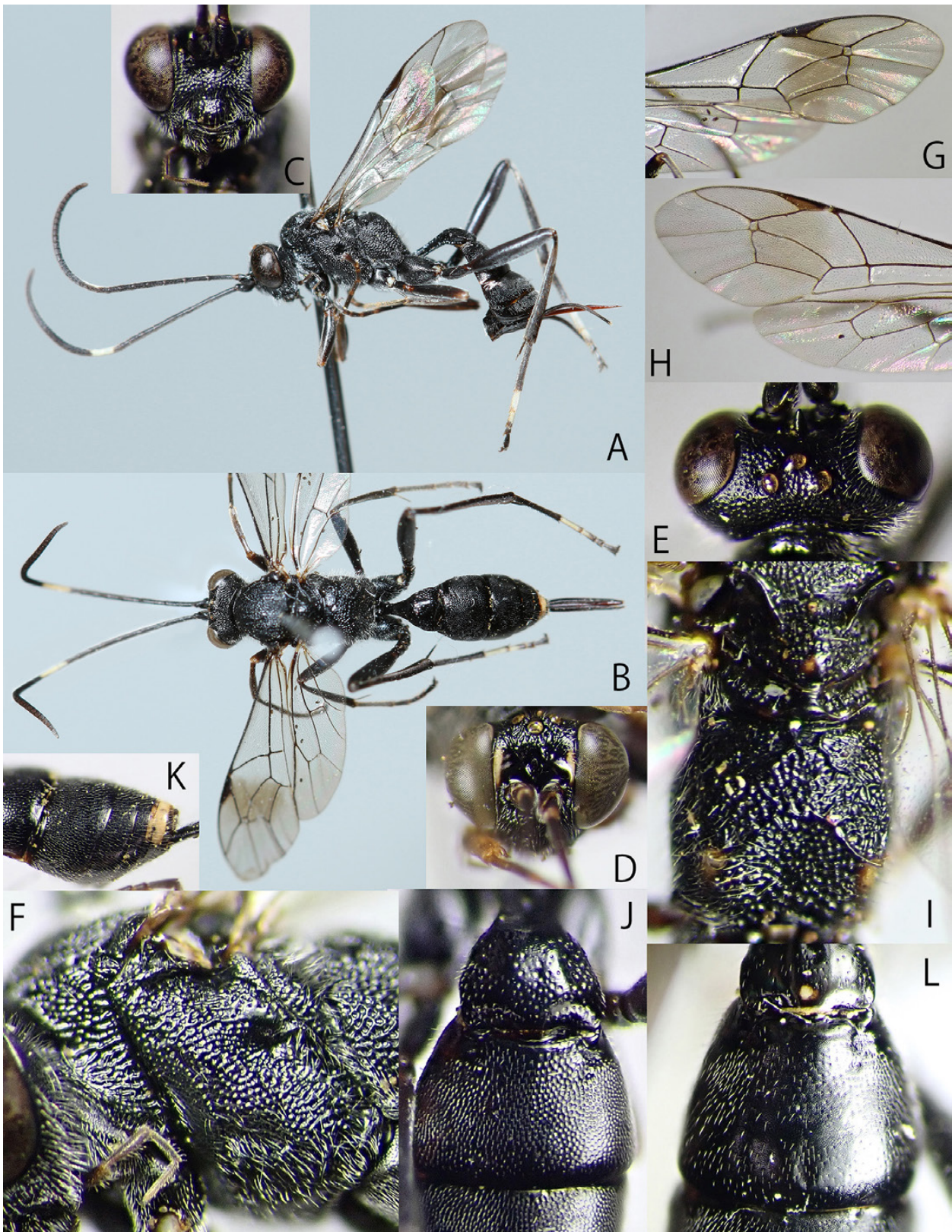


Fig. 67. *Listrognathus (Listrognathus) coreensis coreensis* Uchida, 1930 (A, C, E, F, J: KPM-NK 75870; B, G, K: KPM-NK 75872; D, H, I: MNHAH) and *L. (L.) eccopteromus* Uchida, 1930 (KPM-NK 84994), females — A: lateral habitus; B: dorsal habitus; C: head, frontal view; D: head, antero-dorsal view; E: head, dorsal view; F: pronotum and mesopleuron, lateral view; G, H: wings; I: scutellum and propodeum, dorsal view; J, L: T I and T II, dorsal view; K: posterior part of metasoma, dorso-lateral view.

shaped in lateral view; sparsely punctate dorsally; smooth ventrally; lower margin weakly rounded to subtruncate in frontal view, narrowly reflected in lateral view. Face $0.5 \times$ as long as minimum width; slightly convex medially; punctate; punctures largely united into groove-like foveola medially. Anterior tentorial pit small. Frons concave above antennal sockets; rugose dorsally; smooth on concavity; with pointed median horn (Fig. 67E). POL $1.6\text{--}2.0 \times$ as OD. OOL $1.05\text{--}1.7 \times$ as OD. Gena and occiput finely and densely punctate, ISP coriaceous. Dorsal profile of gena slightly rounded to straight in dorsal view; width abruptly narrowing posteriorly (Fig. 67E). Occipital carina complete. Hypostomal carina strongly widened as lamella between occipital carina and mandibular base, with deep concavity along lamella. Malar space $0.75\text{--}0.9 \times$ as long as basal width of mandible. Mandible convex at base; lower margin strongly widened as lamella; lower tooth equal in length of upper tooth. Antenna with 27–31 flagellomeres; apical part slightly widened. FL I $5.0\text{--}6.9 \times$ as long as maximum depth in lateral view, $1.2\text{--}1.4 \times$ as long as FL II.

Mesosoma. Pronotum reticulate rugose except for

foveolate punctate dorsally (Fig. 67F). Epomia long; dorsal end closed to dorsal margin of pronotum and strongly raised as tubercle. Mesoscutum densely punctate; punctures largely united into groove-like foveola; with short and weak notaulus. Scutellum punctate; convex in lateral view. Mesopleuron largely longitudinally to obliquely rugose (Fig. 67F); partly densely punctate; with small smooth area around speculum. Epicnemial carina present laterally and ventrally; dorsal end not reaching middle height of mesopleuron. Sternaulus deep in anterior 0.5 of mesopleuron. Metapleuron reticulate rugose; with complete juxtacoxal carina. Propodeum rugose (Fig. 67I): anterior transverse carina complete; posterior transverse carina complete (sometimes weak medially), inverted U-shaped (sinuate between lateral sides and median part) (Fig. 80D); lateral longitudinal carina absent; pleural carina absent; lateromedian longitudinal carina present only anterior to anterior transverse carina; apophysis small and obtuse; spiracle elongate. Fore wing length $4.75\text{--}7.7$ mm. Areolet small; slightly longer than maximum width; width slightly or not narrowing anteriorly; received vein 2m-cu



Fig. 68. *Listrognathus (Listrognathus) coreensis coreensis* Uchida, 1930, male (MNHAH) — A: lateral habitus; B: head, mesosoma, and metasoma, dorso-lateral view; C: head, frontal view; D: flagellum and tyloids; E: propodeum, dorsal view.

near outer corner (Figs. 67G, H). Fore wing vein 1cu-a slightly antefurcal to vein M&RS (Figs. 67G, H). Nervellus subvertical; intercepted posterior to middle (Figs. 67G, H). Hind femur reticulate coriaceous; $5.0\text{--}6.45 \times$ as long as maximum depth in lateral view. Tarsal claws simple.

Metasoma densely punctate (Fig. 67J). T I $1.5\text{--}1.75 \times$ as long as maximum width; ISP smooth (Fig. 67J); latero-median carina absent; dorso-lateral carina absent except for posterior part; with pair of lateral triangular teeth at base. T II $0.75\text{--}0.9 \times$ as long as maximum width; ISP weakly coriaceous; thyridium weakly present close to anterior margin of T II; slightly or not depressed; ca. $2.0 \times$ as wide as length. T III to T V with coriaceous ISP. Ovipositor sheath $0.55\text{--}0.75 \times$ as long as hind tibia, $1.05\text{--}1.35 \times$ as long as T I. Ovipositor straight; apex sharp; nodus weak; apex of lower valve with teeth (Fig. 80G).

Colouration (Figs. 67A–K). Body (excluding wings) black to blackish-brown. Setae silver. Frons usually with pair of ivory to yellow markings along each orbit. Mandible more or less tinged with reddish brown. FL VII (or VIII, IX) to FL X (or XI) with white markings. Scutellum sometimes with yellow marking(s). Propodeum sometimes with pair of yellow markings postero-laterally. Posterior margins of T I to T III sometimes narrowly tinged with reddish-brown. Membranous parts of metasomal sternites and ovipositor yellowish-brown. Fore and mid tibiae and tarsi largely brown. Base of hind femur brown. Subbasal part of hind tibia with small ivory band. Bases of hind TS I to TS III each with white band (sometimes band of TS I darkened or absent). Posterior margins of T IV and T VII black. Posterior margins of T V and T VI each with single median white marking. Wings hyaline; usually

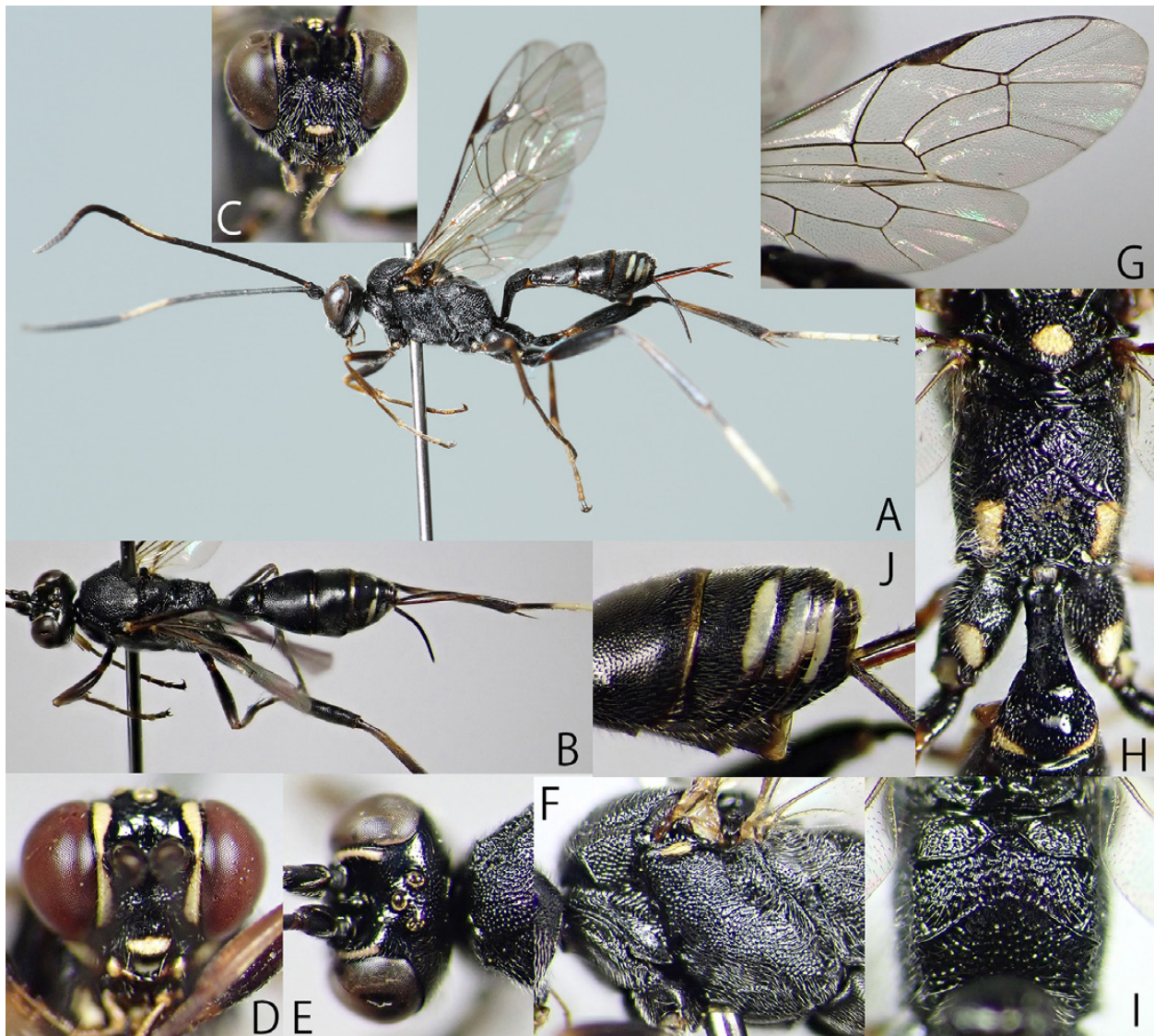


Fig. 69. *Listrognathus (Listrognathus) octoguttatus* sp. nov., females (A–C, E–G, I: holotype: KPM-NK 103192; D, H: paratype: NARO) — A: lateral habitus; B: head, mesosoma, and metasoma, dorsal view; C, D: head, frontal view; E: head and mesoscutum, dorsal view; F: pronotum and mesopleuron, lateral view; G: wings; H: scutellum, propodeum, and T I, dorsal view; I: propodeum, dorsal view; J: posterior part of metasoma, lateral view.

with clouded area (this area sometimes weak). Veins and pterostigma blackish-brown except for brown to yellowish-brown wing base.

Male (n = 4). Similar to female (Figs. 68A–E). T I 1.75–2.1 × as long as maximum width. T II 0.9–1.0 × as long as maximum width. Antenna with 32–34 flagellomeres; with tyloids on FL XV to FL XVIII (Fig. 68D). FL I 3.15–3.5 × as long as maximum depth in lateral view. Hind femur 6.2–6.8 × as long as maximum depth in lateral view. Face, clypeus, frontal orbit, mandible, and anterior part of tegula largely ivory. Antenna without white band. Posterior margins of T IV to T VII each with single median white marking. Fore wing without clouded area. Fore and mid coxae with ivory marking. Fore and mid legs paler than female; dorsal surfaces of tibiae and large parts of tarsi ivory. Hind TS II, TS III, and TS IV ivory. All tibial spurs more or less tinged with ivory.

Distribution. Japan (Hokkaido, Honshu, Sado Is., Kyushu, Iki Is., and Yakushima Is.), Korea and China.

Bionomics. *Nycteola asiatica* (Krulikowski, 1904) (Lepidoptera, Nolidae) is recorded as the host (Momoi, 1968).

Remarks. This is the first record of this species from Honshu, Sado Island, Kyushu, and Iki Island.

***Listrognathus (Listrognathus) punctator* (Smith, 1874)**
[SJN: Ten-tsuno-togari-himebachi]

Cryptus punctator Smith, 1874: 393.

Ichneumon diversipes Walker, 1874: 302.

Materials examined. No material is available in this study.

Distribution. Japan (Honshu).

Bionomics. Unknown.

Remarks. Iwata (1958, 1960) recorded this species from Kyushu basis of a single specimen identified by Dr. T. Uchida, whereas it is a misidentification of *L. coreensis*. Therefore, I delete the distribution of this species from Kyushu. Shimizu & Broad (2020) included high resolution images of the holotypes of *Cr. punctator* and *Ich. diversipes* in their paper. Although, Uchida (1940) synonymised *Ich. diversipes* (female unknown) with *Cr. punctator* (male unknown) without any morphological reason, judging from the photos of Shimizu & Broad (2020), the combination of female and male may be correct.

***Listrognathus (Listrognathus) octoguttatus* sp. nov.**

[New SJN: Yatsuboshi-tsuno-togari-himebachi]

(Figs. 69A–J, 80A–C, E, H)

Type series. Holotype: JAPAN, KPM-NK 103192, F, Honshu, Kanagawa Pref., Hadano City, Mt. Koubou-yama, 1. V. 2016, K. Watanabe & H. Utsugi leg.

Paratype: JAPAN: [Hokkaido] KPM-NK 103193, F, Eniwa City, Banjiri, 20. VI. 2017, K. Watanabe leg. [Honshu] KPM-NK 75876, F, Toyama Pref., Toyama City, Kamegai, 25. VIII. – 1. IX. 2009, M. Watanabe leg. (MsT); KPM-NK75877, F, ditto, 1–8. IX. 2009; NARO, 1F, Ishikawa Pref., Tatsukuchi Town, Nabatani, 5. XI. 1989, Y. Sugie leg.; KPM-NK 75874, F, Fukui Pref., Izumi Vil., Kuzawadani, 30. V. 1982, T. Murota leg. [Shikoku] NARO, 1F, Ehime Pref., Oda Town, 15. VII. 1998, E. Yamamoto leg.

Description. Female (n = 8). Body densely punctate and polished; covered with setae; body length 6.6–10.1 (HT: 8.3) mm.

Head 0.55 × as long as wide in dorsal view. Clypeus 2.0 × as wide as long; strongly convex as pyramid-shaped in lateral view (Fig. 80B); sparsely punctate dorsally; smooth ventrally; lower margin weakly rounded in frontal view, narrowly reflected in lateral view. Face 0.5 × as long as minimum width; slightly convex medially; punctures partly united into groove-like foveola medially. Anterior tentorial pit small. Frons concave above antennal sockets; matt along orbits; punctate dorsally; smooth on concavity; with pointed median horn (Figs. 69E, 80A, B). POL 1.35–1.9 (HT: 1.75) × as OD. OOL 1.1–1.8 (HT: 1.7) × as OD. Gena and occiput finely punctate, ISP coriaceous. Dorsal profile of gena rounded in dorsal view; width abruptly narrowing posteriorly (Fig. 69E). Occipital carina complete. Hypostomal carina strongly widened as lamella between occipital carina and mandibular base, with deep concavity along lamella (Fig. 80C). Malar space 0.6–0.65 (HT: 0.6) × as long as basal width of mandible. Mandible convex at base; lower margin strongly widened as lamella; lower tooth equal in length of upper tooth. Antenna with 29–30 (HT: 30) flagellomeres; apical part slightly widened. FL I 2.4–2.75 (HT: 2.7) × as long as maximum depth in lateral view, 0.35–0.4 (HT: 0.4) × as long as FL II.

Mesosoma. Pronotum rugose ventrally (Fig. 69F). Epomia long, dorsal end closed to dorsal margin of pronotum and strongly raised as tubercle (Fig. 69E). Mesoscutum with short and weak notaulus; punctures partly united into short foveola. Scutellum convex in lateral view. Mesopleuron with small smooth area around speculum; punctures largely united into oblique, groove-like foveola (Fig. 69F). Epicnemial carina present latero-ventrally and ventrally; dorsal end not reaching middle height of mesopleuron. Sternaulus deep in anterior 0.5 of mesopleuron. Metapleuron reticulate rugose; with

complete juxtacoxal carina. Propodeum rugose; anterior transverse carina complete; posterior transverse carina complete, or present laterally, weak or indistinct medially, inverted V-shaped (Figs. 69H, I, 80E); lateral longitudinal carina absent; pleural carina absent; lateromedian longitudinal carina present only anterior to anterior transverse carina; apophysis small and obtuse; spiracle elongate. Fore wing length 6.0–8.1 (HT: 7.1) mm. Areolet small; as long as maximum width; width not narrowing anteriorly; received vein 2m-cu near outer corner (Fig. 69G). Fore wing vein 1cu-a slightly antefurcal to vein M&RS (Fig. 69G). Nervellus subvertical; intercepted posterior to middle (Fig. 69G). Hind femur reticulate coriaceous; 4.9–5.6 (HT: 5.2) $\times$ as long as maximum depth in lateral view. Tarsal claws simple.

Metasoma. T I 1.7–1.85 (HT: 1.85) $\times$ as long as maximum width; ISP smooth; latero-median carina absent; dorso-lateral carina absent except for posterior part; with pair of lateral triangular teeth at base. T II 0.8–1.0 (HT: 0.8) $\times$ as long as maximum width; ISP coriaceous. Thyridium present; somewhat distant from (by more than length of thyridium) anterior margin of T II; flat to slightly depressed; ca. 2.0 $\times$ as wide as length. T III to T V with smooth ISP. Ovipositor sheath 0.68–0.7 (HT: 0.68) $\times$ as long as hind tibia, 1.3–1.6 (HT: 1.4) $\times$ as long as T I. Ovipositor straight; apex sharp; apex of lower valve with teeth (Fig. 80H).

Colouration (Figs. 69A–J). Body (excluding wings) black to blackish-brown. Setae silver. Clypeus with small ivory to yellow marking. Face with pair of ivory to yellow markings along each orbit. Frons with pair of ivory to yellow markings along each orbit. Malar space, base of mandible, lower part of gena, palpi, collar, dorsal margin of pronotum, tegula, scutellum, upper division of metapleuron, propodeum, and coxae sometimes with ivory to yellow marking(s). FL VII (or VIII) to FL XI (or XII) with white markings. Subtegular ridge with yellow marking. T I sometimes with pair of yellow markings postero-laterally. Posterior margins of T I to T III narrowly tinged with reddish-brown. Membranous parts of metasomal sternites and ovipositor yellowish-brown. Apex of trochantelli, bases and apices of femora, fore and mid tibiae, bases of fore and mid tarsal segments, and subbasal part of hind tibia brown to yellowish-brown. Brownish area of femora and tibiae sometimes expanded. Apical part of hind TS I and hind TS II to TS IV ivory. T IV to T VII each with pair of transverse, ivory markings. Wings hyaline. Veins and pterostigma blackish-brown except for brown to yellowish-brown wing base. In some paratypes, following colour variations present: face with pair of yellow.

Male. Unknown.

Distribution. Japan (Honshu).

Bionomics. Unknown.

Etymology. The specific name is from Latin “*octo*” (eight) plus “*guttatus*” (with spots), referring to the eight yellow markings on metasomal tergites.

Remarks. This species resembles *L. coreensis* in the body coloration but can be distinguished by the reverse V-shape posterior transverse carina of propodeum and the four pairs of ivory spots on T IV to T VII (see above key).

Listrognathus (Listrognathus) yunnanensis

He & Chen, 1996

[NSW SJN: Karube-tsuno-togari-himebachi]

(Figs. 70A–E)

Listrognathus (Listrognathus) yunnanensis He & Chen, 1996 in He *et al.*, 1996: 527.

Materials examined. JAPAN: [Tsushima Is.] OMNH, 1M, Nagasaki Pref., Ohfunakoshi, 6. V. 1994, R. Matsumoto leg.; KPM-NK 103191, M, Tsushima City, Tonosaki, 18. VI. 2024, H. Karube leg.

Description. See He *et al.* (1996) and Sheng & Sun (2009).

Distribution. Japan (Tsushima Is.) and China.

Bionomics. Unknown in Japan. In China, *Earias vittella* Fabricius, 1794 (Lepidoptera, Nolidae) has been recorded as the host (He *et al.*, 1996).

Remarks. This is the first record of this species from Japan.

Subgenus *Fenestula* Townes, 1962

Fenestula Townes, 1962 in Townes & Townes, 1962: 408.

Type species: *Mesostenus paludatus* Cresson, 1872.

Original designation.

The males of the Japanese species were unknown, but I was able to find the male of *L. (Fenestula) aequabilis* described below.

Listrognathus (Fenestula) aequabilis Uchida, 1952

[SJN: Sasayama-tsuno-togari-himebachi]

(Figs. 71A–D)

Listrognathus aequabilis Uchida, 1952: 19.

Materials examined. JAPAN: [Honshu] MNHAH, 1F, Hyogo Pref., Sasayama, 25. XI. 1950, K. Iwata leg.; KPM-

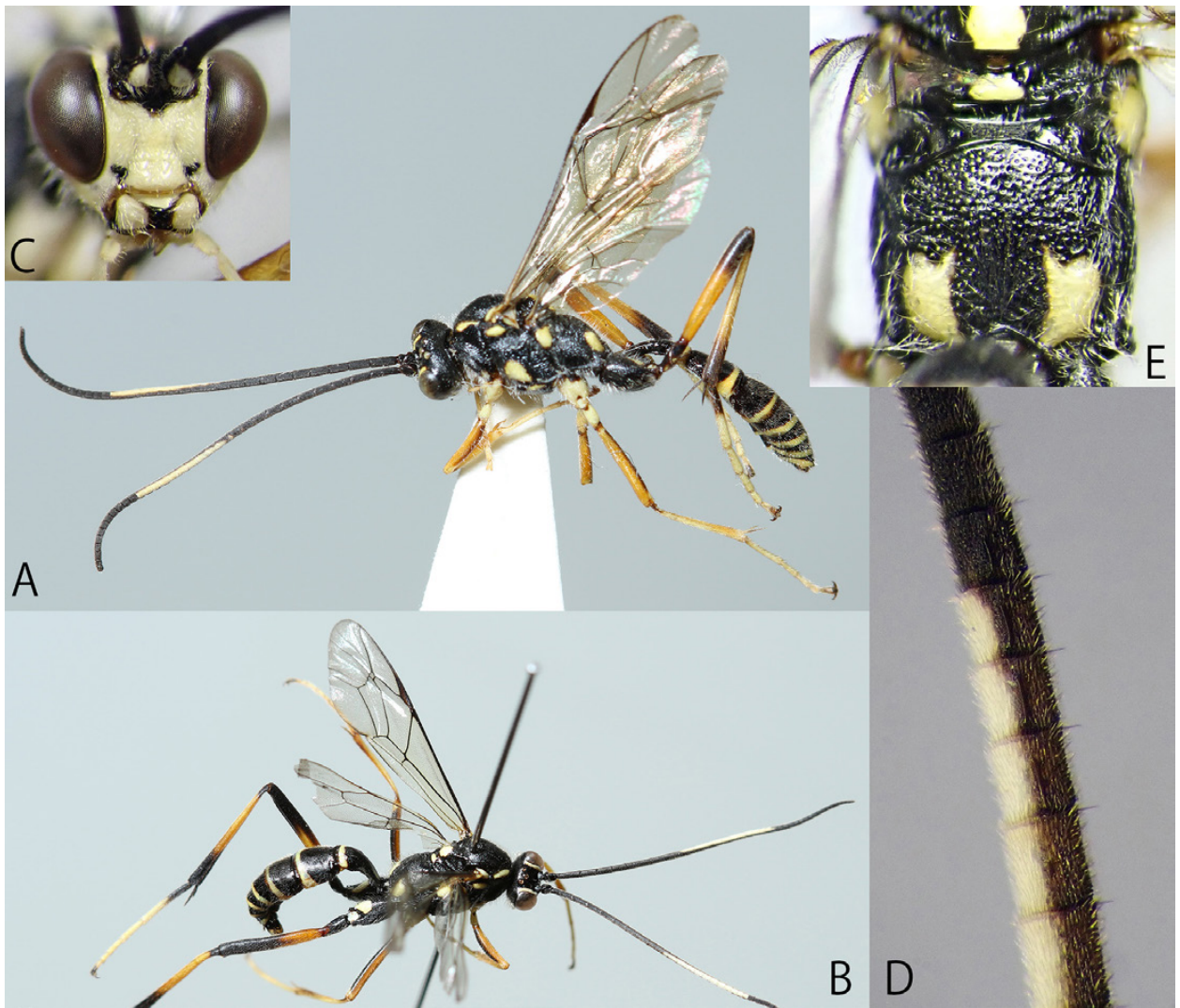


Fig. 70. *Listrognathus (Listrognathus) yunnanensis* He & Chen, 1996, males (A: OMNH; B–E: KPM-NK 103191) — A: lateral habitus; B: head, mesosoma, and metasoma, dorso-lateral view; C: head, frontal view; D: flagellum and tyloids; E: propodeum, dorso-lateral view.

