

On the Diplectroninae and Hydropsychinae (Trichoptera) of India, with related taxa. A tribute to Fernand Schmid

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Abstract. The overall declining state of the western taxonomy is clearly documented by the present fate of the extremely high valued and huge unidentified caddisfly material collected in India and deposited in the Canadian National Collection. Due to the general lack of both financial and scientific resources in taxonomy, this huge collection remained almost untouched during the last 70 years after its collection. With a tribute to the collector, Fernand Schmid, the great caddisfly collector and taxonomist we have reconstructed his collecting activities of the five years in India by geolocalization and elaborated about ten percent of his undetermined Hydropsychidae in the Diplectroninae and Hydropsychinae subfamilies. Description of 145 new species from this small fragment of the huge unidentified collection demonstrates a pronounced underestimation of the biodiversity in general, routinely measured by gross phenomics. During this study we have reinstated the species status of seven taxa: *Diplectrona kirimaduhela* Schmid, 1958, stat. restit., *Cheumatopsyche rienga* Oláh & Johanson, 2008, stat. restit., *Cheumatopsyche amurensis* Martynov, 1934, stat. restit., *Cheumatopsyche banksii* Moseley, 1942, stat. restit., *Cheumatopsyche processuata* (Martynov, 1927), stat. restit., *Potamyia klakahana* (Ulmer, 1951), stat. restit., *Potamyia proboscidea* Li & Tian, 1996, stat. restit., and raised the subspecies status to species rank of *Diplectrona stigmatica* Banks, 1937, stat. nov. Furthermore, we have established four new species groups, sixteen new species complexes and described 145 new species as follows: *Diplectrona aurovittata* new species group: *D. hasada* new species complex: *D. bandara* sp. nov., *D. borghata* sp. nov., *D. chiangma* sp. nov., *D. chingsa* sp. nov., *D. daotama* sp. nov., *D. grimona* sp. nov., *D. jaraina* sp. nov., *D. khopurna* sp. nov., *D. khumyara* sp. nov., *D. kualagomba* sp. nov., *D. kurlingha* sp. nov., *D. lyngkota* sp. nov., *D. mawkhapa* sp. nov., *D. mirgona* sp. nov., *D. muktapura* sp. nov., *D. mynsoa* sp. nov., *D. nongina* sp. nov., *D. nongra* sp. nov., *D. nongronga* sp. nov., *D. sirkasha* sp. nov., *D. siroonga* sp. nov., *D. sumatrana* sp. nov., *D. tairenpokpa* sp. nov., *D. tungpa* sp. nov., *D. tamdaophila* new species complex: *D. aisahka* sp. nov., *D. beluma* sp. nov., *D. dhampa* sp. nov., *D. dhankuta* sp. nov., *D. huishua* sp. nov., *D. khasiaca* sp. nov., *D. khasigupta* sp. nov., *D. madonga* sp. nov., *D. meghalaya* sp. nov., *D. mopaenga* sp. nov., *D. parala* sp. nov., *D. rumkhenga* sp. nov., *D. sitahoana* sp. nov., *D. sohra* sp. nov., *D. coalescens* species group: *D. hongkonga* sp. nov., *D. kattalaimala* sp. nov., *D. shimoga* sp. nov., *D. gombak* new species group: *D. albofasciata* new species complex, *D. fasciata* new species complex: *D. buitenzorga* sp. nov., *D. panaona* sp. nov., *D. simalura* sp. nov., *D. tonkulana* sp. nov., *D. wailima* sp. nov., *D. gentinga* new species complex: *D. gentinga* sp. nov., *D. gombak* new species complex: *D. barisana* sp. nov., *D. merangira* sp. nov., *D. phanoma* sp. nov., *D. temengora* sp. nov., *D. tengaha* sp. nov., *D. taprobanes* new species group: *D. abmaka* sp. nov., *D. kambaita* sp. nov., *D. kamikarka* sp. nov., *D. koda* sp. nov., *D. komadia* sp. nov., *D. madhya* sp. nov., *D. satanwada* sp. nov., *D. sirstranga* sp. nov., *D. tienmua* sp. nov., *D. umlanga* sp. nov., *Cheumatopsyche lepida* species group: *C. assamha* sp. nov., *C. fordula* sp. nov., *C. madpradha* sp. nov., *C. manimapa* sp. nov., *C. pondora* sp. nov., *C. puramukta* sp. nov., *C. purmapa* sp. nov., *C. sohkha* sp. nov., *C. swampa* sp. nov., *C. dubitans* species group: *C. mawpya* sp. nov., *C. excisa* species group: *C. chuga* sp. nov., *C. costalis* species group: *C. dangchura* sp. nov., *C. kampuska* sp. nov., *C. lagaironga* sp. nov., *C. mawjana* sp. nov., *C. mawprana* sp. nov., *C. nonga* sp. nov., *C. nongajra* sp. nov., *C. coinamla* sp. nov., *C. salaka* sp. nov., *C. yunnana* sp. nov., *C. concava* species group: *C. haflonga* sp. nov., *C. kambirona* sp. nov., *C. khasia* sp. nov., *C. korosa* sp. nov., *C. myntanga* sp. nov., *C. nongrima* sp. nov., *C. chinensis* species group: *C. bandarkhala* sp. nov., *C. delhia* sp. nov., *C. hanoia* sp. nov., *C. hotaya* sp. nov., *C. pega* sp. nov., *C. quangchua* sp. nov., *C. tamda* sp. nov., *C. tongoma* sp. nov., *C. holzschuhi* species group: *C. apuma* new species complex: *C. apuma* sp. nov., *C. nyukma* sp. nov., *Potamyia czekanovskii* species group: *P. flavata* new species complex: *P. binhoa* sp. nov., *P. chitwana* sp. nov., *P. congza* sp. nov., *P. moccha* sp. nov., *P. nikalandugola* species complex: *P. hasalaka* sp. nov., *P. tamilnada* sp. nov., *P. chinensis* species group, *P. flava* species group: *P. dinamla* sp. nov., *P. trenhona* species group: *P. barata* sp. nov., *P. jinhongensis* new species complex: *P. dhauliana* sp. nov., *P. yunnanica* new species complex: *P. namha* sp. nov., *P. namkhana* sp. nov., *P. topali* sp. nov., *P. umbaso* sp. nov., *P. vietnama* sp. nov., *Hydromanicus hermosus* species group: *H. flavoguttatus* species complex: *H. bukit* sp. nov., *H. mawpyut* sp. nov., *H. mawshun* sp. nov., *H.*

luctuosus species group nom. nov.: *H. asor* new species complex: *H. shilliang* sp. nov., *H. eleasar* new species complex: *H. kambaitiensis* sp. nov., *H. kamengensis* sp. nov., *H. kashong* sp. nov., *H. sikkimensis* sp. nov., *H. tibetensis* sp. nov., *H. inferior* new species complex: *H. darban* sp. nov., *H. hasad* sp. nov., *H. jakhand* sp. nov., *H. khalband* sp. nov., *H. mattiyang* sp. nov., *H. mynso* sp. nov., *H. nondeng* sp. nov., *H. luctuosus* species complex: *H. fureses* sp. nov., *H. garhwal* sp. nov., *H. khopum* sp. nov., *H. laityn* sp. nov., *H. manilon* sp. nov., *H. mapum* sp. nov., *H. pufok* sp. nov., *H. thangrain* sp. nov., *H. tharauyang* sp. nov., *H. tiyang* sp. nov., *H. tungnath* sp. nov., *H. umbonatus* new species complex: *H. kover* sp. nov., *H. manisir* sp. nov., *H. ronghongkung* sp. nov., *H. sirohis* sp. nov., *H. spatulatus* species group: *H. rahung* sp. nov., *H. spatulatus* species cluster.

Keywords. Geolocalization, Fernand Schmid, India, Diplectroninae, Hydropsychinae, new species.

INTRODUCTION

We have carried out this study on a very small fragment of hydropsychid specimens from Schmid's collection of Indian Trichoptera with description of 145 new species with our fine phenomics in order to demonstrate its huge diversity and extremely high scientific value. First and foremost we wish to thank for this hydropsychine material we have elaborated in this paper and to express our acknowledgement to **Fernand Schmid** (1924, Sion, Switzerland – 1998, Ottawa, Canada), the Great Trichopterologist, the Ultimate Collector of caddisflies and the teacher of the first author. Soon after completing his groundbreaking research, synthesis and revision, on Limnephilidae family (Weaver & Nimmo 1999), he made several long-lasting and wide-ranging collecting expeditions to Pakistan (1953–1954), Ceylon (1954: Sri Lanka), Iran (1955–1956), and to India (1958–1962). His expeditions were often lengthy. He spent at least nine months of the year in the field for four years straight in India, except for 1960, when he was there for seven months (Lonsdale 2000).

TRIBUTE TO FERNAND SCHMID

This entire decade of the intensive field work between 1953 and 1962 was organised through the University of Lausanne, Switzerland, and resulted in an enormous catch of research material. The vast amount of the unidentified materials is deposited in the Canadian National Collection of Insects in Ottawa and still waiting for taxonomists to be elaborated. This will be a hard job, especially to handle the pinned fragile microcaddisflies of a few millimeters. There are two cabi-

nets full of pinned, unidentified Trichoptera and much more unspecified specimens are scattered throughout the collection that was sorted to genus by Fernand Schmid himself (Lonsdale 2018). Who will elaborate this extremely rich material with its ultimate scientific value?

The really high value of Schmid's unidentified Trichoptera collection is documented by the results of the present study. There have been elaborated only about ten percent of the unidentified specimens of the Diplectroninae and Hydropsychinae subfamilies, out of the about 40 families or subfamilies and described over 100 new species. It does not mean however, that we have to multiply 100 by 200 in order to estimate the real potential of the ca. 20 thousands of Trichoptera species in and around the Indian subcontinent. Actually Schmid has estimated the total number of the South West Asian Trichoptera species about 40 thousands (Schmid 1984). According to Malicky (1993) this high number may be an overestimate even for South East Asia.

It is a shame and an axiomatic failure of our western culture that this high-valued material, collected by ultimate talent, devotion and enthusiasm of a great man, is still almost untouched after 70 years of its collection. However, this is not a surprise! This is the symptomatic result of the depressing scenario created by the declining state of the Western taxonomy. The decline of taxonomy, the basic science of sciences, has started by degrading the phenotype with the conflation of systematics and beanbag genetics that is by the “modern synthesis”. This sinister product of scientism is assimilated and adopted in the new systematics of Huxley (1940) and Mayr (1942).

With this ideology and science policy all the resources are drained from taxonomy and channelled into the “modern synthesis”. This decline is supported by the virtual, “modern” analytic philosophy and logical positivism; by the underestimation of empiricism against rationalism and by degrading experience of phenomenology against logics of virtual analysis. All these are resulted in the lack of taxonomists to effectively describe biodiversity; in the lack of adequate sampling density and frequency; and especially in lack of population sampling, the key momentum in the contemporary perspectives of species level taxonomy. Our teacher in taxonomy, Fernand Schmid is turning in his grave!

Unlike to trips in Sri Lanka, Pakistan and Iran, Schmid has not published any general survey or mapping of his trips to India. We have started to study this small fragments of his hydropsychine specimens relying on the locality names printed on the pinned labels. However, names are short-living things which may change rapidly for politics and transliteration (Malicky 2018). Therefore we have decided to search the coordinates for Schmid’s collecting sites by reconstructing on maps his daily movement during his five years long collecting activities in India. Our maps and tables with figured sites help our present study to identify the distribution character states of species described in this paper. Furthermore, it provides basic geo-localisation for the specimens and may help in giving some impetus for future studies on the huge undetermined caddisfly material collected by Fernand Schmid in India.

Geo-localisation of the Schmid collecting sites in India

The geo-localization of Schmid’s collecting localities was based on the great work of Lonsdale (2020) concerning the Schmid Trichoptera collection in India, and, at a lesser degree on the faunistic list given by Aubert (1966), regarding the Stoneflies collected by Schmid in the same Indian regions. Schmid’s Indian activities and localities were hand written in several notebooks but without detailed localization except the name of a

village or hamlet followed by its elevation. All these notebooks are already retranscribed by Malicky (2018). Moreover, one manuscript of Schmid is also directly available on the WEB «Field Notes and Taxonomic Observations of Trichoptera in India from 1958 to 1962» (<https://archive.org/details/fieldnotestaxon1schm>). It is a scan of the original notebook of the Kumaon region (NW India, Uttarakhand), completed by ecological notes: type of water course, name of the river, aquatic or surrounding vegetation, current speed, type of substratum. These two works are the basis of our research work to geolocate the Schmid collecting localities, a hard task since Schmid didn’t give any route map for his Indian collecting trips and since many Indian locality names have changed, as explained by Malicky (2018) and Lonsdale (2020).

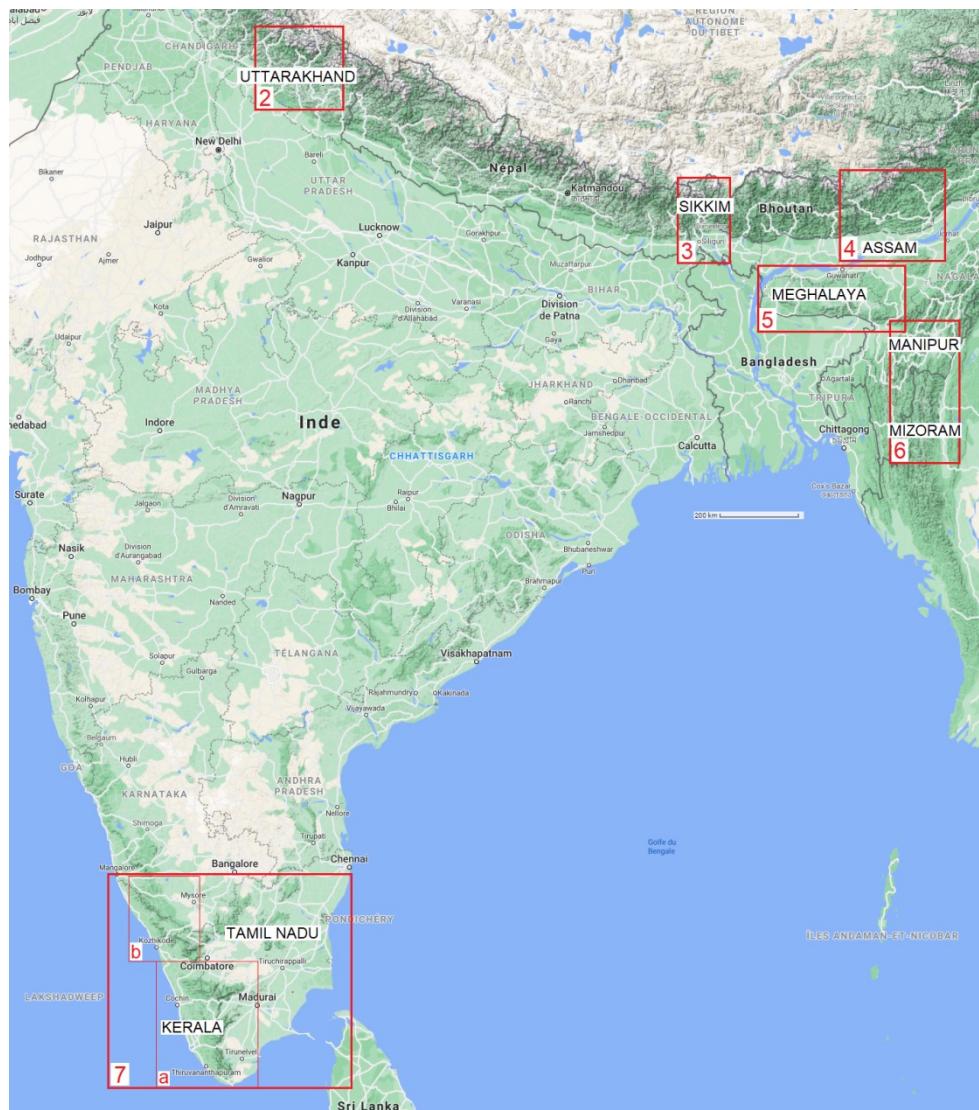
For the geo-localization, we have mainly used two motor researches (Google Map and Open Street Map) and in some cases the indications given by Lonsdale (2020) who has already located some of them. For a few high elevation sites of difficult access, the locality names are not known on the main motor researches, but some of them can be found elsewhere on the WEB. For instance, it is the case of Theulocha and Muguthang, in the heights of the Sikkim mountains (4500 m asl.) that we found on a trecker’s map on an advertisement site (http://www.worldmarcopolo.com/site_map.html)

Most localities of Schmid have been located though their names are often slightly different from the one given by Schmid (phonetic script). In case of two different names, we give first the name written in the Schmid’s notebook and then the current name found on our maps. To plot the Schmid’s localities on a map has helped us to find some names with their new orthography when it corresponds to a locality placed between two others on the Schmid route. However, some localities remain unknown but for interested researchers, an approximative position can be deduced between the two closest known localities, by interpolation. Lacking numbers on the maps correspond to these unknown localities but more

often to some localities that are already plotted on the map, when Schmid has returned several times at the same place or at different elevations in the same place, as it is the case for many localities (for instance on the Manipur map, Sirohi Kashong: 14, 15, 16, 17, 29, 41, 42). On some maps, we use different colours to separate the different trips of Schmid in the same area, to make the map more readable.

