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Taxonomical notes and descriptions of the new *Chelifera* MACQUART species (Diptera: Empididae)

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ABSTRACT

Four *Chelifera* species are described: *C. emeishanica* sp. nov. (China: Sichuan), *C. malickyi* sp. nov. (Thailand), *C. ornamenta* sp. nov. (China: Sichuan), and *C. thaica* sp. nov. (Thailand). The lectotypes of nine Collin's *Chelifera* species are redescribed from type material and designated: *C. angusta* (England), *C. aperticauda* (England), *C. concinnicauda* (Scotland), *C. diversicauda* (England), *C. fumipennis* (Chile), *C. pectinicauda* (England), *C. precabunda* (England), *C. subangusta* (Wales), and *C. tantula* (New Zealand). *C. serraticauda meridionalis* VAILLANT, 1981 is shown to be a junior synonym of *C. serraticauda* ENGEL, 1939.

Key words: *Chelifera*, Hemerodromiinae, Empididae, Diptera, new species, lectotype designations, new synonym, checklist of the world species

IZVLEČEK

Taksonomske posebnosti in opisi novih vrst *Chelifera* MACQUART (Diptera: Empididae)
– Opisane so štiri vrste rodu *Chelifera*: *C. emeishanica* sp. nov. (Kitajska: Sečuan), *C. malickyi* sp. nov. (Tajska), *C. ornamenta* sp. nov. (Kitajska: Sečuan) in *C. thaica* sp. nov. (Tajska). Na podlagi tipskega materiala je ponovno opisanih in označenih devet lektotipov vrst *Chelifera*, ki jih je opisal Collin: *C. angusta* (Anglija), *C. aperticauda* (Anglija), *C. concinnicauda* (Škotska), *C. diversicauda* (Anglija), *C. fumipennis* (Čile), *C. pectinicauda* (Anglija), *C. precabunda* (Anglija), *C. subangusta* (Wales) in *C. tantula* (Nova Zelandija). *C. serraticauda meridionalis* VAILLANT, 1981 je prikazana kot mlajši sinonim vrste *C. serraticauda* ENGEL, 1939.

Ključne besede: *Chelifera*, Hemerodromiinae, Empididae, Diptera, nove vrste, oznake lektotipov, nov sinonim, pregled vrst sveta

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Introduction

Superfamily Empidoidea is divided into Empididae (s.str.), Hybotidae, Atelestidae, Microphoridae and Dolichopodidae. The most important study on the adult Empididae morphology has been published by CHVÁLA (1983) which is primarily based on Palaearctic material. The family Empididae includes subfamilies Oreogetoninae, Empidinae, Brachystomatinae, Ceratomerinae, Clinocerinae and Hemerodromiinae. The genus *Chelifera* of the subfamily Hemerodromiinae was founded by MACQUART (1823) for the type species *Chelifera raptor* MACQUART (= *Chelifera monostigma* (MEIGEN, 1822) that occurs in Europe (CHVÁLA & WAGNER, 1989).

Five important revisional papers dealing with *Chelifera*, including morphology and taxonomy of the species, had previously been published: MELANDER's (1928, 1947) reviews of the Nearctic species, COLLIN's (1927, 1961) works on the British species, and MACDONALD's (1994) revision in which 21 Nearctic and 1 Holarctic species were recognized and illustrated, six of them were described from North America as new to science. Generic description of *Chelifera* which belongs to tribus Hemerodromiini was in general best made by COLLIN (1961).

Phenology and life cycle. The adults of *Chelifera* may be mainly found near running waters on the riparian vegetation and stones, or around the spring areas on the herbage and under fallen leaves and branchlets, but usually in low numbers. Both feeding and mating activity when the males are giving "a gift", usually a small captured fly to the females, are taking turn on the ground, very often in the same time. They prey on Chironomidae, Mycetophilidae and other small insects. Some species which occur in the temperate and warm climates may have two generations per year (bivoltine species), but usually they are univoltine. They are common in dry summer season.

All Hemerodromiinae have four larval instars, and a pupal stage. Eggs are elongate and whitish. Larvae of *Chelifera* are also predators. They are living in sand under stones deeply in flowing water or in spring areas among mosses where they prey on chironomid and simuliid larvae. Body is cylindrical, vorm-like, only 2-5 mm long, almost whitish in colour, with seven pairs of abdominal prolegs. Abdominal terminal segment is posteriorly rounded, bearing two small dorsal and one apical tubercles each covered by two pairs of long hair-like bristles. Pupae possess long spiracular process laterally on each side, altogether one pair of prothoracic and seven pairs of abdominal processes. Pupa or adult escapes from the last larval skin through a T-shaped opening in the back.

Morphology. *Chelifera* are small flies with mantoid habits which are characterized by the lengthened raptorial fore legs and are therefore highly adapted for predatory activity. Body length including terminalia is between 2.0 and 6.5 mm. The females are usually bigger than males. The species which occur in New Zealand are distinctly smaller in comparison with "continental" species, and with shorter wings. Also in the mountain species and those which occur in the islands, the wings are usually shorter than body.

The morphological study showed wide variation in the features important in species identification, which are principally the presence of thoracic longitudinal stripes and wing stigma, a degree of reduction of wing venation, modifications of front femora (blackish or brownish patches) and middle legs chaetotaxy (additional sensory bristles and thorn-like spines) in males (middle legs in females are not modified), reduction of male abdominal tergum 8 (exception are three basal Nearctic species), and the shape and degree of sclerotization of female terminalia. Chaetotaxy of thorax and legs is in general greatly reduced. Colouration of different body parts (e.g. head, antennal style, humeral depression, tarsal and abdominal segments) is a very useful feature to distinguish both males and females (COLLIN, 1961; WAGNER, 1997). It is commonly used in present

descriptions but sometimes it has no value neither in differential diagnosis nor in phylogenetic analysis of the species. The male terminalia provide the most specific characters for distinguishing the species.

State of knowledge. Fauna of *Chelifera* is best known from Palaearctic and Nearctic regions. Additional species were in the past described from New Zealand (MILLER, 1923; COLLIN, 1928), and Chile (COLLIN, 1933). The genus doesn't occur in Australia (SINCLAIR, pers. com.). Several new species have been described in the recent past (HORVAT, 1990 b; LAVALLEE, 1975; MACDONALD, 1994; NIESIOLOWSKI, 1986; VAILLANT, 1981; VAILLANT & CHVÁLA, 1973; VAILLANT & GAGNEUR, 1998; YANG DING & YANG CHI-KUN, 1995; WAGNER, 1984 a, b; WAGNER & NIESIOLOWSKI, 1987). Altogether 60 species are recently recognized from North America, Europe, Asia, New Zealand, North Africa, and Chile (see A checklist of the world species at the end of paper). Two species are Holarctic, 29 Palaearctic, 21 Nearctic, 3 Oriental, 4 Austral-Oceanian, and 1 Neotropical. Three species remain unrecognized at present.

Only a few species are widely distributed in the Holarctic. On the other hand a half of all included species are known only from the type specimens (usually males) or at the most from two or three localities, and no additional material is available. Many further species will surely be discovered and described in the near future, predominantly from Asia and North America. Information on eight European species distribution treated here is mainly based on data from the Catalogue of Palaearctic Diptera (CHVÁLA & WAGNER, 1989) as well as my published data (HORVAT, 1990 a, 1993, 1995 a, b, 1997). As regards the Southeast Europe, till 1990 a very few zoogeographical data were available in the literature. The *Chelifera* adults are not commonly collected in the field, and they are rare in the collections around the world. The female can be usually recognized on the basis of the body colouration (e.g. the presence of thoracic lateral stripes, wing stigma) of the corresponded male. Much more fresh *Chelifera* material collected in the field is needed in the future to solve taxonomy and phylogeny of the species.

Material and methods

Material. The type material of adult *Chelifera* studied by me as well as additional material consist of dried, pinned specimens, microscopic slides with male terminalia, and specimens preserved in ethanol from the following museums (with acronyms used in text): British Museum (Natural History), London, England (BMNH), Naturhistorisches Museum Wien, Vienna, Austria (NMW), Slovenian Museum of Natural History, Ljubljana, Slovenia (PMSL), University Museum Oxford, Oxford, England (UMO), and Zoologisches Forschungsinstitut und Museum Alexander Koenig, Bonn, Germany (ZFMK).

Methods. The adults were collected with sweeping net and aspirator in the vicinity of springs, streams and rivers, and immediately conserved in 85 % ethanol. The dried specimens were, before dissection, first softened for a short time in a wet chamber. As in the case of material preserved in alcohol, the abdomens were dissected from the bodies. They were boiled for approximately 10 minutes in a 10 % solution of potassium hydroxide (KOH) until they become translucent, and washed in 96 % acetic acid. Then they were transferred first into a mixture of clove oil and acetic acid (1:1) for about an hour, for repeated observations in some cases later in ethanol. The entire body and its parts, especially terminalia and their structures, were studied in dorsal and lateral views in glycerine by binocular Wild M3Z. The individual abdomen was stored in plastic microvial with glycerine, joined together with labels and the rest of the animal on the pin, or preserved in 75

% ethanol in the case of material preserved in alcohol. In the dried, pinned material is difficult to exam many characters. In the alcohol preserved material is probably more convenient. Drawings of the newly described species were prepared by using optical microscope Olympus with drawing mirror. The illustrations to the species described by Collin are not given due to the existing figures in literature (COLLIN, 1927, 1961; WAGNER, 1997).

Taxonomical notes

Terminology. The taxonomy of the genus is rather complex because of a lack of differential characters. The homology of the genital sclerites in male terminalia in Empididae is a subject of controversy, and terminology has not yet been cleared. In CHVÁLA (1983) the terms epandrium (=dorsal lamella) and gonocoxite (=lateral lamella) were used in species descriptions. The gonocoxite in *Chelifera* consists of 1-articulated gonopod, gonostyle absent. The cerci are reduced. Furthermore MACDONALD (1994) used cercus and epandrial lobe (after CUMMING & SINCLAIR, 1990), and WAGNER (1997) cercus and periandrium (gonocoxite+gonostyle) for the same genital sclerites. The interpretation of anagenetic trends of the genital structures is still complex, therefore I am using terms dorsal lamellae (=cerci or epandrium), and lateral lamellae (=epandrium or gonocoxites) when describing structures in the male terminalia (Fig. 1). Ventral lamella is generally homologized with hypandrium.

Important features for species identification are the shape, size and colouration of all genital lamellae, particularly of dorsal lamellae, the number of thorn-like teeth situated on each dorsal lamella, and the shape and size of hypandrium as well as aedeagus. Hypandrium bears an anterior (AHYP) and posterior pair (PHYP) of hypandrial processes which differ very much in length and shape (Fig. 2). They can be long, short, thick, conical, straight, apically curved, S-shaped, or almost unapparent. Aedeagus is usually short and thin, arises between lateral lamellae and is hidden by them. But in some species it can be long and thick, expanded well above dorsal lamellae, and apically covered by thorn-like spines. It is very different in size and shape, more or less sclerotized, or only membranous. The female terminalia (Figs. 3-4) are formed from sclerotized terminal cerci, and abdominal segments 8-11. The abdominal segment 8 is much longer than segment 7. The segment 9 is vestigial. The abdominal sternum 8 bears genital opening. There is no ovipositor in *Chelifera*. Terminalia are somewhat compressed and show different degree of development. Two types of telescopic terminalia can be recognized: conical, well-developed, at least twice to 3-times longer than its basal width, sclerotized, and with long cerci, or not conical, weakly developed terminalia with rounded, blunt-type, less sclerotized, and with short cerci.