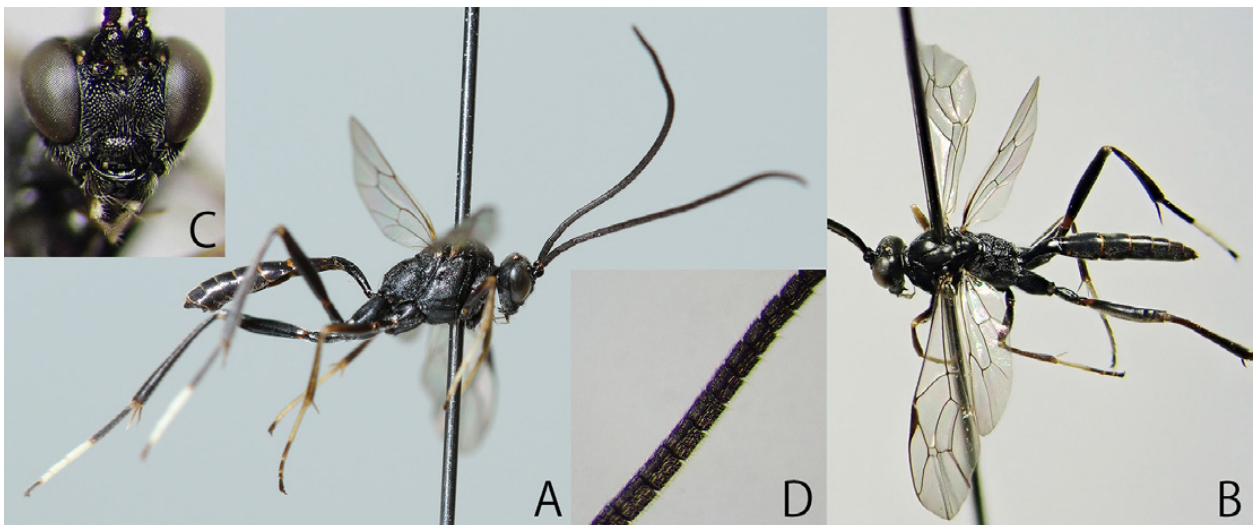


Fig. 71. *Listrognathus (Fenestula) aequabilis* Uchida, 1952, male (KPM-NK 103195) — A: lateral habitus; B: head, mesosoma, and metasoma, dorso-lateral view; C: head, frontal view; D: flagellum and tyloids.

NK 103194, F, Hyogo Pref., Kasai City, Kishiro Town, 29. IV. 2011, K. Maeto & K. Watanabe leg.; KPM-NK 103195, M, Hyogo Pref., Tatsuno City, Kamioka Town, Hashizaki, 22. IV. 2019, K. Watanabe leg.

Description. Female. See Uchida (1952) and Sheng & Sun (2009).

Male ($n = 1$). Similar to female (Figs. 71A–D). Body length 7.9 mm. Clypeus $2.0 \times$ as wide as long. Face $0.7 \times$ as long as minimum width. POL $1.9 \times$ as OD. OOL $1.3 \times$ as OD. Malar space $0.7 \times$ as long as basal width of mandible. Lower part of gena without deep concavity along hypostomal carina. Antenna with 31 flagellomeres;

with slender, linear tyloids on FL XI to FL XXI (Fig. 71D). FL I $2.8 \times$ as long as maximum depth in lateral view, $1.05 \times$ as long as FL II. Fore wing length 5.8 mm. Hind femur $6.1 \times$ as long as maximum depth in lateral view. T I $3.5 \times$ as long as maximum width; with pair of lateral weak convexities. T II $1.5 \times$ as long as maximum width. Frons with pair of small yellow markings between antennal sockets and eyes (Fig. 71C). Antenna without white band (Fig. 71A). Hind TS II to TS IV entirely ivory (Fig. 71A).

Distribution. Japan (Honshu).

Bionomics. Unknown.

Remarks. This is the first record of the male of this species.

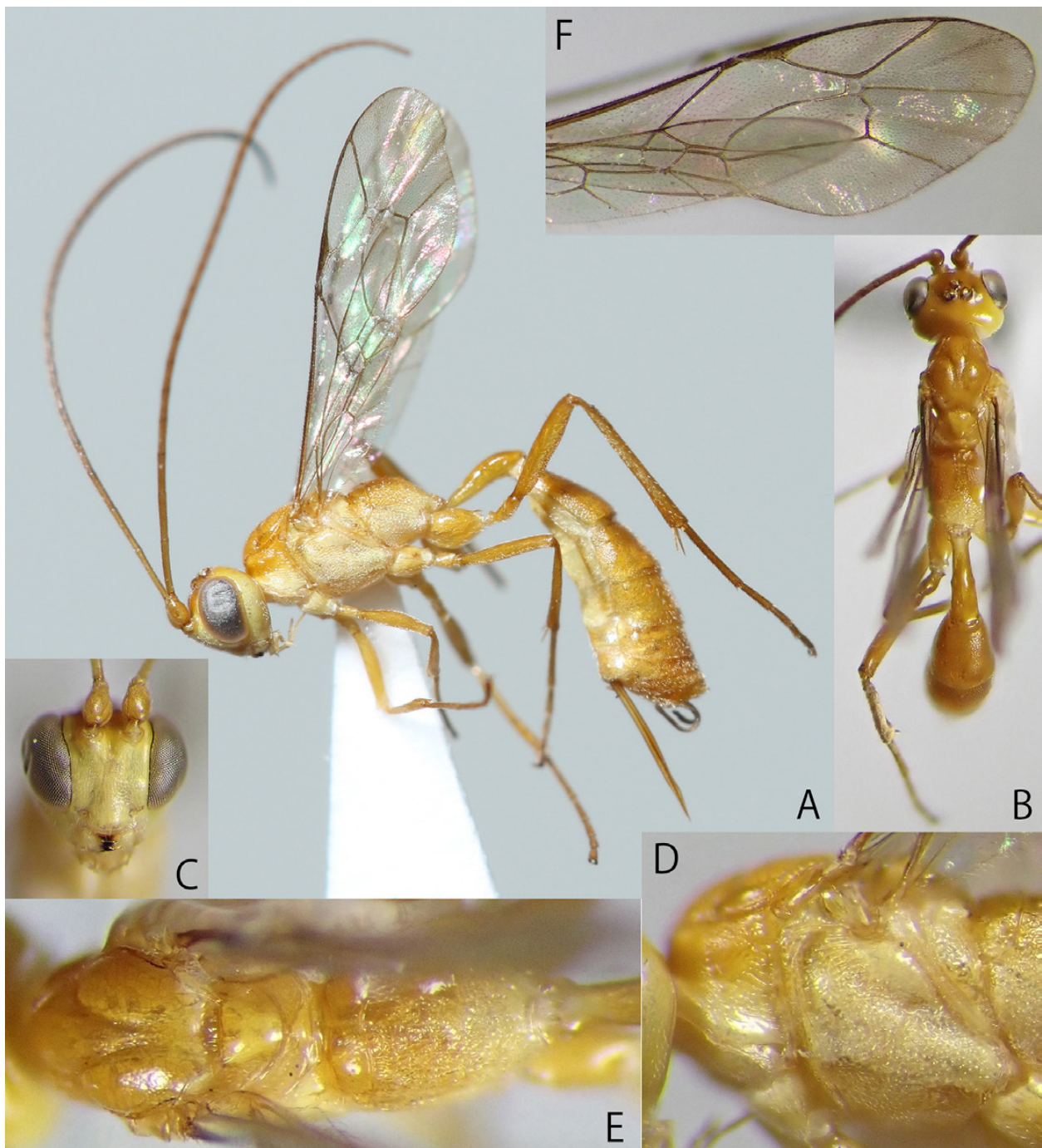


Fig. 72. *Menaforia szepligetii* (Uchida, 1930), female (KPM-NK 103101) — A: lateral habitus; B: head, mesosoma, and metasoma, dorsal view; C: head, frontal view; D: pronotum and mesopleuron, lateral view; E: mesosoma, dorsal view; F: wings.

Genus *Menaforia* Seyrig, 1952

Menaforia Seyrig, 1952: 205. Type species: *Menaforia rufa* Seyrig, 1952. Original designation

A single species, *Men. szepligetii* (Uchida, 1930), has been recorded from Japan. In this study, I newly record this species from Iriomotejima Island and Yonagunijima Island with redescription based on Japanese materials below.

***Menaforia szepligetii* (Uchida, 1930)**

[SJN: Taiwan-togari-himebachi]

(Figs. 72A–F, 73A–D, 80I)

Neomesostenus formosanus Szépligeti, 1916: 293. Name preoccupied.

Mesostenus szepligetii Uchida, 1930: 301. New name.

Eurycryptus unicolor: Watanabe, 2019: 93. Misidentification (in part).

Materials examined. JAPAN: [Miyakojima Is.] MNHAH, 1F (det. Momoi), Okinawa Pref., Miyako Is., XI. – XII. 1952, C. E. Bohart leg. [Iriomotejima Is.] MNHAH, 1M, Okinawa Pref., Taketomi Town, Komi, 19. VIII. 1968, S. Azuma leg.; KPM-NK 5006301, M, Okinawa Pref., Iriomotejima Is., Ootomi, 15. V. 2007, T. Ban leg. [Yonagunijima Is.] KPM-NK 5006300, M, Okinawa Pref., Yonagunijima Is., 29. V. 2003, T. Mita leg.; KPM-NK 103101, F, Okinawa Pref., Yonaguni Town, Tarumai-shitsugen, 25. VI. 2013, S. Fujie leg.

Description. Female (n = 2). Body polished; covered with setae; length 5.9–6.9 mm.

Head $0.75 \times$ as long as wide. Clypeus $1.5 \times$ as wide as long; sparsely punctate; anterior margin slightly rounded in frontal view, without distinct tooth anteromedially. Face $0.65\text{--}0.7 \times$ as long as width just below antennal sockets; densely punctate with some longitudinal lined punctures below antennal sockets. Malar space $0.85\text{--}0.9 \times$ as long as basal width of mandible. Frons and anterior part of vertex finely coriaceous with sparse punctures. Posterior

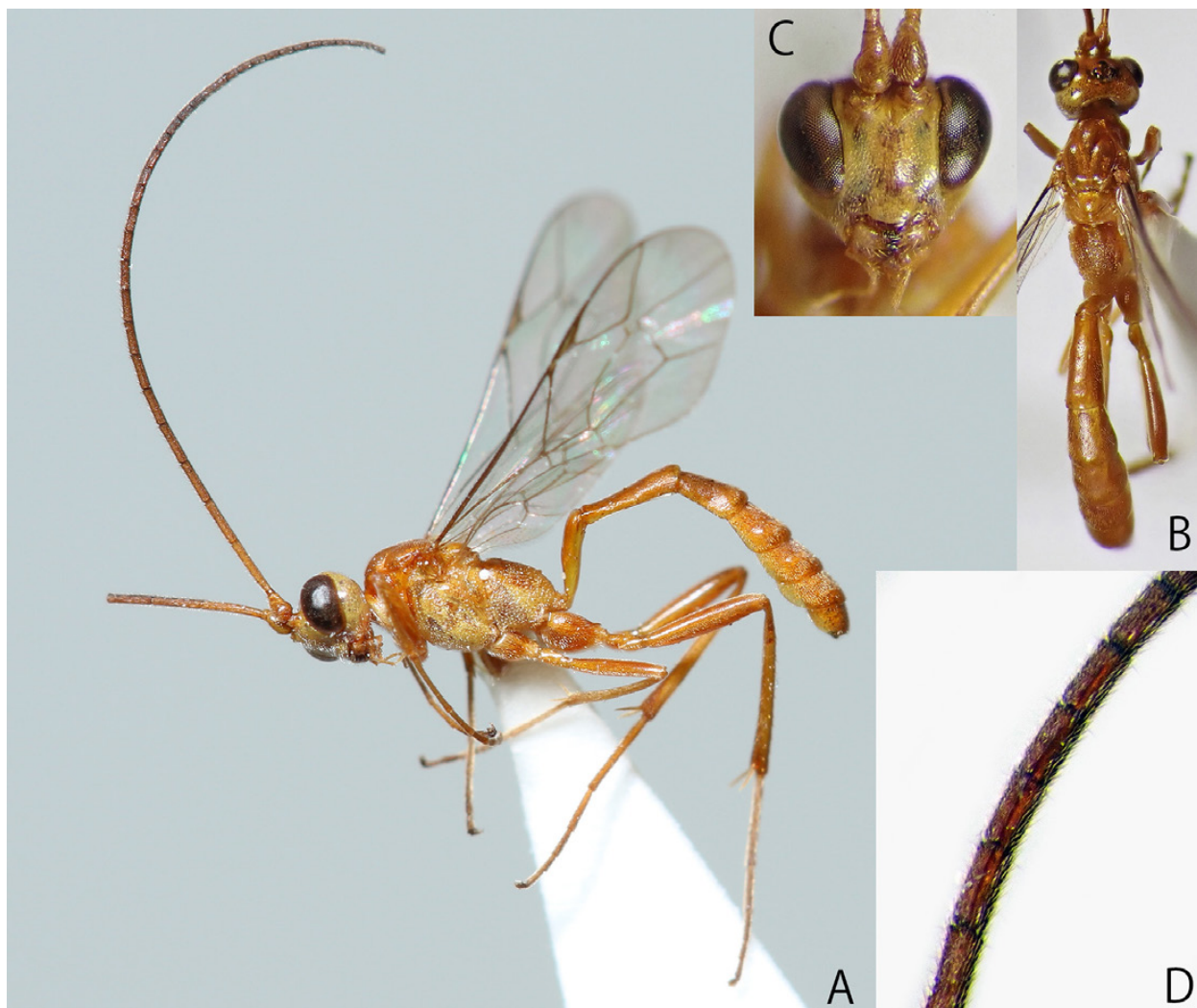


Fig. 73. *Menaforia szepligetii* (Uchida, 1930), male (KPM-NK 5006301) — A: lateral habitus; B: head, mesosoma, and metasoma, dorso-lateral view; C: head, frontal view; D: flagellum and tyloids.

part of vertex and gena punctate. POL $1.8\text{--}2.0 \times$ as OD. OOL $0.9\text{--}1.5 \times$ as OD. Occipital carina complete; joined with hypostomal carina far from mandibular base. Upper tooth of mandible almost as long as lower tooth. Base of mandible flat. Antenna with 34 flagellomeres; apex pointed. FL I $8.3\text{--}9.6 \times$ as long as maximum depth in lateral view, $1.2\text{--}1.25 \times$ as long as FL II.

Mesosoma. Lateral part of pronotum largely covered with oblique rugae. Epomia indistinct. Mesoscutum punctate; with distinct notaulus (Fig. 72B). Scutellum punctate; not margined laterally. Mesopleuron largely irregularly rugulose except for smooth speculum (Fig. 72D); with some longitudinal striae just in front of speculum; with well-developed epicnemial carina. Metapleuron irregularly rugulose; without a juxtacoxal carina. Propodeum without carinae except for anterior and posterior transverse carinae and anterior section of lateromedian longitudinal carinae present. Posterior

transverse carina of propodeum partly weak and sometimes partly indistinct. Anterior area of propodeum including weakly defined area basalis largely smooth. Median and posterior parts of propodeum covered with irregular rugae (Fig. 72E). Fore wing length 4.0–4.9 mm. Areolet present (Fig. 72F). Fore wing vein 1cu-a interstitial to vein M&RS (Fig. 72F). Nervellus reclivous; intercepted slightly anterior the middle. Hind femur $5.6 \times$ as long as maximum depth in lateral view. Tarsal claws simple and short; slightly longer than arolium in hind tarsal claws.

Metasoma. T I $2.9\text{--}3.05 \times$ as long as maximum width; smooth; without carinae. Spiracle of T I situated only slightly just behind of middle length. T II $1.5\text{--}1.6 \times$ as long as maximum width; densely punctate. T III to T V finely and densely punctate. ISP of T II to T V coriaceous. Ovipositor sheath $0.5\text{--}0.55 \times$ as long as hind tibia, $1.0\text{--}1.05 \times$ as long as T I. Ovipositor straight; with a weak nodus and ventral teeth (Fig. 80I).



Fig. 74. *Nippocryptus alutaceus* (Tschek, 1871), female (KPM-NK 91363) — A: lateral habitus; B: head, mesosoma, and metasoma, dorsal view; C: head, frontal view; D: mesosoma, lateral view; E: wings; F: scutellum and propodeum, dorsal view.

Coloration (Figs. 72A–F). Body (excluding wings) yellow to reddish-yellow. Setae silver. Mandibular teeth black. Apical part of antenna, apical segments of tarsi, and ovipositor sheath more or less darkened. Wings hyaline. Veins and pterostigma brown.

Male ($n = 3$). Similar to female (Figs. 73A–D). Body length 6.0–7.2 mm. Clypeus $1.7\text{--}1.75 \times$ as wide as maximum length. Malar space $0.85\text{--}1.0 \times$ as long as basal width of mandible. Antenna with 38 flagellomeres. FL I $6.1\text{--}6.5 \times$ as long as maximum depth in lateral view. FL XII to FL XIV each with linear tyloid ventrally (Fig. 73D). Hind femur $6.0 \times$ as long as maximum depth in lateral view. T II $2.05 \times$ as long as maximum width.

Distribution. Japan (Miyakojima Is., Iriomotejima Is., and Yonagunijima Is.) and Taiwan.

Bionomics. Unknown.

Remarks. This is the first record of the male and from Iriomotejima Island, and Yonagunijima Island. The male of this species resembles *Eurycryptus unicolor* (Uchida, 1932), while it can be distinguished by the reddish-yellow ocellar area (black in *Eur. unicolor*) and the complete occipital carina (absent lower part in *Eur. unicolor*). Watanabe (2019) recorded *Eur. unicolor* from Iriomotejima Island and Yonagunijima Island, while these specimens are misidentification of this species. Thus, the distribution of *Eur. unicolor* of both islands are delated here.

Genus *Nippocryptus* Uchida, 1936

Nippocryptus Uchida, 1936b: 3. Type species: *Hemiteles suzukii* Matsumura, 1912 (= *Ichneumon vittatorius* Jurine, 1807). Original designation

A single species, *N. vittatorius* (Jurine, 1807), has been recorded from Japan. In this study, I identified the generic position of *Caenocryptus canaliculatus* Momoi, 1968 as *Nippocryptus*. In addition, this species has the character states of *N. alutaceus* (Tschek, 1871) and thus I newly synonymised this species with *N. alutaceus* (**syn. nov.**).

Key to Japanese species of *Nippocryptus*

1. Upper tooth of mandible same length as or slightly shorter than lower tooth. Fore wing with conspicuous clouded band in female. Base of hind tibia of male and some females* white. Basal part of T I of male white.
..... *Nippocryptus vittatorius* (Jurine, 1807)
- . Upper tooth of mandible longer than lower tooth. Fore wing without conspicuous clouded area in female (Figs. 74A, E). Hind tibia entirely blackish brown to brown (Figs. 74A, 75A). Basal part of T I of male without white area (Fig. 75B).
..... *Nippocryptus alutaceus* (Tschek, 1871)
(= *Caenocryptus canaliculatus* Momoi, 1968 **syn. nov.**)

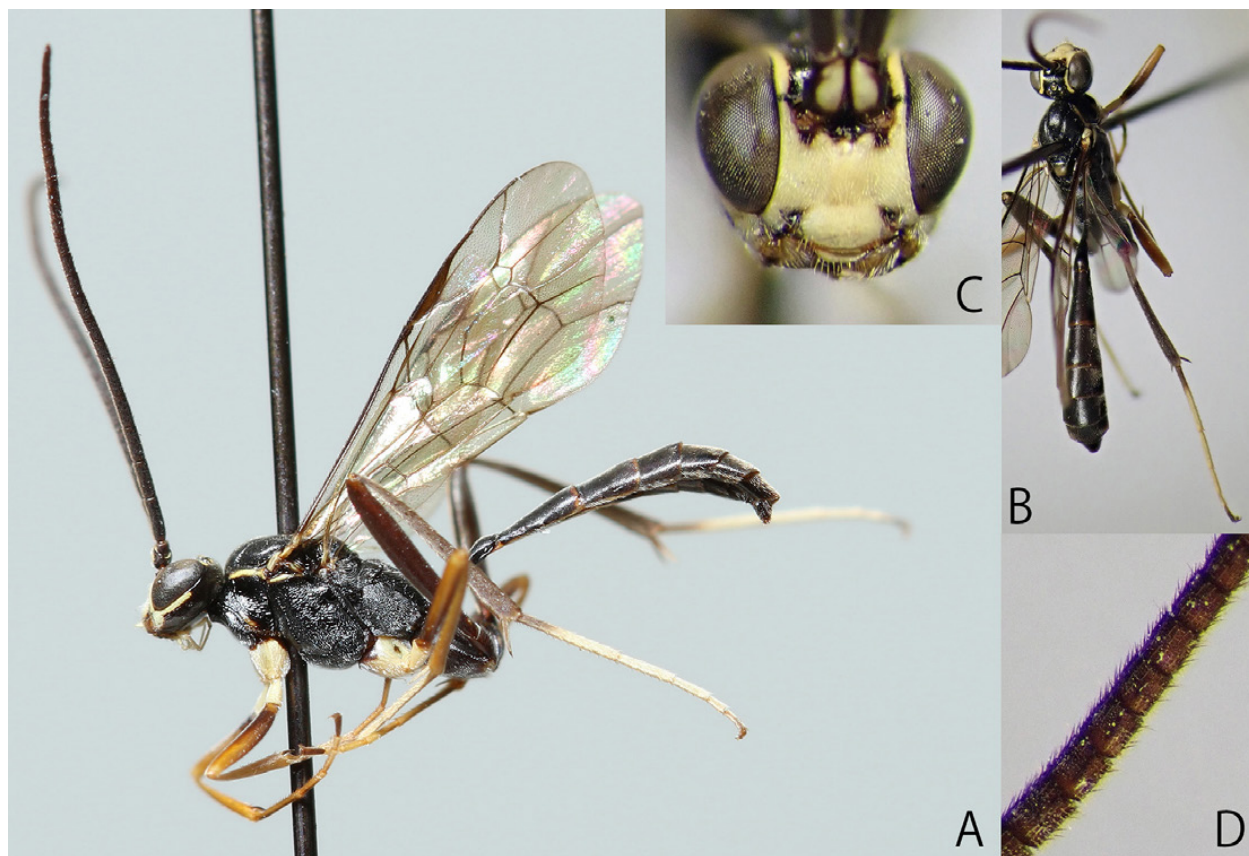


Fig. 75. *Nippocryptus alutaceus* (Tschek, 1871), male (KPM-NK 91362) — A: lateral habitus; B: head, mesosoma, and metasoma, dorso-lateral view; C: head, frontal view; D: flagellum and tyloids.

* Schwarz (1990) noted that the base of female hind tibia of *N. vittatorius* is white, while Japanese specimens of this species usually has entirely black hind tibia.

***Nippocryptus alutaceus* (Tschek, 1871)**

[New SJN: Momoi-togari-himebachi]

(Figs. 74A–F, 75A–D)

Cryptus alutaceus Tschek, 1871: 129.

Caenocryptus canaliculatus Momoi, 1968: 213. **Syn. nov.**

Materials examined. JAPAN: [Hokkaido] KPM-NK 91361, F, Yubari City, Oyubari, 31. VIII. – 13. IX. 2007, A. Ueda leg. (MsT); KPM-NK 91362, M, Akankohan, 1. VII. 1957, R. Ishikawa leg. [Honshu] KPM-NK 91363, F, Gunma Pref., Katashina Vil., Marunuma, Yuzawa, 12. VII. 2014, K. Watanabe leg.; KPM-NK 91364, F, Tokyo, Okutama Town, Hikawa, 1. VII. 2007, K. Watanabe leg.; KPM-NK 91365, F, Kanagawa Pref., Minamiashigara City, Ashigara-toge, 16. VI. 2020, K. Watanabe leg.; KPM-NK 91366, F, Kanagawa Pref., Oiso Town, Koma, Mt. Komayama, 16. IV. 2016, K. Watanabe leg.; KPM-NK

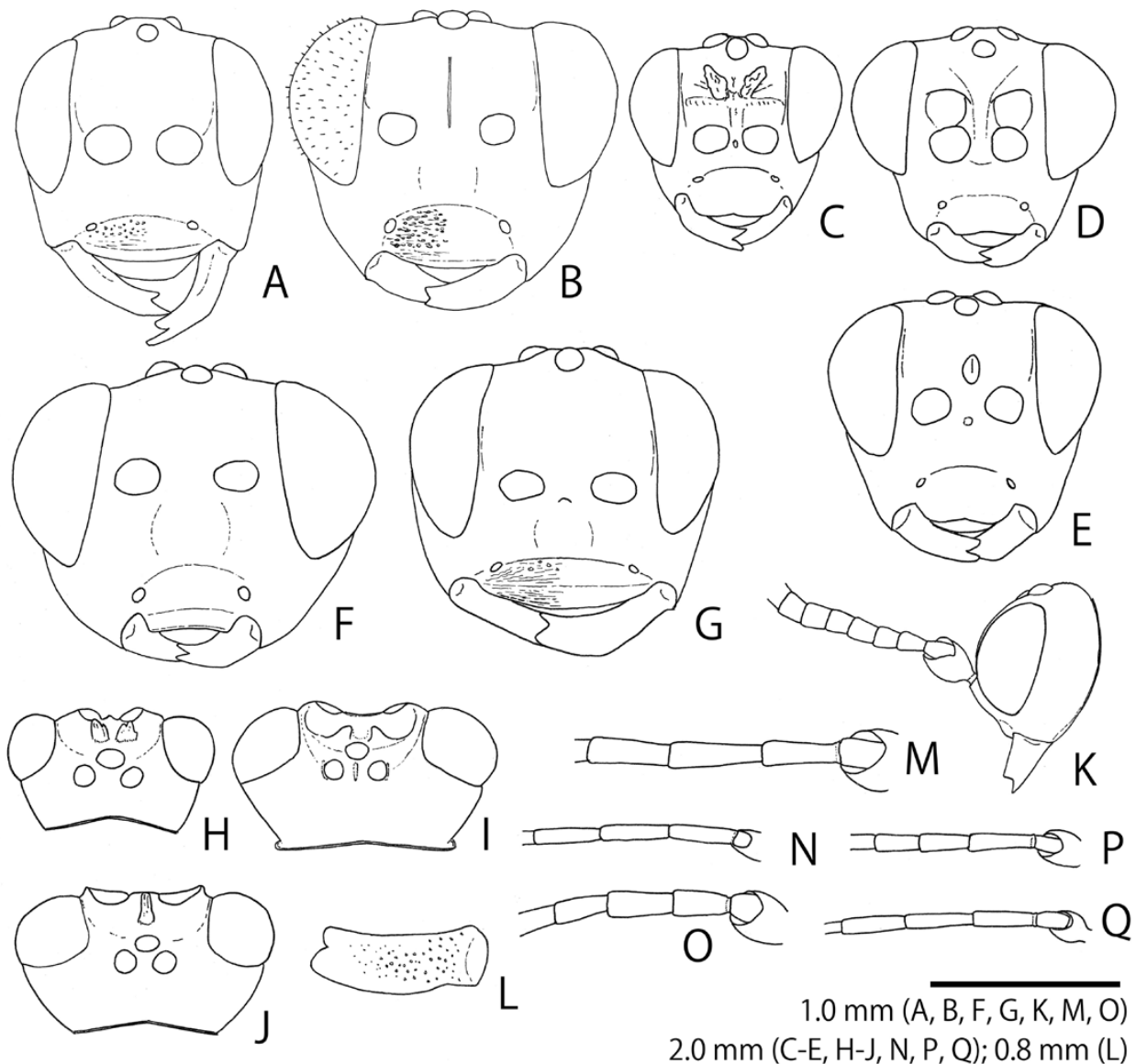


Fig. 76. Japanese species of Aptesini, females — A: *Aconias concavopropodeonius* (Uchida, 1952) (KPM-NK 81193); B: *Aptesis albibasalis* (Uchida, 1930) (KPM-NK 102987); C, H: *Megaplectes bicornis* **sp. nov.** (holotype: KPM-NK 103052); D, I: *Meg. konishii* **sp. nov.** (holotype: KPM-NK 103050); E, J: *Meg. monticola dentatus* Uchida, 1930 (E: KPM-NK 91325; J: KPM-NK 81279); F: *Oresbius cushmani* **nom. nov.** (KPM-NK 81199); G, L: *Plectocryptus japonicus* **sp. nov.** (G: holotype: KPM-NK 5004410; L: paratype: KPM-NK 5004383); K: *Cubocephalus nanus* **sp. nov.** (holotype: KPM-NK 91381); M: *C. asiaticus* **sp. nov.** (holotype: KPM-NK 91383); N: *C. atrator* (Walker, 1874) (KPM-NK 91379); O: *C. confusus* **sp. nov.** (paratype: KPM-NK 91380); P: *C. sapporensis* **sp. nov.** (holotype: KPM-NK 91382); Q: *C. uryuensis* **sp. nov.** (holotype: KPM-NK 75809) — A–G: head, frontal view; H–J: head, dorsal view; K: head and basal part of antenna, lateral view; L: outer face of mandible; M–Q: basal part of antenna, lateral view.