For a better visualisation of the whole collecting effort made by Schmid in India, a first global map (Map 1) shows the 8 main Indian regions

carefully visited by Schmid: Uttarakhand (Map 2), Sikkim and North Western Bengal (Map 3), Assam (Map 4), Meghalaya (Map 5), Manipur + Mizoram (Map 6), Kerala (Map 7a), Tamil Nadu (Map 7b). This global map also shows how Schmid has carefully prepared his successive collecting trips in India, in the great purpose to give to Science a most complete tribute to the Indian Trichoptera as well as to other insects orders also collected by him for his colleagues (Plecoptera, Diptera, ...). It is probably the most considerable effort ever made to prospect a land nearly as big and complex as Europa.

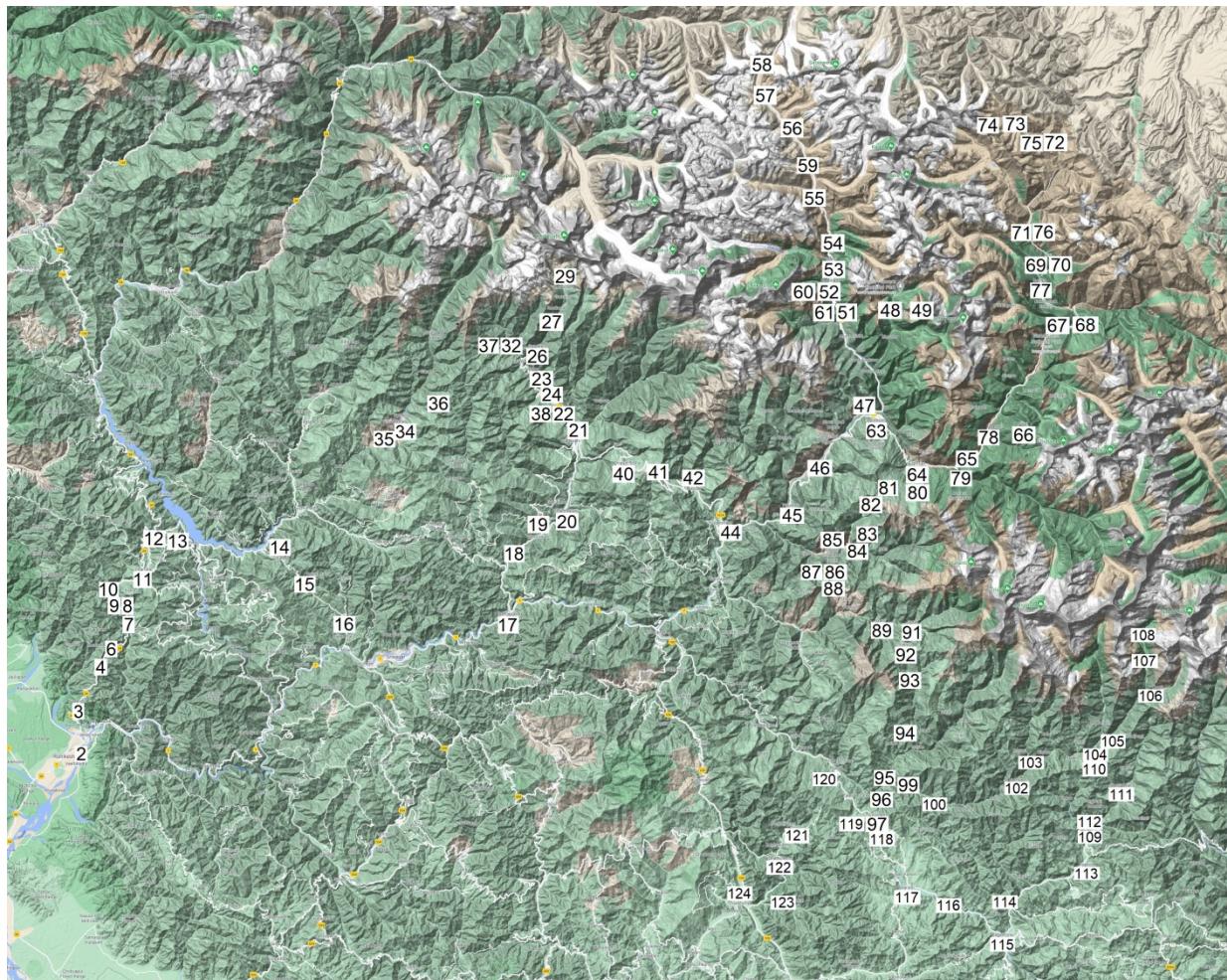


Map 1. The 8 main Indian regions visited by Schmid.

**North West India (Uttarakhand) = Kumaon
1958 (Map 2)**

This high mountainous region of north western India, named under its old appellation «Kumaon» by Schmid, nowadays named Uttarakhand, is placed westward the Nepal and southward the Tibet (Map 1). The ecological notes given for many localities were written at the end of the Kumaon's notebook of Schmid.

- 1 Dera Dun = Dehra Dun, $30^{\circ}18'04.8''N$ $78^{\circ}07'02.4''E$
- 2 U.P. Rishikesh, 1200 ft, Gange River and lateral brooks and springs, $30^{\circ}05'16.7''N$ $78^{\circ}17'22.8''E$, 25–31.03.1958
- 3 Nasendranagar = Narendranagar, 2200 ft, small river and lateral tributaries in narrow valley, $30^{\circ}09'36.9''N$ $78^{\circ}17'24.4''E$, 4.04.1958
- 4 Agra = Agrakhal (Lonsdale 2020), 3000–5000 ft, small brook with mosses tributary of Huini River, $30^{\circ}12'50''N$ $78^{\circ}19'41''E$, 5–6.04.1958
- 5 Birnu, 4000 ft, small brook with mosses, 7.04.1958
- 6 Katkor = Katkot, 3500 ft, small brook, $30^{\circ}14'08.5''N$ $78^{\circ}20'53.9''E$, 7.04.1958
- 7 Ampata, 2500–3500 ft, small river tributary of Huini River, $30^{\circ}16'6''N$ $78^{\circ}22'18''E$, 10.04.1958
- 8 Rampur, Northwards Bhandargaon, 3000–5000 ft, small torrent tributary of Huini River, $30^{\circ}17'23.6''N$ $78^{\circ}22'03.6''E$, 11–12.04.1958
- 9 Tipli = Teepali, 3000 ft, hygropetric habitat below a cascade, $30^{\circ}17'26.7''N$ $78^{\circ}21'27.5''E$, 13.04.1958
- 10 Nagani = Nagani Sera, 4000 ft, small river tributary of Huini River, $30^{\circ}18'41.9''N$ $78^{\circ}20'29.9''E$, 13.04.1958
- 11 Dobalgaon = Dobhalu Ka = Than (the locality indicated in Lonsdale (2020) is wrongly assigned to the Schmid itinerary since it is much too far from the road taken by Schmid), 5000–6000 ft, 2 small torrents, $30^{\circ}19'49.7''N$ $78^{\circ}23'32.5''E$, 14.04.1958
- 12 Jaspur, 3500–4500 ft, small torrent in bushes, $30^{\circ}23'34.7''N$ $78^{\circ}25'21.4''E$, 15.04.1958
- 13 Teri = Tehri Garhwal District, 2500–5000 ft, small torrent tributary of Bhillangana River and hygropetric habitat, $30^{\circ}22'13.7''N$ $78^{\circ}25'55.4''E$, 16–21.04.1958
- 14 Pau Kal = Paukhali Gaon, 4000–5000 ft., river tributary of Bhillangana River and hygropetric habitat, $30^{\circ}21'48.9''N$ $78^{\circ}36'36.7''E$, 21–23.04.1958
- 15 Jakhanr = Jahkand, 3500 ft, below the village, small river tributary of Alaknanda River, $30^{\circ}19'49.4''N$ $78^{\circ}39'20.9''E$, 24.04.1958
- 16 Dangchura = Dang Chaunra, 3000–3200 ft, 2 small brooks tributary of Takali Gad, $30^{\circ}15'55.8''N$ $78^{\circ}43'02.2''E$, 25.04.1958
- 17 Rudraprayag, 1900–2300 ft, small river tributary of Alaknanda and hygropetric habitat, $30^{\circ}17'08.7''N$ $78^{\circ}58'58.3''E$, 28.04.1958
- 18 Rampur (the locality indicated in Lonsdale (2020) is wrongly assigned to the Schmid itinerary since it is much too far from the road taken by Schmid, while our locality named Rampur is just placed between the previous and next localities on the Schmid's route), 2100–3000 ft, small river and hygropetric habitat, $30^{\circ}22'01.7''N$ $78^{\circ}59'12.7''E$, 29.04.1958
- 19 Barakot, 2450–3000 ft, medium size river and hygropetric habitat, $30^{\circ}23'58.9''N$ $79^{\circ}01'32.2''E$, 30.04.1958
- 20 Chandrapuri, 2500–3500 ft, small river in forest and hygropetric habitat, $30^{\circ}25'36.0''N$ $79^{\circ}04'02.9''E$, 1.05.1958
- 21 Gupta Kashi = Guptkashi, 3200–4000 ft, 2 small brooks very steep, $30^{\circ}31'31.3''N$ $79^{\circ}05'20.0''E$, 2.05.1958
- 22 Khumyara = Khumera (Lonsdale 2020), 4300–5000 ft, 2 small brooks in bushes and hygropetric habitat, $30^{\circ}33'15''N$ $79^{\circ}03'44''E$, 3–4.05.1958
- 23 Barasu, 5000–6000 ft, small torrent, Mandakini tributary, in dense forest, $30^{\circ}36'5''N$ $79^{\circ}1'45''E$, 5.05.1958
- 24 Tarsali, 6000–7000 ft, torrent in dense forest, $30^{\circ}35'40''N$ $79^{\circ}2'1''E$, 6.05.1958
- 25 Akhrotkoti, 5700 ft, wonderful forest river, Mandakini tributary, 8.05.1958
- 26 Gaurikund, 6400–7200 ft, small torrent, Mandakini tributary, in bushes, $30^{\circ}39'11.2''N$ $79^{\circ}01'37.0''E$, 9–11.05.1958