Classification. The position of the genus *Chelifera* in subfamily Hemerodromiinae is characterized by raptorial fore legs which are located near head. Fore coxae are greatly lengthened and at least twice as long as other coxae. Fore femora are thickened and bearing two rows of sensory bristles and thorn-like spines beneath (ventrally), both in males and females. Genus *Chelifera* is considered the sister group of the *Metachela* COQUILLET and *Neoplasta* COQUILLET lineage, and this group is monophyletic within tribus Hemerodromiini on the basis of the wing venation, the presence of cells DM and BM, and crossvein bm-Cu. *Metachela* is more closely related to *Chelifera* than *Neoplasta*. MACDONALD (1994) recognized three "informal" *Chelifera* species groups in which a half of Nearctic species were placed on the basis of the presence of wing stigma, modifications of the middle legs and front femora vestiture, a degree of sclerotization of female terminalia, and enlargement of abdominal tergum 8 in males. The relationships of the remaining 11 species had not been resolved.

Several species groups can be recognized. The basal *Chelifera* species which occur in the West North America are characterized by the following plesiomorphies: The abdominal tergum 8 is laterally enlarged posteriorly into lobes which partially overlapping hypandrium and basal portion of lateral lamellae. The male terminalia are oriented posteriorly (=terminal). This enlargement lacks in females. The lateral lamellae are basally narrowly connected or fused. The hypandrium lacks both hypandrial processes. In *C. subensifera* MACDONALD, 1994 both hypandrial processes absent. They are very short, almost unapparent in *C. cirrata* MELANDER, 1947, and in *C. ensifera* MELANDER, 1947. In *C. ensifera* and *C. subensifera*, each dorsal lamella is formed by two separated parts. It is bipartitive. In all other known species, including *C. cirrata*, each dorsal lamella is monopartitive or formed by only one part. The monopartitive dorsal lamella is usually bilobed, formed by basal and distal lobe. The basal forms are characterized by concolorous thorax without thoracic stripes. Wings are clear, without stigma. Vein M1 is as long as stem M1+2. Crossvein dm-Cu is normally developed, cell DM is closed. The middle legs in males are simple, without additional rows of sensory bristles and thorn-like spines. *C. subensifera* MACDONALD is considered to be the most primitive form at present.

On the other hand the following apomorphies are significant in *Chelifera*: The abdominal tergum 8 is usually very small and narrow in dorsal view, and the male terminalia are oriented upwards (=erect). Lateral lamellae are basally not connected, they are significantly separated. Each dorsal lamella is monopartitive. Both hypandrial processes on the hypandrium present. Thoracic longitudinal lateral stripes or a single wide median thoracic stripe present. Wings are clear, but with distinct stigma, usually wide and longer than body length. Vein M1 is longer than stem M1+2. Cell DM is incomplete, partially opened apically, crossvein dm-Cu is reduced or partially absent. Front femur in males is greatly enlarged, with dark patches on the inner or outer surface. Middle legs in males are modified, bearing additional rows of sensory bristles (on tibiae) and thorn-like spines (on femora, the number is between 8-25).

Descriptions and redescriptions

Chelifera angusta COLLIN, 1927

Chelifera angusta COLLIN, 1927: Entomologist's mon. Mag., 63: 95. Type localities: England, Hereford (Tarrington) and Suffolk (Boyton).

Type material. Lectotype male: England: Suffolk, Boyton, 26.VIII.1907, leg. G.H. Verrall (see "lectotype designation" below, UMO). Paralectotypes (all in UMO): 1 male, England, Suffolk, Boyton, 10.VII.1908, leg. J.W. Yerbury; 1 male, England, Hereford, Tarrington, 7.VIII.1913, leg. J.E. Collin.

Recognition. Middle-sized species. It differs from related *C. subangusta* COLLIN, 1961 by slightly narrower dorsal lamellae as well as in number of thorn-like spines situated on male middle femur (up to 17 spines in *C. angusta*, up to 12 spines in *C. subangusta*).

Redescription. Male. Body length 3.0-3.3 mm, wing length 3.2-3.4 mm. Body colouration in general yellowish-grey. Head blackish. Antennae and mouthparts pale yellowish. Thorax yellowish-grey, with two darker grey thoracic longitudinal stripes. Humeral depression yellowish. Wings clear, with dark brownish stigma. Halteres white. Legs yellowish. Distal two tarsomeres in all legs distinctly brownish. Male middle femur with a row of 12-17 minute blackish thorns beneath before middle lying anteriorly. Male middle tibia with darker tiny sensory bristles lying anteriorly beneath middle. Abdomen yellowish with brownish markings. Terminalia yellowish. Each dorsal lamella small, narrow, slightly longer than lateral lamella, brownish towards tip. Lateral lamellae

large and broad, truncate behind. Hypandrium small and rounded. Both hypandrial processes well-developed. Posterior hypandrial process (PHYP) curved posteriorly near apex. Anterior hypandrial process (AHYP) with truncate tip. The species was described and male terminalia illustrated by COLLIN (1927, 1961). **Female.** Body length 3.2-3.5 mm, wing length 3.4-3.6 mm. Slightly bigger than male. Terminalia conical, well-developed.

Lectotype designation. Described from three males taken in England (Suffolk (Boyton) 26 August 1907 and 10 July 1908; Hereford (Tarrington) 7 August 1913). The first mentioned male taken in Suffolk, Boyton on 26 August 1907 (leg. G.H. Verrall) is herewith designated as lectotype of *Chelifera angusta* COLLIN in order to ensure the name's proper and consistent application. It was labelled accordingly in September 1998 in Oxford. All three males mentioned by COLLIN (1961) are preserved in UMO, and they are conspecific. Lectotype and the remaining two paralectotypes are deposited in Verrall-Collin Collection (VC-TYPE 203). In the lectotype all body parts are present. In paralectotype from Suffolk, Boyton (10 July 1908) all body parts are present, and the descriptive characters are identical to those mentioned for lectotype. In second paralectotype from Herefordshire (7 August 1913) there is no abdomen, and middle legs lacking. A mount of the male terminalia was evidently made from this specimen (PONT, 1995).

Distribution. Palaearctic. Europe: Great Britain. Adults were collected in July and August.

Chelifera aperticauda COLLIN, 1927

Chelifera aperticauda COLLIN, 1927: Entomologist's mon. Mag., 63: 95. Type localities: England, Gloucester (Bibury), Oxford (The Parks), Cornwall (Padstow).

Type material. Lectotype male: England: Cornwall, Padstow, VII.1902, leg. C.G. Lamb (see "lectotype designation" below, UMO). Paralectotypes (all in UMO): 2 males, England, Oxon, Oxford University Parks, 11.V.1916; 1 male, England, Oxon, Oxford University Parks, 9.V.1916, leg. A.H. Hamm; 1 male, England, Gloucester, Bibury, 29.VI.1924, leg. A.H. Hamm.

Recognition. Middle-sized species. It is closely related to *C. concinnicauda* COLLIN, 1927. Each dorsal lamella with short projection at middle above in both species: in *C. aperticauda* bears a single large blackish spine while in *C. concinnicauda* is covered by 4-5 thorn-like spines.

Redescription. Male. Body length 3.0-3.3 mm, wing length 3.2-3.5 mm. Body colouration in general yellowish-brown. Head yellowish-brown. Antennae and mouthparts yellowish. Thorax yellowish-grey, with two darker thoracic longitudinal stripes. Humeral depression darkened. Wings clear, with distinct blackish stigma. Halteres pale yellowish. Legs yellowish. Last two tarsal segments in all legs blackish. Middle legs not modified. Abdomen brownish-black, laterally yellowish. The 7th segment is completely yellowish. Genitalia with brownish-black dorsal lamellae bearing short projection at middle above. Lateral lamellae and hypandrium yellowish. Each lateral lamella with short black spines distally. In dorsal view, dorsal lamellae forming a large almost circular opening with two concave incisions separated by short projection at middle. Both hypandrial processes developed. AHYP long, straight, and conical. PHYP curved at apex posteriorly. The species was described and male genitalia figured by COLLIN (1927, 1961). **Female.** Body length 3.3-3.5 mm, wing length 3.5-3.7 mm. Terminalia conical and sclerotized.

Lectotype designation. Described from five males taken in England (Cornwall July 1902; Gloucester 29 June 1924; 3 males taken in Oxford University Parks 9 and 11 May 1916). The first mentioned male taken in Cornwall, Padstow in July 1902 (leg. C.G. Lamb) is herewith designated as lectotype of *Chelifera aperticauda* COLLIN in order to ensure the name's proper and consistent application. It was labelled accordingly in September 1998 in Oxford. All the males mentioned by COLLIN (1961) are preserved in UMO, and they are conspecific. Lectotype and one paralectotype

(from Oxford University Parks 11 May 1916) are deposited in Verrall-Collin Collection (VC-TYPE 202). The remaining three paralectotypes are in General Collection, labelled as identified by Collin. In the lectotype all body parts are present. Two females from Oxford University Parks in UMO (Verrall-Collin Collection and General Collection) are not syntypes as the species was described from the males only (PONT, 1995).

Distribution. Palaearctic. Europe: Great Britain, Belgium, Austria; Poland (NIESIOŁOWSKI, 1992); Slovenia and Montenegro (HORVAT 1990 a, 1995 a). *C. aperticauda* is a bivoltine species. Adults were collected in May, June, July, and in September and October.

Additional material (in PMSL): **Slovenia:** r. Soča, Sveti Urh, Tolmin, 180 m a.s.l., 8.VI.1995, 2 males, leg. Sivec; r. Soča, Žaga, Bovec, 350 m a.s.l., 8.VI.1995, 1 male, 2 females, leg. Sivec.

Chelifera concinnicauda COLLIN, 1927

Chelifera concinnicauda COLLIN, 1927: Entomologist's mon. Mag., 63: 95. Type localities: Scotland, Nethy Bridge and Aviemore.

Hemerodromia monostigma ZETTERSTEDT, 1842: Dipt. Scand., 1: 267; not MEIGEN, misident.

Hemerodromia precatória FALLÉN "var. b": ZETTERSTEDT, 1842: Dipt. Scand., 1: 267.

Hemerodromia stigmatica LUNDBECK, 1910: Dipt. Danica, 3: 233; not SCHINER, misident.

Chelifera lapponica FREY, 1950: Notul. ent., 30: 8. Type locality: Finland, Tana Alv i Utsjoki.

Type material. Lectotype male: Scotland: Elgin, Nethy Bridge, 4.VIII.1911, leg. J.W. Yerbury (see "lectotype designation" below, UMO). Paralectotypes (all in UMO): 2 males, same data as lectotype; 2 males, Scotland, Aviemore, 3.VIII.1914, leg. J.E. Collin.

Recognition. Middle-sized species. The closest relative of *C. aperticauda* COLLIN. In both species male middle legs lacking additional thorn-like spines.