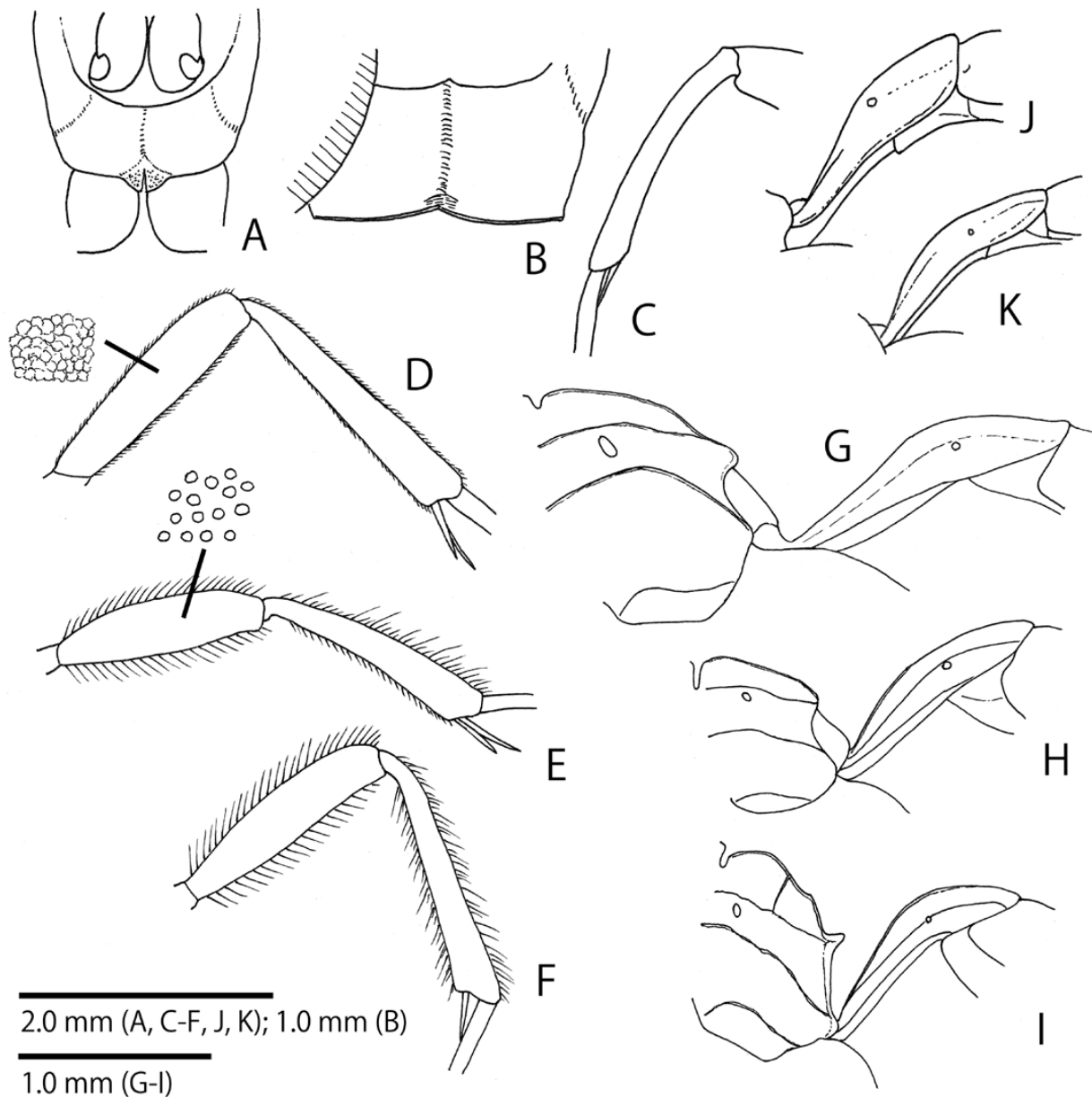


Fig. 77. Japanese species of Aptesini, females — A: *Cubocephalus atrator* (Walker, 1874) (KPM-NK 91385); B: *C. uryuensis* **sp. nov.** (holotype: KPM-NK 75809); C, J: *Parmortha gigantea* **sp. nov.** (holotype: KPM-NK 75808); D: *Aconias concavopropodeonius* (Uchida, 1952) (KPM-NK 81193); E: *Ac. fujiei* **sp. nov.** (holotype: KPM-NK 81195); F: *Ac. longisetosus* **sp. nov.** (holotype: KPM-NK 81196); G: *Aptesia albibasalis* (Uchida, 1930) (KPM-NK 81213); H: *Ap. ezoensis* **sp. nov.** (holotype: KPM-NK 81202); I: *Ap. flagitator* (Rossi, 1794) (KPM-NK 81201); K: *Pa. nigra* **sp. nov.** (holotype: KPM-NK 75811) — A, B: mesosternum, ventral view; C: fore tibia; D–F: hind femur and tibia, lateral view; G–I: propodeum and T I, lateral view; J, K: T I, lateral view.

91367, F, Toyama Pref., Toyama City, Arimine, Jyurodani, 1–8. IX. 2009, M. Watanabe leg. (MsT); KPM-NK 91368, F, ditto, 8–15. IX. 2009; KPM-NK 91369, F, Toyama Pref., Toyama City, Kamegai, 15–26. IX. 2009, M. Watanabe leg. (MsT); KPM-NK 91370, 91371, 2F, Toyama Pref., Nanto City, Togamura-kamimomose, 25. VIII. – 1. IX. 2009, M. Watanabe leg. (MsT); KPM-NK 91372–91375, 4F, ditto, 15–29. IX. 2009; MNHAH, 1F (holotype of *Caenocryptus canaliculatus*), Hyogo Pref., Sasayama, 18. XI. 1954, K. Iwata leg. **AUSTRIA**: LI, 1F (det. Schwarz), Oberösterreich, Hinterstoder, 25. VIII. 1999, F. & T.

Gusenleitner leg.

Description. See Momoi (1968) and Schwarz (1990).

Distribution. Japan (Hokkaido and Honshu).

Bionomics. Host: *Eumenes samuray* Schulthess, 1908 (= *Eumenes rubronotatus rubronotatus* Pérez, 1905) (Hymenoptera, Vespidae) (Momoi, 1968).

Remarks. No particular morphological differences were found between European and Japanese specimens. In Japan, males of *Nippocryptus* are extremely under-represented compared to females. Such a tendency was also observed in this species. Japanese name of this

species, “Kuro-Shikoku-togari-himebachi” is based on the black-bodied species resembles “Shikoku-togari-himebachi”, *Caenocryptus shikokuensis* (Uchida, 1936), while the generic positions of both species are different each other and this species has no distribution data from Shikoku. Thus, I propose new SJN based on Dr. Setsuya Momoi in this study.

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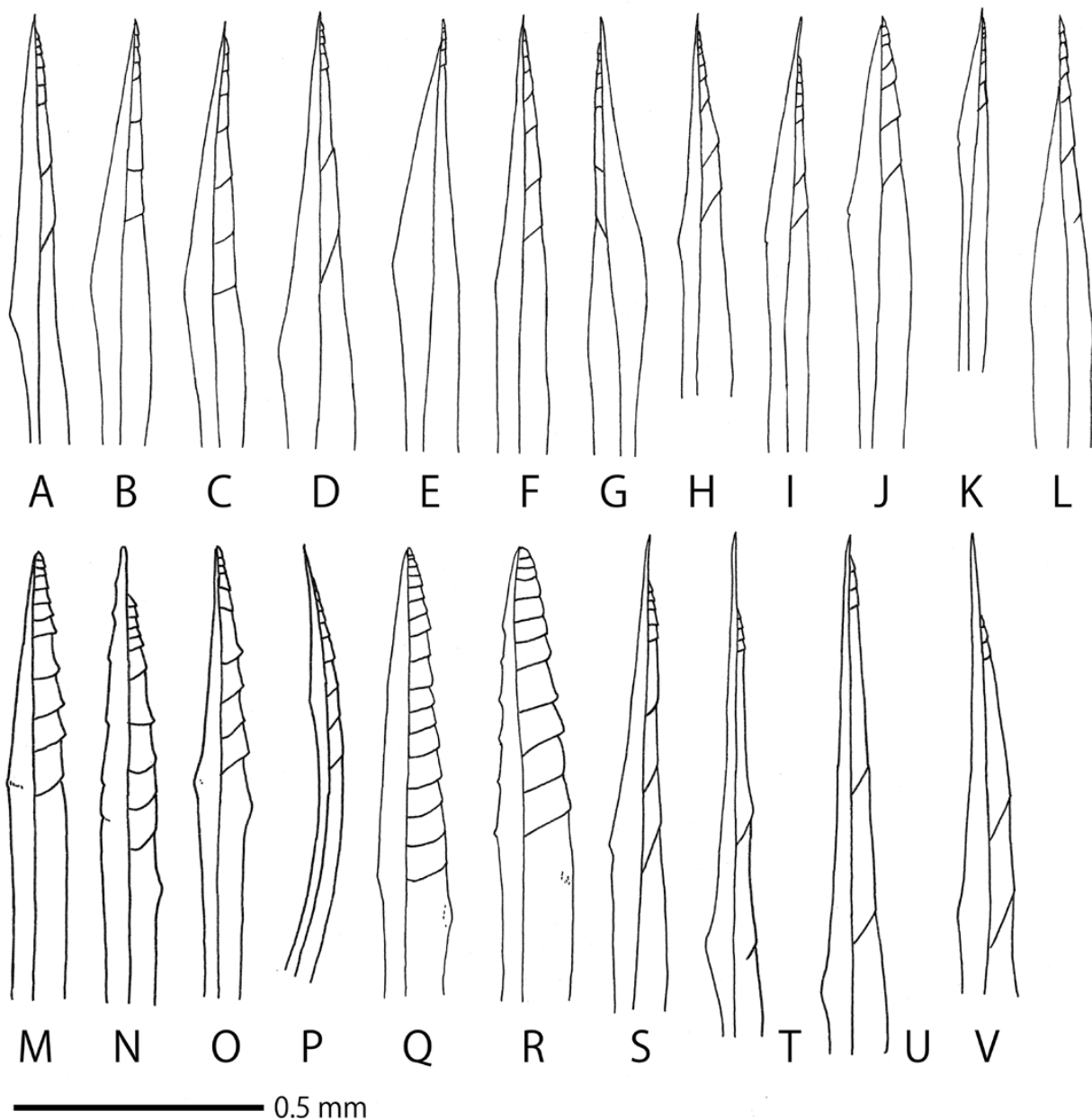


Fig. 78. Apex of ovipositor of Japanese species of Aptesini, females, lateral view — A: *Aconias concavopropodeonus* (Uchida, 1952) (KPM-NK 81288); B: *Ac. fujiei* **sp. nov.** (holotype: KPM-NK 81195); C: *Ac. longisetosus* **sp. nov.** (holotype: KPM-NK 81196); D: *Ac. tarsatus* (Bridgman, 1881) (KPM-NK 81194); E: *Aptes albibasalis* (Uchida, 1930) (KPM-NK 102987); F: *Ap. albicoxalis* **sp. nov.** (holotype: KPM-NK 81204); G: *Ap. ezoensis* **sp. nov.** (holotype: KPM-NK 81202); H: *Ap. flagitator* (Rossi, 1794) (KPM-NK 81202); I: *Ap. jinbensis* **sp. nov.** (holotype: KPM-NK 81207); J: *Ap. melana* Li & Sheng, 2013 (KPM-NK 81211); K: *Ap. minor* **sp. nov.** (holotype: KPM-NK 81212); L: *Ap. yamauchii* **sp. nov.** (holotype: KPM-NK 81208); M: *Cubocephalus asiaticus* **sp. nov.** (holotype: KPM-NK 91384); N: *C. atrator* (Walker, 1874) (KPM-NK 81286); O: *C. confusus* **sp. nov.** (holotype: KPM-NK 91383); P: *C. nanus* **sp. nov.** (holotype: KPM-NK 91381); Q: *C. sapporensis* **sp. nov.** (holotype: KPM-NK 91382); R: *C. uryuensis* **sp. nov.** (holotype: KPM-NK 75809); S: *Giraudia kurenai* **sp. nov.** (holotype: KPM-NK 91387); T: *Gi. nana* **sp. nov.** (holotype: KPM-NK 91388); U: *Gi. spinosa* Uchida, 1936 (KPM-NK 81290); V: *Gi. teranishii* Uchida, 1930 (KPM-NK 91386).

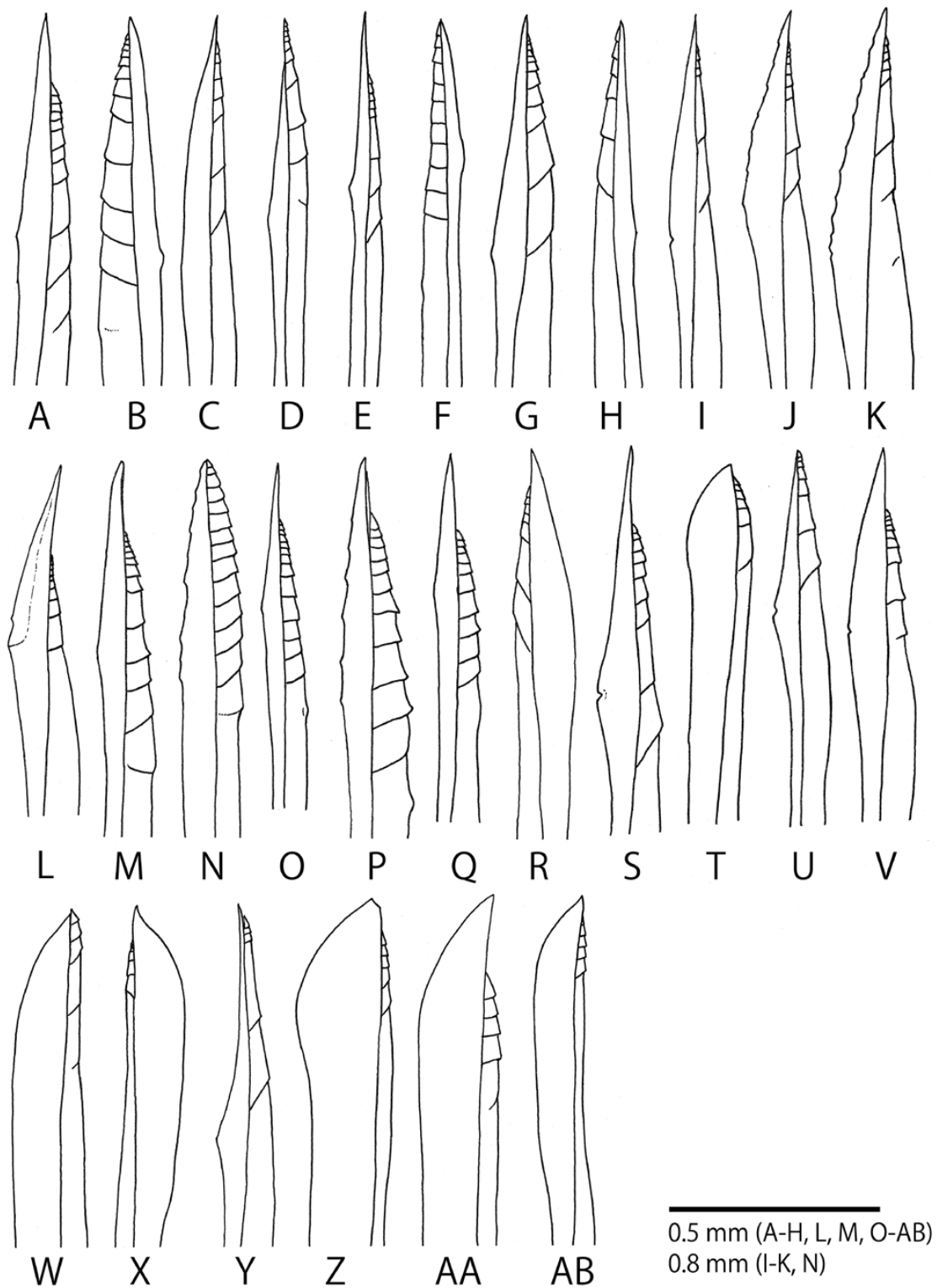


Fig. 79. Apex of ovipositor of Japanese species of Aptesini, females, lateral view — A: *Javra albotrochantellata* **sp. nov.** (holotype: KPM-NK 102847); B: *J. gigantea* **sp. nov.** (holotype: KPM-NK 102819); C: *J. japonica* **sp. nov.** (holotype: KPM-NK 102795); D: *J. minamiashigarensis* **sp. nov.** (holotype: KPM-NK 102821); E: *J. minuta* **sp. nov.** (holotype: KPM-NK 102805); F: *J. taniguchiae* (Uchida, 1956) (KPM-NK 102806); G: *J. tenuis* **sp. nov.** (holotype: KPM-NK 102799); H: *J. teranishii* (Uchida, 1952) (KPM-NK 81293); I: *Megaplectes bicornis* **sp. nov.** (holotype: KPM-NK 103052); J: *Meg. konishii* **sp. nov.** (holotype: KPM-NK 103050); K: *Meg. monticola dentatus* Uchida, 1930 (KPM-NK 91325); L: *Oresbius cushmani* **nom. nov.** (holotype: KPM-NK 81199); M: *Parmortha albitarsale* **sp. nov.** (holotype: KPM-NK 75812); N: *Pa. gigantea* **sp. nov.** (holotype: KPM-NK 75808); O: *Pa. maruyamensis* (Uchida, 1930) (KPM-NK 91326); P: *Pa. nigra* **sp. nov.** (holotype: KPM-NK 75811); Q: *Pa. pleuralis albomaculata* (Ashmead, 1906) (KPM-NK 91389); R: *Plectocryptus japonicus* **sp. nov.** (holotype: KPM-NK 5004410); S: *Pleolophus funereoides* (Uchida, 1952) (KPM-NK 91378); T: *Pleo. obtusus* **sp. nov.** (holotype: KPM-NK 91376); U: *Pleo. sapporensis* (Uchida, 1930) (KPM-NK 5006657); V: *Pleo. setiferae* (Uchida, 1936) (KPM-NK 81297); W: *Schenkia alpina* **sp. nov.** (holotype: KPM-NK 84968); X: *S. japonica* **sp. nov.** (holotype: KPM-NK 84970); Y: *S. minuta* **sp. nov.** (holotype: KPM-NK 84971); X: *S. sylvatica* Townes, Momoi & Townes, 1965 (KPM-NK 81400); AA: *S. tosaensis* (Uchida, 1936) (KPM-NK 69500); AB: *S. uryuensis* **sp. nov.** (holotype: KPM-NK 84967)

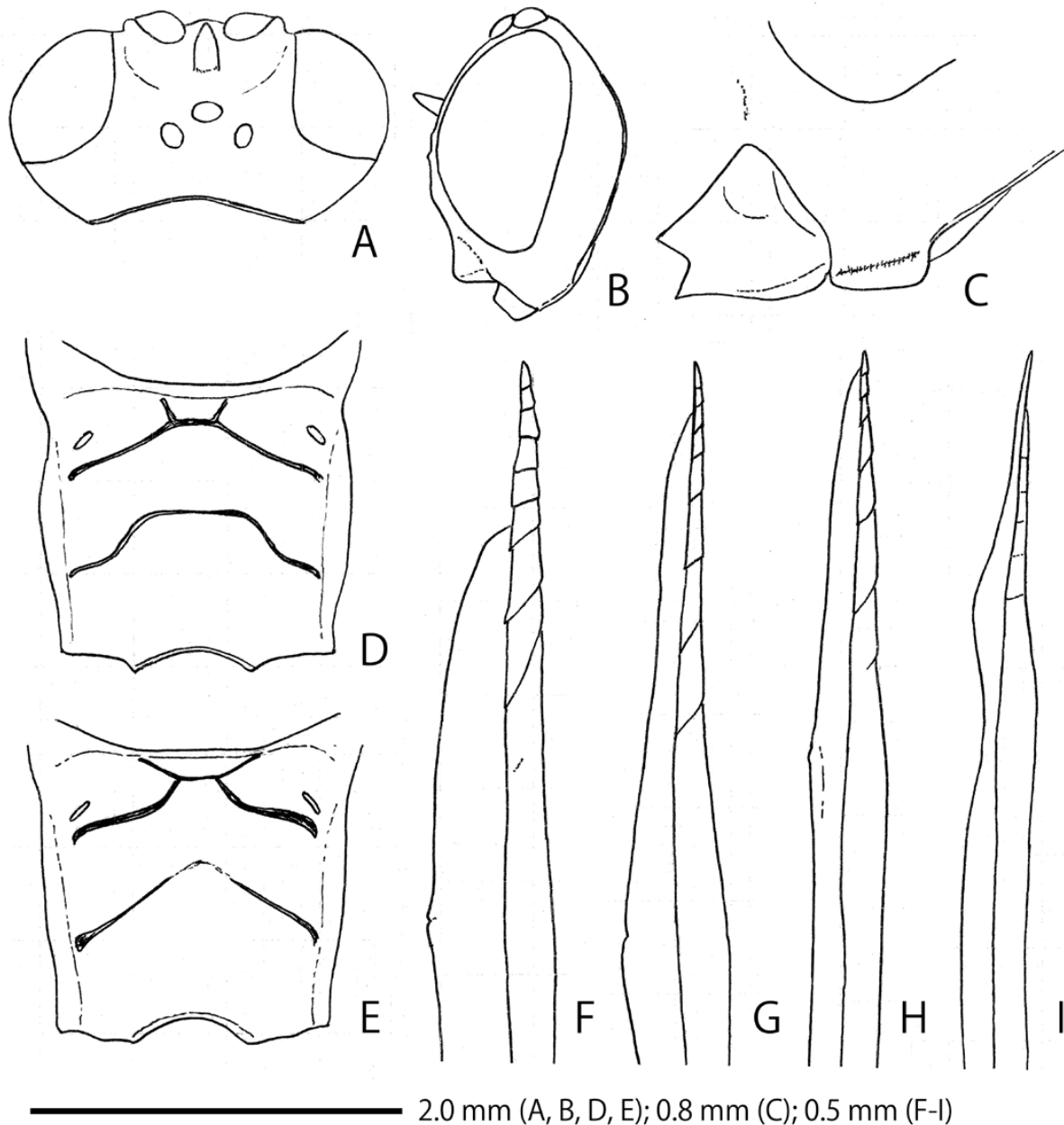


Fig. 80. Japanese species of Cryptini, females — A–C, E, H: *Listrognathus* (*Listrognathus*) *octoguttatus* **sp. nov.** (holotype: KPM-NK 103192); D, G: *L. (L.) coreensis coreensis* Uchida, 1930 (D: MNHAH; G: KPM-NK 75870); F: *Goryphus albofasciatus erabu* **subsp. nov.** (holotype: KPM-NK 103202); I: *Menaforia szepligetii* (Uchida, 1930) (KPM-NK 103101) — A: head, dorsal view; B: head, lateral view; C: malar space and mandible, lateral view; D, E: propodeum, dorsal view; F–I: apex of ovipositor, lateral view.

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摘 要

渡辺恭平, 2025. 日本産トガリヒメバチ亜科 (ハチ目、ヒメバチ科) の 32 新種の記載を伴う分類学的研究. 神奈川県立博物館研究報告 (自然科学), (54): 71–204. [Watanabe, K., 2025. Taxonomic Study of Japanese Cryptinae (Hymenoptera, Ichneumonidae), with Descriptions of 32 New Species. Bull. Kanagawa Pref. Mus. (Nat. Sci.), (54): 71–204.]