- 41 Tungnath, 9000 ft, brook with mosses in forest, $30^{\circ}28'41.9"N$ $79^{\circ}12'43.9"E$, 1.06.1958
- 42 Mandoli = Mandal, 7500 ft, $30^{\circ}27'38.2"N$ $79^{\circ}16'33.2"E$, 1.06.1958
- 43 Duldhar, 4500 ft, big torrent and small brook, 2.06.1958
- 44 Chamoli, 3800 ft, along the Gange River, $30^{\circ}24'16.1"N$ $79^{\circ}19'46.6"E$, 3.06.1958
- 45 Pipalkoti, 4400 ft, small steep brook, $30^{\circ}25'58.0"N$ $79^{\circ}25'58.9"E$, 6.06.1958
- 46 Hilang, = Hailang = Helong, 5000–7500 ft, along the Gange River, $30^{\circ}31'25.0"N$ $79^{\circ}30'16.6"E$, 6–7.06.1958
- 47 Phaia = Chaien, 5780 ft, along Alaknanda River, $30^{\circ}34'03.3"N$ $79^{\circ}32'54.8"E$, 11.06.1958
- 48 Gangrea = Ghangria = Ghangaria, 7500–10000 ft, big torrent and small brook, $30^{\circ}41'54.5"N$ $79^{\circ}35'19.3"E$, 12–15.06.1958
- 49 Lokpal, 14000 ft, glacial lake, $30^{\circ}41'59.3"N$ $79^{\circ}36'56.0"E$, 13.06.1958
- 50 Binaik Chatti, 7000–7500 ft, steep torrent, 16.06.1958
- 51 Hanuman Chatti, 9000 ft, brooklets in grassland, $30^{\circ}41'41"N$ $79^{\circ}30'51"E$, 17.06.1958
- 52 Badrinath, 10100–11000 ft, torrent, brooks and springs, $30^{\circ}44'45.6"N$ $79^{\circ}29'33.7"E$, 18–19.06.1958
- 53 Mana, 10300 ft, brooks and springs, with mosses, $30^{\circ}46'21.0"N$ $79^{\circ}29'39.7"E$, 20.06.1958
- 54 Moussa Pani, brooks and springs, with mosses, 11800 ft, $30^{\circ}47'31.7"N$ $79^{\circ}29'29.6"E$, 21.06.1958
- 55 Nag Tal, 13100 ft, springs and lake, $30^{\circ}51'22.8"N$ $79^{\circ}28'07.1"E$, 22.06.1958
- 56 Phurunda, 15000 ft, Saraswati River, brooks and springs in grassland, $30^{\circ}56'35.7"N$ $79^{\circ}25'57.5"E$, 24.06.1958
- 57 Saraswati, 16000 ft, Saraswati River, $30^{\circ}59'14.3"N$ $79^{\circ}23'22.0"E$, 25–26.06.1958
- 58 Jagrao, 17300 ft, Saraswati River, $31^{\circ}02'03.6"N$ $79^{\circ}23'02.5"E$, 26.06.1958
- 59 Chamrao, 14200 ft, brooks and springs with mosses, $30^{\circ}54'15.5"N$ $79^{\circ}27'35.3"E$, 27.06.1958
- 60 Idem 52, Badrinath 10100–11000 ft, torrent, brooks and springs, $30^{\circ}44'45.6"N$ $79^{\circ}29'33.7"E$, 28–29.06.1958
- 61 idem 51, Hanuman Chatti, 9000 ft, brooklets in grassland, $30^{\circ}41'41"N$ $79^{\circ}30'51"E$, 30.06.1958
- 62 idem 50, Binaik Chatti, 7000–7500 ft, steep torrent, 2.07.1958
- 63 Jashimath = Joshimath = Jyotirmath, 7100 ft, at the light of the Rest House, $30^{\circ}32'55.0"N$ $79^{\circ}33'43.2"E$, 3–4.07.1958
- 64 Tapoban = Tapoban Joshimat = Tapovan, 7300 ft, river and steep brooks under bushes, $30^{\circ}29'05.3"N$ $79^{\circ}37'28.3"E$, 5.07.1958
- 65 Lata, 7500 ft, along the Dauli Ganga River and brooklet, $30^{\circ}29'56.0"N$ $79^{\circ}42'49.2"E$, 6.07.1958
- 66 Phagti = Fagti, 7874 ft, along the Dauli Ganga River, $30^{\circ}33'34.8"N$ $79^{\circ}45'58.7"E$, 7.07.1958
- 67 Kosa, 9219 ft, along the Dauli Ganga River and brooklet, $30^{\circ}40'31.5"N$ $79^{\circ}51'39.0"E$, 8.07.1958
- 68 Malari, 10000–11000 ft, nice torrent, brooks and springs with mosses, $30^{\circ}41'00.4"N$ $79^{\circ}53'23.2"E$, 9–10.07.1958
- 69 Gamsali, = Gamshali, 11000 ft, big glacial torrent, $30^{\circ}45'18.0"N$ $79^{\circ}49'24.9"E$, 11.07.1958
- 70 Timarsan, 11122 ft, along the Dauli Ganga River, lateral torrent and brooks, $30^{\circ}45'52.5"N$ $79^{\circ}50'54.7"E$, 12–14.07.1958
- 71 Siunti, 12260 ft, along the Dauli Ganga River and Dhamian Nadi torrent, $30^{\circ}48'36.3"N$ $79^{\circ}48'04.4"E$, 15.07.1958
- 72 Ganesh Ganga, 14400 ft, steep brooklet, $30^{\circ}55'58.0"N$ $79^{\circ}50'44.1"E$, 16.07.1958
- 73 Khar Yongma, 16000 ft, $30^{\circ}57'22.9"N$ $79^{\circ}46'56.5"E$, 17.07.1958
- 74 Khar Todma, 17000–18000 ft, $30^{\circ}57'26.0"N$ $79^{\circ}44'45.1"E$, 18–19.07.1958
- 75 Geldhung, 14600 ft, big glacial torrent, $30^{\circ}56'01.9"N$ $79^{\circ}50'08.8"E$, 20.07.1958
- 76 Gothing, 12400 ft, brooklet in grassland, $30^{\circ}49'01.9"N$ $79^{\circ}48'28.4"E$, 21.07.1958
- 77 Bampa, 10500 ft, along the Dauli Ganga River, $30^{\circ}44'21.1"N$ $79^{\circ}49'48.4"E$, 23.07.1958
- 78 Suraithota, 7200 ft, along the Dauli Ganga River and lateral brooklet, $30^{\circ}31'52.2"N$ $79^{\circ}44'38.5"E$, 25.07.1958
- 79 Rini, 7000 ft, big torrent and brooklet in bushes, $30^{\circ}28'19.2"N$ $79^{\circ}42'21.5"E$, 27.07.1958

- 80 idem 64, Tapoban, 7300 ft, brooks in forest, 28.07.1958–2.08.1958
- 81 Kulara = Khullara Camp Site, 12000 ft, small torrent in grassland with trees, 30°27'35.2"N 79°35'08.0"E, 3–4.08.1958
- 82 Dakwani = Dhakwani (on the path to the Kuari Pass), 9300–10950 ft, steep torrent in forest, 30°26'26.5"N 79°33'41.8"E, 5–9.08.1958
- 83 Pana, 8200 ft, 3 brooks in bushes, 30°23'27.2"N 79°33'20.5"E, 10.08.1958
- 84 Pagna Malla = Pagana, 5955 ft, steep brook in grassland, 30°22'15.7"N 79°32'34.7"E, 11.08.1958
- 85 Ghona Tal = Gohna Lake, 5580 ft, torrent in forest flowing in the lake, 30°22'24.3"N 79°31'31.4"E, 12.07.1958
- 86 Begar Nala, 6560 ft, 2 torrents in forest, 30°20'33.7"N 79°30'09.7"E, 13.08.1958
- 87 Tarak Tal = Taraktal, 7540 ft, 30°20'35.5"N 79°29'04.2"E, 14.08.1958
- 88 Ramni = Ramani, 8200 ft, torrent, 30°18'55.4"N 79°30'21.2"E, 15.08.1958
- 89 Gery = Gairi = Gari, 6290 ft, river, torrent and brook in bushes, 30°16'21.7"N 79°33'44.3"E, 16.08.1958
- 90 Dhar, 7220 ft, Nandakini tributary, river in forest and lateral canals, 17.08.1958
- 91 Sutol, 7250 ft, meeting of 2 rivers in forest, 30°16'13.1"N 79°37'24.5"E, 18.08.1958
- 92 Kanol, 8530 ft, springs and brooklets with mosses, 30°15'05.8"N 79°35'51.4"E, 19.08.1958
- 93 Wan, 7880 ft, torrents in bushes, 30°12'13.6"N 79°37'06.6"E, 20.08.1958
- 94 Lohajang = Lohjang = Loha Jung, 6070 ft, along the Gyan Ganga River, 30°07'10.1"N 79°36'30.1"E, 21.08.1958
- 95 Salkhola = Ichchholi Laga Silkholia, 4240 ft, junction of Pindar and Kail Ganga Rivers, and lateral brooklets, 30.057177, 79.584542, 22.08.1958
- 96 Koti = Kothi, 4200–5500 ft, steep brooklets in forest, 30°01'52.2"N 79°34'04.9"E, 23.08.1958
- 97 Gwaldam, 6000–6400 ft, small torrent in bushes and brook in forest with mosses, 24–29.08.1958
- 98 Koti, idem 96, 4200 ft, 30.08.1958
- 99 Palwara, 4300 ft, torrent, Pindar tributary, in forest, 30°02'39.9"N 79°36'48.0"E, 1.09.1958
- 100 Lingari = Lingadi, 4400 ft, brooks and springs, 30°01'22.8"N 79°39'59.3"E, 1.09.1958
- 101 Maupata, 4500 ft, along the Pindar River, 2.09.1958
- 102 Harmal, 5100 ft, torrent, Pindar tributary, 30°03'16.8"N 79°47'16.5"E, 4–5.09.1958
- 103 Bilap, 5500 ft, River in forest, 30°04'30.4"N 79°48'38.5"E, 6.09.1958
- 104 Dhur = Dhoor Village, 7400 ft, steep brooks in forest, 30°05'13.9"N 79°54'33.5"E, 8–9.09.1958
- 105 Khati, 7700–8000 ft, along the Pindar River and brooks with mosses, 30°06'18.4"N 79°56'33.7"E, 10–11.09.1958
- 106 Dwali, 8410 ft, torrent and brooks, 30°10'34.0"N 79°59'31.2"E, 12–16.09.1958
- 107 Phurkia, 8510 ft, big torrent and brooklets in forest, 30°12'58.3"N 79°59'50.6"E, 13.09.1958
- 108 Rata, 11000 ft, brooklets in grassland and Rhododendron bushes, with mosses, 30°15'05.8"N 79°59'39.1"E, 14.09.1958
- 109 Saran, 7200 ft, torrent and nice brooks in forest, with mosses, 30°01'07.7"N 79°52'43.3"E, 17.09.1958
- 110 Dhakuri Guest House, 9000 ft, brooks in forest, with mosses, 30°04'37.5"N 79°55'06.4"E, 18.09.1958
- 111 Loharkhet, 5770 ft, torrent, 30°02'11.0"N 79°56'13.9"E, 19.09.1958
- 112 Sarju, 5700–4000 ft, 2 rivers, steep brooks in bushes and hygropetric habitat, 29°59'16.7"N 79°54'53.1"E, 21.09.1958
- 113 Kapkot, 3700 ft, river tributary of Sarju, 29°56'18.3"N 79°54'06.2"E, 21.09.1958
- 114 Chhana, 3500 ft, nice river, lateral hygropetric habitat, 29°53'00.2"N 79°46'31.4"E, 22.09.1958
- 115 Bagheswar = Bageshwar, 3200 ft, Sarju River and small river tributary with mosses, 29°50'33.3"N 79°46'32.0"E, 23.09.1958
- 116 Bamrari, 3700 ft, Gornati River and brooklets in forest, lateral hygropetric habitat, 29°52'40.7"N 79°40'50.2"E, 24.09.1958
- 117 Bajnath = Baijnath, 3800 ft, Gornati River, 29°54'22.8"N 79°36'52.2"E, 25.09.1958

- 118 Sirkot, 4200 ft, river and brooks in bushes, 29°58'42.3"N 79°34'16.3"E, 26.09.1958
- 119 Idem 97, Gwaldam, 6000 ft, 27–30.09.1958
- 120 Simra = Simar Pul, 5800 ft, nice rivers in forest, 30°03'28.7"N 79°29'37.4"E, 1–2.10. 1958
- 121 Nail, 5000–6000 ft, swampy brooklets, 29° 58'37.6"N 79°26'26.9"E, 3.10.1958
- 122 Chulera Sim = Chulerasim, 3800 ft, Ramganga River and lateral steep torrent, 29°55' 59.4"N 79°24'33.0"E, 4.10.1958
- 123 Tarag Tal = Tarag lake, 3900 ft, toorents flowing in a lake, 29°53'01.0"N 79°25'25.0"E, 5.10.1958
- 124 Chaukhutia, 3050 ft, along Ramganga River, 29°53'12.3"N 79°21'00.6"E, 6.10.1958

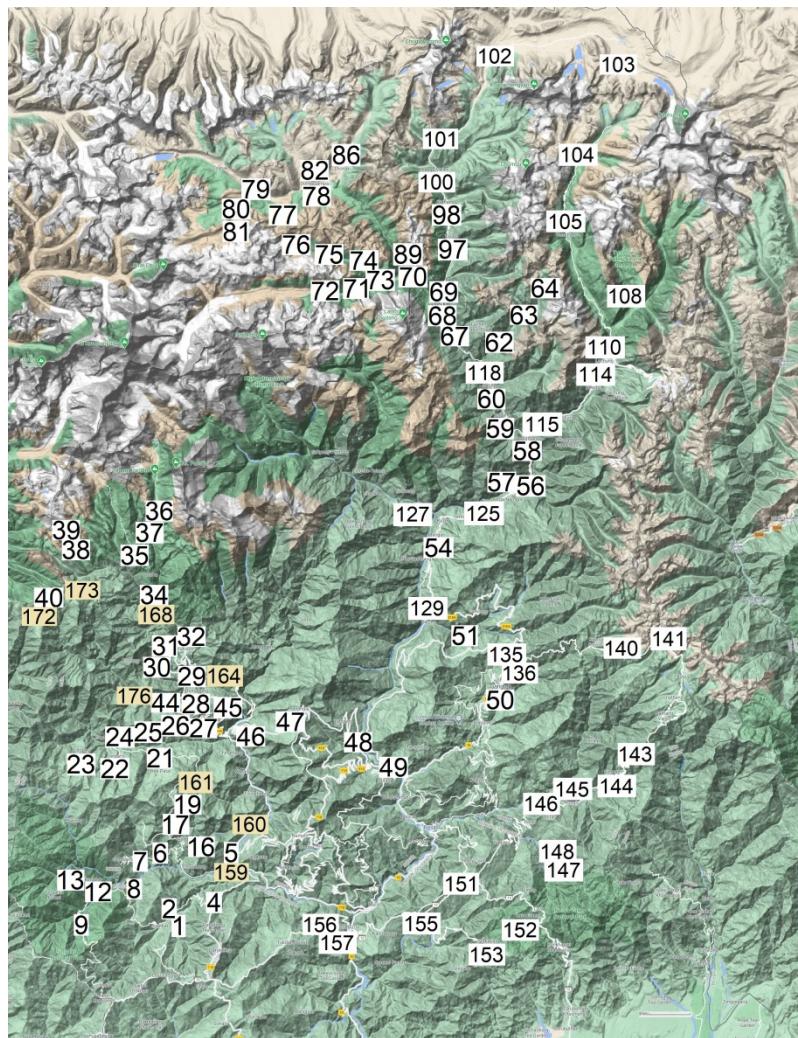
- 125 Sat Tal, 4100 ft, several lakes, 11.10.1958
- 126 Naukucchiya Tal = Naukuchia Taal, 4100 ft, lake, 12.10.1958
- 127 Ranibagh, 1778 ft, torrent, 29°17'14.0"N 79° 33'00.6"E, 13.10.1958

Sikkim and North Western Bengal localities, 1959 (Map 3)

This high mountainous region is surrounded westward by the Nepal, northward by the Tibet and eastward by the Bhoutan (Map 1).

North Western Bengal

- 1 Singtam, 2625 ft, 27°03'48.5"N 88°13'02.6"E, 11.03.1959



Map 3. Schmid's road in Sikkim and North Western Bengal.