Redescription. Male. Body length 3.5-3.7 mm, wing length 3.6-3.8. Body colouration in general yellowish-brown. Head brownish. Antennae and mouthparts pale yellowish. Thorax yellowish, with two indistinct brownish-grey thoracic longitudinal stripes. Humeral depression blackish. Wings clear, with small faint brownish stigma. Halteres pale yellowish. Legs yellowish-brown. Middle legs simple, without modifications. Last tarsal segment in all legs blackish. Abdomen brownish-grey. Last two abdominal segments yellowish-grey. Terminalia with large brownish dorsal lamellae. Each dorsal lamella with a small triangular tooth-like projection at about middle (in dorsal view) bearing 4-5 thorn-like spines. In lateral view the dorsal lamella appearing slightly excised above towards rounded tip. Lateral lamellae pointed and curved up towards dorsal lamellae. Hypandrium small and rounded. Both hypandrial processes developed. AHYP with truncate tip. PHYP curved posteriorly near apex. The species was described and male genitalia illustrated by COLLIN (1927, 1961). **Female.** Body length 3.6-3.9 mm, wing length 3.7-4.00 mm. Terminalia conical and sclerotized.

Lectotype designation. Described from five males taken in Scotland (three males taken in Elgin, Nethy Bridge 4 August 1911; two males taken in Aviemore 3 August 1914). One male of the three males taken in Elgin, Nethy Bridge on 4 August 1911 (leg. J.W. Yerbury) is herewith designated as lectotype of *Chelifera concinnicauda* COLLIN in order to ensure the name's proper and consistent application. It was labelled accordingly in September 1998 in Oxford. All five males mentioned by COLLIN (1961) are preserved in Verrall-Collin Collection (VC-TYPE 201) in UMO, and they are conspecific. In the lectotype all body parts are present. One paralectotype of the remaining four is without abdomen (Elgin, Nethy Bridge 4 August 1911). A mount of the male terminalia evidently belongs to this specimen (PONT, 1995).

Distribution. Palaearctic. Europe: Sweden, Finland, Great Britain, Belgium, Denmark,

Germany, Czech Republic, Slovakia, France; Asia: Mongolia; Poland (NIESIOŁOWSKI, 1992); Croatia and Montenegro (HORVAT, 1990 a). Adults were collected in August and September.

***Chelifera diversicauda* COLLIN, 1927**

Chelifera diversicauda COLLIN, 1927: Entomologist's mon. Mag., 63: 95. Type localities: England, Hereford, Glamorgan and Brecknock.

Type material. Lectotype male: England: Hereford, Stoke Wood, 3.VIII.1913, leg. J.E. Collin (see "lectotype designation" below, UMO). Paralectotypes (all in UMO): 4 males, sama data as lectotype; 1 male, England, Brecknock, Llangammarch Wells, 28.VII.1913, leg. J.W. Yerbury; 1 male, England, Pontrilas, 30.VIII.1913, leg. J.W. Yerbury.

Recognition. Middle-sized species. It is relative to *C. monostigma* (MEIGEN, 1822) according to bilobed dorsal lamellae in both species. In dorsal view dorsal lamellae medially concave in *C. diversicauda* while in *C. monostigma* both inner margins are closely approximated but with distinct distal concavity.

Redescription. Male. Body length 3.0-3.3 mm, wing length 3.1-3.4 mm. Body colouration in general yellowish-grey. Head blackish. Antennae yellowish, with brownish style. Mouthparts yellowish. Thorax yellowish, with two distinct darker grey thoracic longitudinal stripes. Humeral depression brownish. Wings clear, with brownish stigma. Halteres light yellowish. Legs yellowish. Middle legs not modified. Last tarsal segment in all legs blackish. Abdomen brownish-black. Genitalia with large brownish dorsal lamellae. Lateral lamellae and hypandrium yellowish. Each dorsal lamella excised at end, the upper lobe larger and with a black pointed projection on inner side at tip, the lower lobe more rounded. Each lateral lamella with long distal prolongation, the end somewhat hidden beneath dorsal lamella. Hypandrium short and rounded. Both hypandrial processes developed, almost identical in size and shape to those in *C. concinnicauda* COLLIN. The species was described and male terminalia figured by COLLIN (1927, 1961). **Female.** Body length 3.2-3.5 mm, wing length 3.3-3.6 mm. Terminalia conical and sclerotized.

Lectotype designation. Described from seven males taken in England (five males taken in Hereford, Stoke Wood 3 August 1913; Brecknock, Llangammarch Wells 28 July 1913; Pontrilas 30 August 1913). One male of five males taken in Hereford, Stoke Wood on 3 August 1913 (leg. J.E. Collin) is herewith designated as lectotype of *Chelifera diversicauda* COLLIN in order to ensure the name's proper and consistent application. It was labelled accordingly in September 1998 in Oxford. All seven males mentioned by COLLIN (1961) are preserved in Verrall-Collin Collection (VC-TYPE 199) in UMO, and they are conspecific. In the lectotype all body parts are present. One paralectotype of the remaining six is without abdomen (Pontrilas 30 August 1913, leg. J.W. Yerbury). A mount of the male terminalia was evidently made from this specimen (PONT 1995).

Distribution. Palaearctic. Europe: Great Britain, Belgium, Germany, Poland. Adults were found in July and August.

***Chelifera emeishanica* sp. nov.**

Figs. 1-4

Type material. Holotype male: Asia: China-Sichuan: Qingyin Pavilion, Jingshui, Emei Shan, Emei Mts., 180 km SW of Chengdu, 800-1200m a.s.l., 26.-27.V.1991, leg. Horvat, Sivec. Paratypes: 2 females, same data as holotype. The type material is preserved in 75 % ethanol in PMSL (in the author's study collection in Ljubljana).

Recognition. Large yellowish species, without thoracic longitudinal stripes. It is related to European *C. flavella* (ZETTERSTEDT, 1838) according to very similar shape and size of both hypandrial

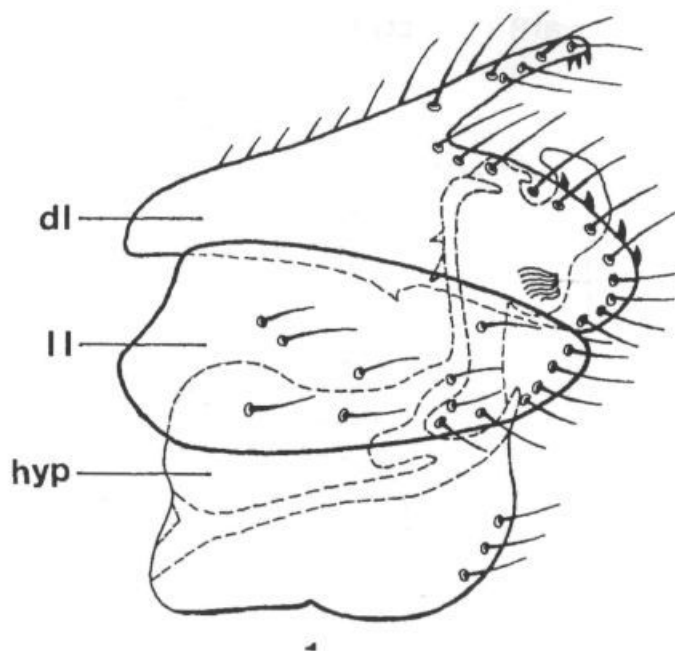
processes. In newly described species each dorsal lamella consists of wide distal prolonged lobe and narrower basal part both covered by thorn-like spines. In *C. flavella*, each dorsal lamella consists of distal and basal lobes almost identical in size but only basal part bearing a tuft of thorn-like spines.

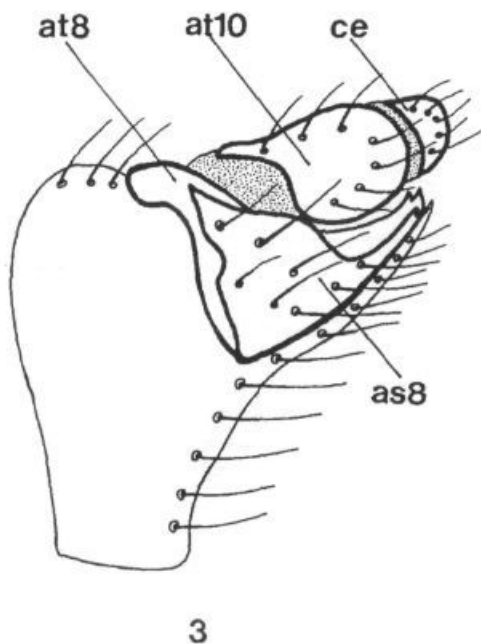
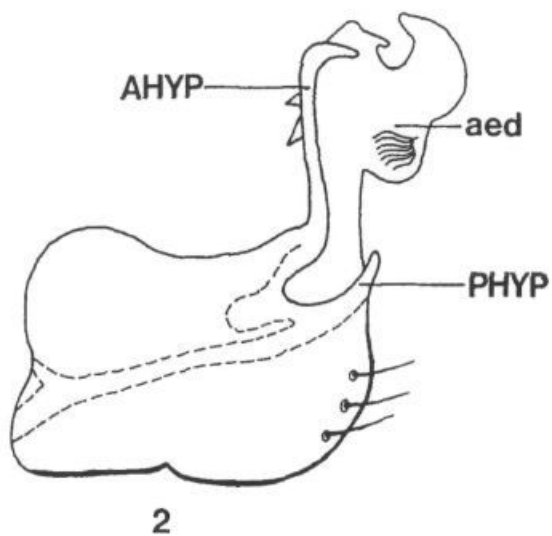
Description. Male. Body length 4.4 mm, wing length 4.6 mm. Body colouration in general yellowish-brown. Head brownish. Antennae, including style, and mouthparts pale yellowish. Thorax yellowish, without thoracic longitudinal stripes. Humeral depression yellowish-brown. Wings clear, stigma lacking. Halteres almost whitish. Legs entirely yellowish. Male middle legs, both femora and tibiae, with additional rows of sensory bristles and thorn-like spines, lying ventrally. Abdominal segments 1-7 dorsally brownish, laterally and ventrally yellowish. Terminalia (Figs. 1-2) with dorsal and lateral lamellae dark brownish, hypandrium light yellowish. Each dorsal lamella with two lobes. Upper (basal) lobe much narrower and with three strong blackish thorn-like spines situated on its apex. Distal lobe bigger and rounded, distally bearing four prominent teeth. Lateral lamellae triangular. Hypandrium with both hypandrial processes. PHYP very short. AHYP long and distinctly curved posteriorly near apex. Aedeagus membranous, only slightly sclerotized.