日本産トガリヒメバチ亜科の 17 属について分類学的研究を行った。検討の結果、以下の 32 新種 1 新亜種を認め、新たに記載し、標準和名を提唱した：フジエクロトガリヒメバチ *Aconias fujiei* **sp. nov.**、ケナガトガリヒメバチ *Ac. longisetosus* **sp. nov.**、アツギトガリヒメバチ *Aptesis albicoxalis* **sp. nov.**、エゾアカハラトガリヒメバチ *Ap. ezoensis* **sp. nov.**、ジンバトガリヒメバチ *Ap. jinbensis* **sp. nov.**、カスミトガリヒメバチ *Ap. minor* **sp. nov.**、ヤマウチトガリヒメバチ *Ap. yamauchii* **sp. nov.**、アジアオナガトガリヒメバチ *Cubocephalus asiaticus* **sp. nov.**、コガタオナガトガリヒメバチ *C. confusus* **sp. nov.**、マメオナガトガリヒメバチ *C. nanus* **sp. nov.**、サッポロオナガトガリヒメバチ *C. sapporensis* **sp. nov.**、ウリュウオナガトガリヒメバチ *C. uryuensis* **sp. nov.**、クレナイトガリヒメバチ *Giraudia kurenai* **sp. nov.**、ムロタトガリヒメバチ *Gi. nana* **sp. nov.**、アシシロモントガリヒメバチ *Javra albotrochantellata* **sp. nov.**、カタヤマトガリヒメバチ *J. gigantea* **sp. nov.**、ニッポンクロトガリヒメバチ *J. japonica* **sp. nov.**、アシガラトガリヒメバチ *J. minamiashigarensis* **sp. nov.**、トヤマクロトガリヒメバチ *J. minuta* **sp. nov.**、ホソミクロトガリヒメバチ *J. tenuis* **sp. nov.**、フタコブオオトガリヒメバチ *Megaplectes bicornis* **sp. nov.**、コニシオオルリトガリヒメバチ *Meg. konishii* **sp. nov.**、コウシュウオナガトガリヒメバチ *Parmortha albitarsale* **sp. nov.**、イトウオナガトガリヒメバチ *Pa. gigantea* **sp. nov.**、ミヤマオナガトガリヒメバチ *Pa. nigra* **sp. nov.**、タニワキトガリヒメバチ *Plectocryptus japonicus* **sp. nov.**、サキマルフトトガリヒメバチ *Pleolophus obtusus* **sp. nov.**、オンタケフトトガリヒメバチ *Schenkia alpina* **sp. nov.**、ヒダヒゲフトトガリヒメバチ *S. japonica* **sp. nov.**、ヤマトフトトガリヒメバチ *S. minuta* **sp. nov.**、キタグニフトトガリヒメバチ *S. uryuensis* **sp. nov.**、ヤツボシツノトガリヒメバチ *Listrognathus (Listrognathus) octoguttatus* **sp. nov.** (以上新種)；シロヨコジマトガリヒメバチ沖永良部島亜種 *Goryphus albofasciatus erabu* **subsp. nov.** (新亜種)。日本から新たに以下のタクサを記録し、種には標準和名を提唱した：*Plectocryptus* Thomson, 1873 (日本新産属)；トゲヒダトガリヒメバチ *Ap. flagitator* (Rossi, 1794)、チュウゴクトガリヒメバチ *Ap. melana* Li & Sheng, 2013、カルベツノトガリヒメバチ *L. (L.) yunnanensis* He & Chen, 1996 (以上日本新産種)；ムネブトトガリヒメバチ名義タイプ亜種 *Idiolispa analis analis* (Gravenhorst, 1807) (日本新産亜種)。以下の 3 種において異名を認めた：*Ac. tarsatus* (Bridgman, 1881) = *Plec. albitarsis* Uchida, 1936 **syn. nov.** (標準和名：アシモンクロトガリヒメバチ)、*Parmortha maruyamensis* (Uchida, 1930) = *Cratocryptus microstriatellus* Uchida, 1952 **syn. nov.** (標準和名：マルヤマヒメトガリヒメバチ)、*Nippocryptus alutaceus* (Tschek, 1871) = *Caenocryptus canaliculatus* Momoi, 1968 **syn. nov.** (標準和名：モモイトガリヒメバチ)。マツノクロホシハバチトガリヒメバチ *Aptesis opaca* (Cushman, 1937) の属を *Oresbius* Marshall, 1867 に移動させ、種小名が先取されていたことから、新置換名 *O. cushmani* **nom. nov.** を提唱した。*Pleolophus sapporensis* (Uchida, 1930) の和名が疑わしい寄主記録に基づいていたため、新しい標準和名としてコガタフトトガリヒメバチを提唱した。上記の種を含めた新分布記録を報告し、再記載と 10 属の種への検索表を提供した。

Original Article

Two New Jawfishes, *Stalix albonotata* sp. nov. and *S. yanoi* sp. nov., from the Ryukyu Islands, Japan (Perciformes: Opistognathidae)Hidetoshi WADA^{1,2)}, Toshiyuki SUZUKI³⁾, Hirozumi KOBAYASHI⁴⁾ & Hiroshi SENOU¹⁾

Abstract. Two new species of the genus *Stalix* (Perciformes: Opistognathidae), *Stalix albonotata* sp. nov. and *Stalix yanoi* sp. nov., are described, based on two specimens of each, from the Ryukyu Islands, Japan. *Stalix albonotata* differs from all congeners by the following combination of characters: longitudinal scale rows 45 or 46; 40–42 total gill rakers on first gill arch (in adults); first 2 mandibular pores well-spaced; lateral line terminating below second or third dorsal-fin soft ray base (dorsal-fin element 13 or 14); anteroventral margin of upper lip crenulate; body grayish-yellow, with fine brown and white vermiculations; dorsal-fin membrane grayish-yellow, with several irregular white blotches when fresh; anterior gular region unpigmented. *Stalix yanoi* differs from all congeners by the following combination of characters: longitudinal scale rows 45–48; 36–37 total gill rakers on first gill arch; two sensory pores present on posterior half of interorbital space; first 2 mandibular pores well-spaced; anteroventral surface of upper lip smooth; body uniformly whitish-green, covered with slight brown pigmentation; and dorsal-fin membrane whitish-green (without notable pattern or markings when fresh). A key to the Japanese species of *Stalix* is given.

Key words: ichthyology, morphology, new species, taxonomy

Introduction

The opistognathid genus *Stalix* Jordan & Snyder, 1902, currently represented by 12 valid species in tropical to temperate Indo-West Pacific waters (Smith-Vaniz, 1989, 2022; Shinohara, 1999, 2006; Prokofiev, 2015), is characterized by the following combination of characters: first 5–9 dorsal-fin spines transversely forked distally, posterior forks successively shallower and more narrow (considered as synapomorphy of this genus); dorsal fin with 10 or 11 spines and 11–14 soft rays; distal margin of anterior dorsal-fin membrane somewhat thickened and expanded dorsally to accommodate spine configuration, forming pronounced lateral fold on sides of fin in some

species; anal fin with 2 spines and 10–14 soft rays; pectoral fin usually with 20–24 rays (rarely 19 or 25); pelvic fin with single spine and 5 soft rays, second soft ray longest, first and second soft rays unbranched and thickened; caudal fin with 3 + 3 procurent rays and 8 + 7–8 segmented rays (including 6–7 + 6–7 = 12–14 branched rays), 11 or 12 + 11 = 22 or 23 rays in total; vertebrae 9 or 10 + 15–18; single supraneural present, positioned just before neural spine of second precaudal vertebrae (no supraneurals in *Stalix toyoshio* Shinohara, 1999, exceptionally); gill rakers on first gill arch 8–13 + 14–23 = 22–34; posterior end of maxilla truncate with small, terminally positioned supramaxilla; anterior nostril tubular, posterior nostril vertically ovate, simple; head, nape, pectoral-fin base,

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thorax, and area immediately behind pelvic fins naked; body with ca. 39–66 oblique scale rows in longitudinal series; lateral-line terminus between verticals from 8th dorsal-fin spine and 4th soft ray; premaxillary and dentary teeth in narrow bands anteriorly, becoming uniserial posteriorly; teeth conical, not noticeably enlarged or strongly hooked (except posteriormost dentary teeth of *Stalix sheni* Smith-Vaniz, 1989); and vomer and palatines toothless (Smith-Vaniz, 1989, 2022; Shinohara, 1999, 2006; Prokofiev, 2015).

During a re-assessment of the family Opistognathidae from Japanese waters, four specimens of the genus *Stalix*, representing two new species (two specimens of each), were identified from the Ryukyu Islands, Japan. Both new species, described herein, share major diagnostic characters with previously known species of *Stalix*, but differ from the latter in having many gill rakers on the first gill arch. A key to Japanese species of *Stalix*, including the two new species, is provided, having been based on comparative material examined and literature descriptions.

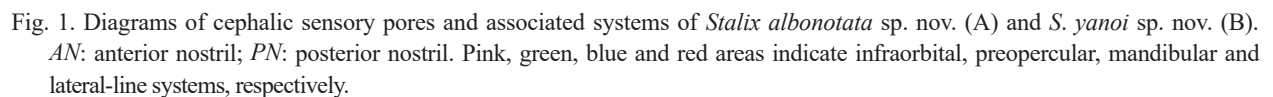
Materials and methods

Counts and measurements followed Smith-Vaniz (1989, 2023), the latter being made to the nearest 0.01 mm, with needle-point calipers under a stereo-microscope. Standard length is abbreviated as SL, and Lateral line as LL (Table 1). A diagram of the cephalic sensory pores in each new species is provided in Fig. 1: the openings of each system were numbered from anteriormost to posteriormost pores based on the holotype of *S. yanoi* (KPM-NI 5503); sensory systems on interorbital, supratemporal, and infraorbital regions were unified as infraorbital system. Squamation, gill rakers, and cephalic sensory pore systems were examined on preserved specimens stained with cyanine blue (Akihito *et al.*, 1993; Saruwatari *et al.*, 1997). Abraded scale numbers were estimated from scale pockets. Fresh color descriptions (before preservation) for both species were based on color photographs of them (Figs. 2A, 3, 4A, 5A–B). Osteological characters were observed on radiographs (Figs. 2C, 5D). Intermuscular bone terminology follows Patterson & Johnson (1995) and

Table 1. Counts and measurements of *Stalix albonotata* sp. nov. and *S. yanoi* sp. nov. from Ryukyu Islands, Japan

	<i>S. albonotata</i>		<i>S. yanoi</i>	
	Holotype KPM-NI 83369	Paratype NSMT-P 145413	Holotype KPM-NI 5503	Paratype OMNH-P 52945
SL (mm)	38.8	20.9	37.4	34.0
Counts				
Dorsal-fin rays	XI, 11	XI, 11	XI, 11	XI, 11
Anal-fin rays	II, 11	II, 11	II, 11	II, 11
Pectoral-fin rays	22(left)/23(right)	22/broken	21/21	22/22
Upper gill rakers	15/16	12*/broken	13/14	13/13
Lower gill rakers	25/26	21*/broken	24/23	23/23
Total gill rakers	40/42	33*/broken	37/37	36/36
Lateral line terminus total elements	14/13	14/14	13.5/13.5	14/14.5
Longitudinal scale rows	45/46	46/46	47/48	47/45
Measurements (% of SL)				
Body depth	20.7	19.1	21.4	20.8
Head length	30.5	35.1	31.6	31.2
Orbit diameter	10.4	10.0	11.5	10.7
Upper jaw length	18.8	19.6	19.6	18.6
Upper jaw width	5.2	6.5	6.7	6.1
Caudal peduncle length	12.1	13.8	13.8	12.3
Caudal peduncle depth	11.6	10.1	11.9	12.6
Postorbital head length	19.1	21.3	19.3	18.4
Postorbital jaw length	7.3	4.9	7.4	6.6
Predorsal length	31.0	35.9	32.5	32.6
Preanal length	57.3	60.6	60.1	61.4
Dorsal fin length	64.4	61.6	63.8	64.9
Anal fin length	30.1	28.7	28.5	28.6
Fifth dorsal-fin spine length	7.8	93.2	9.0	8.6
Seventh dorsal-fin spine length	9.5	10.4	11.5	10.0
Caudal-fin length	25.1	29.8	25.1	26.8
Pelvic-fin length	21.5	19.9	19.3	20.4

*Rudimentary



Holotype. KPM-NI 83369, 38.8 mm SL, adult, Uehara, Iriomote-jima Island, Yaeyama Islands, Ryukyu Islands, Japan, 18 m depth, 18 August 1999, hand net, collected by K. Yano.

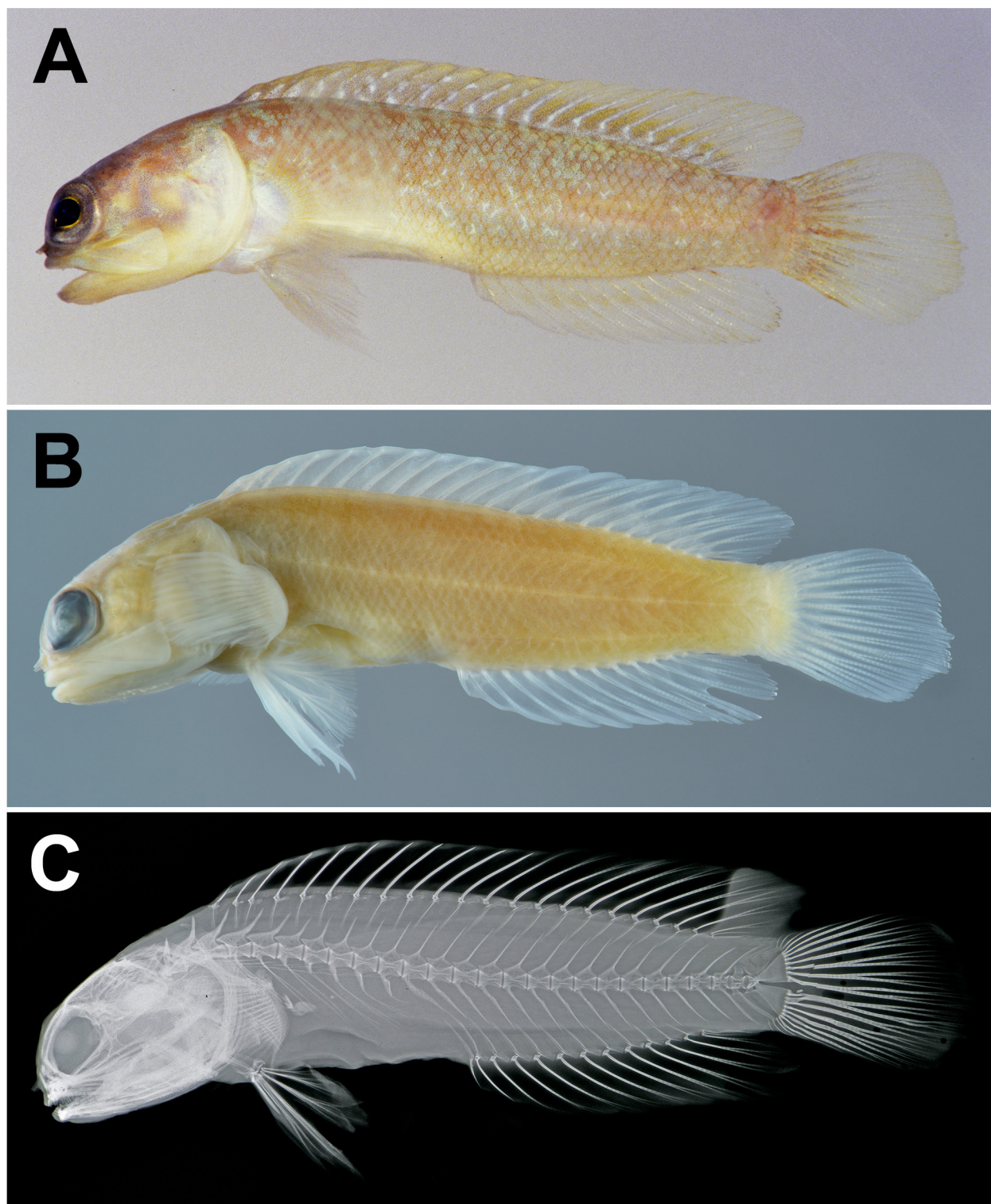


Fig. 2. Holotype of *Stalix albonotata* sp. nov. (KPM-NI 83369, 38.8 mm SL, adult, Iriomote-jima Island, Ryukyu Islands, Japan). A: fresh condition, photo by T. Suzuki; B: preserved condition, photo by H. Wada; C: radiograph, taken by H. Wada.

Paratype. NSMT-P 145413, 20.9 mm SL, juvenile, Kin Bay, Okinawa-jima Island, Okinawa Islands, Ryukyu Islands, Japan, 10 m depth, 16 April 2022, yabby pump, collected by H. Nakajima.

Photographic record (non-type specimen). KPM-NR 70420, Kin Bay, Okinawa-jima Island, Okinawa Islands, Ryukyu Islands, Japan, 7 m depth, 9 September 2009, photo by T. Seko.

Diagnosis. A species of *Stalix* with the following combination of characters: dorsal fin with 11 soft rays; pectoral fin with 22 or 23 soft rays; longitudinal scale rows 45 or 46; gill rakers on first gill arch 15 or 16 + 25 or 26 = 40–42 (in adults); orbit diameter 10.0–10.4 % of SL; two sensory pores (*I4* and *I5*) present on posterior half of interorbital space; first 2 mandibular pores (*M1* and *M2*) well-spaced, fifth pore (*M5*) with single opening (Fig. 1A);

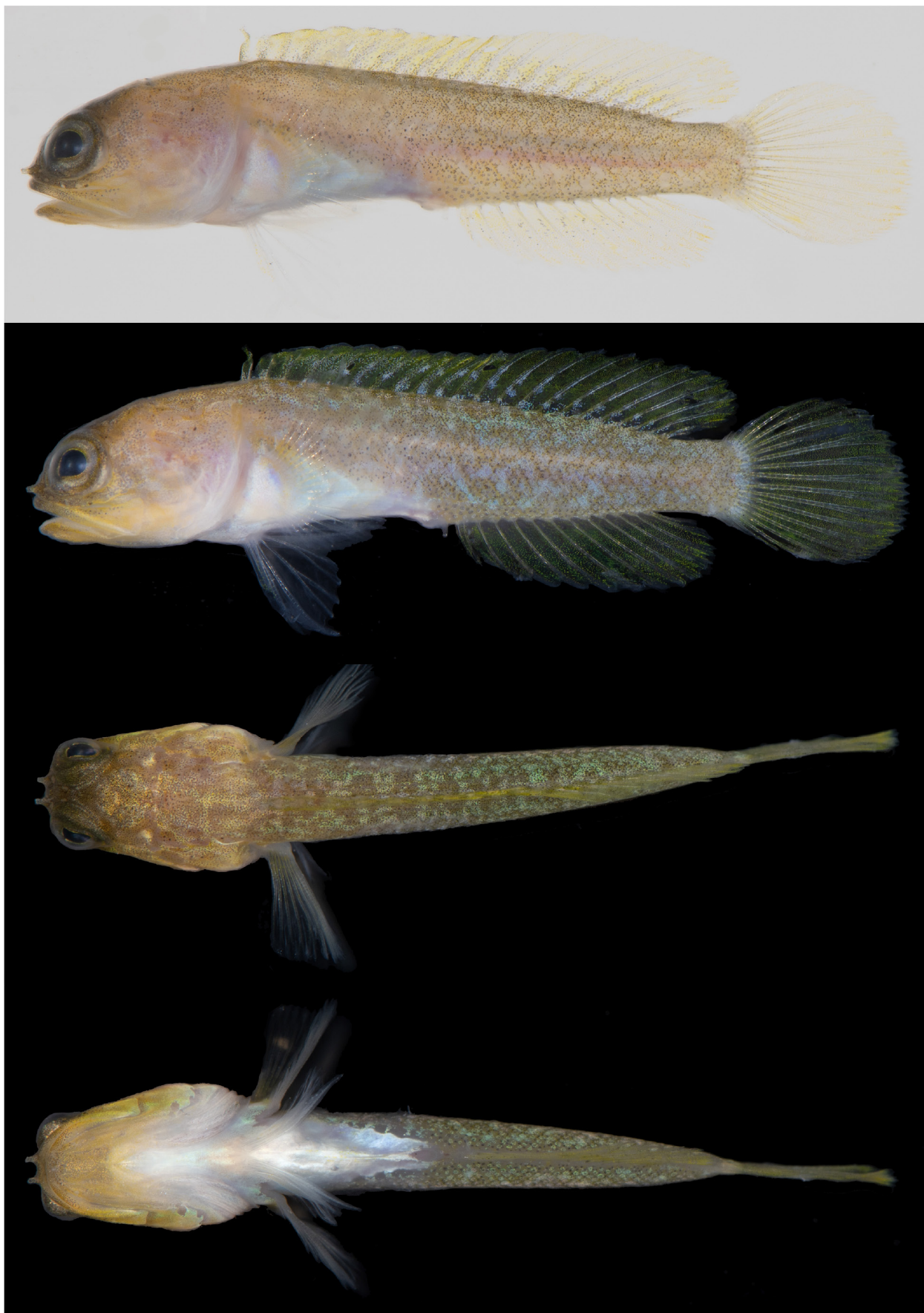


Fig. 3. Fresh specimen of *Stalix albonotata* sp. nov. (NSMT-P 145113, 20.9 mm SL, paratype, juvenile, Okinawa-jima Island, Ryukyu Islands, Japan). Photos by H. Kobayashi.

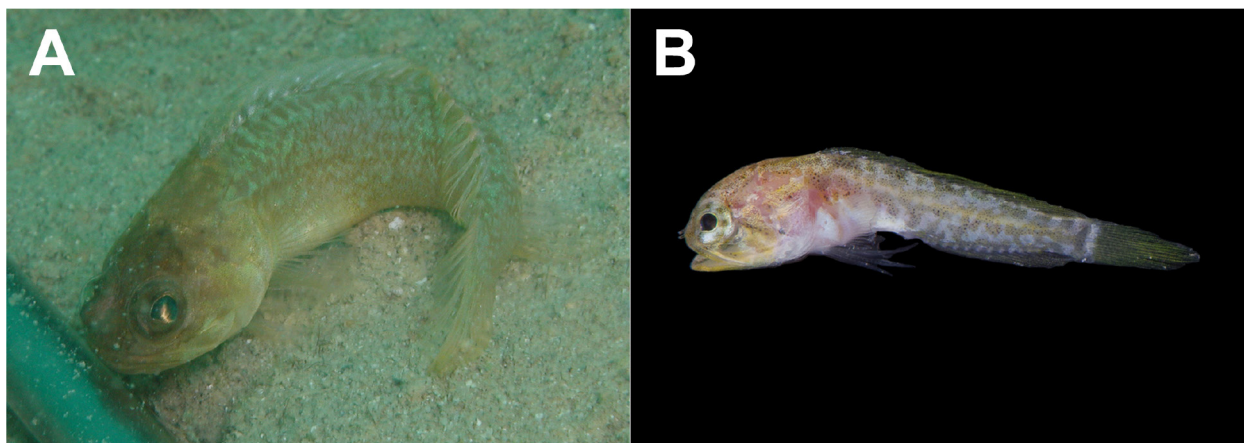


Fig. 4. Photographs of *Stalix albonotata* sp. nov. (A: KPM-NR 70420, not preserved, photo by T. Seko) and *S. cf. albonotata* (B: NSMT-P 145414, ca. 10 mm SL, fresh specimen, photo by H. Kobayashi), Okinawa-jima Island, Ryukyu Islands, Japan.

lateral line terminating below second or third dorsal-fin soft ray base (dorsal fin element 13 or 14); distal incision of 3rd to 5th dorsal-fin spines moderate (Fig. 6A; see Smith-Vaniz, 1989: fig. 1); anteroventral margin of upper lip crenulate (Fig. 7A); body grayish-yellow, with fine brown and white vermiculations; lateral surface of head grayish-green, with rough gray vermiculation; dorsal-fin membrane grayish-yellow, with several irregular white blotches when fresh (Figs. 2, 3); anterior gular region unpigmented (chin and area adjacent to anterior two mandibular pores with a few scattered melanophores) (Fig. 8A).

Description. Data for holotype presented first, followed by paratype data (juvenile; 20.9 mm SL) in parentheses if different. Counts and measurements given in Table 1. Characters given in diagnosis not repeated.

Body elongate, laterally compressed. Upper profile of head rounded. Dorsal profile rising from snout tip to fifth dorsal-fin spine base, thereafter gradually lowering to end of dorsal-fin base. Ventral profile lowering from lower-jaw tip to pelvic-fin origin, subsequently parallel to body axis until middle of anal-fin base. Ventral contour of posterior half of anal-fin base slightly rising. Dorsal and ventral profiles of caudal peduncle parallel. Mouth large, slightly oblique, posterior margin of maxilla reaching vertical through first preopercular pore (*PI* in Fig. 1A); posterior end of maxilla truncate with small, terminally positioned supramaxilla. Anterior nostril tubular, posterior nostril vertically ovate, simple. Single row of about 30 papillae on anteroventral margin of upper lip (8 papillae on anteriormost portion) (Fig. 7A). Gill rakers well-developed (rudimentary). Both jaws with conical teeth, ca. 5 (4) rows anteriorly, becoming uniserial posteriorly; premaxilla with outer row of stout, slightly hooked (straight) teeth anteriorly, becoming smaller posteriorly; 2 irregular rows of smaller teeth and a few slightly enlarged symphyseal teeth behind anterior outer row; dentary with an outer

row of stout straight teeth anteriorly, becoming smaller posteriorly; 3 irregular rows of smaller teeth anteriorly behind outer row. Vomer and palatines toothless.

Dorsal fin origin above posterior tip of gill membrane; dorsal profile of dorsal fin rising from origin to tip of ninth soft ray; posteriormost part of soft-rayed portion rounded; all soft rays branched, ninth longest, last two joined basally; first to seventh (fifth) dorsal-fin spines transversely forked distally, posterior forks successively shallower and more narrow; distal margin of anterior dorsal-fin membrane somewhat thickened and expanded dorsally to accommodate spine configuration, forming a pronounced lateral fold on each side of fin. Anal fin origin below first dorsal-fin soft ray; ventral profile of anal fin lowering from origin to tip of eighth soft ray; posteriormost part of soft-rayed portion rounded; all soft rays branched, except first soft ray simple, eighth longest, last two joined basally. Caudal fin rounded; 3 + 3 procurent rays and 8 + 8 segmented rays (including 6 + 6 = 12 branched rays), 11 + 11 = 22 rays in total. Pectoral fin rounded, rays of upper portion slightly longer than those of lower portion. Pelvic fin semi-falcate; single spine and 5 soft rays, second soft ray longest, first and second segmented rays unbranched, thickened.

Body covered with cycloid scales, except head, nape, pectoral-fin base, thorax, and areas between dorsal-fin base and lateral line, and immediately behind pelvic fins naked; each fin scaleless.

Cephalic sensory pores well-developed (Fig. 1A). Infraorbital system with relatively large pores, opening usually single; anteriormost pore (*II*) located just below anterior nostril; two sensory pores (*I8* and *II0*) on junction of infraorbital system located behind posterodorsal edge of orbit (Fig. 1A); posteriormost pore (*II5*) oval, located just in front of lateral line origin.