- 2 Pul Bazar = Pulbazar, 2400 ft, 27°04'29.7"N 88°12'11.9"E, 12.03.1959
- 3 Dhangia Bazar, 3280 ft, 13.03.1959
- 4 Takvar = Tukvar, 1760 ft, 27°05'50.0"N 88°15'28.3"E, 14.03.1959

Sikkim

- 5 Naya Bazar, 1060 ft, 27°08'49.6"N 88°16'46.6"E, 15–16.03.1959
- 6 Tharpu, 2625 ft, 27°08'43.5"N 88°11'41.0"E, 17.03.1959
- 7 Dharmdin = Daramdin, 2854–3200, 27°08'03.6"N 88°09'49.1"E, 18.03.1959

North Western Bengal

- 8 Bara Hala = Berea?, 4920 ft, 27°06'20.5"N 88°09'18.7"E, 19.03.1959
- 9 Dilpa, 6260 ft, 27°04'44.1"N 88°05'12.8"E, 20.03.1959
- 10 Dilpa, 5500 ft, 27°04'31.9"N 88°05'19.6"E, 21.03.1959
- 11 Bara Hata = Berea, 5000 ft, 27°06'20.5"N 88°09'18.7"E, 22.03.1959
- 12 Rimbik, 6560 ft, 27°07'11.6"N 88°06'17.3"E, 23.03.1959
- 13 Shepi = Sepi Gaon, 7200 ft, 27°07'38.4"N 88°05'52.9"E, 23.03.1959
- 14 Phedigaon, 7000 ft, 25.03.1959

Sikkim

- 15 idem 5, Naya Bazar, 1060 ft, 27°08'49.6"N 88°16'46.6"E, 28.03.1959
- 16 Chakung, 4920 ft, 27°09'12.5"N 88°14'37.8"E, 29.03.1959
- 17 Samdong = Chota Samdong, 3600 ft, 27°10'50.3"N 88°13'34.8"E, 30.03.1959
- 18 Samdong = Chota Samdong, 4100 ft, 27°10'50.3"N 88°13'34.8"E, 31.03.1959
- 19 Dethang = Deythang, 4000 ft, 27°12'03.5"N 88°13'17.6"E, 1.04.1959
- 20 Rapham, 5250 ft, 2.04.1959
- 21 Hi = Hee, 4200–5500 ft, 27°15'19.7"N 88°10'54.4"E, 3.04.1959
- 22 Dentham = Dentam, 4500 ft, 27°15'37.4"N 88°08'24.9"E, 4.04.1959
- 23 Uttare = Uttarey, 6950 ft, 27°15'36.3"N 88°05'55.1"E, 5.04.1959

- 24 Srinagi, 4920 ft, 27°16'11.7"N 88°08'54.1"E, 6.04.1959
- 25 Bongteng = Bangten, 5800 ft, 27°16'31.7"N 88°09'39.6"E, 6.04.1959
- 26 Sardong, 2600 ft, 27°17'05.9"N 88°11'42.6"E, 6.04.1959
- 27 Tikjak = Tikjya, 4900 ft, 27°17'25.1"N 88°13'43.3"E, 7.04.1959
- 28 Chongpung, 5000 ft, 27°19'34.8"N 88°14'09.8"E, 8.04.1959
- 29 Tinglin = Thingle, 2950 ft, 27°20'31.9"N 88°13'45.9"E, 8.04.1959
- 30 Kechoiperi = Khechiperi = Khecheopalri Lake, 5900 ft, 27°21'07.3"N 88°11'25.8"E, 9.04.1959
- 31 Chojo = Tsozo, 3980 ft, 27°21'58.5"N 88°12'21.5"E, 10.04.1959
- 32 Yoksam = Yuksom, 5600 ft, 27°22'20.6"N 88°13'21.0"E, 10.04.1959
- 33 Zomphuk, 6500 ft, 11.04.1959
- 34 Bakkim = Bakhim Guest House, 6890 ft, 27°25'41.9"N 88°11'10.3"E, 12–13.04.1959
- 35 Dzongri, 13222 ft, 27°28'39.0"N 88°09'48.8"E, 14.04.1959
- 36 Tangshing = Thangsing Trekkers's hut, 12200 ft, 27°30'59.3"N 88°11'07.5"E, 17.04.1959
- 37 Churong = Kukchurung Trekkers's hut, 12460 ft, 27°30'12.1"N 88°10'31.1"E, 18.04.1959
- 38 Tikipchu = Tipik chu, 13800 ft, 27°28'37.0"N 88°05'11.0"E, 19.04.1959
- 39 Tikipchu, 15000 ft, 27°29'47.3"N 88°04'16.4"E, 20.04.1959
- 40 Gopetang = Gonpatang (Népal close to the Indian border), 12200 ft, 27°25'44.9"N 88°03'27.9"E, 21.04.1959
- 41 Chunjom, 6800 ft, 23.04.1959
- 42 Ramtang, 5780 ft, 24.04.1959
- 43 Palam, 5100 ft, 25.04.1959
- 44 Singbeng = Singyang, 4920 ft, 27°19'09.7"N 88°12'41.6"E, 26.04.1959
- 45 Pemayangtse, 5600 ft, 27°18'14.7"N 88°15'12.8"E, 27.04.1959
- 46 Ligship = Likship, 1700 ft, 27°16'13.5"N 88°17'34.8"E, 28.04.1959
- 47 Doling, 5900 ft, 27°17'20.6"N 88°20'41.9"E, 29.04.1959
- 48 Mangalbarey = Manglay Bazaar, 2800 ft, 27°16'10.7"N 88°25'27.3"E, 30.04.1959

- 49 Sirwani, 1150 ft, 27°14'29.0"N 88°28'56.8"E, 1.05.1959
- 50 Gangtok, 5570 ft, 27°19'54.9"N 88°36'48.5"E, 3.05.1959
- 51 Lingdok, 4600 ft, 27°23'14.8"N 88°34'21.0"E, 7.05.1959
- 52 Nantpung, 3980 ft, 8.05.1959
- 53 Dakchu, 2300 ft, 9.05.1959
- 54 Mangang = Mangan, 3600 ft, 27°29'42.2"N 88°31'45.9"E, 9.05.1959
- 55 Masin, 4920 ft, 10.05.1959
- 56 Nanga = Naga falls, 5000 ft, 27°32'24.2"N 88°37'51.1"E, 12.05.1959
- 57 Teng = Tung bridge on Lachung River, 4600 ft, 27°32'58.6"N 88°38'43.0"E, 12.05.1959
- 58 Chumtang = Chungthang, 5120 ft, 27°36'14.0"N 88°38'44.9"E, 13.05.1959
- 59 Yugang = Yuigang, 5700 ft, 27°37'45.7"N 88°37'02.5"E, 14.05.1959
- 60 Lathong = Latong, 6560 ft, 27°39'35.4"N 88°36'08.7"E, 15.05.1959
- 61 Benshoi, 7550 ft, 16.05.1959
- 62 Chachu = Tarum Chachu Hot Spring, 9950 ft, 27°42'30.4"N 88°36'35.4"E, 17.05.1959
- 63 Gey, 11650 ft, 27°44'41.9"N 88°38'34.5"E, 18.05.1959
- 64 Gey, 13200 ft, 27°46'18.5"N 88°39'48.1"E, 19.05.1959
- 65 Gey, 12000 ft, 20.05.1959
- 66 idem 62, Chachu = Tarum Chachu Hot Spring, 9900 ft, 27°42'30.4"N 88°36'35.4"E, 21.05.1959
- 67 Chateng = Chaten, 8700 ft, 27°32'24.2"N 88°37'51.1"E, 22.05.1959
- 68 Lachen, 8930 ft, 27°43'45.0"N 88°33'02.3"E, 23.05.1959
- 69 Zema, 8900 ft, 27°45'18.8"N 88°32'32.9"E, 24.05.1959
- 70 Yedang, 10600 ft, 27°46'47.8"N 88°30'04.1"E, 25.05.1959
- 71 Thomrachen, 11900 ft, 27°46'11.4"N 88°26'12.9"E, 26.05.1959
- 72 Yahuk = Yabuk, 13050 ft, 27°45'53.2"N 88°23'30.7"E, 27.05.1959
- 73 Yagtang= Yakthang, 11200 ft, 27°46'31.1"N 88°28'04.4"E, 28.05.1959
- 74 Thomphyak, 12800 ft, 27°47'00.3"N 88°26'57.9"E, 29.05.1959
- 75 Theuchung, 14100 ft, 27°48'28.4"N 88°23'30.1"E, 30.05.1959
- 76 Theulocha = Thieulacha, 14900 ft, 27°48'59.9"N 88°21'52.9"E, 30.05.1959
- 77 Langbos = Langbo, 14750 ft, 27°51'21.9"N 88°21'25.5"E, 31.05.1959
- 78 Dolkhasampat = Dolma Sampa, 14700 ft, 27°53'02.5"N 88°23'00.0"E, 1.06.1959
- 79 Lungma, 15320 ft, 27°52'06.7"N 88°19'39.0"E, 2.06.1959
- 80 Changsang = Changsang glacier, 15750 ft, 27°52'11.2"N 88°17'44.7"E, 2.06.1959
- 81 Goma Sechen, 16730 ft, 27°50'46.6"N 88°17'00.1"E, 3.06.1959
- 82 idem 78, Dolamsampa = Dolma Sampa, 14700 ft, 27°53'02.5"N 88°23'00.0"E, 5.06.1959
- 83 Kora Chamna, 16250 ft, 6.06.1959
- 84 Kora La Cho, 16700 ft, 6.06.1959
- 85 Siling, 14900 ft, 6.06.1959
- 86 Mugutang = Muguthang = Lhonak, 14750 ft, 27°53'56.5"N 88°25'01.4"E, 7.06.1959
- 87 Sase, 14170 ft, 7.06.1959
- 88 Rongsha, 14400 ft, 8.06.1959
- 89 idem 70, Yedang, 10600 ft, 27°46'47.8"N 88°30'04.1"E, 9.06.1959
- 90 idem 70, Yedang, 9680 ft, 27°46'47.8"N 88°30'04.1"E, 10.06.1959
- 91 idem 69, Zema = Zemu chu River, 8900 ft, 27°45'19.2"N 88°32'32.4"E, 11.06.1959
- 92 idem 67, Chateng = Chaten, 8700 ft, 27°32'24.2"N 88°37'51.1"E, 12.06.1959
- 93 idem 68, Lachen, 8900 ft, 27°43'45.0"N 88°33'02.3"E, 13.06.1959
- 94 idem 69, Zema, 9100 ft, 27°45'18.8"N 88°32'32.9"E, 14.06.1959
- 95 Yunga, 10000 ft, 14.06.1959
- 96 Tombu, 10450 ft, 15.06.1959
- 97 Talam, 11300 ft, 27°49'28.6"N 88°33'07.2"E, 16.06.1959
- 98 Yagtang = Yathang, 11650 ft, 27°51'46.5"N 88°32'42.2"E, 17.06.1959
- 99 Kalip, 12100 ft, 18.06.1959
- 100 Tanggu = Thangu, 12800 ft, 27°54'36.8"N 88°42'42.2"E, 19.06.1959
- 101 Taling, 13800 ft, 27°55'50.7"N 88°32'08.4"E, 21.06.1959
- 102 Denkung, 15750 ft, 28°01'13.8"N 88°36'06.3"E, 22.06.1959

- 103 Cho Lhamo = Tso Lhamo Lake, 16700 ft, 28°00'25.5"N 88°45'21.9"E, 25.06.1959
 104 Yume Samdong = Yumesodong, 15110 ft, 27°54'36.8"N 88°42'42.2"E, 26.06.1959
 105 Yumtang = Yumthang, 12140 ft, 27°49'35.4"N 88°41'41.0"E, 27.06.1959
 106 Chachu, 11500 ft, 29.06.1959
 107 Phune Kongma, 11150 ft, 30.06.1959
 108 Shingba = Shingba Rhododendron Sanctuary, 10400 ft, 27°45'02.6"N 88°46'25.7"E, 30.06.1959
 109 Namnasa, 10000 ft, 1.07.1959
 110 Lachung = Lachung bridge on the Lachung River, 8610 ft, 27°41'26.8"N 88°44'44.5"E, 2–13.07.1959
 111 Chumyomoi Chaka, 11800 ft, 8.07.1959
 112 Namnasa, 10000 ft, 11.07.1959
 113 Namnasa, 9500 ft, 12.07.1959
 114 Bichu = Beechu, 8000–8500, 27°39'34.4"N 88°43'44.3"E, 14.07.1959
 115 Bop, 5950 ft, 27°36'58.5"N 88°39'34.0"E, 15.07.1959
 116 idem 58, Chumtang = Chungthang, 5120 ft, 27°36'14.0"N 88°38'44.9"E, 16–23.07.1959
 117 idem 59, Yugang = Yuigang, 5700 ft, 27°37'45.7"N 88°37'02.5"E, 24.07.1959
 118 idem 60, Lathang = Latong, 6500 ft, 27°39'35.4"N 88°36'08.7"E, 26.07.1959
 119 Selep, 7000 ft, 27.07.1959
 120 idem 67, Chateng = Chaten, 8000 ft, 27°32'24.2"N 88°37'51.1"E, 28.07.1959
 121 idem 58, Chumtang = Chungthang, 5120 ft, 27°36'14.0"N 88°38'44.9"E, 30.07.1959
 122 Teng, 4600 ft, 1.08.1959
 123 Tung, 4500 ft, 2.08.1959
 124 idem 56, Nanga = Naga falls, 5000 ft, 27°32'24.2"N 88°37'51.1"E, 5000 ft, 3–4.08.1959
 125 Manu = Manul, 4900 ft, 27°31'14.3"N 88°35'24.9"E, 5.08.1959
 126 Singhik = Singchit, 3700 ft, 27°31'30.7"N 88°35'01.5"E, 6–19.08.1959
 127 Lingtham = Lingthem, 5250–6500 ft, 27°31'34.8"N 88°30'17.0"E, 8–10.08.1959
 128 idem 54, Mangang = Mangan, 3600 ft, 27°29'42.2"N 88°31'45.9"E, 11.08.1959
 129 Dikchu = bridge on the Dik Chuu River, 2300 ft, 27°24'05.8"N 88°31'25.6"E, 12.08.1959
 130 Dikchu, 2200 ft, 27°23'41.0"N 88°30'50.7"E, 13.08.1959
 131 Dikchu, 2080 ft, 27°23'41.0"N 88°30'50.7"E, 14.08.1959
 132 Kambur, 3280 ft, 15.08.1959
 133 Nampung, 3280 ft, 16.08.1959
 134 = 51, Lingdok, 4000 ft, 27°23'12.2"N 88°34'18.8"E, 17.08.1959
 135 Penlang La = Penlong La (Pass), 6200 ft, 27°21'59.7"N 88°37'00.1"E, 18.08.1959
 136 Rongne = Rongneck, 6200 ft, 27°20'15.2"N 88°37'44.2"E, 21.08.1959
 137 Karponang, 8100 ft, 22.08.1959
 138 Karponang, 9900 ft, 23.08.1959
 139 Chamiteng, 9900 ft, 24.08.1959
 140 Tsomgo = Tsongmo Lake, 9900–12500 ft, 27°22'26.9"N 88°45'24.2"E, 26.08.1959
 141 Sherabtong = Sarathang, 13200 ft, 27°22'40.5"N 88°49'10.7"E, 27.08.1959
 142 Sherabtong = Sarathang, 12700 ft, 27°22'40.5"N 88°49'10.7"E, 28.08.1959
 143 Padamchen, 7060 ft, 27°14'38.5"N 88°46'14.3"E, 29.08.1959
 144 Lingtam, 4600 ft, 27°13'41.8"N 88°44'27.0"E, 2.09.1959
 145 Rangli = Rongli, 2550 ft, 27°12'11.7"N 88°42'05.5"E, 3.09.1959
 146 Aritar, 4920 ft, 27°11'17.7"N 88°40'28.8"E, 5.09.1959

North Western Bengal

- 147 Rhenok = Rhenok forest, 1900–3200 ft, 27°07'41.0"N 88°41'07.8"E, 5.09.1959
 148 Lingsoka = Lingsaykha Khasmahal, 3930 ft, 27°08'17.5"N 88°40'34.5"E, 7.09.1959
 149 Lingsoka = Lingsaykha Khasmahal, 4270 ft, 9.09.1959
 150 Lingsoka = Lingsaykha Khasmahal, 4500 ft, 10.09.1959
 151 Labha, 5000 ft, 27°06'30.0"N 88°33'29.7"E, 11.09.1959
 152 Samabeong = Samabiyong, 4540 ft, 27°03'06.2"N 88°38'20.5"E, 12.09.1959
 153 Git Dabling = Git Dubling, 4900–5100 ft, 27°02'38.3"N 88°36'35.8"E, 13–15.09.1959
 154 Khani, 2050 ft, 16.09.1959
 155 Pudung, 3280 ft, 27°04'00.5"N 88°31'01.3"E, 17.09.1959
 156 Bara Mangwa = Bara Mungwa, 720 ft, 27°03'50.7"N 88°24'38.2"E, 18.09.1959