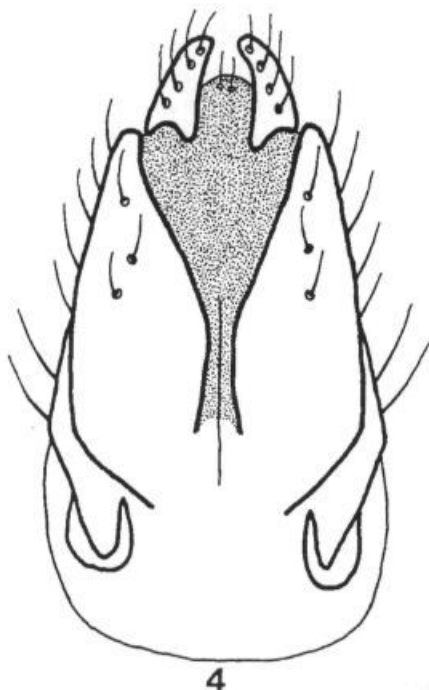
Female. Body length 4.0-4.4 mm, wing length 4.2-4.6 mm. Similar to male, slightly smaller. Tip of female terminalia (Figs. 3-4) brownish, not connical, with a blunt-type and rounded, less sclerotized, only weakly developed.

Distribution. Oriental. Asia: China (Sichuan). No additional records are available. The species was found in May.

Etymology. The species is named after Emei Shan town located in the area of Emei Mountains in Sichuan (China).







Figs. 1-4. *Chelifera emeishanica* sp. nov. Holotype male: 1-male terminalia, lateral view: dl-dorsal lamella, ll-lateral lamella, hyp-hypandrium; 2-hypandrium with aedeagus (aed), lateral view: AHYP-anterior hypandrial process, PHYP-posterior hypandrial process; female terminalia-lateral view (3), and dorsal view (4): at8-abdominal tergum 8, as8-abdominal sternum 8, at10-abdominal tergum 10, ce-cercus.

***Chelifera fumipennis* COLLIN, 1933**

Chelifera fumipennis COLLIN, 1933: Dipt. Pat. S. Chile, 4: 284. Type locality: Chile, Chiloe Island, Ancud.

Type material. Lectotype male: Chile: S. Chile (=Chiloe Island), Ancud, 17.-19.XII.1926, leg. Edwards (see "lectotype designation" below, BMNH). Paralectotypes: 1 female, same data as lectotype (BMNH); 1 female, Chile, Chiloe Island, Castro, XII.1926, leg. R.C. Shannon (USNM).

Recognition. Small species. It is closely related to New Zealand's *C. tantula* COLLIN, 1928 according to not hyaline, brownish wings without stigma which are characteristic only for group of species occurring in Chile and New Zealand. In Chilean species each dorsal lamella with semicircular excision distally at tip above. In *C. tantula* each dorsal lamella is simple, oval and without basal and distal lobes, or leaf-shaped.

Redescription. Male. Body length 2.3 mm, wing length 2.4 mm. Body colouration in general brownish-black, sometimes reddish-black. Head blackish, with distinct vertical bristles. Antennae and mouthparts yellowish-brown. Thorax reddish-brown, without thoracic longitudinal stripes. Thoracic microtrichia present. Humeral depression brownish. Wings slightly longer than body length, not clear, brownish, without stigma. Both cells BM and DM are complete. Vein M1 at least twice as long as stem M1+2. Halteres yellowish-brown. Legs reddish. Front femur raptorial, but slightly slender, less thickened than usually in *Chelifera*, with a double row of rare shorter and longer strong sensory bristles, thorn-like spines vestigial (all other *Chelifera* possess a double row

of distinct sensory bristles, and a double row of distinct thorn-like spines). Front tibia without distinct posteroventral spur at tip beneath. Middle legs not modified. Abdomen brownish-black. Terminalia quite small. Each dorsal lamella narrow with tiny semicircular excision at tip above. Dorsal lamellae projecting backwards beyond lateral lamellae. The species was described and male terminalia figured by COLLIN (1933). **Female.** Body length 3.0 mm, wing length 3.1 mm. Distinctly bigger than male. Terminalia conical, sclerotized, well-developed, and with distinct long cerci in dorsal and lateral views.

Lectotype designation. Described from three specimens taken in Chile (one male and one female taken on Chiloe Island, Ancud 17-19 December 1926; one female taken in Chiloe Island, Castro December 1926). All three specimens are conspecific. The first mentioned male taken on Chiloe Island, Ancud on 17-19 December 1926 (leg. Edwards) is herewith designated as lectotype of *Chelifera fumipennis* COLLIN in order to ensure the name's proper and consistent application. It was labelled accordingly in September 1998 in BMNH. In the lectotype all body parts are present. The lectotype and female paralectotype from the type locality are deposited in BMNH (VC-TYPE 504). The remaining female paralectotype from Chiloe Island, Castro (leg. R.C. Shannon) which was not examined by me is preserved in National Museum of Natural History (USNM) in Washington D.C., USA (PONT, 1995).

Distribution. Neotropical. Chile (endemic). No additional records are available. Adults were collected in December.

Chelifera malickyi sp. nov.

Figs. 5-7

Type material. Holotype male: Asia: Thailand: Doi Inthanon National Park, 2100m a.s.l., 6.IV.1993, leg. Horvat, Sivec. Paratypes: 5 females, same data as holotype. The type material is preserved in 75 % ethanol in PMSL (in the author's study collection in Ljubljana).

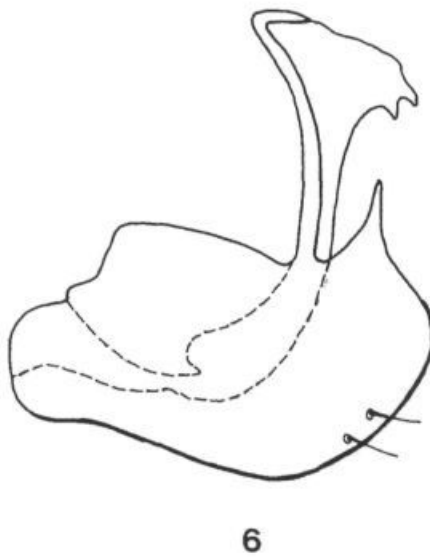
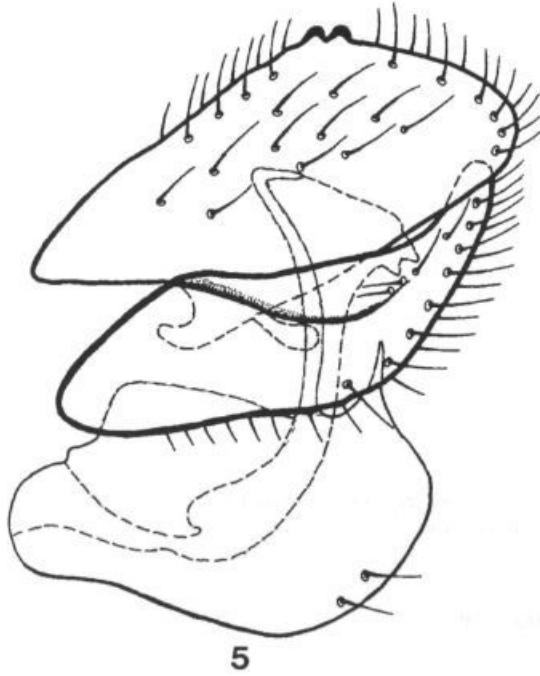
Recognition. Middle-sized species. Closely related to *C. stigmatica* (SCHINER, 1862). Each dorsal lamella in newly described species trapezoid, heavily bristled, medially with two strong teeth on its inner margin. In *C. stigmatica* each dorsal lamella bilobed, with large, broad basal lobe covered with 5-8 blackish teeth, and narrow finger-like prolonged distal lobe covered only with bristles.

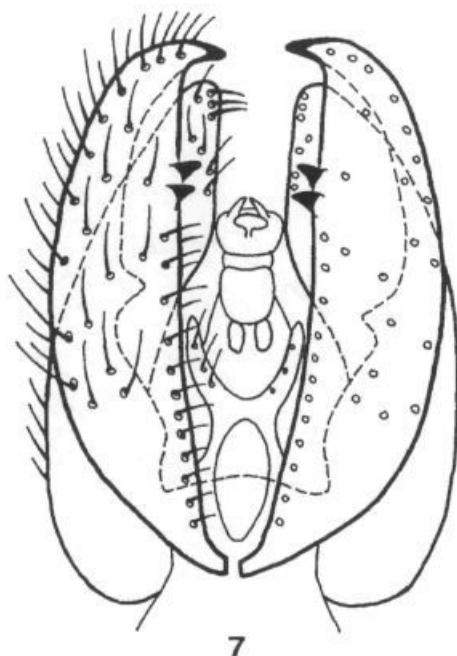
Description. Male. Body length 3.8 mm, wing length 3.9 mm. Body colouration in general dark yellowish. Head blackish. Antennae and mouthparts yellowish. Thorax dark yellowish, with two brownish thoracic longitudinal stripes. Humeral depression brownish. Wings clear. Brownish wing stigma present. Halteres pale yellowish. Legs yellowish, front pair raptorial, posterior four simple and slender. Last tarsal segment in all legs brownish. Middle legs without additional sensory bristles and thorn-like spines, not modified. Abdomen yellowish-brown. Terminalia (Figs. 5-7) with brownish dorsal lamellae. Lateral lamellae and hypandrium dark yellowish. Each dorsal lamella large, trapezoid in lateral view, with two strong blackish teeth located on its inner margin in dorsal view. Distally dorsal lamellae are distinctly curved inwards. Lateral lamellae with long and narrow distal prolongation. Hypandrium with both hypandrial processes. AHYP long, slender, straight, sharply curved posteriorly near apex. PHYP much shorter and thicker. Aedeagus membranous, weakly sclerotized. **Female.** Body length 3.8-4.0 mm, wing length 3.9-4.1 mm. Similar to male, but slightly bigger. Terminalia conical and sclerotized.

Distribution. Oriental. Asia: Thailand. No additional records are available. Adults were collected in April.

Derivatio nominis. The species is named in honour of the famous entomologist Dr. Hans

Malicky from Lunz am See in Austria, for his permanent donation of numerous empidids from his field investigations in Asia and Europe.





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Figs. 5-7. *Chelifera malickyi* sp. nov. Holotype male: 5-male terminalia, lateral view, 6-hypandrium and aedeagus, lateral view, 7-male terminalia, dorsal view.

Chelifera ornamenta sp. nov.

Figs. 8-11

Type material. Holotype male: Asia: China-Sichuan: Valley of the Heroes, Yingxiongou, Wolong, 9-20 km W of Sauwan (between two bridges), 2000-2500m a.s.l., 5.-6.VI.1991, leg. Horvat, Sivec. Paratypes: 2 males, 7 females, same data as holotype. The type material is preserved in 75 % ethanol in PMSL (in the author's study collection in Ljubljana).