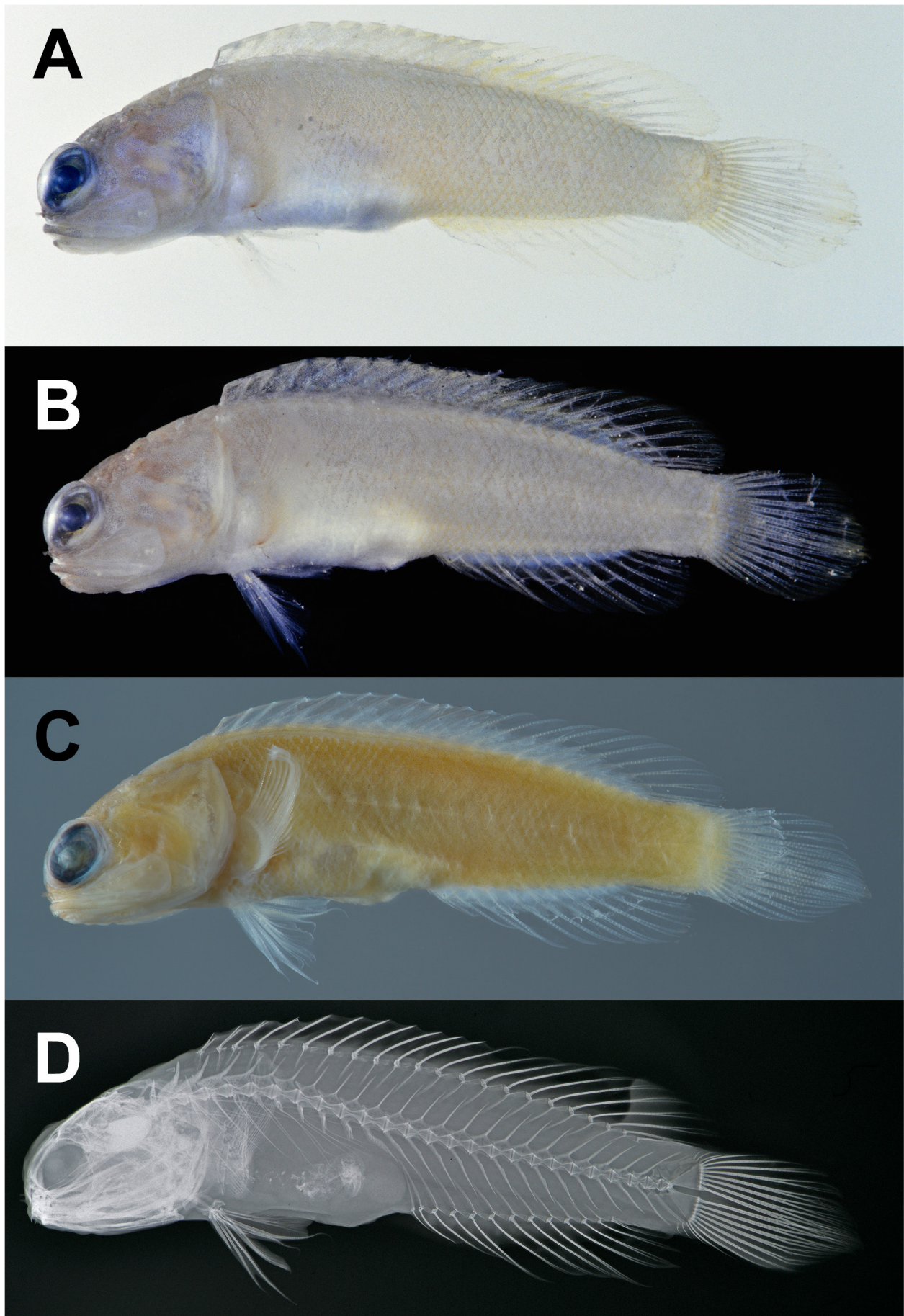


Fig. 5. Holotype of *Stalix yanoi* sp. nov. (KPM-NI 5503, 37.4 mm SL, adult, Iriomote-jima Island, Ryukyu Islands, Japan). A, B: fresh condition, photos by H. Senou; C: preserved condition, photo by H. Wada; D: radiograph, taken by H. Wada.

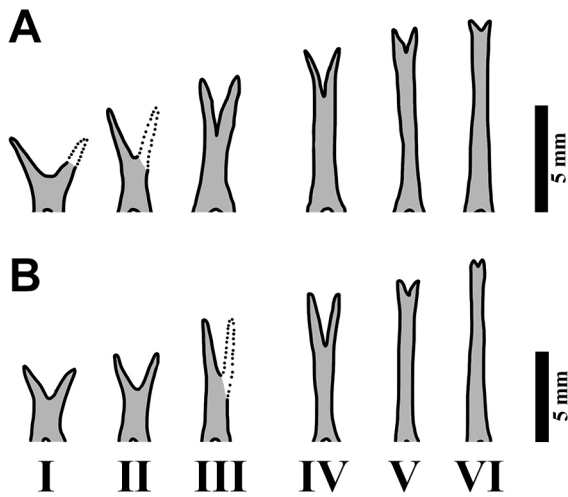


Fig. 6. Shape of first six (I–IV) dorsal-fin spines of two species of *Stalix* (frontal views). A: *Stalix albonotata* sp. nov., KPM-NI 83369, holotype, 38.8 mm SL; B: *Stalix yanoi* sp. nov., KPM-NI 5503, holotype, 37.4 mm SL.

Vertebrae 10 + 16; single supraneural present, positioned just before neural spine of second precaudal vertebrae.

Coloration when fresh (Figs. 2A, 3). Body mostly grayish-yellow, with fine brown and white vermiculations; thorax and pectoral-fin base white; abdomen yellowish-green. Dorsal surface head yellowish-brown; lateral surface of head grayish-yellow with rough gray vermiculation; maxilla, ventral surface of lower jaw and gill membrane yellowish-green; tips of both lips grayish-green. Dorsal fin entirely grayish-yellow; several irregular white blotches on spinous portion; white blotches on soft rayed portion along each soft ray. Anal fin entirely yellowish-green; a single yellow band running longitudinally at one-third height of soft-rayed portion (band rudimentary in juvenile). Caudal fin yellow green, except anterior one-third brown. Pectoral and pelvic fins yellowish-green.

Coloration in alcohol (Fig. 2B). Head and body generally pale brown; whitish and greenish coloration (of fresh condition) faded; slight brownish coloration retained.

Etymology. The specific name, English common name, and standard Japanese name refer to the fine white vermiculation on the body and the irregular white blotches on the dorsal fin of this species.

Distribution and habitat. Currently collected only from Iriomote-jima and Okinawa-jima islands, Ryukyu Islands, Japan. In addition, an individual was observed at 7 m depth in Kin Bay, Okinawa-jima Island (Fig. 4A: KPM-NR 70420). All of these individuals were found in an inner bay (silty sand bottom). The paratype was observed with following five gobioids, usually inhabit silty sand bottom: *Myersina nigrivirgata* Akihito & Meguro, 1983, *Oplopomus oplopomus* (Valenciennes, 1837),

Oxyurichthys papuensis (Valenciennes, 1837), *Taenioides kentalleni* Murdy & Randall, 2002, and *Tomiyamichthys* sp. 7 sensu Senou *et al.* (2021).

Comparisons. *Stalix albonotata* differs from all other congeners in having many gill rakers on the first gill arch (15 or 16 + 25 or 26 = 40–42 vs. 14 or fewer on upper limb, 24 or fewer on lower limb, total 37 or fewer in all other congeners) (Table 1; Smith-Vaniz, 1989, 2022; Shinohara, 1999, 2006; Prokofiev, 2015; Allen & Erdmann, 2012, 2024). *Stalix albonotata* is most similar to *Stalix flavida* Smith-Vaniz, 1989, distributed in Brunei, Indonesia, East Timor, and northwestern Australia (Smith-Vaniz, 1989; Allen & Erdmann, 2024), both sharing several morphological characters as follows: dorsal fin with 11 spines and 11 soft rays, first 5–7 dorsal-fin spines transversely forked distally; anal fin with 2 spines and 10 or 11 soft rays; pectoral fin with 20–23 rays; longitudinal scale rows 42–46; body moderately deep, 17.8–23.8 % of SL; relatively small eye, its diameter 9.3–10.9 % of SL; anteroventral margin of upper lip crenulate; first 2 mandibular pores well-spaced, fifth pore with single opening; body pale yellow to greenish-tan or brown, with fine vermiculation; head with several blotches (when fresh or in life) or weakly pigmented (Figs. 1A, 2–3, 7A; Table 1; Smith-Vaniz, 1989; Allen & Erdmann, 2024). However, *S. albonotata* differs from *S. flavida* in having 40–42 gill rakers on the first gill arch (vs. 31–33 in *S. flavida*), a long lateral line, terminating below the second or third dorsal fin soft ray base (vs. last dorsal-fin spine or first soft ray base), several irregular white blotches on the dorsal-fin membrane when fresh (vs. no white blotches), and an unpigmented anterior gular region (vs. uniformly pigmented adjacent to fourth mandibular pore) (Figs. 2, 3, 8A; Table 1; Smith-Vaniz, 1989; Allen & Erdmann, 2024).

Remarks. See the remarks on *S. yanoi* for the discussion of including *S. albonotata* as a member of the genus *Stalix*.

A single juvenile specimen of opistognathid (Fig. 4B; NSMT-P 145414, ca. 10 mm SL), (probably just after settlement), of similar coloration to *S. albonotata* (Figs. 2, 3, 4A), was collected from the same locality as the paratype (NSMT-P 145413), but could not be unequivocally identified due to its undeveloped diagnostic features. Future identification may be possible after collecting more specimens at other growth stages or by DNA barcoding.

Stalix yanoi sp. nov.

(New English name: Yano's Jawfish; new standard Japanese name: Sarashi-kaeruamadai)
(Figs. 1B, 5, 6B, 7B, 8B; Table 1)

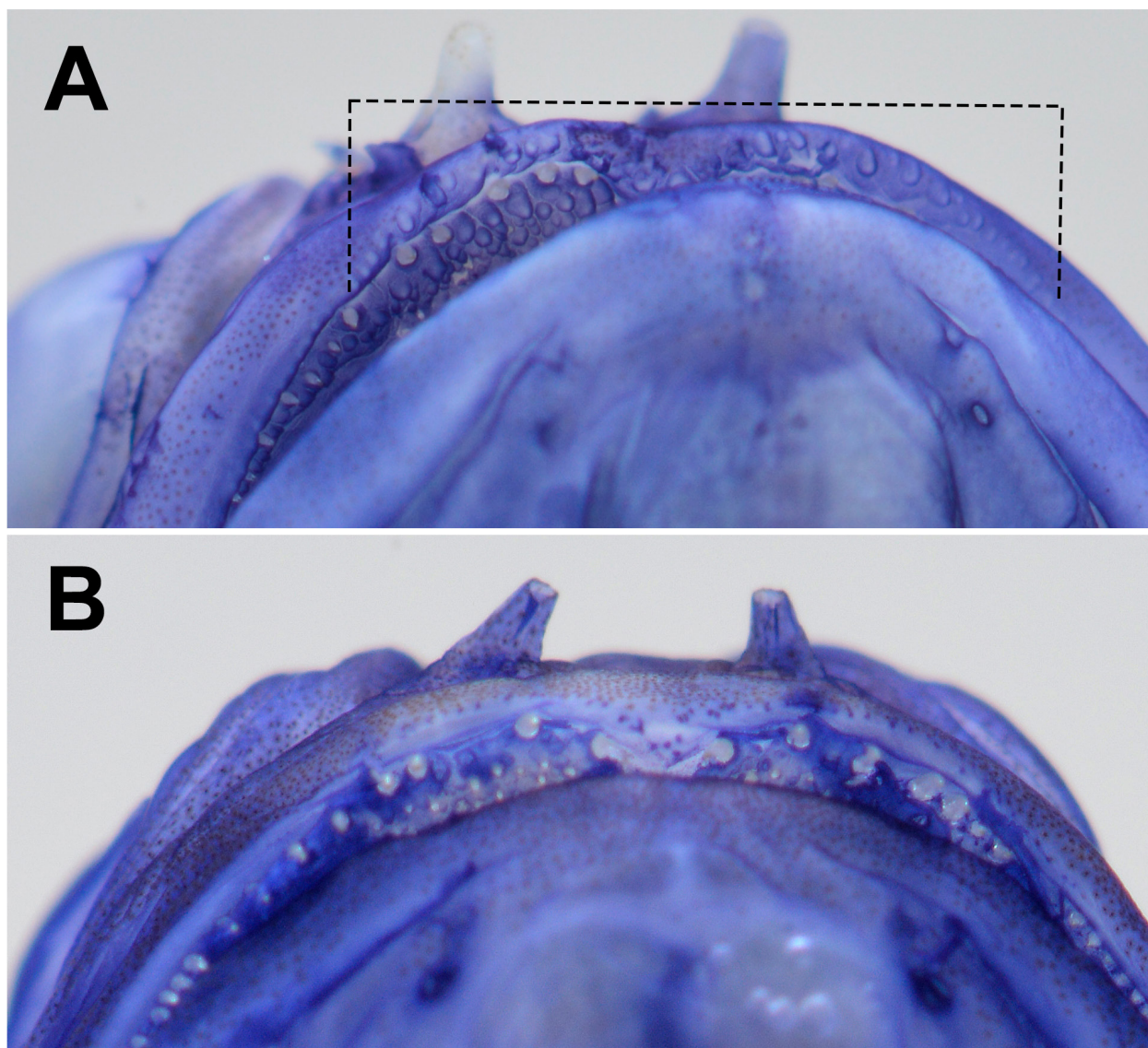


Fig. 7. Ventral surfaces of upper lip of two species of *Stalix*. A: *Stalix albonotata*, KPM-NI 83369, holotype, 38.8 mm SL; B: *Stalix yanoi*, KPM-NI 5503, holotype, 37.4 mm SL. Broken line indicates area with papillae.

Holotype. KPM-NI 5503, 37.4 mm SL, adult, Uehara, Iriomote-jima Island, Yaeyama Islands, Ryukyu Islands, Japan, 16 m depth, 16 November 1998, hand net, collected by K. Yano.

Paratype. OMNH-P 52945, 34.0 mm SL, adult, Uehara, Iriomote-jima Island, Yaeyama Islands, Ryukyu Islands, Japan, 18 m depth, 18 August 1999, hand net, collected by K. Yano.

Diagnosis. A species of *Stalix* with the following combination of characters: dorsal fin with 11 soft rays; pectoral fin with 21 or 22 soft rays; longitudinal scale rows 45–48; gill rakers on first gill arch 13 or 14 + 23 or 24 = 36 or 37; orbit diameter 10.7–11.5 % of SL; two sensory pores (*I4* and *I5*) present on posterior half of interorbital space; first 2 mandibular pores (*M1* and *M2*) well-spaced, fifth pore (*M5*) with single opening (Fig. 1B); lateral line terminating below second to fourth dorsal fin soft ray base (dorsal fin element 13.5–14.5);

distal incision of 3rd to 5th dorsal-fin spines moderate (Fig. 6B; see Smith-Vaniz, 1989: fig. 1); anteroventral surface of upper lip smooth (Fig. 7B); body uniformly whitish-green covered with slight brown pigmentation; lateral surface of head with several gray roughly irregular blotches; dorsal-fin membrane whitish-green, lacking any notable patterns or markings when fresh (Fig. 4A, B); anterior gular region unpigmented (chin and area adjacent to anterior two mandibular pores with a few scattered melanophores) (Fig. 8B).

Description. Data for holotype presented first, followed by paratype data in parentheses if different. Counts and measurements given in Table 1. Characters given in diagnosis not repeated.

Body elongate, laterally compressed. Upper profile of head rounded. Dorsal profile rising from snout tip to fifth dorsal-fin spine base, thereafter gradually lowering to end of dorsal-fin base. Ventral profile lowering from

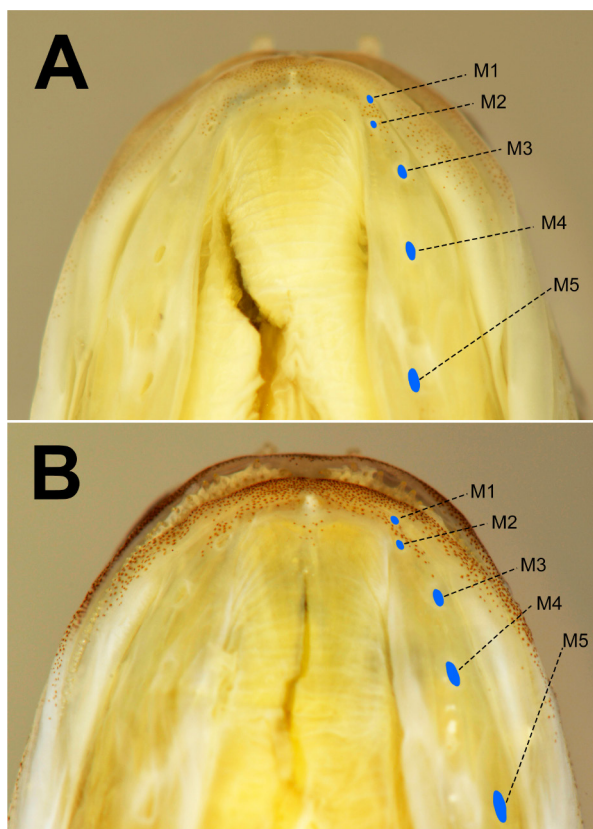


Fig. 8. Gular regions of two species of *Stalix*. A: *Stalix albonotata* sp. nov., KPM-NI 83369, holotype, 38.8 mm SL; B: *Stalix yanoi* sp. nov., KPM-NI 5503, holotype, 37.4 mm SL. M1–5 indicate position of first to fifth mandibular pores, respectively.

lower-jaw tip to pelvic-fin origin, subsequently parallel to body axis until middle of anal-fin base. Ventral contour of posterior half of anal-fin base slightly rising. Dorsal and ventral profiles of caudal peduncle parallel. Mouth large, slightly oblique, posterior margin of maxilla reaching vertical through first (second) preopercular pore (*P1* or *P2* in Fig. 1B); posterior end of maxilla truncate with small, terminally positioned supramaxilla. Anterior nostril tubular, posterior nostril vertically ovate, simple. Both jaws with conical teeth, ca. 6 rows anteriorly, becoming uniserial posteriorly; premaxilla with outer row of stout, slightly hooked teeth anteriorly, becoming smaller posteriorly; 3 irregular rows of smaller teeth and a few slightly enlarged symphyseal teeth behind anterior outer row; dentary with an outer row of stout straight teeth anteriorly, becoming smaller posteriorly; 3 (2) irregular rows of smaller teeth anteriorly behind outer row. Vomer and palatines toothless.

Dorsal fin origin above posterior tip of gill membrane; dorsal profile of dorsal fin rising from origin to tip of ninth (eighth) soft ray; posteriormost part of soft-rayed portion rounded; all soft rays branched, except first soft ray simple, eighth longest, last two joined basally; first to sixth (fifth) dorsal-fin spines transversely forked distally,

posterior forks successively shallower and more narrow; distal margin of anterior dorsal-fin membrane somewhat thickened and expanded dorsally to accommodate spine configuration, forming a pronounced lateral fold on each side of fin. Anal fin origin below last dorsal-fin spine base; ventral profile of anal fin lowering from origin to tip of seventh soft ray (eighth); posteriormost part of soft-rayed portion rounded; all soft rays branched, except first soft ray simple, eighth (ninth) longest, last two joined basally. Caudal fin rounded; 3 + 3 procurent rays and 8 + 8 segmented rays (including 6 + 6 = 12 branched rays), 11 + 11 = 22 rays in total. Pectoral fin rounded, rays of upper portion slightly longer than those of lower portion. Pelvic fin semi-falcate; single spine and 5 soft rays, second soft ray longest, first and second segmented rays unbranched, thickened.

Body covered with cycloid scales except head, nape, pectoral-fin base, thorax, and areas between dorsal-fin base and lateral line, and immediately behind pelvic fins naked; each fin scaleless.

Cephalic sensory pores well-developed (Fig. 1B). Infraorbital system with relatively large pores, opening usually single; anteriormost pore (*I1*) located just below anterior nostril; three sensory pores (*I8*, *I9* and *I10*) on junction of infraorbital system located behind posterodorsal edge of orbit; posteriormost pore (*I15*) oval, located on just front of lateral line origin.

Vertebrae 10 + 16; single supraneural present, positioned just before neural spine of second precaudal vertebrae.

Coloration when fresh (Fig. 4A, B). Most parts of head and body whitish-green with slight brown pigmentation; thorax, abdomen and pectoral-fin base white; fine brown pigmentation on dorsal surface of head, and tips of both jaws; lateral surface of head with several gray, roughly irregular blotches. Anal, pectoral and pelvic fins whitish-green. Caudal fin pale yellowish-green, except anterior half grayish-green.

Coloration in alcohol (Fig. 4C). Head and body generally pale brown; whitish, grayish and greenish coloration of fresh specimens generally faded, although brownish coloration remains, especially anteriorly on head.

Comparisons. *Stalix yanoi* can be distinguished from all other congeners by the total number of gill rakers on the first gill arch (36 or 37 in *S. yanoi* vs. 40–42 in *S. albonotata*, 34 or fewer in other species) (Table 1; Smith-Vaniz, 1989, 2022; Shinohara, 1999, 2006; Prokofiev, 2015; Allen & Erdmann, 2012, 2024). The former is most similar to *Stalix eremia* Smith-Vaniz, 1989, currently known from a single specimen collected from Papua New Guinea (Smith-Vaniz, 1989; Allen & Erdmann, 2024), the

two species sharing several morphological characters as follows: dorsal fin with 11 spines and 11 soft rays, first 5–7 dorsal-fin spines transversely forked distally; anal fin with 2 spines and 11 soft rays; pectoral fin with 21 or 22 rays; lateral line terminating below second to fourth dorsal fin soft ray base (dorsal fin element 13–14.5); longitudinal scale rows 44–49; body moderately deep, 19.1–21.4 % of SL; anteroventral margin of upper lip smooth; first 2 mandibular pores well-spaced, fifth pore with single opening; body uniformly golden-brown or whitish-green with slight brown pigmentation; and anterior gular region unpigmented (Figs. 1B, 4–5, 6–8B; Table 1; Smith-Vaniz, 1989; Allen & Erdmann, 2024). However, *S. yanoi* differs from *S. eremia* in having 35–37 gill rakers on the first gill arch (vs. 33 or 34 in *S. eremia*), well-developed cephalic sensory pores, two sensory pores (*I4* and *I5*) on posterior half of interorbital space (vs. relatively poor, single pore), and no notable pattern or markings on the dorsal fin when fresh (vs. a narrow, bright blue basal stripe) (Figs. 1B, 4–5; Table 1; Smith-Vaniz, 1989; Allen & Erdmann, 2024).

Etymology. The specific name and English common name are named in honor of Mr. Korechika Yano (Dive Service YANO), who has kindly supported our ichthyofaunal research in the Ryukyu Islands. The standard Japanese name is a combination of “Sarashi”, which means white cloth in Japanese and refers to the whitish body of the species, and “Kaeruamadai”, the common Japanese name for members of the genus *Stalix*.

Distribution and habitat. Currently collected only from the Iriomote-jima Island, Ryukyu Islands, Japan, the present specimens having been found in an inner bay (silty sand bottom).

Remarks. Both of the new species conform to the generic characteristics of *Stalix* sensu Smith-Vaniz (1989) (see Introduction), except with regard to gill raker numbers on the first gill arch. Whereas the currently recognized valid species of *Stalix* have 22–34 total gill rakers on the first gill arch, *S. albonotata* and *S. yanoi* have 40–42 and 36–37 gill rakers, respectively (Table 1; Smith-Vaniz, 1989, 2022; Shinohara, 1999, 2006; Prokofiev, 2015; Allen & Erdmann, 2012, 2024). In fact, within the family Opistognathidae, total gill raker numbers range widely, from 19–47 in *Opistognathus* and from 38–65 in *Lonchopisthus* (Smith-Vaniz and Walsh, 2017; Smith-Vaniz, 2023), indicating that the number of gill rakers in *S. albonotata* and *S. yanoi* represents expansion of intra-generic variation within the genus.

Key to the Japanese species of *Stalix*

Diagnostic characters of *Stalix histrio* Jordan & Snyder, 1902, *Stalix immaculata* Xu & Zhan, 1980, and *S. toyoshio* are based on comparative material examined and the following literature descriptions: Smith-Vaniz (1989), Shinohara (1999, 2006), Aizawa and Doiuchi (2013), and Allen and Erdmann (2024). Oh *et al.* (2008) reported a single specimen of *Stalix* from Korea as *S. toyoshio* with detailed description, but this specimen differs from *S. toyoshio* described by Shinohara (1999) in the characteristics of the mandibular pores, the position of the lateral line termination, and the fresh coloration of the body surface. In addition, since there are no nominal species that clearly match the specimen reported by Oh *et al.* (2008), it is considered an undescribed species and Oh *et al.* (2008) is not referenced in present key.

- 1a. Total gill rakers 22–25; wide dark margin on posterior edge of opercle; single dark stripes on upper half of body, and dorsal and anal fins *S. histrio* “Kaeruamadai”
- 1b. Total gill rakers 27–42; no dark margin on posterior edge of opercle; no dark stripes on body or fins 2
- 2a. Lower limb gill rakers 18–20; anterior gular region pigmented; two dark blotches on dorsal-fin spinous portion (rarely absent) *S. immaculata* “Hime-agoamadai”
- 2b. Lower limb gill rakers 21–26; anterior gular region unpigmented; no dark blotches on dorsal-fin spinous portion 3
- 3a. Longitudinal scale rows 55–58; total gill rakers 32 or 33; first and second mandibular pores confluent *S. toyoshio* “Kibire-kaeruamadai”
- 3b. Longitudinal scale rows 45–48; total gill rakers 36–42; first and second mandibular pores well separated 4
- 4a. Total gill rakers 40–42; anteroventral margin of upper lip crenulate (Fig. 7A); body grayish-green, with fine brown and white vermiculations (Figs. 2, 3, 4A) *S. albonotata* sp. nov. “Shimofuri-kaeruamadai”
- 4b. Total gill rakers 36 or 37; anteroventral margin of upper lip smooth (Fig. 7B); body uniformly whitish-green, covered with slight brown pigmentation (Fig. 5) *S. yanoi* sp. nov. “Sarashi-kaeruamadai”

Comparative materials. *Stalix histrio*: OMNH-P 35289, Nago Bay, Okinawa-jima Island, Ryukyu Islands, Japan, collected by T. Suzuki; *Stalix eremia*: KPM-NR 39624 (photograph), Jetty, Derawan Island, Indonesia,

photo by Y. Sasaki; *S. cf. albonotata*: NSMT-P 145414, ca. 10 mm SL, Kin Bay, Okinawa-jima Island, Ryukyu Islands, Japan, collected by T. Sato.

Acknowledgments

We are especially grateful to K. Yano (see above), H. Nakajima and T. Sato (University of the Ryukyus, Japan) for collecting and providing specimens of the genus *Stalix*, T. Seko (Spitz River Trekking), and Y. Sasaki for providing photographs of the genus *Stalix*, S. Matsui (OMNH), M. Nakae and G. Shinohara (NSMT) for curatorial assistance, and G. Hardy (Ngunguru, New Zealand) for reading the manuscript and providing help with English. This work was supported by JSPS KAKENHI Grant Number 24K16204 to the first author.

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摘 要

和田英敏・鈴木寿之・小林大純・瀬能 宏, 2025. 琉球列島から得られたアゴアマダイ科カエルアマダイ属の2新種シモフリカエルアマダイ (新称) *Stalix albonotata* およびサラシカエルアマダイ (新称) *S. yanoi*. 神奈川県立博物館研究報告 (自然科学), (54): 205–217. [Wada, H., T. Suzuki, H. Kobayashi & H. Senou, 2025. Two new jawfishes, *Stalix albonotata* sp. nov. and *S. yanoi* sp. nov., from the Ryukyu Islands, Japan (Perciformes: Opistognathidae). Bull. Kanagawa Pref. Mus. (Nat. Sci.), (54): 205–217.]