157 Peshok, 780–850 ft, 27°04'18.4"N 88°24'13.9"E, 19–20.09.1959

Sikkim

158 Manghtar, 930 ft, 21.09.1959

159 idem 5, Naya Bazar, 1060 ft, 27°08'49.6"N 88°16'46.6"E, 22.09.1959

160 Mabong, 1148 ft, 27°10'31.4"N 88°18'10.0"E, 23.09.1959

161 Rishi, 1470 ft, 27°13'13.0"N 88°13'55.2"E, 24.09.1959

162 idem 46, Ligship = Likship, 1700 ft, 27°16'13.5"N 88°17'34.8"E, 25.09.1959

163 idem 28, Chongpung, 4920 ft, 27°19'34.8"N 88°14'09.8"E, 27.09.1959

164 idem 29, Tinglin = Thingle, 2950 ft, 27°20'31.9"N 88°13'45.9"E, = 28.09.1959

165 Tashigang = Tashigang Resort, Yangtse, 3120 ft, 27°17'49.1"N 88°16'18.2"E, 29.09.1959

166 idem 32, Yoksam = Yuksom, 5600 ft, 27°22'20.6"N 88°13'21.0"E, 30.09.1959

167 Zonphuk, 6500 ft, 1.10.1959

168 idem 34, Bakkim = Bakhim Guest House, 6890 ft, 27°25'41.9"N 88°11'10.3"E, 2.10.1959

169 idem 36, Tangshing = Thangsing Trekkers's hut, 12200–14100 ft, 27°30'59.3"N 88°11'07.5"E, 5–6.10.1959

170 idem 37, Churong = Kukchurung Trekkers's hut, 12460 ft, 27°30'12.1"N 88°10'31.1"E, 8.10.1959

171 Yangsap, 13120 ft, 9.10.1959

172 idem 40, Gopetang = Gonpatang (Népal close to the Indian border), 12299 ft, 27°25'44.9"N 88°03'27.9"E, 10.10.1959

173 Lakchmi Pokri = Lachmi Pokhri, 14000 ft, 27°26'03.5"N 88°05'06.2"E, 11.10.1959

174 idem 41, Chungjom, 6800 ft, 12.10.1959

175 idem 42, Ramtang, 5780 ft, 13.10.1959

176 idem 44, Singbeng = Singyang, 4920 ft, 27°19'09.7"N 88°12'41.6"E, 14.10.1959

177 idem 45, Pemayangtse, 5600 ft, 27°18'14.7"N 88°15'12.8"E, 15.10.1959

178 idem 161, Rishi, 1470 ft, 27°13'13.0"N 88°13'55.2"E, 16.10.1959

179 idem 160, Mahong = Mabong, 1148 ft, 27°10'31.4"N 88°18'10.0"E, 17.10.1959

180 idem 5, Naya Bazar, 1060 ft, 27°08'49.6"N 88°16'46.6"E, 17.10.1959

**North western Assam (23.09.1960 – 21.10.1961)
(Map 4)**

This high mountainous region is surrounded westward by the Bhutan and northward by the Tibet (Map 1).

1 Lalaghat, 50 ft, 24°33'08.7"N 92°37'37.7"E, 23.09.1960

2 Gauhati = Guwahati, 100 ft, 26°08'39.4"N 91°44'05.9"E, 26.09.1960

3 Foothills, 700 ft, 26°56'58.7"N 92°22'06.5"E, 25.02.1961

4 Chapai, 700 ft, 26°27'52.3"N 92°01'32.8"E, 26.02.1961

5 Dhekiajuli, 400 ft, 26°42'31.2"N 92°29'10.1"E, 28.02.1961

6 Bhairabkunda, 700–1000 ft, 26°53'10.2"N 92°07'28.2"E, 3–8.03.1961

7 Amatulla, 1250–2000 ft, 26°55'42.9"N 92°07'19.3"E, 9–11.03.1961

8 Ankalling = Ankalin, 2100 ft, 27°01'30.2"N 92°08'37.9"E, 12.03.1961

9 Bokhar, 2200 ft, 13.03.1961

10 Lungdur, 2800 ft, 27°03'26.1"N 92°08'40.4"E, 14.03.1961

11 Lifakpo = Liphakpu, 3100 ft, 27°04'35.6"N 92°07'15.3"E, 15.03.1961

12 Kalaktang, 4000 ft, 27°06'14.5"N 92°06'49.9"E, 16–22.03.1961

13 Brukpataenchu = Brokpalangchen, 3750–4000 ft, 27°05'02.1"N 92°06'22.6"E, 17–18.03.1961

14 Warongpang = Warrangpam, 4250–5000 ft, 27°06'22.6"N 92°05'01.3"E, 19–21.03.1961

15 idem 12, Kalaklang = Kalaktang, 4000–5500 ft, 27°06'17.4"N 92°06'49.7"E, 23.03.1961

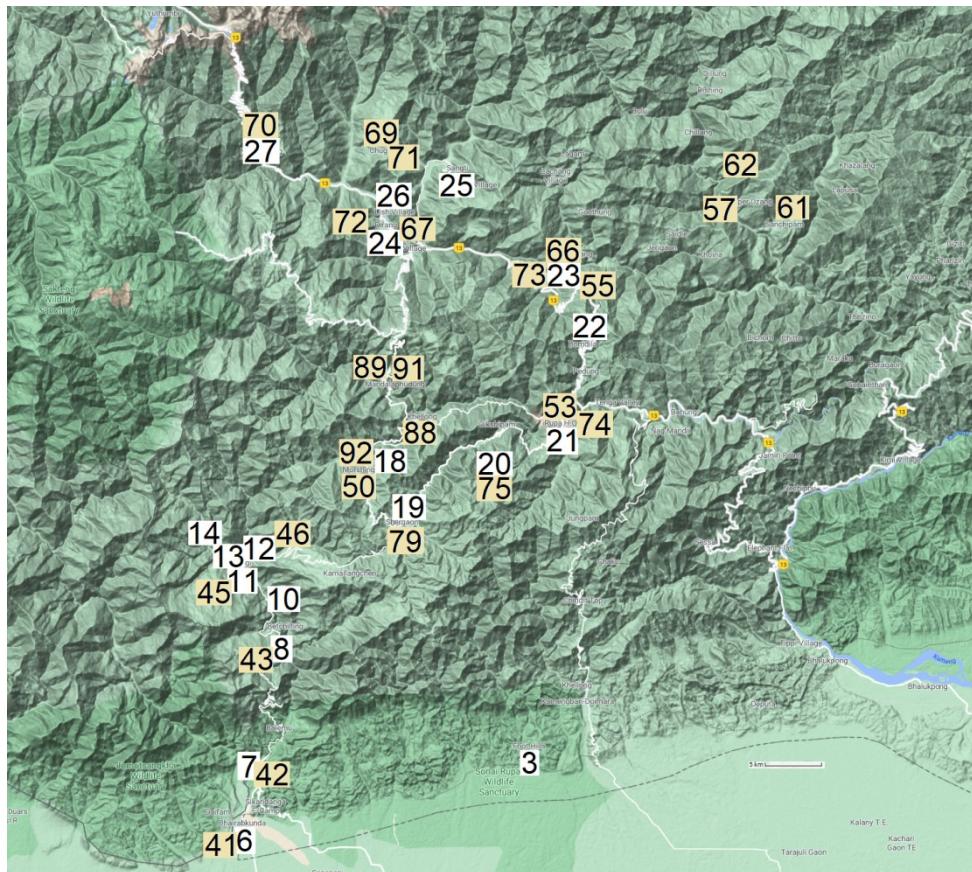
16 Jhum La, 7200–8000 ft, 15–22.09.1961

17 Talung Deong, 7000 ft, 26.03.1961

18 Domkho, 6950 ft, 27°09'58.2"N 92°13'49.4"E, 27.03.1961

19 Shergaon, 6200–6600 ft, 27°07'26.2"N 92°15'18.4"E, 28–30.03.1961

20 Gigaon = Jigaon, 6000 ft, 27°10'05.7"N 92°20'14.8"E, 31.03.1961



Map 4. Schmid's road in Assam.

- 21 Rupa, 5200–6000 ft, 27°12'10.6"N 92°23'55.1"E, 1–3.04.1961
- 22 Bomdi La = Bomdila, 8800 ft, 27°16'21.3"N 92°25'07.2"E, 4–7.04.1961
- 23 Rahung, 5200 ft, 27°18'46.2"N 92°23'43.8"E, 8.04.1961
- 24 Dirang Dzong, 5300 ft, 27°20'37.0"N 92°16'22.8"E, 9–11.04.1961
- 25 Sangti, 5500 ft, 27°24'20.3"N 92°18'15.6"E, 12.04.1961
- 26 Lih = Lish, 5500 ft, 27°22'16.2"N 92°14'14.7"E, 13.04.1961
- 27 Nyukmadong, 6600–8000 ft, 27°24'32.5"N 92°07'57.3"E, 18–23.04.1961
- 28 idem 24, Dirang Dzong, 5300 ft, 27°20'37.0"N 92°16'22.8"E, 24.04.1961
- 29 idem 23, Rahung, 5200 ft, 27°18'46.2"N 92°23'43.8"E, 25.04.1961
- 30 idem 19, Bomdi La = Bomdila, 8800 ft, 27°16'15.2"N 92°25'59.0"E, 26–30.04.1961
- 31 idem 21, Rupa, 5200–6000 ft, 27°12'10.6"N 92°23'55.1"E, 2–3.05.1961
- 32 idem 20, Gigaon = Jigaon, 6000 ft, 27°10'05.7"N 92°20'14.8"E, 4.05.1961
- 33 idem 19, Shergaon, 6100–6600 ft, 27°07'26.2"N 92°15'18.4"E, 5–10.05.1961
- 34 idem 18, Domkho, 6900 ft, 27°09'58.2"N 92°13'49.4"E, 11.05.1961
- 35 idem 17, Talung Dzong, 7000 ft, 12.05.1961
- 36 idem 16, Jhum La, 7800 ft, 13–14.05.1961
- 37 idem 12, Kalaktang, 4000 ft, 27°06'17.4"N 92°06'49.7"E, 14.05.1961
- 38 idem 11, Lifakpo = Liphakpu, 3100 ft, 27°04'35.6"N 92°07'15.3"E, 15.05.1961
- 39 idem 10, Lungdur, 2800 ft, 27°03'26.1"N 92°08'40.4"E, 16.05.1961
- 40 idem 7, Amatulla, 1800 ft, 26°55'42.9"N 92°07'19.3"E, 17.05.1961
- 41 idem 6 Bhairabkunda, 700–1000 ft, 26°53'10.2"N 92°07'28.2"E, 18–22.05.1961

- 42 idem 7, Amatulla, 1300–2000 ft, 26°55'42.9"N
92°07'19.3"E, 23–25.05.1961
- 43 idem 8, Ankaling = Ankalin, 2100 ft, 27°01'
30.2"N 92°08'38.3"E, 26.05.1961
- 44 idem 9, Bokhar, 2200–2500 ft, 27–28.05.1961
- 45 idem 11, Lifakpo = Liphakpu, 3100 ft, 27°04'
35.6"N 92°07'15.3"E, 29.05.1961
- 46 idem 12, Kalakpang = Kalaktang, 4000 ft,
27°06'17.4"N 92°06'49.7"E, 31.05.1961
- 47 idem 16, Jhum La, 9000 ft, 31.05.1961
- 48 idem 16, Jhum La, 7800 ft, 1–2.06.1961
- 49 idem 17, Talung Dzong, 7000–7800 ft, 3–6.
06.1961
- 50 Moshing = Morshing, 7800 ft, 27°09'53.7"N
92°12'56.7"E, 7.06.1961
- 51 idem 18, Dorukho = Domkho, 6500 ft, 27°09'
56.4"N 92°13'49.7"E, 8.06.1961
- 52 Bilo La, 5800–6000 ft, 9–10.06.1961
- 53 idem 21, Rupa, 5500–6000 ft, 27°12'10.6"N
92°23'55.1"E, 11–12.06.1961
- 54 idem 22, Bomdi La = Bomdila, 8800 ft,
27°16'21.3"N 92°25'07.2"E, 13–21.06.1961
- 55 Salari, 4000 ft, 27°18'32.8"N 92°24'41.4"E,
22.06.1961
- 56 But, 5800 ft, 23.06.1961
- 57 Nafra, 3500 ft, 27°22'15.0"N 92°32'41.9"E,
24–25.06.1961
- 58 Nafra, 4000 ft, 27°22'31.7"N 92°33'02.3"E,
26.06.1961
- 59 Nyong, 4800 ft, 27.06.1961
- 60 Kuijalong, 4500 ft, 28–30.06.1961
- 61 Khelang = Khellong, 6000 ft, 27°22'11.2"N
92°36'19.4"E, 1–2.07.1961
- 62 Nakhu, 3800–4800 ft, 27°24'11.1"N 92°33'
35.8"E, 3–6.07.1961
- 63 idem 56, But, 4000 ft, 7–8.07.1961
- 64 idem 55, Salari, 4000–4300 ft, 27°18'32.8"N
92°24'41.4"E, 9–10.07.1961
- 65 idem 22, Bondi La = Bomdila, 8800 ft, 27°
16'21.3"N 92°25'07.2"E, 11–15.07.1961
- 66 idem 23, Rahung, 6500–7000 ft, 27°18'46.2"N
92°23'43.8"E, 16–17.07.1961
- 67 idem 24, Dirang Dzong, 5300–6500 ft, 27°20'
37.0"N 92°16'22.8"E, 18–22.07.1961
- 68 idem 26, Lih = Lish, 5500 ft, 27°22'16.2"N
92°14'14.7"E, 24.07.1961
- 69 Chug, 6800–7300 ft, 27°25'07.7"N 92°14'01"
E, 25–31.07.1961
- 70 idem 27, Nyukmadong, 6600–8000 ft, 27°24'
32.5"N 92°07'57.3"E, 1.08.1961
- 71 idem 69, Chug, 7150–7300 ft, 27°25'07.7"N
92°14'01"E, 9–13.08.1961
- 72 idem 24, Dirang Dzong, 5300 ft, 27°20'37.0"N
92°16'22.8"E, 15.08.1961
- 73 idem 23, Rahung, 7000–7300 ft, 27°18'46.2"N
92°23'43.8"E, 16–17.08.1961
- 74 idem 21, Rupa, 5500 ft, 27°12'10.6"N 92°23'
55.1"E, 26.08.1961
- 75 idem 20, Gigaon = Jigaon, 6000 ft, 27°
10'05.7"N 92°20'14.8"E, 27.08.1961
- 76 idem 19, Shergaon, 6100 ft, 27°07'26.2"N
92°15'18.4"E, 28.08.1961
- 77 idem 19, Shergaon, 6200 ft, 27°07'26.2"N 92°
15'18.4"E, 29.08.1961
- 78 idem 19, Shergaon, 6400–6500 ft, 27°07'
26.2"N 92°15'18.4"E, 30–31.08.1961
- 79 idem 19, Shergaon, 6800 ft, 27°07'26.2"N
92°15'18.4"E, 1.09.1961
- 80 Tarupa La, 9000 ft, 2.09.1961
- 81 idem 18, Domkho, 6970 ft, 27°09'58.2"N
92°13'49.4"E, 3.09.1961
- 82 idem 50, Moshing = Morshing, 6800 ft, 27°09'
53.7"N 92°12'56.7"E, 4–7.9.1961
- 83 idem 50, Moshing = Morshing, 7000–7500 ft,
27°09'53.7"N 92°12'56.7"E, 8–10.9.1961
- 84 idem 17, Talung Dzong, 7000–7800 ft, 11–13.
09.1961
- 85 idem 16, Jhum La, 7200–8000 ft, 15–22.09.
1961
- 86 idem 18, Domkho, 6500 ft, 27°09'58.2"N 92°
13'49.4"E, 23.09.1961
- 87 idem 52, Bilo La, 5800 ft, 24.09.1961
- 88 Kelong = Khellong, 6000–6200 ft, 27°12'
28.2"N 92°16'21.8"E, 25–26.09.1961
- 89 Phutang, 6800 ft, 27°14'23.7"N 92°14'06.5"E,
27–28.09.1961
- 90 Phutang, 7200–7300 ft, 27°14'35.8"N 92°14'
24.6"E, 1–4.10.1961
- 91 Prudong = Mandalaphudung, 11000 ft, 27°
14'00.7"N 92°14'56.2"E, 5.10.1961
- 92 idem 50, Moshing = Morshing, 9000 ft, 27°
09'53.7"N 92°12'56.7"E, 6.10.1961
- 93 idem 50, Moshing = Morshing, 6800 ft, 27°
09'53.7"N 92°12'56.7"E, 7.10.1961
- 94 idem 16, Jhum La, 9000 ft, 8.10.1961