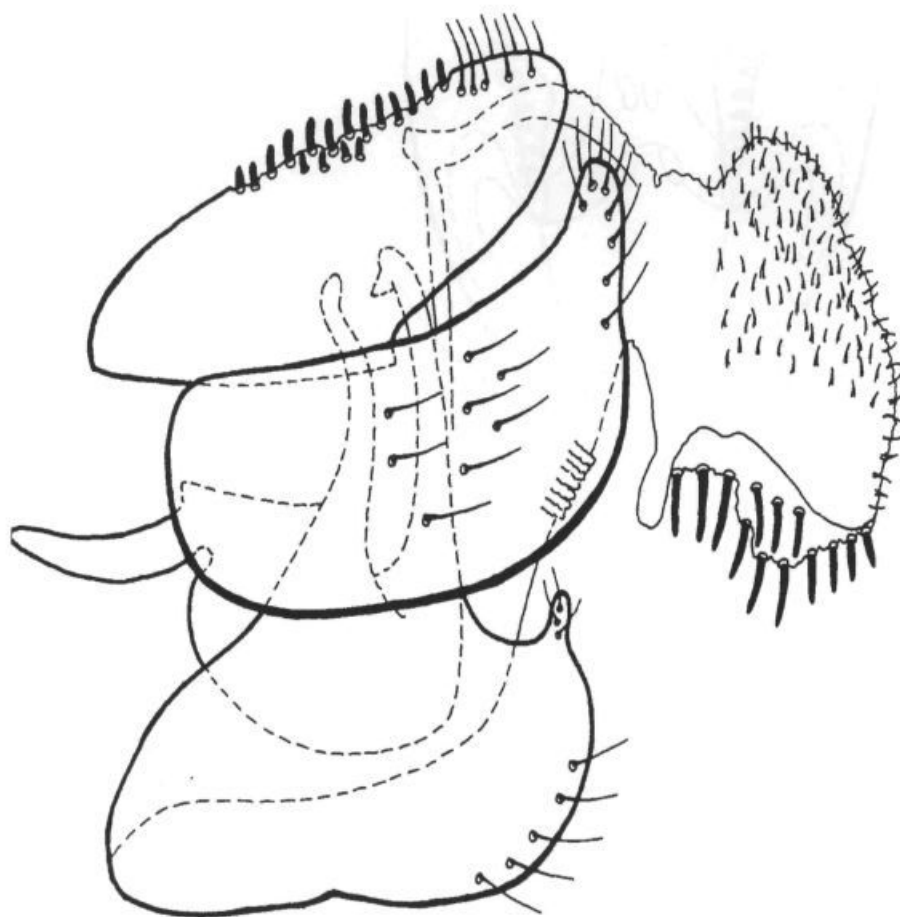
Recognition. Medium-sized to large species. Considering the general concolorous dark brownish colouration of thorax, without thoracic longitudinal stripes, and the absence of wing stigma as well as modifications of fore and middle legs, *C. ornamenta* sp. nov. is closely related to *C. chvalai* WAGNER, 1984 which occurs in Central Asia (Uzbekistan, Kirghizia) and North America (MACDONALD, 1994), and to Nearctic *C. mana* LAVALLEE, 1975 and *C. varix* MELANDER, 1947.

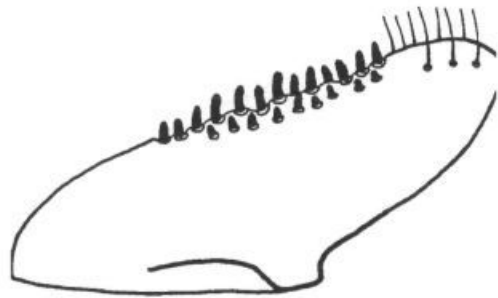
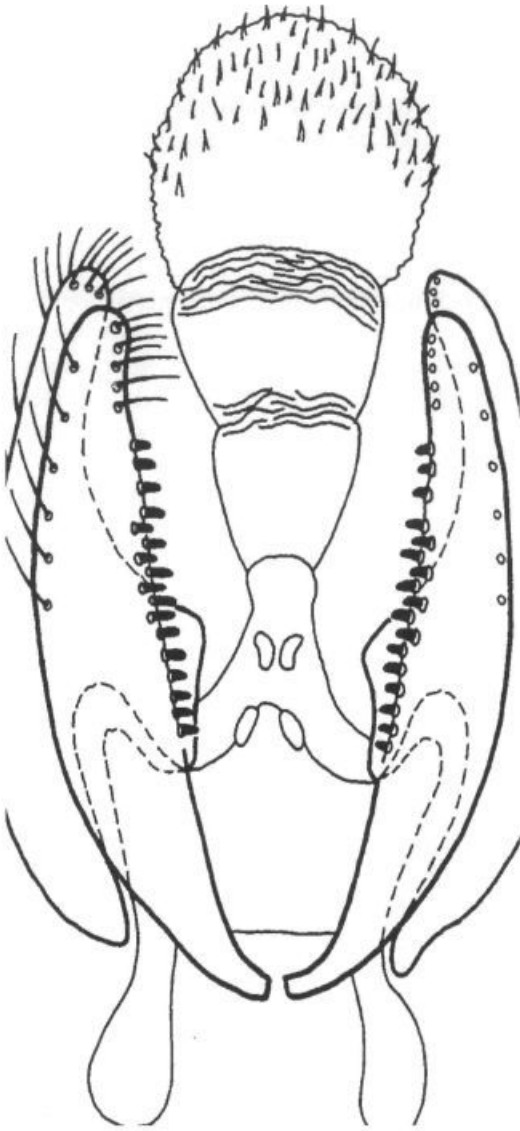
Description. Male. Body length 3.4-3.8 mm, wing length 3.7-4.0 mm. Thoracic colouration in general dark brownish with blackish tinge, concolorous, without thoracic longitudinal stripes. Head and eyes blackish. Postocular bristles present. Mouthparts short, yellowish. Antennae yellowish, but distally brownish. Thorax dark brownish with blackish tinge. 1 pair of prealar bristles, 1 pair of intra-alar bristles. Scutellum with 1 pair of scutellar bristles. Humeral depression brownish-black. Wings clear, without distinct stigma, only with faint light brownish "spot". Vein M1 approx. twice longer than stem M1+2. Halteres light yellowish. Legs in general yellowish. Last three tarsal segments in all legs brownish. Front and middle legs in males raptorial and modified, hind legs simple, slender, and unmodified. Male front femur wide and short, with several specific brownish-black transversal patches or ornaments: four patches on the outer surface of the front femur, and three patches on its inner surface. Front femur ventrally with a double row of short strong blackish thorns, and outside a double line of long sensory bristles. Male front tibia

with a narrow brownish-black longitudinal stripe on its outer surface. Male middle femora and tibiae with additional rows of sensory bristles and blackish thorn-like spines. Male middle femur much stronger than that of the hind legs. Male middle tibia ventrally with specific distinct cavity or incurvation located on its second half caudally. The posterior margin of the middle tibia covered with numerous blackish short thorn-like spines. Abdominal tergites brownish, sternites light brownish. Terminalia (Figs. 8-11) relatively small in comparison with the size of body. All genital lamellae dark brownish. Dorsal lamellae simple, oval, without lobes or leaf-shaped, medially covered with numerous blackish thorn-like spines or teeth. Lateral lamellae with distinctly bristled distal prolongation. Hypandrium even larger than dorsal or lateral lamellae. AHYP paired, long and slightly S-shaped. PHYP very short and thick. Aedeagus distinct, with numerous long blackish spines on its membranous apex. **Female.** Body length 3.9-4.4 mm, wing length 4.0-4.4 mm. Similar to male, without specific dark patches on front femora, also middle femora unmodified, and middle tibiae without specific cavity. Terminalia connical, sclerotized, well-developed.

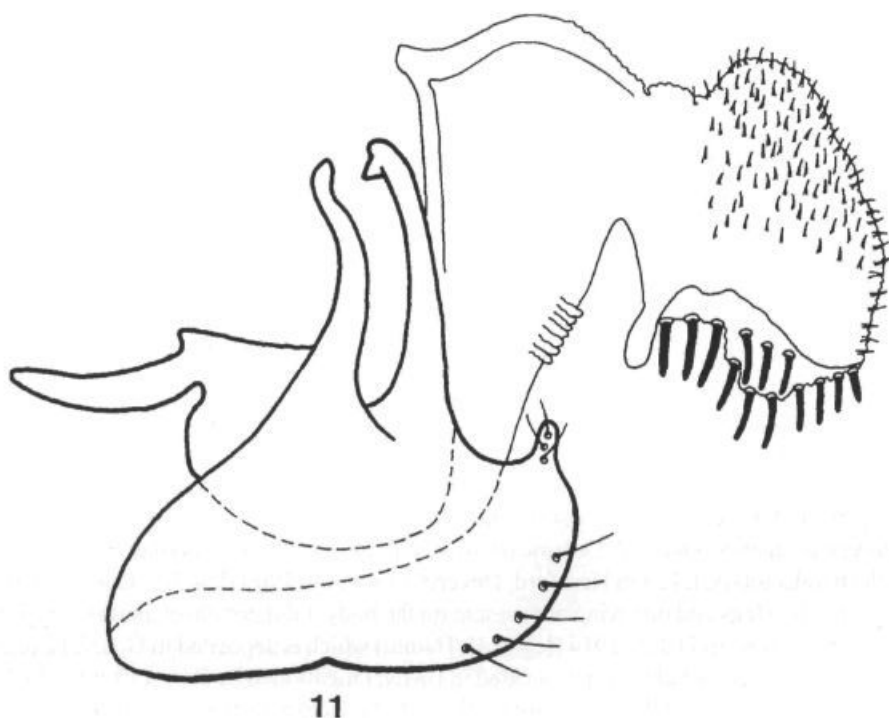
Distribution. Palaearctic. Asia: China (Sichuan). No additional records are available. The species was found in June.

Etymology. The species is named according to specific ornaments or patches located on front femora.





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Figs. 8-11. *Chelifera ornata* sp. nov. Holotype male: 8-male terminalia, lateral view, 9-male terminalia, dorsal view, 10-inner side of the right dorsal lamella, lateral view, 11-hypandrium and aedeagus, lateral view.

***Chelifera pectinicauda* COLLIN, 1927**

Chelifera pectinicauda COLLIN, 1927: Entomologist's mon. Mag., 63: 95. Type localities: England, Sutherland, Inverness, Oxford, Shropshire, Herefordshire.

Type material. Lectotype male: England: Loch Assynt, 11.VI.1911, leg. J.W. Yerbury (see "lectotype designation" below, UMO). Paralectotypes (all in UMO): 1 male, England, Sutherland, Golspie, 30.VII.1914, leg. J.E. Collin; 1 male, England, Hereford, Devereux, 8.VII.1909, leg. J.E. Collin; 1 male, England, Oxon, Oxford Bayswater, 15.VII.1916, leg. A.H. Hamm.

Recognition. Small to medium-sized species, similar to *C. angusta* COLLIN. It is characterized by wide trapezoid truncate basal lobe covered posteriorly with teeth, and narrow finger-like distal prolongation, both parts of each dorsal lamella.

Redescription. Male. Body length 2.7-2.9 mm, wing length 2.8-3.0 mm. Body colouration in general yellowish. Head greyish. Antennae and mouthparts pale yellowish. Thorax yellowish, with two dark thoracic longitudinal stripes. Humeral depression yellowish. Wings clear, with a

dark brownish stigma. One specimen without crossvein dm-Cu, discal cell DM opened apically on one wing. Halteres yellowish. Legs as in *C. angusta*. Male middle femur with a row of minute blackish thorn-like spines or "points", about 8-12 in number, situated just beyond middle. Male middle tibia with a row of blackish thorn-like hairs beneath before middle. Both rows are lying anteriorly. Last tarsal segment in all legs blackish. Abdomen greyish. Abdominal tergum 8 yellowish. Genitalia with brownish dorsal and lateral lamellae. Each dorsal lamella with two lobes. Basal lobe widening out, truncate at end and covered with 8-10 strong teeth, distal finger-like prolongation narrow and only bristled. Both hypandrial processes developed. AHYP long and narrow, straight and slightly S-shaped. PHYP much shorter. The species was described and male genitalia illustrated by COLLIN (1927, 1961). **Female.** Body length 3.0-3.3 mm, wing length 3.1-3.4 mm. Middle legs in females not modified, without distinctive blackish spines as in males. Abdomen yellowish with a narrow brownish band at base of each tergum. Terminalia conical.