琉球列島から得られたスズキ目アゴアマダイ科カエルアマダイ属の2新種、シモフリカエルアマダイ *Stalix albonotata* およびサラシカエルアマダイ *Stalix yanoi* をそれぞれ2標本に基づき記載した。シモフリカエルアマダイは縦列鱗数が45–46および第1鰓弓の総鰓耙数が40–42 (成魚の場合)、下顎の第1・2番目の感覚管孔がよく離れる、側線の最後の開孔が背鰭第2–3軟条基底下にある、上唇前部腹面に凹凸をもつ、生鮮時に体が灰みの黄でブラウンと白の緻密な虫食い状斑をもち、背鰭鰭膜が灰みの黄で複数の白の不定形斑をもつ、頤の前半に黒色素胞がないなどの形態学的特徴により同属他種から識別される。サラシカエルアマダイは縦列鱗数が45–48および第1鰓弓の総鰓耙数が36–37、両眼間隔域の後半部に2個の開孔をもつ、下顎の第1・2番目の感覚管孔はよく離れる、上唇前部腹面が円滑、生鮮時に体が一様に白みの緑で僅かにブラウンの色素胞で覆われる、背鰭鰭膜が白みの緑で明瞭な斑紋をもたないなどの形態学的特徴により同属他種から識別される。また、これら2新種を含む日本産カエルアマダイ属の検索表を作成した。

報 告

沖縄県久米島沖で撮影された特異的な形態をもつクロボウズギス科魚類
トゲボウズギス属の仔魚の記載Description of Larvae of *Dysalotus* sp. (Chiasmodontidae) with Unique
Morphology Photographed Underwater off Kume Island, Okinawa, Japan伴 和幸¹⁾・峯水 亮²⁾・加山藍子³⁾・佐藤洋一⁴⁾Kazuyuki BAN¹⁾, Ryo MINEMIZU²⁾, Aiko KAYAMA³⁾ & Yoichi SATO⁴⁾**Key words:** deep sea fish, East China Sea, rare species, swallowers, Trachinoidei

緒 言

クロボウズギス科 Chiasmodontidae トゲボウズギス属 *Dysalotus* は、小棘列が側線の背・腹側の体表上にある、C 字状で大きな眼下管、上主上顎骨を有するおよび鰓条骨数 7 などによって同科他属と区別される (Johnson & Cohen, 1974; 伴・福井, 2012; Melo, 2017)。本属はこれまでにトゲボウズギス *Dysalotus alcocki* MacGilchrist, 1905、カクシトゲボウズギス *D. oligoscolus* Johnson & Cohen, 1974、*D. pouliulii* Melo, 2017 の 3 種が記載され (Johnson & Cohen, 1974; Melo, 2017)、そのうち日本からはトゲボウズギスとカクシトゲボウズギスが報告されている (伴・福井, 2012; 中坊・土居内, 2013)。本属魚類は *D. pouliulii* を除いて三大洋の中深層に広く分布するが (Melo, 2017)、採集される機会が少ない稀種である (Kawai & Shinohara, 2008)。特に仔稚魚に関する知見はきわめて乏しく、仔魚に関しては報告すらなく、稚

魚に限っても 2 報のみである。本属の稚魚の形態に関する唯一の知見は、福井・伴 (2014) による九州南東沖から得られたトゲボウズギス属の未同定種 *Dysalotus* sp. の稚魚 1 個体 (標準体長 33.3 mm) の標本に基づく報告のみである。Melo (2017) はトゲボウズギスの稚魚を 4 個体 (標準体長 29.8–44.9 mm) 報告しているが、標本情報以外の記載がなく、同定の根拠や形態が不明である。著者らは沖縄県久米島沖で本属仔魚の水中写真を世界で初めて得たため、本属仔魚の形態に関する知見を報告する。

材料と方法

本報告で用いた水中写真 (Fig. 1) はすべて沖縄県久米島沖で撮影された。撮影は夜間に複数の水中ライトを係留し、浮遊する生物を観察するダイビング手法である Black Water Dive® 下で行われた。計数・計測方法および各成長段階の名称は沖山編 (2014) に従った。

水中写真

3 個体 (標準体長約 15–40 mm) (Fig. 1) : 個体 A (Fig. 1A)、KPM-NR 253180、標準体長約 15 mm (目測)、後屈曲期仔魚、沖縄県久米島沖 (東シナ海)、水深約 8 m、2019 年 8 月 3 日 21 時 50 分頃、水温 28 °C、峯水 亮 撮影 ; 個体 B (Fig. 1B–G)、Fig. 1B : KPM-NR 253193、Fig. 1C–G : KPM-NR 248939A–E、標準体長約 35–40 mm (目測)、後屈曲期仔魚、沖縄県久米島沖 (東シナ海)、水深約 13–15 m、2023 年 7 月 22 日 23 時 25–34 分、水温

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28.8–29.6 °C、加山藍子 撮影 (Fig. 1B)、佐藤洋一 撮影 (Fig. 1C–G) ; 個体 C (Fig. 1H)、KPM-NR 253205、標準体長約 25 mm (目測)、後屈曲期仔魚、沖縄県久米島沖 (東シナ海)、水深約 20 m、2023 年 7 月 23 日、水温 29.5 °C、加山藍子 撮影。

比較標本

福井・伴 (2014) が報告し、国立科学博物館に保管されているトゲボウズギス属の未同定種 1 個体 *Dysalotus* sp. (NSMT-PL 878、標準体長 33.3 mm、稚魚、30°09.8' N, 134°01.5' E、九州南東沖、中層トロール、曳網水深 0–760 m、開洋丸、1986 年 7 月 15 日) を用いた。

結 果

同定

本研究で観察された 3 個体は体型や色素胞の分布がよく一致し、観察された時期や場所も同様であったため同種と見なした。胸鰭と腹鰭条は伸長しない。眼上棘と前鰓蓋棘、軀幹部に小棘を有し、発光器を欠く。吻は尖る。これらの組み合わせが、福井・伴 (2014) が示したトゲボウズギス属稚魚の特徴と一致したため、本報告の個体は本属に同定された。既知の本属 3 種の成魚は、尾部の小棘列数や前鋤骨歯の有無、歯列や顎の長さによって識別されるが、今回観察された個体ではこれらが未発達であったため、種の同定は不可能であった。

発育段階

個体 A (Fig. 1A) は下尾骨が屈曲し、背鰭と臀鰭が明らかに形成中であったため、後屈曲期仔魚と判断した。個体 B (Fig. 1B–G) は下尾骨が屈曲しているものの、背鰭と臀鰭の鰭条数が定数 (既知の本属 3 種の背鰭と臀鰭の鰭条数は D VII – XII –22–29、A23–29 ; 伴・福井, 2012; Johnson & Cohen, 1974; Kawai & Shinohara, 2008; MacGilchrist, 1905; Melo, 2017) に達しているかが判別不能であり、個体 C (Fig. 1H) は下尾骨と背鰭と臀鰭が観察できなかったが、個体 A と色素胞の分布や体各部のプロポーション、顎歯の発達状況がほぼ同一であったため、これら 2 個体も後屈曲期仔魚と見なした。

形態

体は伸長し、側扁する。吻は尖る。体高は眼後方からより増大し、軀幹部で高く、尾部後半で低い。軀幹部と尾部に小棘が散在する。肛門は体の前方約 2/5 にある。眼上棘と前鰓蓋棘を有する。眼は真円形で、上顎の前方約 3/5 上にある。口は

著しく大きく、上顎後端は眼の後縁を超え下顎隅角部付近に達する。上顎は前方が湾曲する。下顎は先端が上顎より突出し、先端部の歯が牙状。第 1 背鰭第 1 棘は胸鰭基底よりやや後方上にある。第 2 背鰭と臀鰭は対在する。胸鰭基底は腹鰭基底の直上にある。腹鰭基底はやや隆起し、鰓蓋後端下の直前にある。尾鰭は二叉型で、上葉と下葉の両端が尾部長と同程度に著しく伸長する。各個体の鰭条数は以下の通り。個体 A (Fig. 1A) : D X ?–15+; A 15+; P1 12; P2 3+?; C 10/6+?。個体 B (Fig. 1B–G) : D VIII ?–23+?; A 24+?; P1 12?; P2 6?; C 10/9?。個体 C (Fig. 1H) : P1 12?; P2 5+?。

色彩

体は一様に半透明で、一部に黄色、茶色、白色あるいは黒色の色素胞を有し、体と鰭に次のように出現する。頭部では、吻、眼窩域、後頭部、項部、癒合部、眼後部、鰓蓋部、峡部に色素斑を有する。軀幹部および尾部では、背中線に 3 個、腹中線に 1 個の鞍状斑を有し、肛門直上に 2 個、および腹中線に 5 個の点状色素胞が不連続に並び、尾柄後部側面に 1 個の色素斑を有する。胸鰭では、基底に茶色と黒色の色素斑を、鰭膜の一部に黒色と黄色の色素斑を有する。腹鰭鰭膜の中央より外縁は黒色の色素斑を有し、その中に黄色の色素が混じる。第 1 背鰭と第 2 背鰭、胸鰭、および臀鰭には色素胞がほとんど出現せず、これらの鰭条と鰭膜の末端がわずかに白色と茶色を呈する。尾鰭上葉と下葉の末端の鰭膜は茶色を呈する。胸鰭、腹鰭および尾鰭の鰭条の末端は白色の色素斑を有する。腹腔は黒色素胞を有する。

行動

発見時は、頭部を水平方向に約 70–90° 下方に傾け、すべての鰭を開いた状態で静止していた。遊泳時は、頭部を軸に尾部を側方にくねらせて高速回転した。

考 察

本報告の仔魚は、尾鰭上下両葉の後端が著しく伸長していた。この形質はクロボウズギス科の他属仔稚魚 (Johnson & Cohen, 1974; Shiganova, 1990; Watson & Sandknop, 1996; Hardy, 2006; 福井・伴, 2014) のみならず、他科の仔稚魚 (e.g., Moser, 1996; 沖山編, 2014) から報告されておらず、きわめて特異的である。既知の稚魚 (NSMT-PL 878) では、尾鰭の鰭条が破損していたため、この特異的な形質が本種または本属特有であるかは不明である。また、頭部を下方に向けて浮遊する様子が

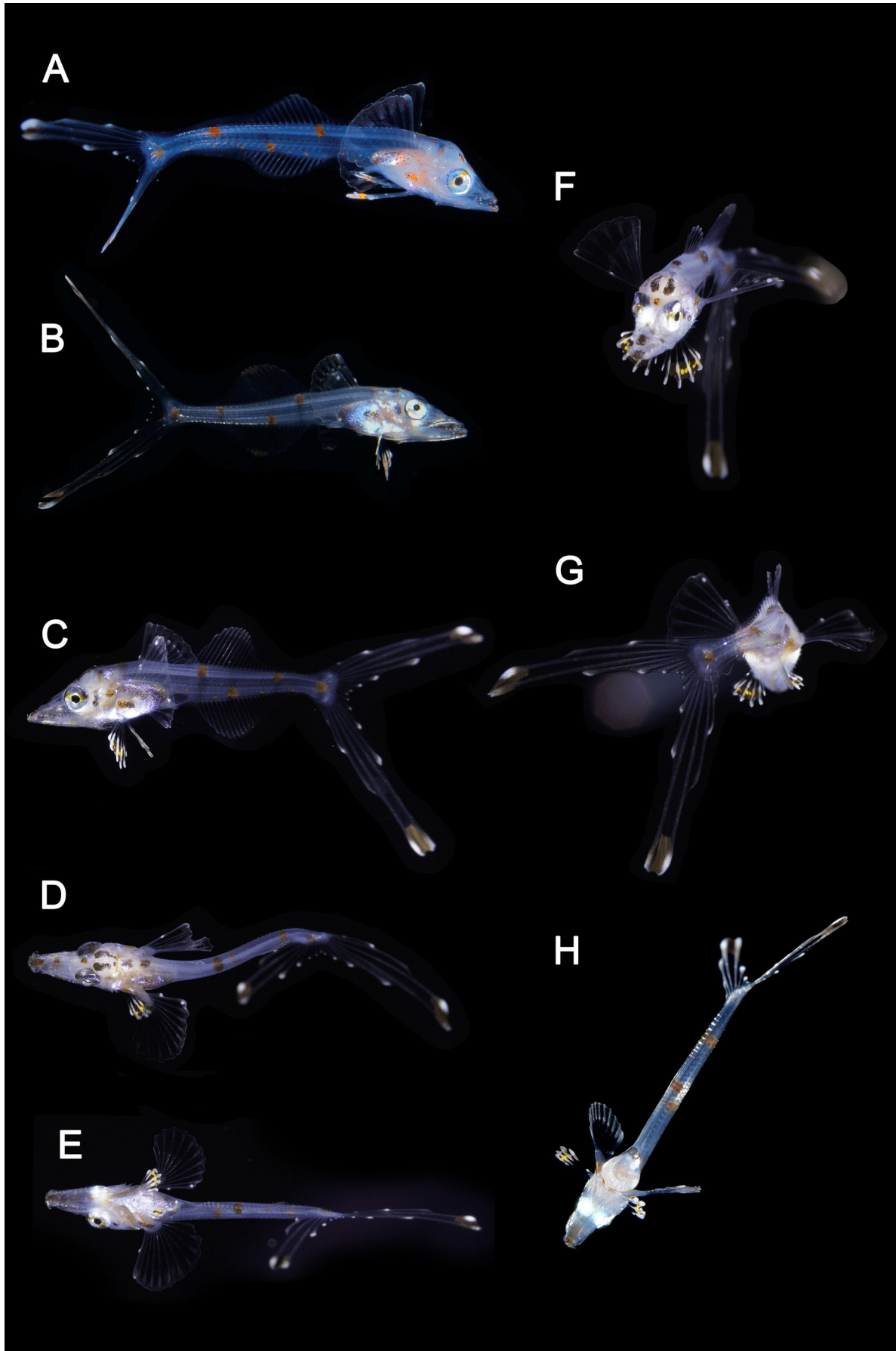


Fig. 1. Underwater photographs of larvae of *Dysalotus* sp. from off Kume Island, Okinawa, Japan. A: KPM-NR 253180, ca. 15 mm SL, 8 m depth, 3 Aug. 2019, photographed by R. Minemizu; B: KPM-NR 253193, ca. 35–40 mm SL, 15 m depth, 22 Jul. 2023, photographed by A. Kayama; C–G: KPM-NR 248939A–E, ca. 35–40 mm SL, 13–14 m depth, 22 Jul. 2023, photographed by Y. Sato; H: KPM-NR 253205, ca. 25 mm SL, 20 m depth, 23 Jul. 2023, photographed by A. Kayama.

観察されたことから、巨大な尾鰭は、水の抵抗を高めて浮遊に役立っている可能性が示唆される。

希種である本種が、本報告の3個体とも Black Water Dive® 中に久米島沖の同時期（7–8月）に撮影されたことから、今後同様の条件で調査を行い、標本を得ることで、今回確認ができなかった本属魚類の識別性質でもある上主上顎骨や鰓条骨等の詳細な観察、遺伝子情報を用いた同定が可能になるものと思われる。

謝 辞

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報 告

伊豆・小笠原諸島におけるカエルハゼの出現記録

Records of the Sicydiine Goby, *Smilosicyopus leprurus* (Sakai & Nakamura, 1979), in the Izu and Ogasawara Islands, Tokyo Metropolis, Japan尾山大知^{1,2)}・瀬能 宏³⁾Daichi OYAMA^{1,2)} & Hiroshi SENOU³⁾

Abstract. In November 2007, an adult female (29.0 mm SL) *Smilosicyopus leprurus* (Sakai & Nakamura, 1979) was collected on Ani-jima Island, Ogasawara Islands, Tokyo Metropolis, Japan. Characterized by a row of canine-like symphyseal teeth on both the upper and lower jaws, ca. 17 upper jaw teeth and 0 transverse scale rows, short clearly-defined moustache-like coloring above the upper lip, and the body mainly greyish without a lateral band, the specimen represented the first record from the Ogasawara Islands. Previously, *S. leprurus* has been recorded from a wide distribution in the western Pacific, including the Ryukyu Archipelago and Mikura-jima Island, the Izu Islands, Japan. A juvenile (13.7 mm SL) of *S. leprurus* collected from Mikura-jima Island in July 2010, and briefly reported in the “Red Data Book Tokyo 2014: Islands version” (Senou, 2014), is described in detail herein. Given the amphidromous life cycle of *S. leprurus*, the collection of the above two specimens suggests that the species presence on the Izu and Ogasawara islands was likely due to larval dispersal via the Kuroshio Current and/or other ocean currents such as the Kuroshio Counter-Current or North Equatorial Current from the Kuroshio basin, as the species is not considered as established on either island group. However, the adult specimen from Ani-jima Island, which had apparently inhabited the island for some time after its recruitment, suggests that *S. leprurus* could become established on the Ogasawara Islands in the future.

Key words: amphidromous, biogeography, Kuroshio Current, larval dispersion, range extension

緒 言

カエルハゼ *Smilosicyopus leprurus* (Sakai & Nakamura, 1979) は、河川上流域に生息し、最大体長 5.5 cm に達するスズキ目ハゼ科魚類である（前田, 2017; 瀬能, 2021）。本種は Sakai & Nakamura (1979) により沖縄県石垣島産の 25 標本に基づきアカボウズハ

ゼ属 *Sicyopus* Gill, 1863 の新種として記載されたが、Watson (1999) は本種をタイプ種として新亜属 *Smilosicyopus* Watson, 1999 を創設した。その後、*Smilosicyopus* は Keith *et al.* (2011) によって属に格上げされ、前田 (2018) は本属に対して新標準和名カエルハゼ属を提唱した。現在、カエルハゼ属には中・西部太平洋から 7 種が知られ、本邦にはカエルハゼのみが分布し、伊豆諸島御蔵島および琉球列島から記録されている（瀬能, 2014, 2021; 前田, 2018）。

本種を含むボウズハゼ類はいずれも成魚は河川で産卵し、孵化した仔魚は降海して、再び河川に遡上および着底し成長する両側回遊魚であると考えられている（Keith *et al.*, 2015; 前田, 2018）。また、本種の生息には自然地形の残された溪流環境が不可欠である（立原, 2015; 前田, 2017）。そのため、人間活動に伴う河川環境の改変や、河川横断物の設置による稚魚の遡上阻害が本種の生息におよぼ

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す悪影響が懸念されており、本種は環境省のレッドデータブックおよびレッドリストでは絶滅危惧IA類に（立原, 2015; 環境省, 2020）、鹿児島県や沖縄県ではそれぞれ絶滅危惧I類と絶滅危惧IB類に選定されている（米沢・四宮, 2016; 前田, 2017）。

しかしながら、標本の採集が容易ではないうえ、種の識別が困難なため、本属各種の分布実態は未解明であり（Keith & Taillebois, 2014）、上述のとおり日本国内において絶滅が危惧される状況も踏まえると、国内におけるカエルハゼの分布や生息の実態を正確に把握することが保全上重要である。特に、東京都島嶼部においては、伊豆諸島御蔵島から本種の記録があり、本種は伊豆諸島において情報不足に選定され（瀬能, 2014）、本種の分布および生息状況に関する知見の蓄積が急務となっていた。

今回、神奈川県立生命の星・地球博物館所蔵の魚類標本資料の中から、2007年11月に東京都島嶼部の小笠原諸島兄島から得られた1個体のカエルハゼが確認された。本種の国内における記録状況は上述のとおりであり、兄島産の標本は本種の小笠原諸島における初記録となる。本研究では、東京都島嶼部における本種の分布および生息実態の解明に寄与し、本種の保全に資することを目的として、兄島産標本および瀬能（2014）が伊豆諸島初記録として報告した御蔵島産の稚魚1標本の形態を詳細に記載するとともに、伊豆・小笠原諸島における本種の出現要因を考察した。

材料と方法

標本の計数計測方法は中坊・中山（2013）および明仁ほか（2013）に従い、計測はノギスを用いて10分の1mmの精度で行った。頭部感覚器官や鱗相の観察は双眼実体顕微鏡下で行い、観察時にはサイアニンブルーによる表面染色を施した。内部骨格の観察と、鰭が畳まれた状態で固定されていたKPM-NI 27940の鰭条数の計数は軟X線写真を用いて行った。頭部感覚器官の名称および第1背鰭担鰭骨と神経棘との関係式（P-V）は明仁親王（1988a）および明仁ほか（2013）に従い、色彩の表記は財団法人日本色彩研究所（1981）の系統色名に準拠した。性別の判断は前田（2018）に従い、南西諸島の地名は目崎（1983）に準拠した。標準体長（standard length）は体長またはSLと略記した。本研究で使用した標本およびその写真は、全て神奈川県立生命の星・地球博物館の魚類標本資料（KPM-NI）または魚類写真資料（KPM-NR）として収蔵されている。なお、同館における資料番号は電子台帳上ではゼロが付加された7桁の数字が用いられているが、本稿では本質的な有効数字で表した。

結果

カエルハゼ

Smilosicyopus leprurus (Sakai & Nakamura, 1979)

(Figs. 1–5; Table 1)

標本

KPM-NI 26751: 13.7 mm SL、性別不明（稚魚）、伊豆諸島御蔵島大島分川、2010年7月28日、手網、内野啓道・瀬能 宏採集；KPM-NI 27940: 29.0 mm SL、雌、小笠原諸島父島列島兄島ブラボー湾流入河川、2007年11月3日、小塚拓矢採集。

写真

KPM-NR 49176A–D: KPM-NI 26751の生鮮標本写真、2010年7月28日、瀬能 宏撮影；KPM-NR 257248A: KPM-NI 26751の軟X線写真、2024年8月4日、和田英敏撮影；KPM-NR 257249A–I: KPM-NI 27940の固定標本写真、2024年5月11日、尾山大知撮影；KPM-NR 257249J–L: KPM-NI 27940の水槽写真（生時）、2007年11月3日、小塚拓矢撮影；KPM-NR 257249M: KPM-NI 27940の軟X線写真、2024年8月4日、和田英敏撮影。

記載

KPM-NI 26751の生鮮時の写真をFig. 2、KPM-NI 27940の固定後および生時の写真をFig. 3およびFig. 4にそれぞれ示す。また、両標本の軟X線をFig. 5、計数計測値をTable 1に示す。体は細長く、やや縦扁した円筒形。頭部から躯幹部にかけて縦扁するが、躯幹部から尾部にかけては後方ほど側扁する。口は垂端位で上顎が下顎より突出する。口裂は僅かに斜行し、眼の前縁直下のやや後方まで達する。背鰭は2基で、第1背鰭は棘のみ、第2背鰭は棘と軟条からなる。第1背鰭は台形。第1背鰭と第2背鰭の高さはほぼ等しく、第2背鰭と臀鰭は対在する。背鰭の鰭条は伸長しない。胸鰭後端は第1背鰭基底前端には達するが、後端には達さない。左右の腹鰭は癒合し吸盤状をなす。尾鰭はやや丸みを帯びた截形。頭部背面を含め、体前半は無鱗である。体後半部は、腹面側は第2背鰭の起点直下付近、背面側も第2背鰭の第4鰭条付近より後方は円鱗に覆われる。前鼻孔は前鼻管先端で開孔するが、前鼻管は非常に短い。後鼻孔は眼の前縁からわずかに前方に位置し、楕円形である。頭部感覚器官は、前眼肩甲管に開孔A'、B、C、D（単一）、F、H'、後眼肩甲管に開孔K'、L'、前鰓蓋管に開孔M'、O'がある。孔器列は発達しない。上顎と下顎に櫛状の歯や唇歯はなく、犬歯状歯が各一列並ぶ。右上顎上の犬歯状歯はおおよそ

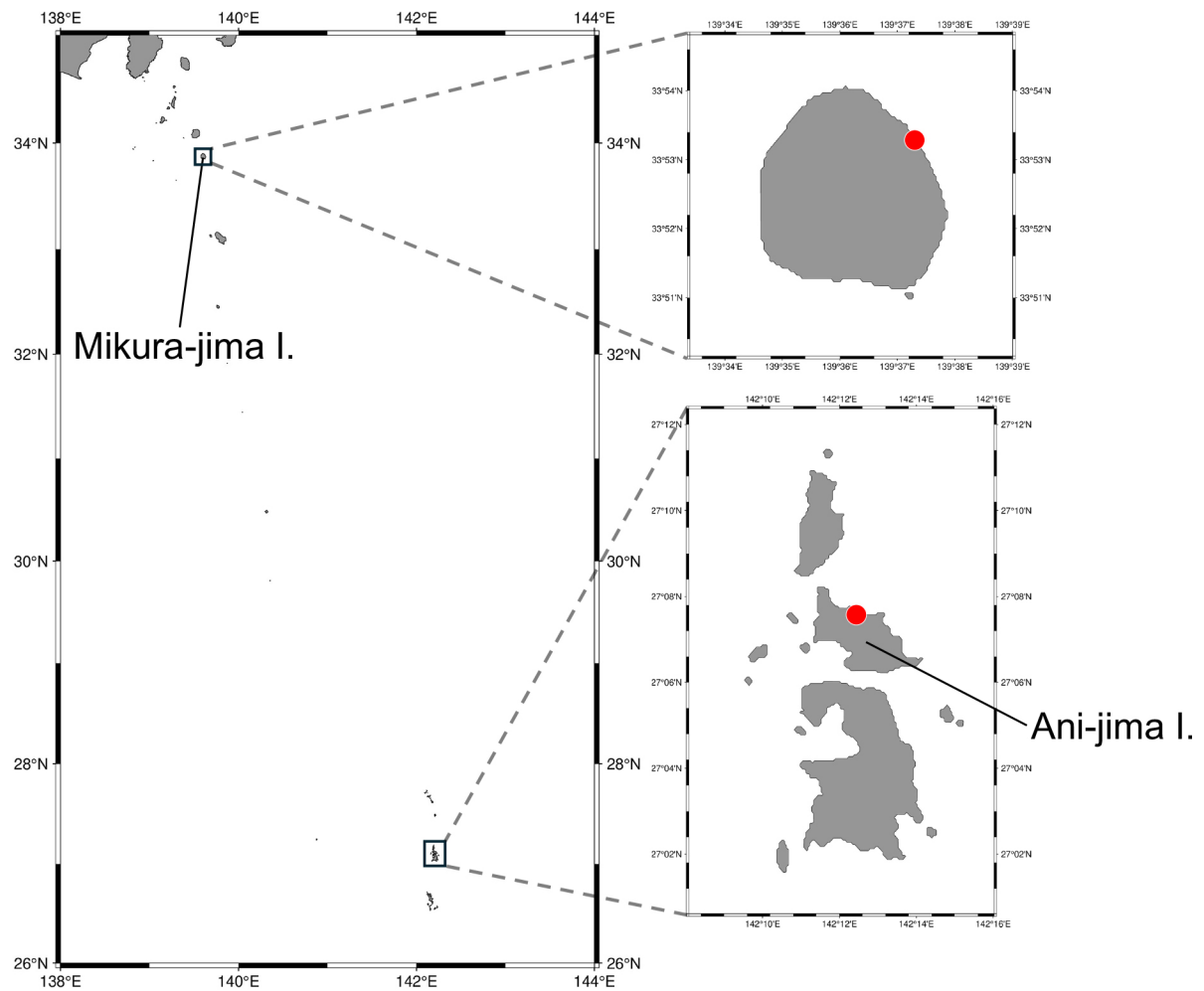


Fig. 1. Map showing collection localities of *Smilosicyopus leprurus* (red circles) in Izu and Ogasawara islands, Tokyo Metropolis, Japan.



Fig. 2. *Smilosicyopus leprurus* from Mikura-jima I., Izu Is., Japan, immediately after fixation (KPM-NI 26751, juvenile, 13.7 mm SL). Photos (KPM-NR 49176A & C) by H. Senou.