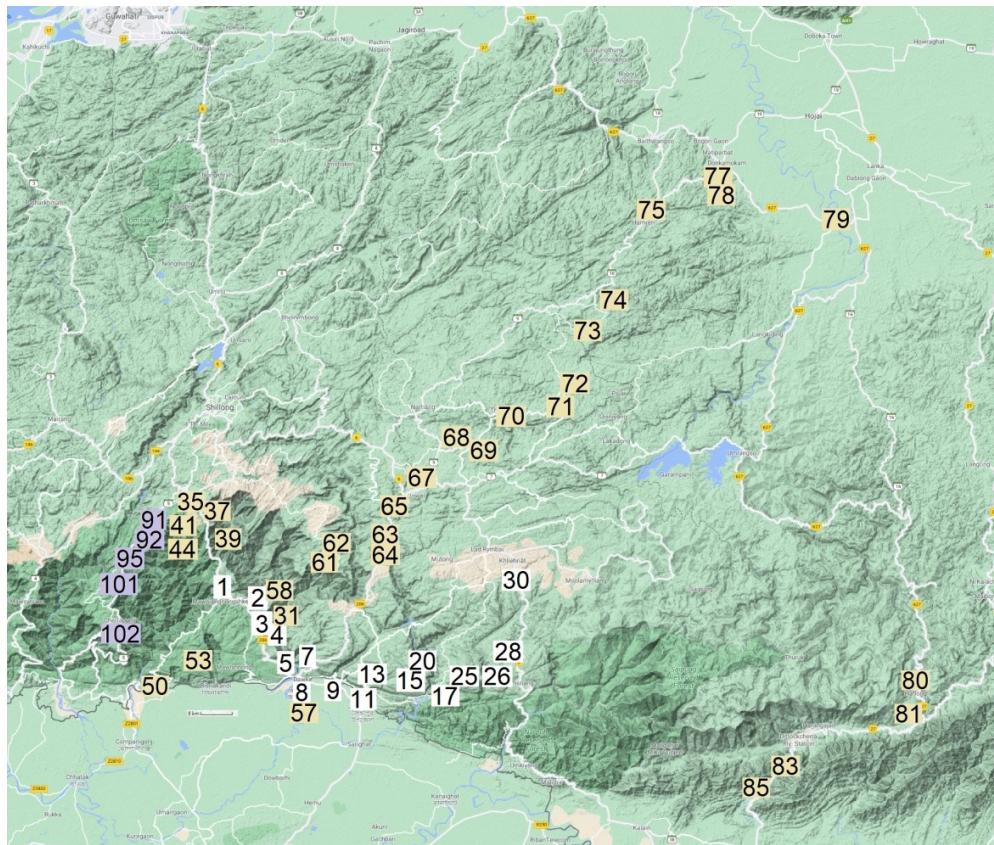
- 95 idem 12, Kalaktang, 4000 ft, 27°06'17.4"N 92°06'49.7"E, 9–10.10.1961
- 96 idem 10, Lungdur, 2800 ft, 27°03'26.1"N 92°08'40.4"E, 11–12.10.1961
- 97 idem 9, Bokhar, 2000 ft, 13.10.1961
- 98 idem 8, Ankaling = Ankalin, 5000 ft, 27°01'30.2"N 92°08'38.3"E, 14.10.1961
- 99 idem 7, Amatulla, 2000 ft, 26°55'42.9"N 92°07'19.3"E, 16.10.1961
- 100 idem 7, Amatulla, 1500–1800 ft, 26°55'42.9"N 92°07'19.3"E, 17–19.10.1961
- 101 idem 6, Bhairabkunda, 1000 ft, 26°53'10.2"N 92°07'28.2"E, 20.10.1961
- 102 idem 6, Bhairabkunda, 700 ft, 26°53'10.2"N 92°07'28.2"E, 21.10.1961

Meghalaya and southern Assam, 1959–1960 (Map 5)

Meghalaya was named United Jaintia and Khasi Hills (UJKH) in the Schmid's notebook. This moutainous region is rather isolated southward the wide Brahmapoutre River and northward the Bangladesh (Map 1).

- 1 Pinursla = Pynursla, 3750 ft, 25°18'34.7"N 91°54'06.8"E, 30.11.1959
- 2 Mawpran = Mawpran Nonglyndiang, 3500 ft, 25°17'52.9"N 91°57'40.4"E, 1.12.1959
- 3 Pynter, 2800 ft, 25°15'49.9"N 91°57'33.6"E, 2.12.1959
- 4 Mawshun, 1500 ft, 25°14'46.7"N 91°58'21.2"E, 4.12.1959
- 5 Shnongpdeng, 200–1000 ft, 25°12'27.0"N 92°00'28.4"E, 5.12.1959
- 6 idem 5, Shnongpdeng, 500 ft, 25°12'27.0"N 92°00'28.4"E, 6.12.1959
- 7 Sohkhā = Sohkhā Shnong, 200–300 ft, 25°12'59.3"N 92°01'55.0"E, 7.12.1959
- 8 Dawki, 200 ft, 25°11'21.1"N 92°01'12.2"E, 8.12.1959

- 9 Ronghongkung = Rhongkum, 200 ft, 25°10'49.4"N 92°05'01.5"E, 9.12.1959
- 10 Sohkhārim, 200 ft, 10.12.1959
- 11 Muktapur, 200 ft, 25°09'48.6"N 92°07'45.4"E, 11–12.12.1959
- 12 Syndai, 700 ft, 25°10'34.6"N 92°07'46.7"E, 14.12.1959
- 13 Syndai, 700–2500 ft, 25°11'29.2"N 92°08'31.5"E, 15.12.1959
- 14 Syndai, 800 ft, 25°11'29.2"N 92°08'31.5"E, 16.12.1959
- 15 Laremshiap = Laremshyiap, 1800 ft, 25°10'44.5"N 92°11'54.1"E, 17.12.1959
- 16 Laremshiap = Laremshyiap, 1500 ft, 25°10'39.7"N 92°11'46.4"E, 18.12.1959
- 17 Borghat, 200 ft, 25°09'50.0"N 92°15'13.4"E, 19–22.12.1959
- 18 Purnasampa, 500 ft, 23–24.12.1959
- 19 idem 12, Syndai, 700 ft, 25°10'34.6"N 92°07'46.7"E, 25–26.12.1959
- 20 Tarangblang, 2000 ft, 25°11'24.4"N 92°12'34.2"E, 27.12.1959
- 21 Mawpang, 2500 ft, 28.12.1959
- 22 Tkentalong, 2500 ft, 29–31.12.1959
- 23 idem 20, Tarangblang, 2000 ft, 25°11'24.4"N 92°12'34.2"E, 1.01.1960
- 24 idem 17, Borghat, 200 ft, 25°09'50.0"N 92°15'13.4"E, 2–3.01.1960
- 25 Lakadong, 1500 ft, 25°10'50.4"N 92°16'55.1"E, 4.01.1960
- 26 Umlong, 500 ft, 25°10'19.7"N 92°20'13.1"E, 5.01.1960
- 27 Umpuh, 2000 ft, 6.01.1960
- 28 Musianglamare = moo sianglamare, 2700 ft, 25°13'13.5"N 92°21'20.7"E, 7–9.01.1960
- 29 Tharauyang, 2900 ft, 10.01.1960
- 30 Myndihati = Byndihati, 3000 ft, 25°19'09.4"N 92°22'12.7"E, 11.01.1960
- 31 Pynter, 1700 ft, 25°15'17.2"N 91°57'46.6"E, 19.01.1960



Map 5. Schmid's road in Meghalaya.

- 32 Pynter, 500 ft, $25^{\circ}15'18.2''\text{N}$ $91^{\circ}58'43.8''\text{E}$, 20.01.1960
 33 Pynter, 200–300 ft, $25^{\circ}15'18.2''\text{N}$ $91^{\circ}58'43.8''\text{E}$, 21–23.01.1960
 34 idem 4, Mawshun, 2000 ft, 24.01.1960
 35 Laitlyngkot, 4800 ft, $25^{\circ}26'39.0''\text{N}$ $91^{\circ}50'40.8''\text{E}$, 14.03.1960
 36 Laitlyngkot, 4000–4500 ft, $25^{\circ}26'39.0''\text{N}$ $91^{\circ}50'40.8''\text{E}$, 15.03.1960
 37 Laitlyngkot, 3000–3500 ft, $25^{\circ}25'51.2''\text{N}$ $91^{\circ}52'58.5''\text{E}$, 16.03.1960
 38 Laitlyngkot, 2000–2300 ft, $25^{\circ}24'42.9''\text{N}$ $91^{\circ}54'35.4''\text{E}$, 17.03.1960
 39 Mawkhap, 1500 ft, $25^{\circ}23'15.5''\text{N}$ $91^{\circ}54'14.0''\text{E}$, 18.03.1960
 40 Mawkhap, 2000 ft, $25^{\circ}23'27.7''\text{N}$ $91^{\circ}53'59.0''\text{E}$, 19.03.1960
 41 Rumkheng = Ramkheng, 5500 ft, $25^{\circ}23'20.0''\text{N}$ $91^{\circ}50'01.1''\text{E}$, 20–23.03.1960
 42 Rumkheng = Ramkheng, 4500 ft, $25^{\circ}23'07.2''\text{N}$ $91^{\circ}50'12.8''\text{E}$, 24.03.1960
 43 Rumkheng = Ramkheng, 3000 ft, $25^{\circ}21'55.4''\text{N}$ $91^{\circ}50'24.4''\text{E}$, 25.03.1960
 44 Rumkheng = Ramkheng, 2000 ft, $25^{\circ}21'11.8''\text{N}$ $91^{\circ}50'17.3''\text{E}$, 26.03.1960
 45 Nongrim = Nongtraw?, 1800 ft, $25^{\circ}22'09.9''\text{N}$ $91^{\circ}45'48.2''\text{E}$, 27.03.1960
 46 Nongrim = Nongtraw?, 3000 ft, $25^{\circ}22'09.9''\text{N}$ $91^{\circ}45'48.2''\text{E}$, 28.03.1960
 47 Mawshnid, 1400 ft, 29.03.1960
 48 Mawja, 550 ft, 30.03.1960
 49 Nongjri = Hat Nongjri, 350 ft, $25^{\circ}10'18.4''\text{N}$ $91^{\circ}46'54.9''\text{E}$, 31.03.1960
 50 Nongjri = Hat Nongjri, 300 ft, $25^{\circ}10'18.4''\text{N}$ $91^{\circ}46'54.9''\text{E}$, 1.04.1960
 51 Therria, 200 ft, 2.04.1960
 52 Barpunji, 200 ft, 3.04.1960
 53 Hat Nongshken = Nongshken, 200 ft, $25^{\circ}12'39.0''\text{N}$ $91^{\circ}51'44.9''\text{E}$, 4.04.1960
 54 Umkaram, 1000 ft, 5.04.1960
 55 idem 4, idem 34, Mawshun, 1500 ft, 6.04.1960
 56 Shuongpdeng, 1000 ft, 7.04.1960

- 57 idem 8, Dawki, 200 ft, 25°11'21.1"N 92°01'12.2"E, 8.04.1960
 58 idem 2, Mawpran = Mawpran Nonglyndiang, 3500 ft, 25°17'52.9"N 91°57'40.4"E, 8.04.1960
 59 Mawpran = Mawpran Nonglyndiang, 2000 ft, 25°18'27.3"N 91°58'05.7"E, 9.04.1960
 60 Mawpran = Mawpran Nonglyndiang, 900 ft, 25°18'43.0"N 91°59'15.6"E, 10.04.1960
 61 Syntung, 4000 ft, 25°21'12.2"N 92°03'08.0"E, 11.04.1960
 62 Mawlang, 4000 ft, 25°21'30.3"N 92°04'15.1"E, 12.04.1960
 63 Jarain, 2800 ft, 25°22'23.7"N 92°08'58.9"E, 13.04.1960
 64 Mawpyut, 4000 ft, 25°22'20.7"N 92°09'03.7"E, 14.04.1960
 65 Demphring = Demthring, 3800 ft, 25°26'09.5"N 92°10'08.0"E, 16.04.1960
 66 Tadlaskein, 4250 ft, 17.04.1960
 67 Umlangshor, 4100 ft, 25°28'32.3"N 92°12'49.0"E, 18.04.1960
 68 Nongjni = Nongjngi, 3750 ft, 25°32'21.1"N 92°16'12.4"E, 19.04.1960
 69 Mynso = Mynsso, 3500 ft, 25°33'43.5"N 92°19'37.5"E, 20.04.1960
 70 Shilliang Myntang = Shiliangmyntang, 3500 ft, 25°33'55.6"N 92°21'32.5"E, 21.04.1960
 71 Thangrain, 3000 ft, 25°34'45.1"N 92°26'26.7"E, 22.04.1960
 72 Barato, 2500 ft, 25°36'24.1"N 92°27'23.1"E, 23.04.1960

- United district of Mikir and North Cachar Hills, Assam*
- 73 Nongjrang = Nonjirong, 2700 ft, 25°41'29.6"N 92°28'41.3"E, 25.04.1960
 74 Umbaso, 2300 ft, 25°43'46.3"N 92°31'33.5"E, 26.04.1960
 75 Rongkhong = Rongbong Ronghang, 1400 ft, 25°51'24.1"N 92°35'17.5"E, 27.04.1960
 76 Sirtrang, 1400 ft, 28.04.1960
 77 Tranggaon = Terang Gaon, 1200 ft, 25°54'57.6"N 92°41'30.2"E, 29.04.1960
 78 Langtrang = Langang, 500 ft, 25°54'18.6"N 92°41'11.6"E, 30.04.1960
 79 Kherani Mokam = Kheroni mökki, 200 ft, 25°51'29.8"N 92°53'02.9"E, 3.05.1960