Lectotype designation. Described from five males taken in England. I checked four male syntypes, which are deposited in Verrall-Collin Collection (VC-TYPE 204) in UMO (Loch Assynt 11 June 1911; Sutherland, Golspie 30 July 1914; Hereford, Devereux 8 July 1909; Oxon, Oxford Bayswater 15 July 1916). The first mentioned male taken in Loch Assynt on 11 June 1911 (leg. J.W. Yerbury) is herewith designated as lectotype of *Chelifera pectinicauda* COLLIN in order to ensure the name's proper and consistent application. It was labelled accordingly in September 1998 in Oxford. All four males are conspecific. In the lectotype all body parts are present. The paralectotype taken in Sutherland, Golspie on 30 July 1914 (leg. J.E. Collin) has no head and hind legs. In the paralectotype taken in Hereford, Devereux on 8 July 1909 (leg. J.E. Collin) there is no head, and only two legs and one wing are present on the body. I did not check male syntype taken in Oxford Hogley Bog on 11 July 1914 (leg. A.H. Hamm) which is deposited in General Collection in UMO. There are additional syntypes located in BMNH mentioned by PONT (1995), which I did not examine. It's a question if they are conspecific with the lectotype of *C. pectinicauda*.

Distribution. Palaearctic. Europe: Great Britain, France, Poland, Slovakia, Serbia (HORVAT, 1990 a), and Macedonia (HORVAT, 1997). Adults were collected in June, July, and August.

Additional material (in PMSL): **Macedonia:** Gorno Begovo, spring in Begovo Pole field (E part), Jakupica Mts., 1950 m a.s.l., 8.VII.1996, 1 male, 2 females, leg. Horvat.

Chelifera precabunda COLLIN, 1961

Chelifera precabunda COLLIN, 1961: British Flies, 6: 701. Type localities: England, Devon (Southleigh), Hereford (Devereux Pool), Sussex (Frant), Cambs (Chippenham Fen), Perth (Aberfoyle and Loch Tummel), Argyll (Isle of Jura), and Cromarty (Dingwall).

Type material. Lectotype male: England: Cambs, Chippenham Fen, 22.VIII.1949, leg. J.E. Collin (see "lectotype designation" below, UMO). Paralectotypes (all in UMO): 2 males, same locality as lectotype, 3.IX.1949 and 6.IX.1949; 1 male, Devon, Southleigh, 18.V.1937, leg. J.E. Collin; 3 males, 1 female, Hereford, Devereux, 8.VII.1909, leg. J.E. Collin; 1 male, Sussex, Frant, 14.VI.1886, leg. G.H. Verrall; 1 male, Loch Tummel, 29.VI.1937, leg. J.E. Collin; 1 female, Perth, Aberfoyle, 8.IX.1905, leg. Carter; 1 female, Argyll, Jura Island, IX.1907, leg. Waterston.

Recognition. Big species, closely related to *C. precatória* (FALLÉN, 1816) and *C. wagneri* HORVAT, 1990. Male terminalia resembling those of *C. precatória*. It differs by distinct median incision covered with spines of each dorsal lamella (in dorsal view), while in *C. precatória* dorsal lamellae are closely approximated, without incisions.

Redescription. **Male.** Body length 4.0-4.4 mm, wing length 4.1-4.5 mm. Body colouration in general blackish, abdomen brownish-black. Head blackish. Mothparts and antennae yellowish.

Third antennal segment, including style, yellowish. Thorax reddish-black, without thoracic longitudinal stripes. Humeral depression reddish-black. Wings clear, with brownish-black semicircular stigma, and with radial vein slightly curved downwards and round stigma. Halteres pale yellowish. Legs yellowish. Last two tarsal segments in middle and hind legs brownish. Middle legs not modified. Terminalia with brownish dorsal lamellae, which are somewhat wider towards end in lateral view. Each dorsal lamella in dorsal view with a more pronounced projection on middle of upper margin covered with thorn-like spines. Lateral lamellae and hypandrium yellowish. Both hypandrial processes developed. AHYP long, straight. PHYP is slightly shorter, and oriented posteriorly. Aedeagus distinctly sclerotized but with membranous apex. The species was described and male terminalia illustrated by COLLIN (1961). **Female.** Body length 4.2-4.6 mm, wing length 4.3-4.7 mm. Terminalia narrow, long, conical, sclerotized, well-developed.

Lectotype designation. Described from nine males and three females taken in England (three males taken in Cambs, Chippenham Fen 22 August 1949, 3 September 1949, 6 September 1949; one male taken in Devon, Southleigh 18 May 1937; three males and one female taken in Hereford, Devereux 8 July 1909; one male taken in Sussex, Frant 14 June 1886; one male taken in Loch Tummel 29 June 1937; one female taken in Perth, Aberfoyle 8 September 1905; one female taken in Argyll, Jura Island September 1907). The male taken in Cambs, Chippenham Fen on 22 August 1949 (leg. J.E. Collin) is herewith designated as lectotype of *Chelifera precabunda* COLLIN in order to ensure the name's proper and consistent application. It was labelled accordingly in September 1998 in Oxford. The lectotype and all paralectotypes (both males and females) are deposited in Verrall-Collin Collection (VC-TYPE 831) in UMO, and they are conspecific.

Distribution. Palaearctic. Europe: Great Britain, Belgium, Germany, Poland, Hungary, Spain, France, Bulgaria; Georgia-Caucasus (JOOST, 1981); Slovenia, Croatia, Montenegro, Serbia (HORVAT, 1990 a, 1995 a), Bosnia & Herzegovina (HORVAT, 1990 a, 1993), and Macedonia (HORVAT, 1990 a, 1995 b, 1997). New to the fauna of Greece. Adults were collected from April to October.

Additional material (in PMSL): **Slovenia:** r. Drtjščica, Gradišče, Lukovica, 360 m a.s.l., 4.VI.1996, 10 males, 8 females, leg. Sivec; r. Drtjščica, Prikrnica, Moravče, 350 m a.s.l., 10.IX.1996, 2 males, 1 female, leg. Horvat; r. Peskovski potok, Peskovci, Gornji Petrovci, 250 m a.s.l., 17.V.1996, 1 male, leg. Horvat. **Macedonia:** Gorno Begovo, spring in Begovo Pole field (E part), Jakupica Mts., 1950 m a.s.l., 8.VII.1996, 1 female, leg. Horvat; stream 3 km S of Aldinci, Karadica Mts., Dračevo, 1225 m a.s.l., 7.VII.1996, 7 males, 5 females, leg. Horvat. **Greece:** Greek Macedonia, 9 km W of Florina, 26.IX.1988, 1 male, 2 females, leg. Horvat, Sivec; Epiros, Metsovo, Katara Pass, 1.X.1988, 1 male, leg. Horvat, Sivec; Peloponnisos, r. Krathis, 7 km N of Peristera, 22.IV.1990, 1 male, leg. Horvat, Sivec.

Chelifera serraticauda ENGEL, 1939

Figs. 12-15

Chelifera serraticauda ENGEL, 1939: Fliegen der Pal. Reg., 28. Empididae, 4(4): 125. Type locality: Austria, Nord-Tirol, Stanser Alm.

Chelifera serraticauda meridionalis VAILLANT, 1981: Bonn. zool. Beitr., 32: 373. Type locality: France, haute vallee de Vesubie, Alpes meridionales. **NEW SYNONYM**

Type material. Holotype male (NMW): Austria: "Nord-Tirol, Stanser Alm, 10.8.28, leg. Zerny" (first label under the specimen); "Type" (second label-red coloured); "*Chelifera serraticauda* n.sp., Dr. Engel det. 1939" (the third label). Then come macerated male genitalia stored in plastic microvial with glycerine (prepared by Dr. R. Wagner, Schlitz). The holotype male is in excellent condition, only left hind tibia with tarsomeres lacking. *Chelifera serraticauda meridionalis* VAILLANT

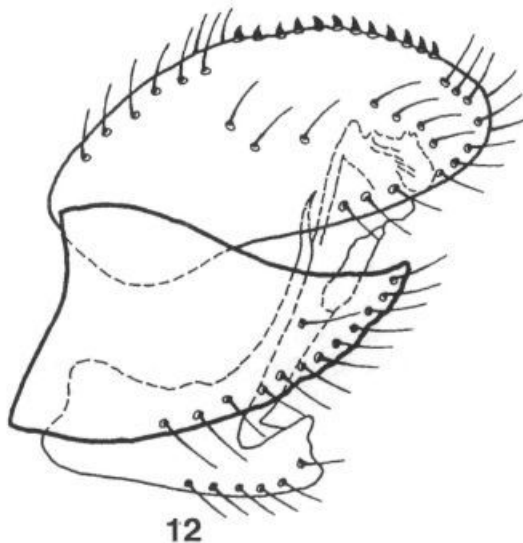
(Holotype male-microscopic slide with male terminalia, ZFMK).

Synonymy. *Chelifera serraticauda meridionalis* was described by VAILLANT (1981: 373) as a subspecies of *C. serraticauda* ENGEL. The recent examination of Vaillant's male type specimen from France (haute vallee de Vesubie, Alpes meridionales) which is located in ZFMK and comparison with my diagnosis of *C. serraticauda* holotype male prepared during visit of NMW, the shape and morphological characters of both male terminalia as well as comparison with fine drawings of the genitalia given by VAILLANT (1981), clarified and proved that it becomes a junior synonym of *C. serraticauda* ENGEL.

Recognition. Middle-sized species, characterized by "serrate" dorsal lamellae covered medially by two rows of strong small blackish teeth. Closely related to *C. astigma* COLLIN, 1927 and *C. thaica* sp. nov.

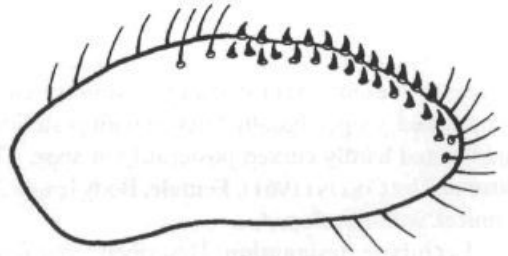
Redescription. Male. Body length 3.5 mm, wing length 3.6 mm. Body colouration in general yellowish, except blackish head and eyes. Mouthparts and antennae yellowish. Thorax yellowish with orange tinge, without thoracic longitudinal stripes. Chaetotaxy: 1 pair of prealar bristles, 1 pair of intra-alar bristles, and a pair of short scutellar bristles. Humeral depression yellowish-brown. Wings clear, without stigma. Cell DM complete. Halteres yellowish. Legs yellowish. Last three tarsal segments light brownish. Middle legs simple, not modified. Abdomen brownish. Terminalia (Figs. 12-15) with dark brownish leaf-shaped dorsal lamellae without lobes, medially covered with two rows of strong blackish thorn-like spines. Lateral lamellae and hypandrium yellowish-brown. Hypandrium small, with long and straight AHYP. PHYP almost unapparent. Aedeagus membranous and weakly sclerotized. The species was described and male genitalia figured by ENGEL (1939). **Female.** Slightly bigger than male. Terminalia not conical, less sclerotized, rounded.