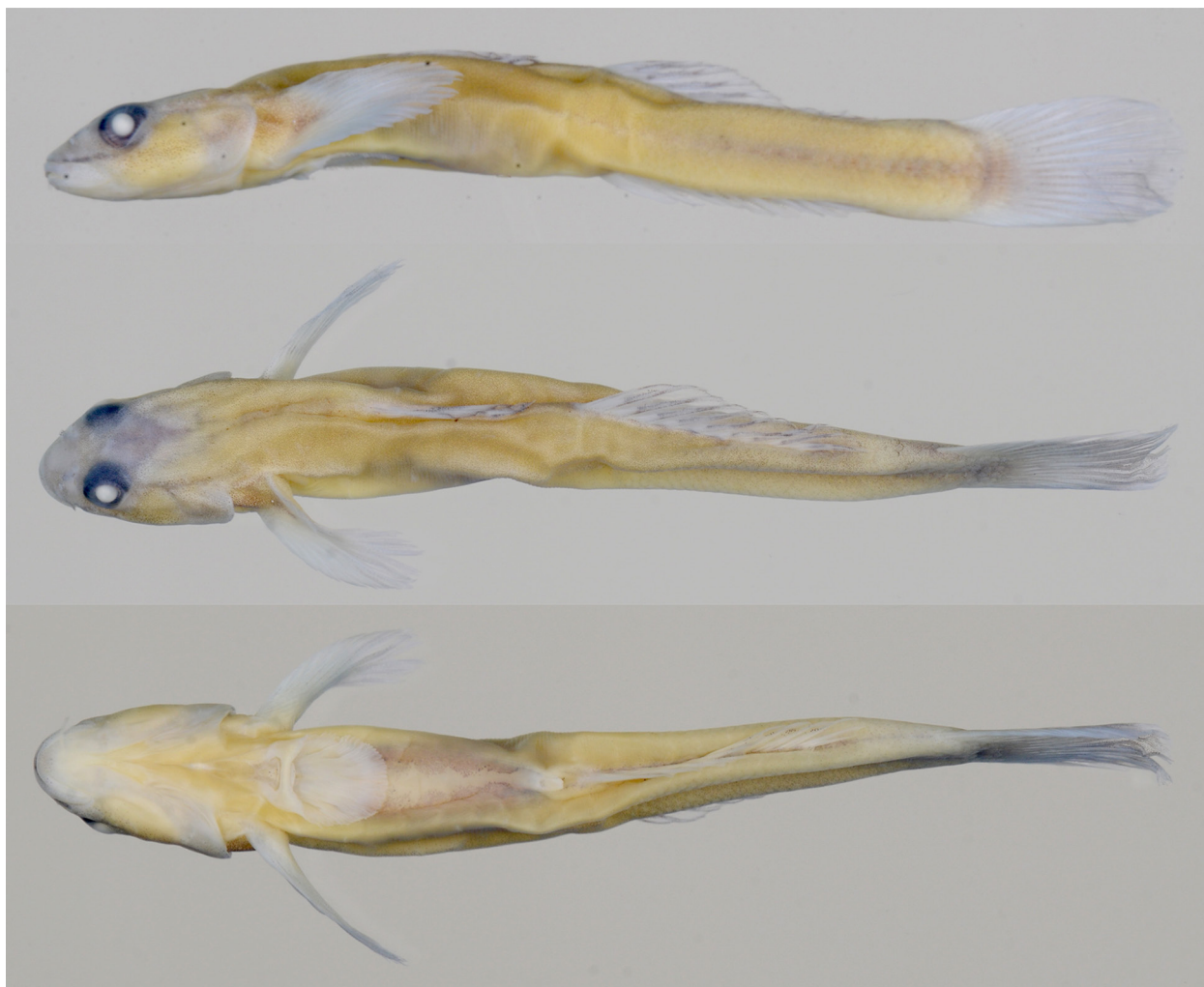


Fig. 3. Preserved specimen of *Smilosicyopus leprurus* from Ani-jima I., Ogasawara Is., Japan (KPM-NI 27940, female, 29.0 mm SL). Photos (KPM-NR 257249A, D & G) by D. Oyama.

17本（頭部感覚器官および歯の記載はKPM-NI 27940の観察に基づく；KPM-NI 26751は標本が小さく確認できなかった）。脊椎骨数は $10 + 16 = 26$ 。背鰭の担鰭骨と脊椎骨の関係（P-V）は3/12210/9 [KPM-NI 27940 (Fig. 5B)の観察に基づく；KPM-NI 26751は標本の脱灰が進んでおり、軟X線写真 (Fig. 5A) からは確認できなかった]。

色 彩

稚魚 (KPM-NI 26751)：生鮮時 (Fig. 2)、体はにぶい黄色で半透明。頭部には上唇の前端から眼下に至る細い口髭状の黒色縦線がある。頭部から胸鰭基部にかけての体側から背面には黒色素胞が密に分布する。胸鰭基部から尾柄にかけての体側から背面には黒色素胞が6つの鞍状斑をなす。背鰭および臀鰭の鰭条と、第1背鰭の縁辺部の鰭条周辺の鰭膜には黒色素胞が分布する。また、背鰭の鰭条上およびその周辺の鰭膜にあさい黄色の色素胞が散在する。臀鰭起部から尾鰭の起点にかけての腹面には黒色素胞が密集し縦線をなす。



Fig. 4. Aquarium photograph of *Smilosicyopus leprurus* from Ani-jima I., Ogasawara Is., Japan (KPM-NI 27940, female, 29.0 mm SL). Photo (KPM-NR 257249J) by T. Kozuka.

雌成魚 (KPM-NI 27940)：生時 (Fig. 4)、体は一樣にあさい赤みの黄で、頭部には上唇の前端から眼下に至る細い口髭状の黒色縦線がある。背鰭鰭条上には黒色点があり、2列の縦列をなす。腹部は赤みを帯びる。固定後 (Fig. 3)、体は一樣にクリーム色に退色し、無斑。腹面はやや赤みを帯びる。背鰭鰭条上の黒色点縦列と頭部の口髭状の黒色縦線は残る。

分 布

本種は西部太平洋に広く分布し、これまでに日本および台湾、パラオ諸島、インドネシア、オー



Fig. 5. X-rays of *Smilosicyopus leprurus*. A: KPM-NI 26751, 13.7 mm, Mikura-jima I., Izu Is.; B: KPM-NI 27940, 29.0 mm SL, Ani-jima I., Ogasawara Is. Radiographs (A: KPM-NR 257248A; B: KPM-NR 257249M) by H. Wada.

Table 1. Counts and measurements of *Smilosicyopus leprurus* from the Izu and Ogasawara islands, Japan

	KPM-NI 26751	KPM-NI 27940
	Juvenile	Female
	Mikura-jima Island	Ani-jima Island
Standard length (SL; mm)	13.7	29.0
Counts		
Dorsal-fin rays	VI-I, 9	VI-I, 9
Anal-fin rays	I, 10	I, 10
Pectoral-fin rays	14	14
Pelvic-fin rays	I, 5	I, 5
Branched caudal-fin rays	13	13
Transverse scale series	0	0
Predorsal scales	0	0
Vertebrae	10 + 16 = 26	10 + 16 = 26
Measurements as % of SL		
Total length	122.0	122.0
Head length	24.6	22.1
Snout length	8.2	6.8
Eye diameter	6.6	5.7
Postorbital length of head	13.8	11.3
Upper-jaw length	4.4	5.6
Body depth at pectoral-fin base	10.7	10.7
Body depth at anal-fin origin	8.8	11.5
Caudal peduncle depth	8.3	10.2
Caudal peduncle length	21.6	20.4
Predorsal length	38.4	33.6
Pectoral-fin length	14.0	17.0
Pelvic-fin length	12.3	10.5

ストリア北東部（クイーンズランド州）からの記録がある（Watson, 1999; Keith & Taillebois, 2014; Keith *et al.*, 2015; 前田, 2017, 2018; 周ほか, 2020; 瀬能, 2021）。日本国内においては、伊豆諸島の御蔵島および琉球列島の大隅諸島（屋久島）、奄美諸島（奄美大島）、沖縄諸島（沖縄島）、八重山諸島（石垣島、西表島、与那国島）から記録されていた（林・伊藤, 1978; Sakai & Nakamura, 1979; 鈴木・瀬能, 1981; 林ほか, 1981; 鈴木ほか, 1982; 明仁親王, 1988b; 吉郷, 2000; Watson, 1999; 鈴木, 2001; Sakai *et al.*, 2001; 神田ほか, 2009; Yonezawa *et al.*, 2010; 明仁ほか, 2013; 瀬能, 2014, 2021; 米沢・四宮, 2016; Koeda *et al.*, 2016; 前田, 2017, 2018; Nakae *et al.*, 2018; Oyama *et al.*, 2025）。本研究によって、小笠原諸島父島列島兄島から新たに記録された。

なお、瀬能（2014）や立原（2015）、武内（2019）は、本種の分布にマリアナ諸島を含めており、Myers (1988) は私信に基づいてマリアナ諸島から本種を記録しているほか、Fitzsimons *et al.* (2002) もグアム島に本種が分布するとしているが、これらの文献では証拠となる標本の有無や、同定の根拠が示されていない。また、Parenti & Maciolek (1993) はマリアナ諸島産の標本をカエルハゼをとして比較標本にリストしており、Ebner (2019) は Parenti & Maciolek (1993) と Fitzsimons *et al.* (2002) を引用する形でマリアナ諸島（北マリアナ諸島およびグアム）を本種の分布に含めた。しかしながら、Parenti & Maciolek (1993) においてもマリアナ諸島産の標本をカエルハゼと同定した根拠は示されておらず、Keith & Taillebois (2014) や Keith *et al.* (2015) はマリアナ諸島を本種の分布に含めていない。また、Donaldson & Myers (2002) はマリアナ諸島に *Sicyopus* sp. A が分布するとし、Myers & Donaldson (2003) は *Sicyopus* sp. A をグアム島とロタ島から記録しているほか、Watson *et al.* (2001) はグアム島から得られた標本をカエルハゼと区別し、*Sicyopus* (*Smilosicyopus*) sp. として比較標本に用いている。以上より、マリアナ諸島にカエルハゼ属魚類が生息することは確かであるが、本集団がカエルハゼであるか否かについては、さらなる検討を要する。したがって、本研究ではマリアナ諸島を本種の記録地に含めなかった。

生息環境

KPM-NI 26751 は御蔵島大島分川の河口域（Fig. 6A, B）で、切り立った崖下にある滝壺の岩盤上において目視、採集された。調査時に同所ではオオウナギ *Anguilla marmorata* Quoy & Gaimard, 1824 の幼魚（KPM-NI 26752–26757、計 10 個体）が確認された。KPM-NI 27940 は兄島の海食崖上を

流れ、ブラボー湾に流入する小河川（河川名なし）の下流域（Fig. 6C, D）で、水深約 20 cm、川幅約 1 m の淵から採集された。採集地点周辺の底質は主に岩盤と岩だが、淵部には砂礫が堆積しており、同所ではボウズハゼ *Sicyopterus japonicus* (Tanaka, 1909) とナンヨウボウズハゼ *Stiphodon percnopterygionus* Watson & Chen, 1998 が確認された（佐々木哲朗氏、私信）。

備考

本種は両側回遊魚であると考えられており、体長約 13 mm で河川に加入することから（Keith *et al.*, 2015; 前田, 2017）、御蔵島から得られた KPM-NI 26751（体長 13.7 mm）は加入直後の稚魚であったと考えられる。また、本種の最小成熟体長は不明であるが、兄島から得られた KPM-NI 27940（体長 29.0 mm、全長 35.4 mm）については、泌尿生殖突起や色彩における本種の雌成魚の特徴が形成されていたことに加えて、Sakai & Nakamura (1979) は体長 31.8–44.0 mm、全長 38.3–52.3 mm のタイプシリーズを全て成魚として扱っていることから、本研究では成魚と見做した。

考察

兄島から得られた雌成魚（KPM-NI 27940）は上顎および下顎上に発達した犬歯状歯があることがカエルハゼ属の特徴（Watson, 1999）と一致した。さらに、右上顎上の犬歯状歯の本数は 17 であること、頭部から体前半にかけての背面に暗色斑がないこと、横列鱗数が 0 であること、体は灰褐色で、上唇の前端から眼下に至る細い口髭状の黒色縦線以外に目立つ斑紋がないことなどが Sakai & Nakamura (1979) および明仁ほか（2013）、Keith & Taillebois (2014)、前田（2018）の示した本種の形態的特徴とよく一致したことからカエルハゼと同定した。御蔵島から得られた稚魚（KPM-NI 26751）は標本のサイズが小さく上顎の犬歯状歯を計数できなかったものの、他の標徴については上記のカエルハゼの形態的特徴とよく一致していた。また、同個体は生鮮時に色素胞が不明瞭な暗色の横帯を形成していたが（Fig. 2）、同様に、稚魚期に特有の斑紋を持つ事例はルリボウズハゼ *Sicyopterus lagocephalus* (Pallas, 1770) をはじめとする他のボウズハゼ類でも報告されているため（Keith *et al.*, 2008, 2015; Watanabe *et al.*, 2011）、本研究ではこれを観察標本が着底直後の稚魚であることに起因する特徴と見做し、御蔵島産の標本もカエルハゼと同定した。

本種の国内における記録状況は「分布」の項で



Fig. 6. Habitats of *Smilosicyopus leprurus*. A, B: mouth of O-shimawake-gawa Riv., Mikura-jima I., Izu Is., photos by K. Uchino; C, D: lower reach of an unnamed stream flowing into Bravo Bay, Ani-jima I., Ogasawara Is., photos by T. Sasaki.

述べたとおりであり、本研究で記載した兄島産の標本は本種の小笠原諸島からの初記録となる。また、瀬能（2014）が報告した御蔵島産の稚魚については詳細な形態学的検討は行われていなかったが、本研究によって記録の確実性が改めて確認された。なお、カエルハゼは琉球列島などでは主に河川上流域に生息するが（立原，2015; Keith *et al.*, 2015; 前田，2017, 2018; 瀬能，2021）、御蔵島と兄島の採集地では河川の流程が非常に短いうえ、急峻な地形ゆえに下流域や汽水域はほとんど発達せず、河口まで上流域の環境が続いているため（Fig. 6）、本種が河口域や下流域で採集されたと考えられる。

本種は両側回遊魚で、約2ヶ月の海洋生活期をもつと考えられている（Keith *et al.*, 2015; 前田，2017）。また、本種は黒潮流路上に位置する琉球列島や台湾における分布が確認されており、黒潮

の流速（3–5 ノット）を考慮すると（松浦・瀬能，2012）、黒潮流線のフィリピン東方沖で産卵された浮遊性卵および浮遊期の仔魚はおおよそ13–23日で伊豆諸島近海まで到達と考えられていることから（和田ほか，2021）、御蔵島で得られた標本は琉球列島や台湾などの南方地域で黒潮に取り込まれ、輸送された無効分散個体であると考えられる。他方、小笠原諸島は黒潮の流路から外れており、琉球列島から魚類の直接の分散は難しいと考えられているものの（Senou *et al.*, 2006）、吉郷（2002）は小笠原諸島に出現する両側回遊性の陸水動物の由来について、北赤道反流や黒潮反流を介した分散の可能性を指摘している。加えて、Lord *et al.* (2015) は、本種と同じく両側回遊を行うボウズハゼ類であるナンヨウボウズハゼについて、小笠原諸島の集団と黒潮流域の琉球列島および台湾

の集団の間で、ミトコンドリア DNA の COI 領域の塩基配列に差異が見られないことを報告し、両集団間に海流を介した仔稚魚の分散による遺伝的交流があることを示唆した。さらには、日本本土から琉球列島、台湾にかけての黒潮流域に広く分布し、単一の集団遺伝構造を持つボウズハゼ(渡邊, 2012) が伊豆諸島や小笠原諸島から記録されていることも踏まえると(吉郷, 2002; 瀬能, 2014)、兄島産の標本についても、これらの海流を介して黒潮流域から供給された可能性が高い。兄島産標本の由来を明らかにするためには、北西太平洋における本種の分布実態のさらなる解明や、分子生物学的研究による本種の集団遺伝構造に関する知見の蓄積が求められる。

なお、近年、黒潮流域において暖水性魚類の北上および記録数の増加が確認されており、定着地点も北上していることが指摘されている(山川ほか, 2018, 2020)。その分布からして熱帯性魚類であるカエルハゼについても、国内における再生産の状況や生息数の動態の詳細は不明であるものの、伊豆・小笠原諸島への分散源である可能性が高い黒潮流域の琉球列島や台湾などにおいて近年本種の個体数の増加や、再生産地域の北上が起きており、その結果として仔稚魚の供給数が増加したり、より北方の地域まで分散しやすくなり御蔵島や兄島での出現に繋がった可能性がある。

御蔵島と兄島のいずれにおいても、これまでに確認された本種は本研究で記載した各 1 個体のみであることから、少なくともこれらの標本が採集された時点では、両島において本種は定着に至っていなかったと考えられる。特に、御蔵島における本種の生息環境は増水等による攪乱が大きく脆弱であるだけでなく(瀬能, 2014)、今後再び本種の稚魚が加入しても、定着し安定した生息地となる可能性は低い。他方、兄島のブラボー湾流入河川から得られた標本はその体長から加入後しばらくの間同河川に生息していたと考えられる。また、小笠原諸島の河川では、本種と同じボウズハゼ類のルリボウズハゼやナンヨウボウズハゼをはじめとする熱帯性魚類の定着が確認されており(佐々木ほか, 2001; 吉郷, 2002; 瀬能, 2014)、カエルハゼが採集された兄島の河川でもナンヨウボウズハゼが継続的に確認されていることから(瀬能, 未発表)、今後カエルハゼの加入が続けば、本種が定着し個体群が確立される可能性がある。小笠原諸島では、近年河川改修や外来種の侵入により河川環境が悪化しているうえ、渇水により両側回遊性魚類の遡上が阻害されていることが懸念されており(横井ほか, 2009; 瀬能, 2014)、今後河川環境の保全を進めると同時に本種の消長に十分注意を払うことが肝要である。

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報 告

神奈川県国府津海岸に漂着したアオウミガメ *Chelonia mydas* の消化管
内容物とフジツボの付着痕についてGut Contents and Barnacle Traces of a Green Sea Turtle (*Chelonia mydas*)
Stranded on the Kozu Coast, Kanagawa Prefecture, Japan.松本涼子¹⁾Ryoko MATSUMOTO¹⁾

Abstract. Artificial debris, along with sea plants, were found as gut contents of an immature female green sea turtle (*Chelonia mydas*) with a shell length of 470 mm, stranded on the Kozu coast, Odawara, Kanagawa Prefecture. This artificial debris was examined, and items measured, to understand trends in the color and size of debris that green sea turtles mistakenly ingest. This study found that most of the artificial debris comprised soft plastic. These items were mostly transparent or semi-transparent, with the proportion of colored soft plastics being low. The other items of artificial debris were fibers (including fishing line), but there was no hard plastic. The maximum length of the soft plastic pieces was approximately 210 mm, with most fragments being smaller. A band of white plastic found in the coprodeum retained its original shape, suggesting that green sea turtles can ingest and later pass soft plastics of around 200 mm in length. It is not clear whether ingestion of artificial debris was the cause of the turtle's death on the basis of poor nutritional status, as its relatively well-developed fat tissue suggests it was not in a particularly poor nutritional state. However, 19 holes were found on the bone of the skull that appeared to be barnacle traces, and one of these had penetrated the bone. These holes were probably made by barnacles that embedded themselves in the turtle, such as *Platylepas hexastylus*, a species commonly found on green sea turtles. Attachment of large numbers of *Platylepas hexastylus* to the skin of a sea turtle occurs primarily in sick animals and is therefore a general indicator of reduced health. In the green sea turtle under study, the relationship between plastic ingestion and deteriorating health is not clear, but the turtle may have died because of deteriorating health, allowing the barnacles to erode and penetrate the skull. Thus, it is important to monitor the gut contents of sea turtles stranding in Kanagawa Prefecture and report evidence of penetration by barnacles.

Key words: artificial debris, marine debris, soft plastics, sea turtle, *Platylepas hexastylus*

緒 言

アオウミガメ *Chelonia mydas* は熱帯・亜熱帯の海（インド洋・大西洋・太平洋）に広く生息する。その食性は、海藻類や海草類を主とする植物食だが、無脊椎動物も捕食していることが知られている（Carr, 1952; Hays & Brown, 1982; Seminoff

et al., 2002; Amorocho & Reina, 2007）。アオウミガメは、これまで人間による食用などを目的とした乱獲、海洋事故や産卵場所の減少、気候変動による胚の孵化成功率の低下などにより世界的に個体数が減少している（Groombridge & Luxmoore, 1989; Koch *et al.*, 2006; Maneja *et al.*, 2023）、国際自然保護連合のレッドデータブック（IUCN, 2024）で絶滅危惧種に指定され、ワシントン条約の付属書Iに認定されている。

ウミガメの個体数減少が危ぶまれる中、更なる問題が海洋ゴミ（人工物）の存在である。ウミガ

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メを含む多くの脊椎動物（魚類・哺乳類・鳥類）で人工物の誤飲が確認され、健康被害が懸念されている（e.g. Laist, 1996; Baulch & Perry, 2014; Day *et al.*, 2014; Boerger *et al.*, 2010; Possatto *et al.*, 2011; Schuyler *et al.*, 2014a）。ウミガメの中でも種によって人工物の誤飲の量が異なっており、アオウミガメとオサガメ *Dermochelys coriacea* ではプラスチック摂取量が増加している種として知られている（e.g. Schuyler *et al.*, 2014a）。アカウミガメ *Caretta caretta* とアオウミガメに小型ビデオカメラを設置し、三陸海岸における採餌行動と排泄物や消化管内容物の分析を行った研究（Fukuoka *et al.*, 2016）では、クラゲを主食とするアカウミガメよりも、雑食性の強いアオウミガメの方が人工物に遭遇した際の誤飲頻度が高いことを明らかにした。この研究によると、アカウミガメに比べてアオウミガメの方が採餌の際の深度が浅いため、海面を漂う人工物に遭遇する頻度が高い。さらに、アカウミガメは

クダクラゲ類のように細長い動物やウニなどの底生動物を捕食するため、形状と動きで人工物と餌を区別できるが、アオウミガメは海面を受動的に漂うクラゲ類や尾索動物のサルパ類を捕食するため軟質プラスチックと餌を誤認しやすいことが示唆されている（Fukuoka *et al.*, 2016）。誤飲された軟質プラスチックのうち、透明または白色のものが多く誤飲されているのはクラゲ類と誤認したものと考えられている（e.g. Fukuoka *et al.*, 2016）。これまで、神奈川県沿岸に漂着したウミガメの種類と体サイズに関して報告されているが（石井, 2008）、消化管内容物に含まれる人工物の色や大きさに関する報告はあまり行われていなかった。本研究は神奈川県沿岸に漂着したウミガメにおける人工物の摂取状況の把握とデータの蓄積を目的として、2024年に神奈川県小田原市国府津海岸に漂着したアオウミガメの消化管から発見された人工物の色や大きさ、アオウミガメの外傷について報告する。

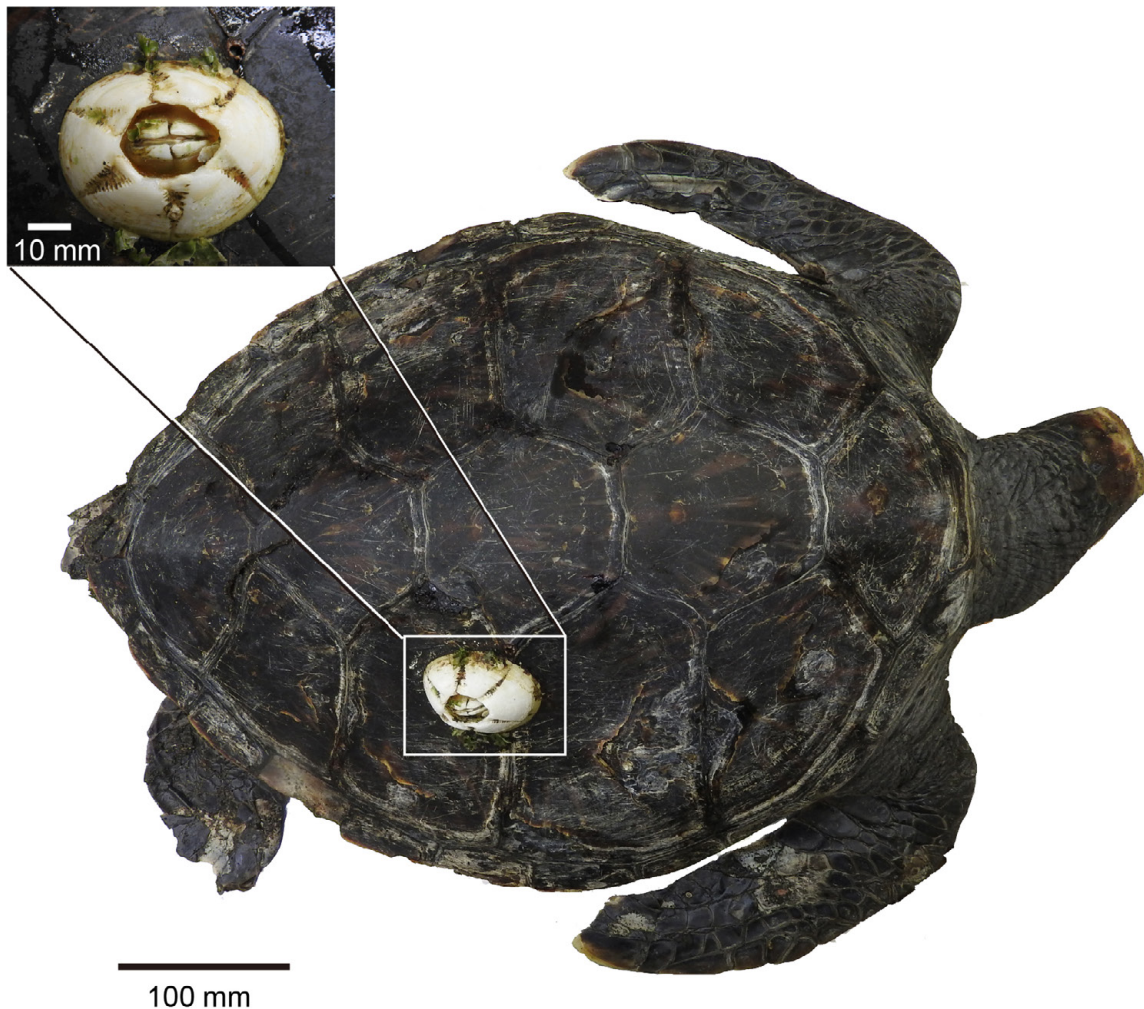


図 1. 2022 年 2 月 20 日に小田原市国府津海岸に漂着した雌のアオウミガメ *Chelonia mydas* (KPM-NFR 1036) と背甲に付着するカメフジツボ *Chelonibia testudinaria*.

Fig. 1. A female green sea turtle (*Chelonia mydas*; KPM-NFR 1036) with a barnacle (*Chelonibia testudinaria*) on her back, stranded on the Kozu coast, Odawara, Kanagawa Prefecture, 20th February 2022.