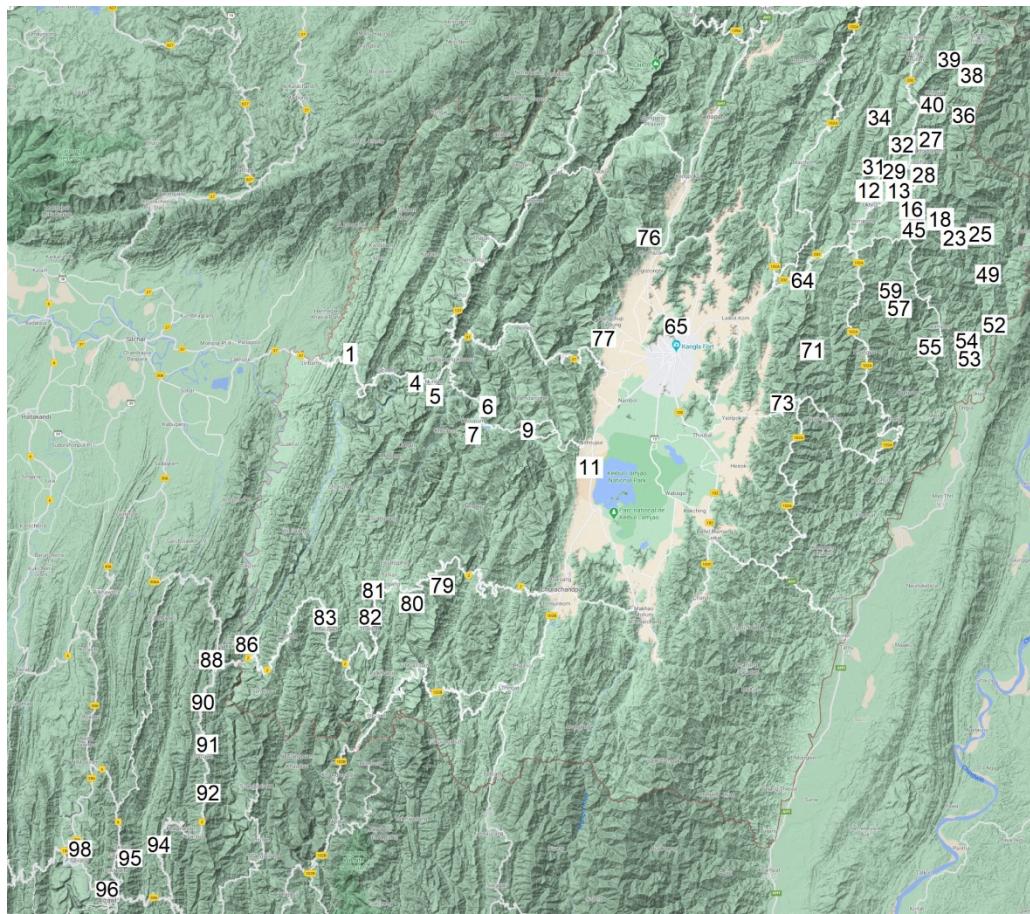
- 80 Haflong, 1500 ft, 25°09'43.8"N 93°00'54.3"E, 5.05.1960
 81 Inchaikang, 800 ft, 25°07'40.0"N 92°59'52.0"E, 6.05.1960
 82 Nangku, 700 ft, 7.05.1960
 83 Bandarkhali = Bandarkhal, 500 ft, 25°03'31.1"N 92°48'02.5"E, 8.05.1960
 84 Bandarkhali = Bandarkhal, 300 ft, 25°03'31.1"N 92°48'02.5"E, 9.05.1960
 85 Damchara, 250 ft, 25°00'44.8"N 92°44'57.3"E, 10.05.1960
 86 Chabaghan, 100 ft, 11.05.1960
 87 Silchar, 50 ft, 24°50'07.4"N 92°47'10.8"E, 12.05.1960
 88 Lakhipur, 100 ft, 24°47'48.6"N 93°00'34.5"E, 14–16.05.1960
 89 Telka, 62 ft, 15.05.1960
 90 Jirighat, 80 ft, 24°48'29.4"N 93°06'17.9"E, 16.05.1960

Meghalaya (UJKH), Autumn 1960

- 91 Dympep, 6000 ft, 25°24'40.6"N 91°47'26.7"E, 1.10.1960
 92 Mawrap = Mawrah, 4800 ft, 25°23'09.8"N 91°46'53.3"E, 2.10.1960
 93 Serrarim, 5800 ft, 3.10.1960
 94 Amsawmat, 4500 ft, 5.10.1960
 95 Serrarim = Sohrarim, 5500 ft, 25°20'57.8"N 91°44'51.3"E, 6–7.10.1960
 96 idem 92, Mawrap = Mawrah, 4500 ft, 25°23'09.8"N 91°46'53.3"E, 8.10.1960
 97 idem 45, Nongrim = Nongtraw?, 2800 ft, 25°22'09.8"N 91°45'41.5"E, 9.10.1960
 98 idem 46, Nongrim = Nongtraw?, 3500 ft, 25°22'09.8"N 91°45'41.5"E, 10.10.1960
 99 idem 46, Nongrim = Nongtraw?, 3000 ft, 25°22'09.8"N 91°45'41.5"E, 11.10.1960
 100 Mawshuid, 1400 ft, 12.10.1960
 101 Laitryngew, 5000 ft, 25°19'21.8"N 91°43'48.0"E, 13.10.1960
 102 Cherrapunji, 4500 ft, 25°16'08.1"N 91°44'03.1"E, 14.10.1960

Manipur and Mizoram (Map 6)

This mountainous region of eastern India is adjacent to the Birman (Myanmar) border (Map 1).



Map 6. Schmid's road in Manipur and Mizoram.

Manipur

- 1 Kaiphundai, 100 ft, 24°47'49.8"N 93°14'14.7"E, 20.05.1960
- 2 Vangai Chungpar, 300 ft, 21.05.1960
- 3 Dinamlong, 300 ft, 22–23.05.1960
- 4 Kambiron, 1500 ft, 24°44'46.9"N 93°23'01.7"E, 24.05.1960
- 5 Nungba, 2300 ft, 24°44'49.3"N 93°24'48.7"E, 25.05.1960
- 6 Lagairong, 2500 ft, 24°42'02.4"N 93°31'55.8"E, 26.05.1960
- 7 Khopurn = Khoupum Valley, 2500 ft, 24°40'31.8"N 93°31'07.3"E, 27.05.1960
- 8 Luanglong Khunau = Lubanglong, 2500 ft, 24°41'08.8"N 93°31'27.2"E, 28.05.1960
- 9 Leimatak River, 1300 ft, 24°38'48.5"N 93°38'03.3"E, 29–30.05.1960

- 10 Tairenpokpi, 4000 ft, 24°49'36.7"N 93°48'14.6"E, 31.05.1960
- 11 Ningthoukhong, 2500 ft, 24°34'44.5"N 93°45'11.1"E, 1.06.1960
- 12 Ukhru, 6000 ft, 25°04'46.3"N 94°21'07.8"E, 4.06.1960
- 13 Langdang, 5300 ft, 25°07'27.2"N 94°24'12.7"E, 5.06.1960
- 14 Sirohi Kashong = Siruhi Kashong = Shirui Kashong (peak), 7000–7500 ft, 25°06'44.5"N 94°27'35.4"E, 6–7.06.1960
- 15 Sirohi Kashong = Shirui Kashong (peak), 6800 ft, 25°07'06.4"N 94°27'36.6"E, 8.06.1960
- 16 Sirohi Kashong = Shirui Kashong (peak), 6000 ft, 25°07'39.7"N 94°26'20.6"E, 9.06.1960
- 17 Sirohi Kashong = Shirui Kashong (peak), 6200 ft, 25°07'39.7"N 94°26'20.6"E 10.06.1960

- 18 Mapum, 5000 ft, 25°04'55.9"N 94°30'16.9"E, 11.06.1960
- 19 Mapum, 3300 ft, 25°03'23.2"N 94°30'33.5"E, 12.06.1960
- 20 Chingsao = Zingsui, 5400 ft., 25°05'43.2"N 94°31'56.0"E, 13.06.1960
- 21 Chingsao = Zingsui, 3800 ft., 14.06.1960
- 22 Chingsao = Zingsui, 4500 ft., 5.06.1960
- 23 Loni = Roni, 4500–5500 ft., 25°03'41.8"N 94°34'18.8"E, 16.VI.1960,
- 24 Mattiyang, 2800 ft, the Mattiyang Mount (1531m), probably 24°59'02.1"N 94°36'31.9"E, is the major peak of the range between the Mount Khayang Bung upto Chahang Khunou (Chahong Khunou). The locality Mattiyang was not found but it should be along the road to the Mattiyang Mount near this point according to the altitude, 24°53'16.1"N 94°36'49.2"E, 17.06.1960
- 25 Khaiyang = Khayang, 3200 ft, 25°03'48.1"N 94°36'52.9"E, 18.06.1960
- 26 Akayam Bum, 7500–5800 ft, 20–23.06.1960
- 27 Khamasson = Khamasom, 3900 ft, 25°12'05.8"N 94°29'16.4"E, 24.06.1960
- 28 Sihai Khulen = Sihai Khullen, 4700 ft, 25°11'32.1"N 94°29'31.5"E, 25.06.1960
- 29 Sirohi = Shirui, 4300 ft, 25°07'42.6"N 94°25'14.6"E, 26.06.1960
- 30 idem 12, Ukhrul, 6000 ft, 25°04'46.3"N 94°21'07.8"E, 28.06.1960
- 31 Khangairim. It probably corresponds to Khangkhui Khullen, 4145 ft, 25°05'58.7"N 94°23'35.8"E, 29.06.1960,
- 32 Longhi Khulen = Longpi = Nungbi Khullen, 4500 ft, 25°12'20.9"N 94°27'10.1"E, 30.06.1960
- 33 Huiahu = Huishu, 4300 ft, 25°15'07.6"N 94°32'23.5"E, 1.07.1960
- 34 Huiahu = Huishu, 5000 ft, 25°14'47"N, 94°33'10"E, 2.07.1960
- 35 Huiahu = Huishu, 3800 ft, 25°15'01.4"N 94°31'51.8"E, 3.07.1960
- 36 Poi, 4200 ft, 25°16'35.5"N 94°33'09.9"E, 4.07.1960
- 37 Poi, 3800 ft, 25°16'35.8"N 94°32'14.8"E, 5.07.1960
- 38 Challao = Challow, 3250 ft, 25°21'30.0"N 94°33'06.1"E, 6.07.1960
- 39 Kongai, 3900 ft, 25°22'44.7"N 94°32'48.0"E, 7.07.1960
- 40 Chingai, 4400 ft, 25°19'13.2"N 94°30'15.1"E, 8.07.1960
- 41 idem 29, Sirohi = Shirui, 4100 ft, 25°07'42.6"N 94°25'14.6"E, 9.07.1960
- 42 idem 14, Sirohi Kashong = Siruhi Kashong = Shirui Kashong (peak), 7000–7500 ft, 25°07'16.8"N 94°27'29.5"E, 11–13.07.1960
- 43 idem 12 & 30, Ukhrul, 6000 ft, 25°04'46.3"N 94°21'07.8"E, 14–15.07.1960
- 44 Khanggai, 4828 ft, 16.07.1960
- 45 Pushing, 6000 ft, 25°04'27.2"N 94°28'00.7"E, 17.07.1960
- 46 Pushing, 4800 ft, 25°03'51.5"N 94°28'37.7"E, 18.07.1960
- 47 Lushat, 2800 ft, 19.07.1960
- 48 Langkae = Lanchah, 5000 ft, 20.07.1960
- 49 Chattrib, 4300 ft, 24°58'26.5"N 94°36'52.9"E, 21.07.1960
- 50 Chattrib, 1500 ft, 24°57'35.8"N 94°35'30.7"E, 22.07.1960
- 51 Chattrib, 4500 ft, 24°58'26.5"N 94°36'52.9"E, 23.07.1960
- 52 Chaharg Khunon = Chahong Khunou, 1200 ft, 24°51'21.3"N 94°37'49.4"E, 24.07.1960
- 53 Aishi, 1200 ft, 24°47'17.3"N 94°34'38.1"E, 25.07.1960
- 54 Lakhan Khuman, 3000 ft, 24°48'51.1"N 94°33'34.6"E, 26.07.1960
- 55 Bongba Khunou = Bungpa Khunou, 4800 ft, 24°49'12.6"N 94°29'13.2"E, 27.07.1960
- 56 Bongba Khulen = Bungpa Khullen, 2500 ft, 24°49'49.6"N 94°27'28.6"E, 28.07.1960
- 57 Ningthi, 1800 ft, 24°51'57.2"N 94°23'58.3"E, 29.07.1960
- 58 Ningthi, 2500 ft, 24°52'48.8"N 94°24'35.5"E, 30.07.1960
- 59 Hanggou = Hangkou, 3300 ft, 24°55'27.1"N 94°23'53.1"E, 31.07.1960
- 60 Apong, 3000 ft, 24°56'14.4"N 94°24'17.0"E, 1.08.1960
- 61 Apong, 2400 ft, 24°56'18.8"N 94°23'28.3"E, 2.08.1960
- 62 Datum, 5000 ft, 3.08.1960
- 63 Sokpao = Shokvao?, 2700 ft, 4.08.1960
- 64 Lithan = Litan, 3000 ft, 24°56'33.5"N 94°12'52.4"E, 5.08.1960

- 65 Imphal, 2500 ft, 24°51'04.5"N 93°57'01.6"E, 7–8.08.1960
 66 idem 64, Litan, 3000 ft, 24°56'33.5"N 94°12'52.4"E, 10.08.1960
 67 Litan, 4000 ft, 24°55'54.6"N 94°13'27.0"E, 11.08.1960
 67 Yongphu, 4500 ft, 12.08.1960
 68 Sinda, 4000 ft, 13.08.1960
 69 Marou, 4000 ft, 14.08.1960
 70 Singkap, 3800 ft, 16–17.08.1960
 71 Tangkhul Hundung, 3000 ft, 24°48'23.3"N 94°14'29.0"E, 18.08.1960
 72 Natjang, 4500 ft, 24°42'42.8"N 94°11'39.9"E, 19.08.1960
 73 Mollen, 3800 ft, 24°42'25.7"N 94°10'51.7"E, 20.08.1960
 74 Walthou, 2550 ft, 21.08.1960
 75 idem 65, Imphal, 2560 ft, 24°51'04.5"N 93°57'01.6"E, 22–26.08.1960
 76 Panggang, 2750 ft, 25°01'33.4"N 93°52'60.0"E, 27.08.1960
 77 Khaorang = Kharang, 3750 ft, 24°50'24.0"N 93°47'49.9"E, 28.08.1960
 78 Phaipbengmun = Phaipheng, 2157 ft, 24°21'04.4"N 93°27'46.6"E, 29.08.1960
 79 Phaipbengmun = Phaipheng, 5000 ft, 24°20'31.1"N 93°26'03.9"E, 30.08.1960
 80 Pamjai = Pamzal, 3500 ft, 24°18'57.6"N 93°22'19.0"E, 31.08.1960
 81 Songpekumun = Suangpekumun, 900 ft, 24°20'14.3"N 93°17'24.9"E, 1.09.1960
 82 Thanlou = Thanlon, 2500 ft, 24°15'58.6"N 93°16'50.9"E, 2.09.1960
 83 Pherjol = Pherzawl, 900 ft, 24°15'47.6"N 93°11'12.3"E, 3.09.1960
 84 Pherjol = Pherzawl, 1100 ft, 24°15'47.6"N 93°11'12.3"E, 4.09.1960
 85 Ptarbung, 3000 ft, 5.09.1960
 86 Tipaimukh, 80 ft, 24°14'06.5"N 93°01'34.1"E, 6–7.09.1960