Distribution. Palaearctic. Europe: Austria, Switzerland (the Alps), France (the Alps). Adults were collected in August.





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Figs. 12-15. *Chelifera serraticauda* ENGEL. Holotype male: 12-male terminalia, lateral view, 13-male terminalia, dorsal view, 14-inner side of the right dorsal lamella, lateral view, 15-hypandrium and aedeagus, lateral view.

***Chelifera subangusta* COLLIN, 1961**

Chelifera subangusta COLLIN, 1961: British Flies, 6: 708. Type localities: Northern Wales; Scotland, Nairn; England, Cusop Dingle near Hay, Herefordshire.

Type material. Lectotype male: Northern Wales: Merioneth, Harlech, 20.VI.1955, leg. C.H. Andrewes (see "lectotype designation" below, UMO). Paralectotypes (all in BMNH): 1 male, Northern Wales, Maentwrog, 26.VI.1955, leg. C.H. Andrewes; 1 male, Scotland, Inverness, Nairn, 19.VII.1909, leg. J.J.F.X. King; 1 male, England, Cusop Dingle, Hay, Herefordshire, 26.VIII.1913, leg. J.H. Wood.

Recognition. Medium-sized species, closely related to *C. angusta* COLLIN according to the shape of dorsal lamellae.

Description. Male. Body length 3.2-3.3 mm, wing length 3.4-3.5 mm. Body colouration in general yellowish-grey. Head blackish. Mouthparts and antennae yellowish. Thorax yellowish-grey, with two indistinct greyish thoracic longitudinal stripes. Humeral depression yellowish-brown. Wings clear, with brownish stigma. Halteres pale yellowish. Legs yellowish. Last tarsal segment in all legs brownish. Male middle femur with a row of 11-12, in some specimens 8-12 tiny blackish thorn-like spines beneath before middle, lying ventrally. Male middle tibia with a row of blackish bristles beneath middle, lying ventrally. Hind legs simple and slender. Abdomen with darker brownish tergites 1-5, the remainder are yellowish. Terminalia with brownish narrow dorsal lamellae slightly broader than in *C. angusta*. Lateral lamellae less truncate and broad. Both hypandrial processes present. AHYP straight, slightly curved anteriorly, and spine-like. PHYP more complicated, longer, basally thicker, with posteriorly and downwards oriented short process at its middle, and hardly curved posteriorly at apex. The species was described and male terminalia illustrated by COLLIN (1961). **Female.** Body length 3.4-3.5 mm, wing length 3.6-3.7 mm. Terminalia conical, well-developed.

Lectotype designation. Described from four males taken in Northern Wales (Merioneth, Harlech 20 June 1955; Maentwrog 26 June 1955), Scotland (Inverness, Nairn 19 July 1909), and England (Cusop Dingle, Hay, Herefordshire 26 August 1913). The first mentioned male taken in Merioneth, Harlech on 20 June 1955 (leg. C.H. Andrewes) is herewith designated as lectotype of *Chelifera subangusta* COLLIN in order to ensure the name's proper and consistent application. It was labelled accordingly in September 1998 in Oxford. Lectotype is preserved in Verrall-Collin Collection (VC-TYPE 832) in UMO. The remaining three paralectotypes are conspecific with the lectotype, and they are deposited in BMNH. In the lectotype the abdomen with genitalia is separated on a mount pinned alongside the rest of the body.

Distribution. Palaearctic. Europe: Great Britain, Belgium, Germany, Poland, Czech Republic. New to the fauna of Slovenia. Adults were collected from May to September.

Additional material (in PMSL): **Slovenia:** r. Drtjščica, Vinje, Moravče, 380 m a.s.l., 22.V.1996, 1 male, leg. Horvat; r. Drtjščica, Vinje, Moravče, 360 m a.s.l., 27.VIII.1996, 1 male, 1 female, leg. Sivec; r. Drtjščica, Prikrnica, Moravče, 350 m a.s.l., 10.IX.1996, 1 male, leg. Horvat.

***Chelifera tantula* COLLIN, 1928**

Chelifera tantula COLLIN, 1928: 43. Type locality: New Zealand, Ohakune.

Type material. Lectotype male: New Zealand: Ohakune, XI.1922 (see "lectotype designation" below, BMNH). Paralectotypes (in BMNH): 1 male, same data as lectotype; 4 females, same locality as lectotype, 1.-14.XII.1922; 1 female, same locality as lectotype, III.1923, leg. T.R. Harris.

Recognition. Small species, with brownish wings shorter than body length. It is relative to *C. fumipennis* COLLIN (from Chile), and to species which occur in New Zealand, *C. apicata* COLLIN, 1928, *C. fontinalis* MILLER, 1923, *C. tacita* COLLIN, 1928.

Redescription. Male. Body length 2.6-2.7 mm, wing length 2.5-2.6 mm. Body colouration in general brownish-black, abdomen blackish. Head blackish. Antennae and mouthparts light brownish. Antennal style brownish, longer than basal flagellomere. A pair of ocellar bristles and pair of vertical bristles present. Thorax brownish, without thoracic longitudinal stripes. Humeral depression darkened. Wings not clear, almost brownish (as in *C. fumipennis*), without stigma. Vein M1 at least twice as long as stem M1+2. Halteres yellowish. Legs light brownish. Front femora with a double row of minute blackish thorns ventrally beneath before middle as in all known *Chelifera* species except *C. fumipennis*. Middle legs not modified. Tarsal segments in all legs brownish. Genitalia small in comparison with the entire body. Each dorsal lamella simple, oval, without basal and distal lobes, or leaf-shaped. Lateral lamellae basally narrow with broad truncate distal prolongation. Hypandrium and hypandrial processes small. The species was described and figured by COLLIN (1928). **Female.** Body length 2.7-2.8 mm, wing length 2.6-2.7 mm. Terminalia conical and well-developed, laterally compressed, ending in two narrow sclerotized almost blackish cerci.

Lectotype designation. Described from seven specimens taken in New Zealand (two males taken in Ohakune November 1922; four females taken in Ohakune 1-14 December 1922; 1 female taken in Ohakune March 1923). The first mentioned male taken in Ohakune in November 1922 is herewith designated as lectotype of *Chelifera tantula* COLLIN in order to ensure the name's proper and consistent application. It was labelled by the author accordingly in September 1998 in Oxford. The lectotype and the remaining six paralectotypes are preserved in BMNH (VC-TYPE 250), and they are conspecific. In the lectotype all body parts are present. In paralectotype male taken in Ohakune in November 1922 one wing is missing.

Distribution. Austral-Oceanian. New Zealand. No additional records are available. This species is present from early to late summer (November to March).

Chelifera thaica sp. nov.

Figs. 16-19

Type material. Holotype male: Asia: Thailand: Doi Pui National Park, 15 km W of Chiang Mai, 28.III.1993, leg. Horvat, Sivec. Holotype is preserved in 75 % ethanol in PMSL (in the author's study collection in Ljubljana).

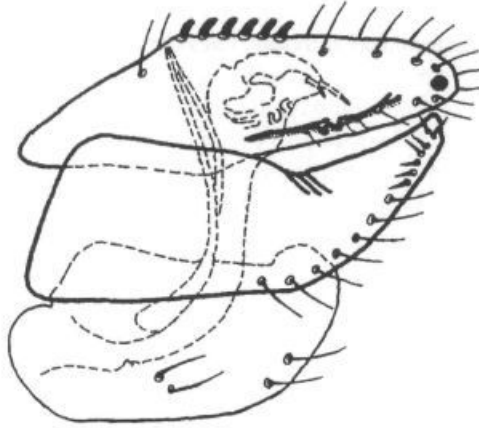
Recognition. Small species, closely related to *C. serraticauda* ENGEL according to lack of thoracic longitudinal stripes, no wing stigma and no prominent vestiture in middle legs in both species. In newly described species each dorsal lamella medially with a row of 6 strong thorn-like teeth, and with a single blackish tooth distally (in dorsal view).

Description. Male. Body length 3.0 mm, wing length 3.2 mm. Body colouration in general yellowish, abdomen light brownish. Head blackish. Antennae, including style, and mouthparts pale yellowish. Thorax yellowish, without thoracic longitudinal stripes. Humeral depression light brownish. Thoracic chaetotaxy poor as usually in *Chelifera*. Wings clear, stigma lacking. Crossvein dm-Cu present, discal cell DM complete. Halteres almost whitish. Legs yellowish. Middle and hind legs without additional sensory bristles or thorn-like spines, simple and slender. Last two tarsal segments in all legs brownish. Terminalia (Figs. 16-19) light brownish. Dorsal lamellae narrow, with a row of 6 distinct thorn-like spines at middle. In dorsal view lamellae not concave. On distal part of each dorsal lamella a strong prominent tooth-like spine is present (in dorsal

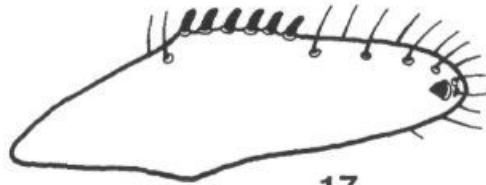
view). Lateral lamellae simple, distally bristled, with distinct distal prolongation apically bearing strong short bristles. Hypandrium small, rounded, weakly bristled. AHYP paired, very thin and long, conical, slightly curved anteriorly. PHYP almost unapparent. **Female.** Unknown.

Distribution. Oriental. Asia: Thailand. No additional records are available. The species was found in March.

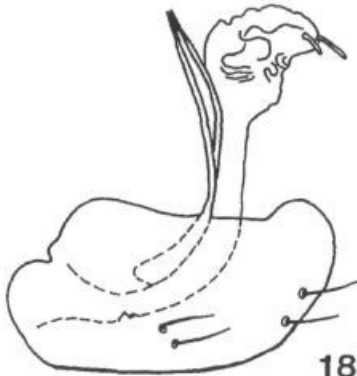
Etymology. The species has been named after the Asian state where it was found.



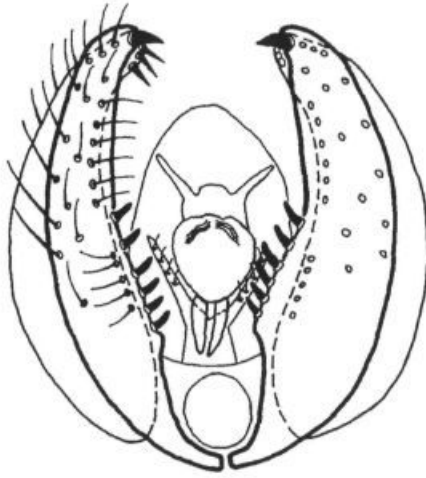
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Figs. 16-19. *Chelifera thaica* sp. nov. Holotype male: 16-male terminalia, lateral view, 17-inner side of the right dorsal lamella, lateral view, 18-hypandrium and aedeagus, lateral view, 19-male terminalia, dorsal view.