材料と方法

2024年2月20日に神奈川県小田原市国府津海岸に漂着した雌のアオウミガメの死体が神奈川県立生命の星・地球博物館に持ち込まれた(図1)。骨格標本作製の過程で、メッシュ16(目開き1mm)の金属篩を用いて消化管から内容物を採集し、水道水で洗浄した後、亀田・石原(2009)に従い、植物質(海藻類・海草類)、動物質、人工物に分類した。また、これらの湿重量を測定し、重量の割合を以下のように計算した。

重量の割合(%) = (各消化管内容物の重量 / 全消化管内容物の重量) × 100

海藻類については70%のエタノールで固定し、動物質、人工物については乾燥標本とした。アオウミガメが誤飲した人工物の傾向を調べるため、人工物を乾燥させ、番号を付した後、最大長と幅を計測し、色彩と透明度を分類した。透明度については、人工物の裏側に置かれた物の色彩や形を透過できる物については透明、色や形が不明瞭だが確認できるものは半透明に分類し、透過しないもののうち無色のものを白と同定した。これらのデータはMicrosoft Excelを用いて図表にした。

結果

1) 外部形態と特徴

本研究対象のアオウミガメ(KPM-NFR 1036)は甲長470mm、体重9.1kgの未成熟の雌であり、吻部から眼窩にかけて白骨化が進んだ状態で海岸に打ち上げられていた。背甲には、長径56.3mm、短径45.6mmのカメフジツボ *Chelonibia testudinaria* が付着していた(図1)。アオウミガメの後頭部から首、四肢の筋は腐敗が進んでいたが、腹部の筋や内臓は比較的腐敗が進んでおらず、大腸が一部破れていたが内臓の同定は可能だった。しかし、病変の有無の詳細を確認できるまでの良好な保存状態ではなかった。また、腹部には脂肪層が発達しており、栄養状態が極端に悪い様子は確認できなかった。消化管は全体的に内容物で満たされており、直腸からは植物質の内容物に加えて帯状の人工物が摘出された。また、解剖前の頭部にフジツボのような固着性生物の存在は確認されなかったが、解剖後に検体を水に晒して骨格標本作製したところ、頭骨の背側面を構成する前頭骨 frontal、頭頂骨 parietal、後眼窩骨 postorbital、鱗状骨 squamosal に楕円形の穴が19箇所認められた(図2A, B)。

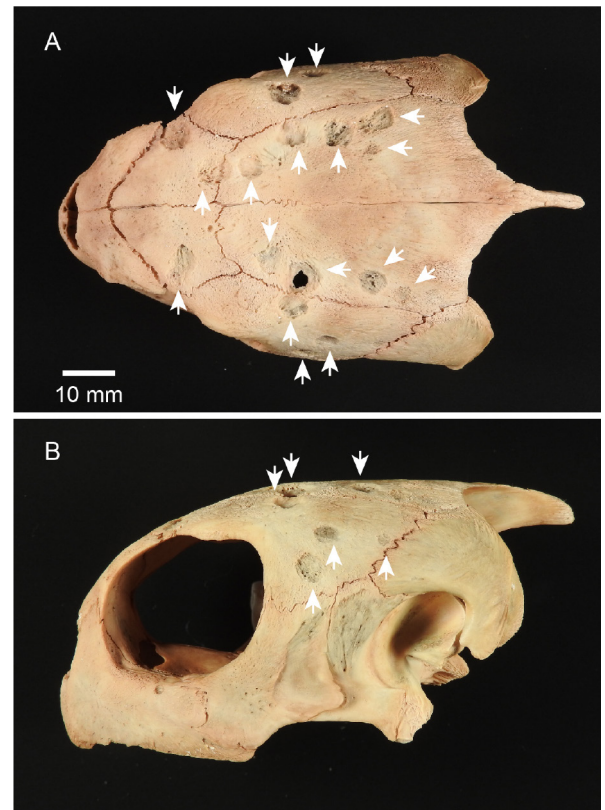


図2. アオウミガメ *Chelonia mydas* (KPM-NFR 1036) の頭骨. A: 背側面観; B: 左側面観. 白の矢印はフジツボの付着痕と見られる穴を示す.

Fig. 2. The skull of a green sea turtle (*Chelonia mydas*; KPM-NFR 1036). A: in dorsal view; B: in lateral view. White arrows indicate the traces of barnacles.

これらの穴の直径は約2.4-7.2mmであり、一部は骨を貫通して孔になっていたが(図2A)、脳函の直上に当たる部分に穴は見られなかったことから、脳に直接的な損傷はなかったものと見られる。

2) 消化管内容物

消化管内容物の湿重量の合計は86.7gである。そのうち、植物質が61.7%と大半を占め、続いて人工物37.0%、動物質1.3%であった(表1; 図3)。植物質については、ホンダワラ属などの海藻類が多く認められたが、海草類も一部含まれていた(図4A, B)。動物質の内容物には、鳥の羽根が1点、ムラサイガイ *Mytilus galloprovincialis* やエボシイガイ類 *Lepadiformes* などの殻の破片が発見された(図4C)。

消化管内容物から取り出された人工物は大きく分けて、軟質プラスチックと人工繊維に分かれ、硬質プラスチックは発見されなかった。軟質プラスチックのうち計測可能であった50点について、色彩、形状、最大長の計測値を調べた(図5, 6)。その結果、調査対象の大半が透明(40%)・半透明(32%)であり、続いて白(12%)、黒(8%)、

表 1. アオウミガメ *Chelonia mydas* (KPM-NFR 1036) の消化管内容物
Table 1. Gut contents of a green sea turtle (*Chelonia mydas*; KPM-NFR 1036)

消化管内容物 Diet item		湿重量 (g) Wet weight (g)	重量の割合 (%) Proportion of samples (%)
海藻類 Algae	ホンダワラ属 <i>Sargassum</i> sp.	53.5	61.7
	その他未同定 Other unidentified aglae		
海草類 Sea grass	未同定 Unidentified sea grass		
動物質 Animal material	ムラサキイガイ <i>Mytilus galloprovincialis</i>	1.1	1.3
	エボシガイ類 Lepadiformes		
	鳥の羽根 Bird feather		
	その他未同定の貝 Other unidentified shells		
人工物 Artificial debris	軟質プラスチック Soft plastics	32.1	37
	人工繊維 Artificial fibers		

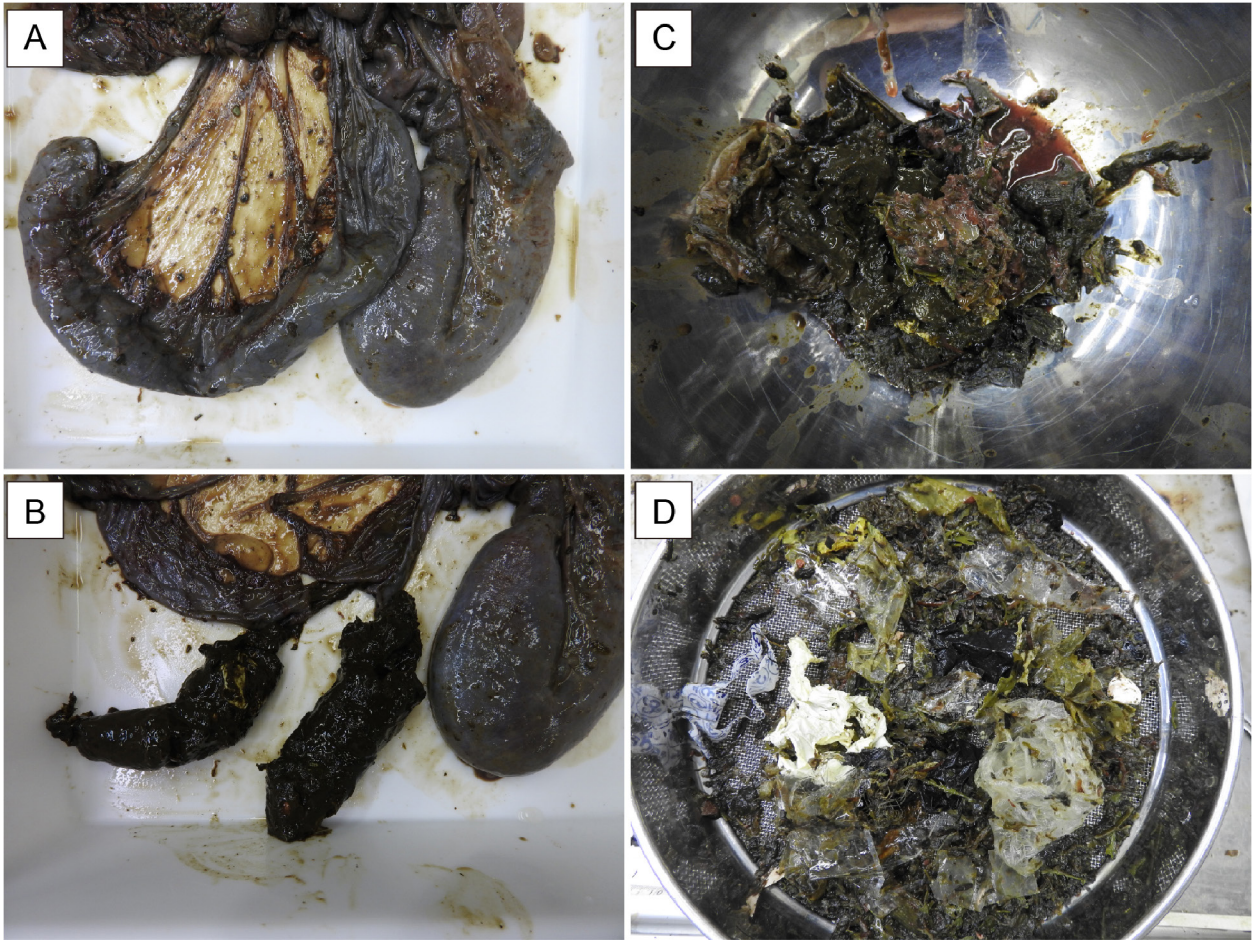


図 3. A: 内容物が詰まったアオウミガメ *Chelonia mydas* (KPM-NFR 1036) の消化管 ; B: A から抽出された内容物 ; C: 抽出された全ての内容物 ; D: 抽出された全ての人工物。
Fig. 3. A: Green sea turtle (*Chelonia mydas*; KPM-NFR 1036) gut with contents; B: contents extracted from part of the gut in (A); C: all contents extracted from gut; D: Artificial debris found as gut contents.

青 (2 %)、オレンジ (2 %)、黄 (4 %) が認められた (図 5)。体内から発見された軟質プラスチックの大部分が原型を留めておらず、長辺 210 mm、短辺 140 mm 以下で、引きちぎられた状態のものが多かった (図 6)。しかし、粉砕が進んでいないために元の形状がわかるものが以下

4 点認められた。: (1) パスタを束ねる帯状プラスチック ; (2) 四角い袋状の半透明のプラスチック ; (3) 箱状の物を包んでいたと見られる透明なプラスチック ; (4) 粘着テープの一部と見られる半透明のプラスチック (図 4A)。この他、人工繊維の 2 点については、両者ともに白色であった (図 4B)。

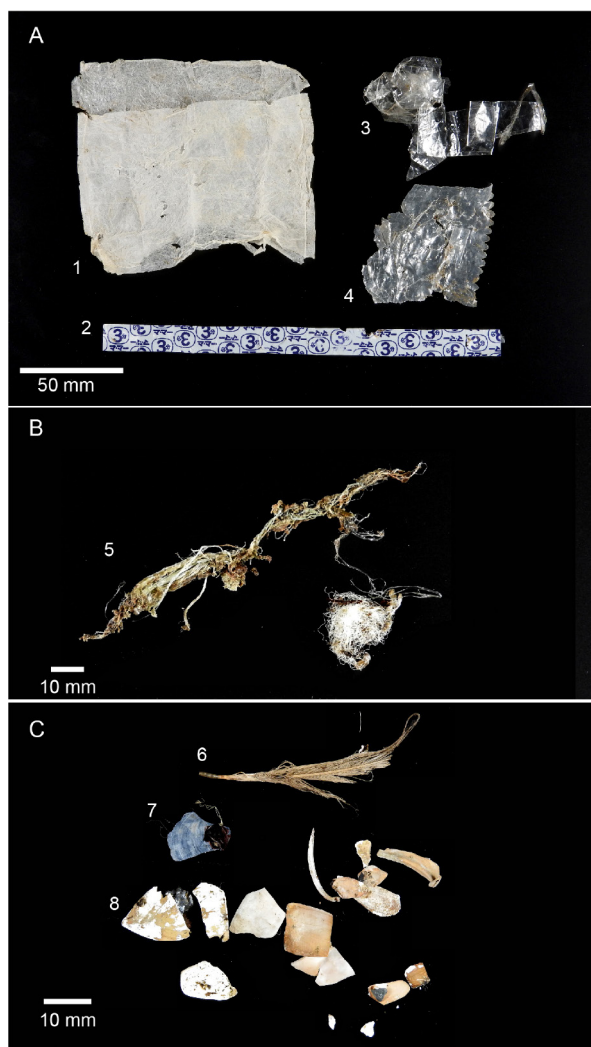


図 4. アオウミガメ *Chelonia mydas* (KPM-NFR 1036) の消化管内容物。A: 軟質プラスチックの一部; B: 人工繊維; C: 動物質。1: 四角い袋状のプラスチック; 2: パスタを束ねる帯状プラスチック; 3: 箱状の物を包むプラスチック; 4: 粘着テープの一部と見られるプラスチック; 5: 釣り糸; 6: 鳥の羽根; 7: ムラサキイガイ *Mytilus galloprovincialis*; 8: エボシイガイ類 *Lepadiformes*。

Fig. 4. Gut contents of a green sea turtle (*Chelonia mydas*; KPM-NFR 1036). A: examples of soft plastics; B: artificial fibers; C: animal materials. 1: square bag-shaped plastic; 2: band of plastic used to bind pasta; 3: plastic used to wrap boxed objects; 4: pieces of adhesive tape; 5: fishing lines; 6: bird feather; 7: part of a Mediterranean mussel (*Mytilus galloprovincialis*); 8: part of a lepadiform crustacean.

釣り糸の束は最大長 135 mm であり、繭玉のような細い繊維の塊は最大長 40 mm であった。

考 察

本研究において、アオウミガメの消化管内容物から発見された軟質プラスチックでは、透明・半透明の比較的小さな破片 (210 mm 以下) が高

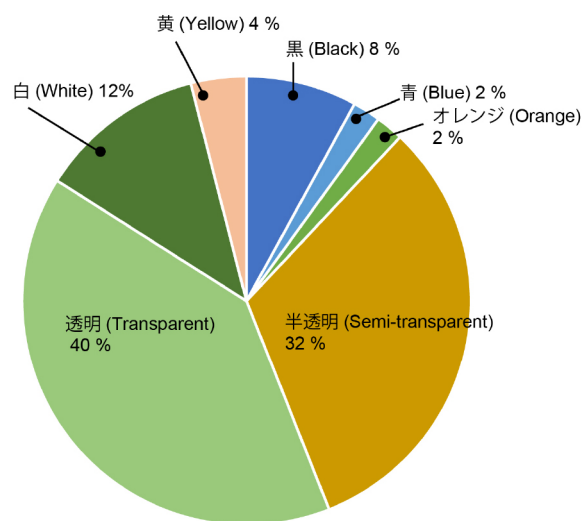


図 5. アオウミガメ *Chelonia mydas* (KPM-NFR 1036) の消化管内容物から発見された軟質プラスチックの色の割合を示した円グラフ。

Fig. 5. Pie chart showing the percentage of soft plastic of different colors found from gut contents of a green sea turtle (*Chelonia mydas*; KPM-NFR 1036).

い割合で認められた。しかし、この結果がアオウミガメにとって誤飲しやすい人工物の大きさや色を直接的に反映しているかについては、以下 2 点の可能性を考慮する必要がある: 1) 軟質のプラスチックが消化管を通過する過程で小さく粉砕されているため小さな破片が多くなっている; 2) 透明から半透明の軟質のプラスチックの割合の高さは、体内に取り込まれた時点で 1 つの大きな塊だった物が消化の過程で分割され、見かけ上の摂取頻度が高まっている。アオウミガメが軟質プラスチックを体内に摂取した時点での人工物の大きさを復元することは、非常に困難である。しかし、前述したように、消化管内容物として確認された軟質プラスチックのうち、元の形状がわかるものが 4 点確認されている。中でもパスタを束ねる白色の帯状プラスチックは欠損している箇所が認められなかった。また、これは、直腸から植物質の消化物と共に発見されている。以上のことから、小さい軟質プラスチックを誤飲しやすいかどうかは明らかではないが、少なくとも甲長 470 mm の未成熟のアオウミガメが、最大長約 200 mm の軟質プラスチックを嚥下することができ、これが元の形状を留めて直腸まで到達することが明らかになった。幼体～成体のアカウミガメを対象とした先行研究では、人工物の大きさは 7 mm (プラスチック片) から 2130 mm (ナイロン繊維) であり、平均的な人工物の大きさは 77.1 ± 26.7 mm であることが報告されている (Solomando *et al.*, 2022)。さらに、人工物の

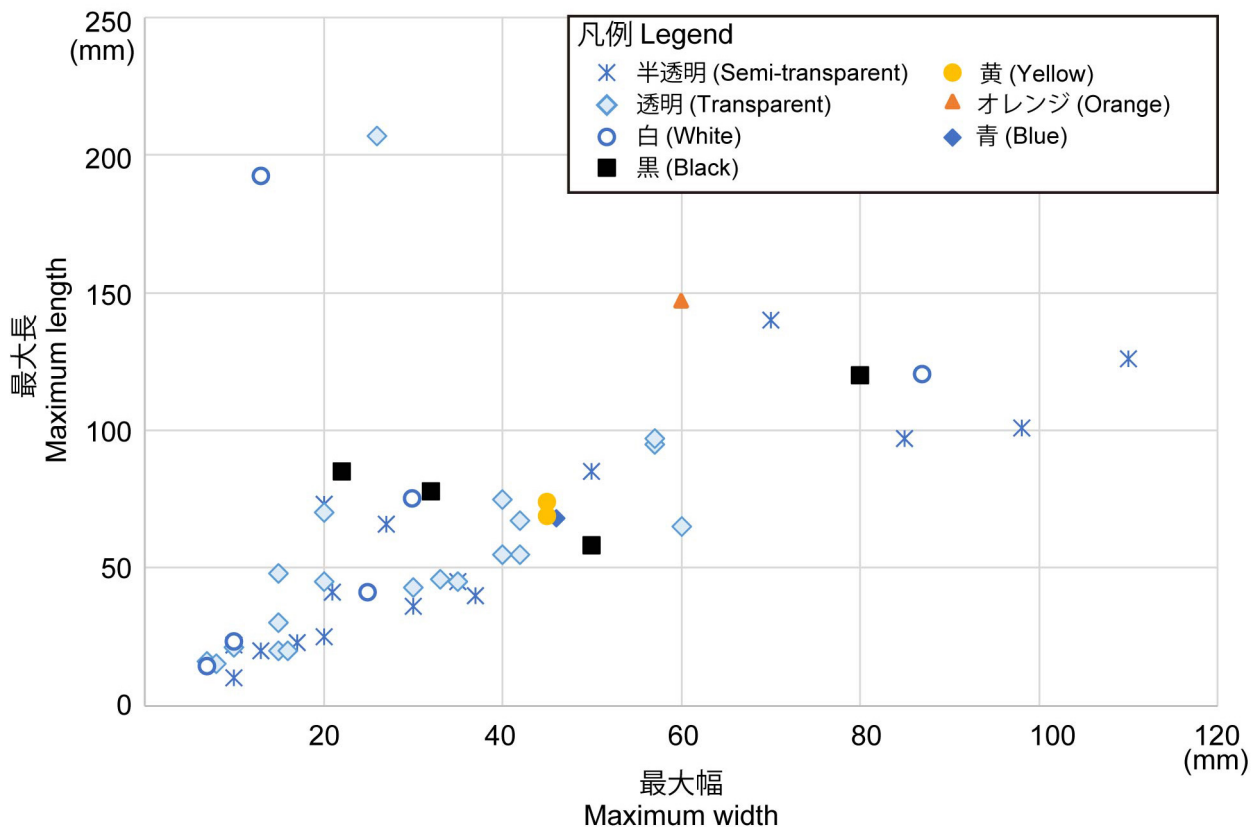


図 6. アオウミガメ (KPM-NFR 1036) から発見された軟質プラスチックのサイズを示した散布図。

Fig. 6. Scatterplot showing the size of soft plastic pieces found from a green sea turtle (KPM-NFR 103).

大半はシート状のプラスチック片が占めていた。この分析結果は、人工物の大きさ・形状という点で本研究のアオウミガメの結果と類似している。また、本検体から発見された人工物の中でも高い割合で見つかった透明・半透明の軟質プラスチック片を比較したところ、材質や厚みが多様であり、少なくとも 6 種類またはそれ以上あると見られるため、有色の軟質プラスチックよりも誤飲する割合が高いと考えられる。これは、アオウミガメの消化管内容物の先行研究と整合的である (e.g. Schuyler *et al.*, 2012, 2014b; Fukuoka *et al.*, 2016)。誤飲しやすい人工物の大きさと成長段階に伴う餌サイズとの関係性を理解するためにも、更なるデータの収集と解析が必要とされる。

ウミガメの中でもアオウミガメは人工物の誤飲が多い種として知られている (e.g. Schuyler *et al.*, 2014a) が、ウミガメは人工物に限らず、石や鳥の羽など天然のゴミも頻繁に摂取しこれらを排泄しているため、人工物が即座に致死効果をもたらしていないことも指摘されている (Fukuoka, *et al.*, 2016)。今回、国府津海岸で発見されたアオウミガメについても、消化管内容物 40 % が人工物であったが、体内に脂肪が十分に蓄えられて栄養状態が悪くなかったこと、一部のプラスチッ

クは排泄間際であったことから、人工物の誤飲による栄養状態の低下が死因となった可能性は低い。しかし、孵化後のアカウミガメの幼体で報告されている、人工物の誤飲による食物摂取量の減少 (McCauley, S. J. & Bjorndal, 1999) や、プラスチック破片に含まれる有毒化合物が生体に及ぼす影響 (e.g. Teuten *et al.*, 2009; Yamashita *et al.*, 2011; Solomando *et al.*, 2022) については今後も注視していく必要がある。

本研究対象のアオウミガメの死因を探る上で、もう 1 つ注目すべき特徴は、頭骨に残された 19 箇所穴である。これらは楕円形で、その深さは浅いものから深いものまであり、穴の底面は滑らかまたは平坦である。これらは、フジツボに侵蝕を受けたウミガメの骨の特徴と一致するため (Zonneveld *et al.*, 2022)、これらの穴はフジツボの付着痕と考えられる。アオウミガメに付着するフジツボとして、カメフジツボ *Chelonibia testudinaria* とサラフジツボ *Platylepas hexastylus* が最もよく知られている (e.g. Bugoni *et al.*, 2001)。本検体の背甲にも長径 56.3 mm、短径 45.6 mm のカメフジツボが付着していた。カメフジツボについては、固着面の軟組織を穿孔しないことが知られている (e.g. Boyd *et al.*, 2021)。ま

た、健康状態の良好なウミガメであれば、硬い岩などに甲羅などを擦り付けて固着性生物を削り落とし、その影響を軽減することが可能である (Boylan, 2016)。一方、サラフジツボなどでは底部に突起が発達して鱗板や骨を侵蝕する (e.g. Monroe, 1981; Lazo-Wasem *et al.*, 2011; Zonneveld *et al.*, 2022)。このような侵蝕性の固着性生物であっても、ウミガメが健康な状態であれば、骨が侵蝕を受けても修復される (e.g. Sato and Jenkins, 2020) が、何らかの原因で体が弱っていた場合は骨を修復することができない。また、サラフジツボは、病気のウミガメに大量に付着することから、ウミガメの健康状態の低下を示す指標の1つとしても知られている (Boylan, 2016)。本研究対象のアオウミガメの頭骨に残された痕跡は、サラフジツボなどの付着痕の可能性が高く、頭骨に密集して付着していることから、健康状態が良好だったとは考えにくい。また、侵蝕を受けた頭骨が修復せずに骨の貫通を許している点から、健康状態の悪化が示唆される。しかし、本検体の保存状態では内臓の病変を確認することはできなかった。このアオウミガメについて、人工物の誤飲が健康状態に及ぼした影響は明らかではない。しかし、頭骨に残されたフジツボの痕跡は、健康状態の悪化によってサラフジツボのような固着性生物の付着を招き、過度の骨の侵蝕を許すまでの状態に至った後、頭骨の損傷が直接的な原因かは不明だが、最終的に死に至った可能性を示唆している。アオウミガメの健康状態を害する要因は複数あり、それらは複雑に結びついているものと考えられるため、今後も漂着するウミガメの消化管内容物や、固着性生物による外傷など包括的に記録を続ける必要がある。

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摘 要

松本涼子, 2025. 神奈川県国府津海岸に漂着したアオウミガメ *Chelonia mydas* の消化管内容物とフジツボの付着痕について. 神奈川県立博物館研究報告 (自然科学), (54): 233–241. [Matsumoto, R., 2025. Gut Contents and Barnacle Traces of a Green Sea Turtle (*Chelonia mydas*) Stranded on the Kozu Coast, Kanagawa Prefecture, Japan. Bull. Kanagawa Pref. Mus. (Nat. Sci.), (54): 233–241.]

神奈川県小田原市国府津海岸に漂着した甲長 470 mm の未成熟の雌のアオウミガメの消化管から、植物片と共に人工物が発見された。アオウミガメが誤飲する人工物の色や大きさなどの傾向を調べるため、消化管から得られた人工物を分類し計測を行った。その結果、透明・半透明の軟質プラスチックが大部分を占める一方、有色の軟質プラスチックの割合は低かった。そのほか、人工繊維が 2 点発見されたが、硬質のプラスチックは含まれていなかった。軟質プラスチックの最大長は約 210 mm であり、それ以下の小さい破片が多く含まれていた。直腸から見つかった帯状の白色の軟質プラスチックは、元の形状を保持していたことから、アオウミガメが 200 mm 程度の大きさを体内に取り込み、排泄が可能であることを示唆していた。このアオウミガメの腹部は脂肪層が発達していたことから栄養状態が極端に悪い状態ではなく、人工物の誤飲が栄養状態の低下をもたらし、直接的な死因となった可能性は低い。しかし、頭部にフジツボの付着痕と見られる穴が 19 箇所認められ、そのうち 1 つは頭骨を貫通していた。アオウミガメに付着するフジツボの中でもサラフジツボは骨を侵蝕する。また、病気の個体に大量に付着するため、健康状態の悪化を示す指標としても知られている。今回研究対象となったアオウミガメについて、人工物の誤飲と健康状態の悪化の関係は明らかではないが、フジツボの痕跡は、このアオウミガメの健康状態が悪化していたことを示唆し、頭骨の貫通を許すまでに体が弱り最終的に死に結びついた可能性がある。今後も神奈川県に漂着するウミガメの消化管内容物や、固着性生物による外傷など包括的に注視していく必要がある。

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