Acknowledgments

I am indebted to Dr. Ruth Contreras-Lichtenberg of Naturhistorisches Museum Wien, Dr. Adrian C. Pont of University Museum Oxford, Dr. Nigel Wyatt of British Museum (Natural History), and Dr. Hans Ulrich of Zoologisches Forschungsinstitut und Museum Alexander Koenig for being given the possibility to study type material from their collections in Vienna, Oxford, London and Bonn. I am very much indebted to Dr. Milan Chvála for his critical comments and advice during supervising my postgraduate study at Charles University in Prague. The present study was partially supported by the Austrian Science and Research Liaison Office Ljubljana. I would like to thank my colleague Dr. Ignac Sivec who joined me in the field work in Asia and the Balkans, and my colleague Dr. Tomi Trilar for his review of the previous manuscript of this paper.

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Appendix

A checklist of the world *Chelifera* species

(AO = Austral-Oceanian, H = Holarctic, N = Nearctic, NT = Neotropical, O = Oriental, P = Palaearctic):

- | | |
|--|---|
| <i>C. alpina</i> VAILLANT, 1981: P | <i>C. notata</i> (LOEW, 1862): N |
| <i>C. angusta</i> COLLIN, 1927: P | <i>C. nubecula</i> (BECKER, 1908): P |
| <i>C. aperticauda</i> COLLIN, 1927: P | <i>C. obscura</i> VAILLANT, 1968: P |
| <i>C. apicata</i> COLLIN, 1928: AO | <i>C. obsoleta</i> (LOEW, 1862): N |
| <i>C. astigma</i> COLLIN, 1927: P | <i>C. ornamenta</i> sp. nov.: P |
| <i>C. banksi</i> MELANDER, 1947: N | <i>C. pallida</i> VAILLANT, 1981: P |
| <i>C. barbarica</i> VAILLANT, 1981: P | <i>C. palloris</i> (COQUILLET, 1895): N |
| <i>C. bidenta</i> MACDONALD, 1994: N | <i>C. pectinicauda</i> COLLIN, 1927: P |
| <i>C. caliga</i> LAVALLEE, 1975: N | <i>C. perlucida</i> NIESIOLOWSKI, 1986: P |
| <i>C. chvalai</i> WAGNER, 1984: H | <i>C. polonica</i> WAGNER & NIES., 1987: P |
| <i>C. circinata</i> MACDONALD, 1994: N | <i>C. precabunda</i> COLLIN, 1961: P |
| <i>C. cirrata</i> MELANDER, 1947: N | <i>C. precatorea</i> (FALLÉN, 1816): H |
| <i>C. concinnicauda</i> COLLIN, 1927: P | <i>C. pyrenaica</i> VAILLANT, 1981: P |
| <i>C. corsicana</i> VAILLANT, 1981: P | <i>C. rastrifera</i> MELANDER, 1947: N |
| <i>C. defecta</i> (LOEW, 1862): N | <i>C. recurvata</i> (MELANDER, 1947): N |
| <i>C. diversicauda</i> COLLIN, 1927: P | <i>C. serraticauda</i> ENGEL, 1939: P |
| <i>C. emeishanica</i> sp. nov.: O | <i>C. siveci</i> WAGNER, 1984: P |
| <i>C. ensifera</i> MELANDER, 1947: N | <i>C. stigmatica</i> (SCHINER, 1862): P |
| <i>C. flavella</i> (ZETTERSTEDT, 1838): P | <i>C. stuprator</i> (MELANDER, 1947): N |
| <i>C. fontinalis</i> (MILLER, 1923): AO | <i>C. subangusta</i> COLLIN, 1961: P |
| <i>C. frigilii</i> (ZETTERSTEDT, 1838): P | <i>C. subensifera</i> MACDONALD, 1994: N |
| <i>C. fumipennis</i> COLLIN, 1933: | <i>C. subnotata</i> MACDONALD, 1994: N |
| <i>C. giraudae</i> VAILLANT, 1981: P | <i>C. tacita</i> COLLIN, 1928: AO |
| <i>C. loveti</i> MELANDER, 1947: N | <i>C. tantula</i> COLLIN, 1928: AO |
| <i>C. macedonica</i> WAGNER & NIES., 1987: P | <i>C. thaica</i> sp. nov.: O |
| <i>C. malickyi</i> sp. nov.: O | <i>C. trapezina</i> (ZETTERSTEDT, 1838): P |
| <i>C. mana</i> LAVALLEE, 1975: N | <i>C. valida</i> (LOEW, 1862): N |
| <i>C. monostigma</i> (MEIGEN, 1822): P | <i>C. varix</i> MELANDER, 1947: N |
| <i>C. multidentata</i> MACDONALD, 1994: N | <i>C. vockerothi</i> VAILLANT & CHVÁLA, 1973: P |
| <i>C. neangusta</i> MACDONALD, 1994: N | <i>C. wagneri</i> HORVAT, 1990: P |

Remark: Two *Chelifera* species described from China (YANG DING & YANG CHI-KUN, 1995) were not studied yet as well as *Chelifera khemisiana* VAILLANT & GAGNEUR, 1998 described recently from Algeria. They remain unrecognized at present.

Obituary

Huw Idwal Griffiths 1958-2002

On 12 June 2002, Dr. Huw I. Griffiths, member of the editorial board of *Scopolia*, passed away in hospital in Hull, UK. Huw was born to Martha and Idwal Griffiths in Louth, Lincolnshire, England, on 14 May 1958. He is survived by his wife Dr. Jane M. Reed, an internationally recognised authority on diatoms, and by their three-year-old son Thomas.

Huw's keen interest in nature, and animals in particular, developed early on during his childhood. In spite of this, it was not until later in his life that the opportunity arose to pursue these interests. After finishing secondary school, Huw opted out of university and spent many years going from job to job in the search of a purpose in his life. This wandering period probably contributed to Huw's colourful character, which made him a unique personality as well as an indisputable authority in the scientific community. It was at the age of 27 when he chose zoology as his future career, obtaining a first class BSc Hons degree in zoology from the University of Wales in June 1988. During his undergraduate training, Huw was known by his supervisors (with whom he was still in touch until very recently) for his boundless enthusiasm, while his outstanding academic merit was reflected in his receipt of the Edith Sheppard and Tattersall Exhibition Awards for the best second year work in Zoology and for final year research, respectively. As a promising young scientist Huw continued his studies at the University of Wales where he received his MPhil in April 1992. His thesis entitled "*The conservation status of the Eurasian badger (Meles meles L., 1758) (Carnivora, Mustelidae) in western Europe*" is still the most complete study on this topic. The results have been published as several original scientific papers, while the thesis in its entirety served as the basis for the Report to the Permanent Committee of the Convention on the Conservation of European Wildlife and Natural Habitats at the Council of Europe. Not content with this, however, Huw embarked on his PhD research whilst still working on the MPhil, completing his thesis on freshwater ostracod crustacea in May 1995 (University of Wales) entitled: "*The application of freshwater Ostracoda to the reconstruction of Late Quaternary Palaeoenvironments in North-western Europe*".



The PhD and MPhil research were carried out while Huw was employed as a Research Technician at the School of Pure & Applied Biology, University of Wales College of Cardiff (1988-1989), a Research Assistant at the School of History & Archaeology at the same University (1989-1992), and a Research Associate at the Department of Genetics, University of Leeds (1992-1995). Huw then succeeded in obtaining a permanent lectureship in September 1995 in the Department of Geography, University of Hull, being promoted to Senior Lecturer in October 2000. Huw's last years in Hull were a happy period in his life. After so many years of tensions, pressures and uncertainties, he finally settled down and, even more importantly, established a family, which remained the focus of his private life. Equally, Huw was very relaxed at work and enjoyed the company of his colleagues and students in Hull. He was the mainstay of a dynamic research group of colleagues, external

collaborators and students involved both in the field of environmental change in aquatic ecosystems and that of mammalian biogeography and conservation. In addition, he loved teaching and enjoyed working with enthusiastic students.

Unlike many scientists, Huw was renowned for the diversity and breadth of his interests, which often gave him a novel outlook on how to tackle a scientific problem in the best possible way. As noted, these spanned a range of fields from mammalian ecology to freshwater biology and extended in recent times to combining pure and social scientific approaches to solving complex issues. Within this, his major specialisation was to combine modern and ancient datasets from species with excellent fossil records (notably mammals and ostracod crustaceans) to elucidate long-timescale evolutionary and biogeographic patterns, and to use these as analogues in modelling the effects of rapid modern environmental and climate change. The use of freshwater ostracods for the reconstruction of Quaternary palaeoenvironments and recent environmental histories involved studies of both modern and fossil faunas, and also the construction of experimental studies to examine carbon and oxygen isotope uptake in the shells of living ostracods.

Evidently, Huw was much attracted by complex issues and one of his last projects was to bring together key workers from different fields concerned with Balkan biodiversity. To this end he co-organised a successful exploratory workshop "*Pattern and Process in Balkan Biodiversity*" in September 2001, sponsored by the European Science Foundation and the Ministry of Science and Research of the Republic of Slovenia. This meeting well reflects Huw's close contacts he maintained with Slovene scientists since his first visit to the country in summer 1992. His strongest collaboration was with the vertebratologists from the Slovenian Museum of Natural History, but he was also in touch with a number of other researchers with shared interests. Being slightly disappointed that his frequent proposals for upgrading the collaboration between the Slovenian Natural History Museum and the University of Hull did not receive support from the Museum's authorities, Huw enthusiastically joined a small research group of the newly-founded Institute for Biodiversity Studies at the Science and Research Centre of the Republic of Slovenia Koper from its inception in summer 2001. This collaboration was extremely fruitful and resulted in the organisation of the aforementioned "*Pattern and Process in Balkan Biodiversity*" workshop in September 2001, only a few months after the Institute was formed. For Huw's key role in the preparation of the meeting, as well as for his outstanding scientific output, the Science and Research Centre of the Republic of Slovenia Koper elected him a research associate.

During his short scientific career, Huw had a prodigious research output; he had become a recognised leading authority on the use of freshwater Ostracoda in palaeoecological work and biological monitoring and, equally, was well known for his work on carnivores. What is particularly sad is that Huw did not have time enough to develop fully as a scientist. He died full of ideas and plans and right in the middle of a pile of unfinished work. In spite of Huw's spectacular scientific career and impressive bibliography, he certainly still did not achieve the peak which was promised by his work to date and by his brilliant mind. More extensive obituaries will appear in forthcoming issues of *Folia Zoologica*, *Small carnivore Conservation*, and *Annales*; *Annales* will also publish a complete bibliographic list.

The editorial board of *Scopolia* as well as Huw's collaborators in Slovenia and abroad lost a devoted and loyal friend and we know only too well that we won't ever meet another like him. Huw enriched our lives tremendously and influenced our professional careers. His name will continue to survive in science, as his figure will never fade in the memory of those of us who have had the privilege of being his friends.

Boris Kryštufek

Vsebina / Contents:

Bogdan HORVAT

Taxonomical notes and descriptions of the new *Chelifera* MACQUART species
(Diptera: Empididae)

Taksonomske posebnosti in opisi novih vrst *Chelifera* MACQUART
(Diptera: Empididae)

Obituary / Osmrtnica: Huw Idwal Griffiths (1958-2002)