Mizoram (Lushai hills)

- 87 Waiten, 2500 ft, 8.09.1960
 88 Thingsat, 3500 ft, 24°11'49.3"N 92°56'24.3"E, 9.09.1960
 89 Thingsat, 2000 ft, 24°11'49.3"N 92°56'24.3"E, 10.09.1960
 90 Ratu, 3000 ft, 24°06'43.2"N 92°55'12.8"E, 11.09.1960

- 91 Darlon = Darlawn, 3500 ft, 24°01'00.7"N 92°55'36.2"E, 12.09.1960
 92 Sawleng, 4000 ft, 23°58'55.7"N 92°56'04.3"E, 13.09.1960
 93 Phaileng, 3500 ft, 14.09.1960
 94 Sonai = Sonai River, 308 ft, 23°51'04.2"N 92°49'45.1"E, 15.09.1960
 95 Nausel, 4000 ft, 23°48'58.2"N 92°45'44.3"E, 16.09.1960
 96 Aijal = Aizwal, 3700 ft, 23°44'39.5"N 92°44'33.9"E, 17.09/1960
 97 Sairang, 500 ft, 23°48'29.8"N 92°39'15.5"E, 20.09.1960
 98 Sairang, 200 ft, 23°48'39.1"N 92°38'58.6"E, 21.09.1960

Southern India (mainly Tamil Nadu and Kerala) 1958–1959 (Map 7a, 7b)

The southern part of the Indian peninsula is mainly separated into two regions: the Kerala and the Tamil Nadu (named Madras in Schmid's notebook) (Map 1). We cut this wide region in two parts to make the maps more readable (Map 7a, 7b)

Penjab

- 1 Mandkot Cotti, < 2000 ft, 1.11.1958

Madhya Pradesh

- 2 Satanmara = Satanwada?, 1308 m, 25°44' 9.2" N 77°23'48.9"E, 28.11.1961
 3 Biaora, 1308 ft, 23°55'07.7"N 76°54'17.8"E, 4. 11.1958
 4 Sendhma = Sendhwa, 1308 ft, 21°41'20.7"N 75°04'53.1"E, 5.11.1958

Bombay (Mumbai)

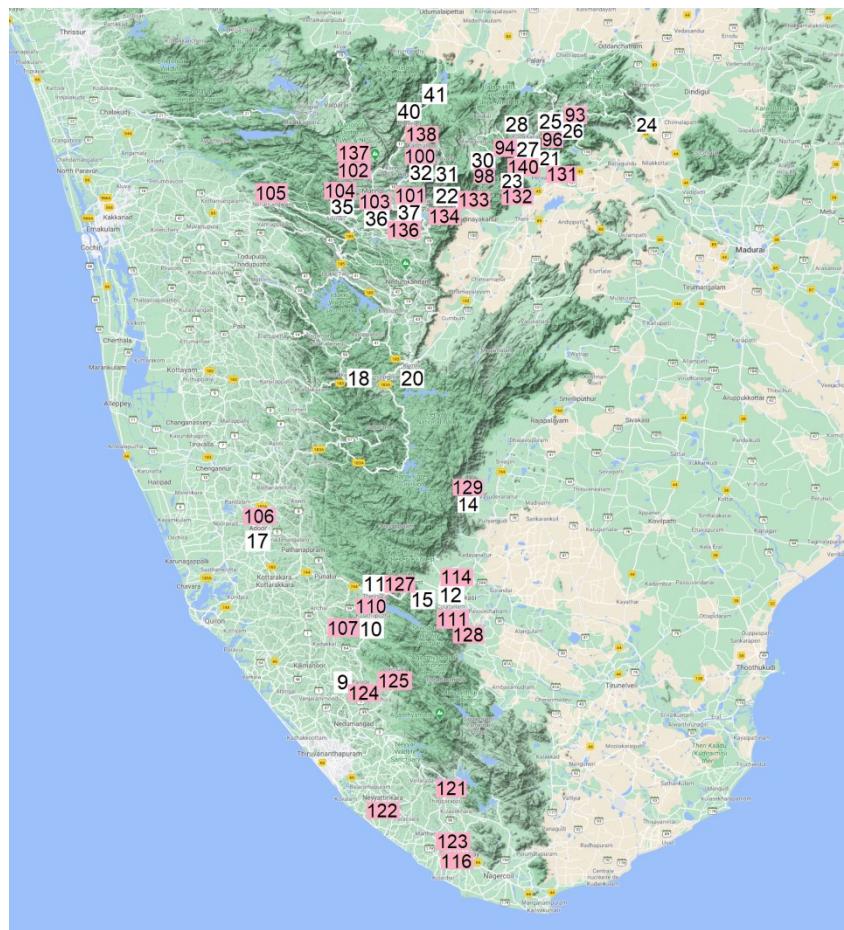
- 5 Chandou, 1308 ft, 6.11.1958

Mysore (Karnataka)

- 6 Hiriyur, < 1000 ft, 13°56'58.4"N 76°36'50.1"E, 9.11.1958

Tamil Nadu (Madras)

- 7 Kunjankuzhi, 400 ft, 19.11.1958
 8 Balamor, 1000 ft, 20.11.1958



Map 7a. Schmid's road in Kerala.

Kerala

- 9 Palod = Palode, 400 ft, $8^{\circ}43'14.3''\text{N}$ $77^{\circ}01'12.5''\text{E}$, 21.11.1958
- 10 Kolattupuzha = Kulathupuzha, 400 ft, $8^{\circ}54'23.9''\text{N}$ $77^{\circ}03'47.9''\text{E}$, 21.11.1958
- 11 Tenmalai = Thenmala, 500–900 ft, $8^{\circ}58'07.4''\text{N}$ $77^{\circ}04'13.7''\text{E}$, 22.11.1958

Tamil Nadu (Madras)

- 12 Kuttalam = Courtallam, 500–1500 ft, $8^{\circ}55'10.4''\text{N}$ $77^{\circ}15'53.7''\text{E}$, 23.11.1958
- 13 Aindalai Aruri, 800–1500 ft, 24.11.1958
- 14 Kattalaimala, in the surroundings of Courtallam and Kannupulimedu, probably corresponds to Kottamalai, 1000 ft, $9^{\circ}13'33.3''\text{N}$ $77^{\circ}19'06.9''\text{E}$, 4.11.1958
- 15 Kannuppali = Kannupulimedu, 800–1500 ft, $8^{\circ}56'28.1''\text{N}$ $77^{\circ}12'10.2''\text{E}$, 25.11.1958

Kerala

- 16 idem 11, Tenmalai = Thenmala, 500–900 ft, $8^{\circ}58'07.4''\text{N}$ $77^{\circ}04'13.7''\text{E}$, 26.11.1958
- 17 Adur = Adoor, 400 ft, $9^{\circ}08'42.8''\text{N}$ $76^{\circ}44'06.7''\text{E}$, 27.11.1958
- 18 Pirmed = Peermade, 600 ft, $9^{\circ}34'40.2''\text{N}$ $77^{\circ}00'56.8''\text{E}$, 27.11.1958
- 19 Pirmed = Peermade, 3000–3500 ft, $9^{\circ}34'00.7''\text{N}$ $77^{\circ}00'59.9''\text{E}$, 27.11.1958

Tamil Nadu (Madras)

- 20 Kumili = Kumily, 2000–2500 ft, $9^{\circ}36'10.6''\text{N}$ $77^{\circ}10'07.6''\text{E}$, 28.11.1958
- 21 Krishnappanayakkan = Krishnappanayakkan Tope (close to Kumbakkrai Falls), 1200 ft, $10^{\circ}10'46.8''\text{N}$ $77^{\circ}31'51.5''\text{E}$, 30.11.1958
- 22 Kottagudi = Kottakudi, 2000–2500 ft, $10^{\circ}04'54.1''\text{N}$ $77^{\circ}14'49.1''\text{E}$, 30.11.1958

- 23 Sathuparai = Sothuparai dam, 1500 ft, 10°07' 57.0"N 77°27'20.1"E, 1.12.1958
- 24 Chittayankottai = Sithayankottai, 1000 ft, 10°15'55.1"N 77°50'00.2"E, 2.12.1958
- 25 Perumalmalai, 4000–4500 ft, 10°15'55.5"N 77°32'37.7"E, 3–4.12.1958
- 26 Senhaganur = Senbahanoor, 5500–6500 ft, 10°13'52.3"N 77°30'11.6"E, 3–8.12.1958
- 27 Kodaikanal, 6500–7200 ft, 10°12'54.0"N 77°28'45.5"E, 5–12.12.1958
- 28 Vilpatti, 6300 ft, 10°15'58.5"N 77°29'56.7"E, 9.12.1958
- 29 Fort Hamilton, 7200–7500 ft, 12–13.12.1958
- 30 Swamp Hill, 7300 ft, 10°10'01"N 77°22'36"E, 13.12.1958

Kerala

- 31 Top Station, 7000 ft, 10°07'44.8"N 77°14'45.4"E, 14.12.1958
- 32 Ellapatti, 6000 ft, 10°07'40.7"N 77°12'36.8"E, 14.12.1958
- 33 Palar, 5200 ft, 14.12.1958
- 34 Mumar = Munnar?, 1500–3500 ft, 15.12.1958
- 35 Vellala Mudi, 3000 ft, 10°01'47.3"N 76°58'50.9"E, 15.12.1958
- 36 Pallivasal, 2500 ft, 10°03'10.3"N 77°03'32.1"E, 16.12.1958
- 37 Periyakanal = Perikanal, 5000 ft, 10°02'11.4"N 77°09'35.1"E, 17.12.1958
- 38 Craiglamont, 6500 ft, 18.12.1958
- 39 Talaiyar Maduvakkudi, 4200 ft, 18.02.1958
- 40 Maraiyur = Marayoor, 3000–4000 ft, 10°16'17.7"N 77°09'16.0"E, 19–20.02.1958
- 41 Chimar = Chinnar Wildlife Sanctuary, 1500 ft, 10°20'24.2"N 77°13'05.2"E, 20.12.1958

Tamil Nadu (Madras)

- 42 Varaiyattu Tittu, 1500 ft, 21.12.1958
- 43 Vannanturai, 1300 ft, 22.12.1958
- 44 Attikatti, 2500–3500 ft, 22.12.1958
- 45 Coibatore = Coimbatore, 1500 ft, 10°55'33.4"N 76°54'38.2"E, 23.12.1958
- 46 Coonoar = Coonoor, 2400–4500 ft, 11°19'52.9"N 76°48'02.8"E, 24.12.1958
- 47 Ootacamund = Udhagamandalam = Ooty, 7200–7300 ft, 11°24'12.7"N 76°41'42.3"E, 25.12.1958

- 48 Avalanche = Avalanche Lake Forest Reserv, 6900–7500 ft, 11°17'59.3"N 76°35'23.9"E, 27–30.12.1958
- 49 Makurti = Mukurthi National Park, 4100 ft, 11°09'25.2"N 76°30'30.5"E, 1.01.1959
- 50 Pykara, 6900 ft, 11°28'20.6"N 76°36'13.8"E, 2.02.1959
- 51 Gudalur, 4000–6500 ft, 11°29'07.0"N 76°31'31.9"E, 6–7.01.1959
- 52 Devala, 3000 ft, 11°28'36.6"N 76°22'50.1"E, 8.01.1959

Kerala

- 53 Meppadi, 2800–3500 ft, 11°33'13.8"N 76°08'02.7"E, 8–9.01.1959
- 54 Erumakolli, 3200 ft, 11°33'58.8"N 76°06'35.7"E, 10.01.1959

Mysore (Karnataka)

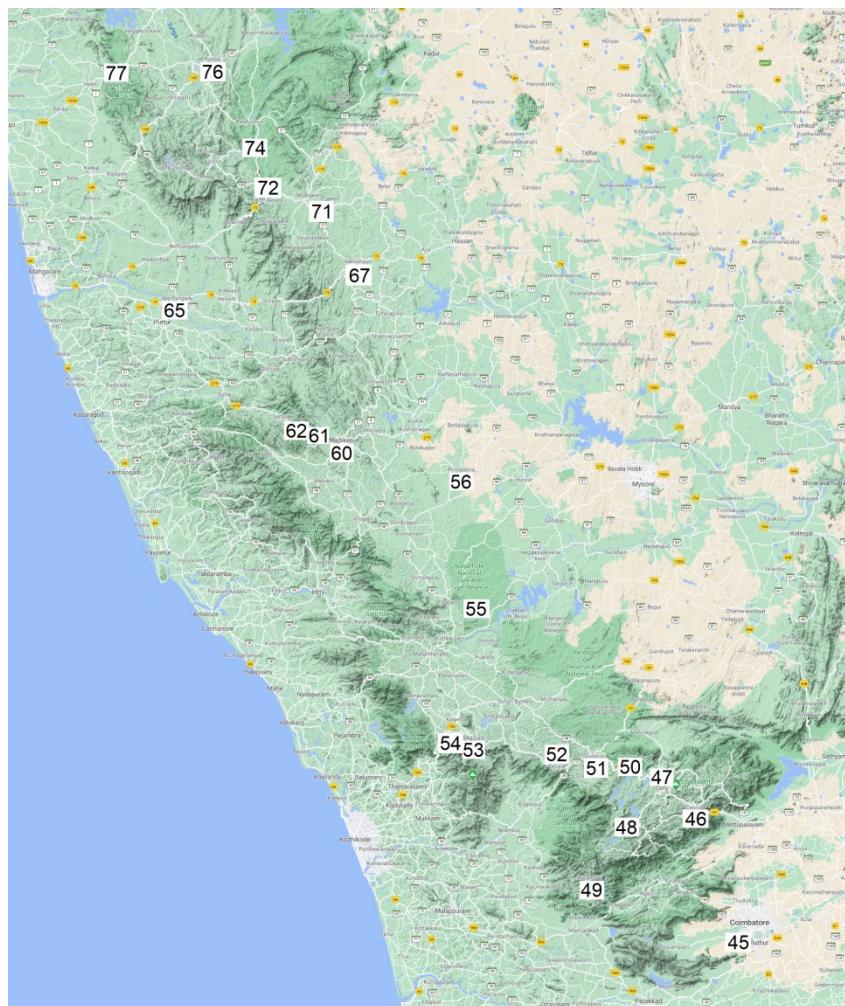
- 55 Kakankote, 2450 ft., 11°55'36.0"N 76°09'12.6"E, 10.01.1959
- 56 Piriyapatna, 2800 ft, 12°20'30.6"N 76°04'59.8"E, 14.01.1959

Kerala

- 57 Vittekoli, 2200 ft, 15.01.1959
- 58 Urti, 300 ft, 15.01.1959
- 59 Mankut, 200 ft, 15.01.1959

Mysore (Karnataka)

- 60 Mercara, 3400 ft, 12°25'29.1"N 75°43'25.5"E, 16.01.1959
- 61 Katageri = Katakeri, 3000 ft, 12°25'46.9"N 75°41'57.4"E, 16.01.1959
- 62 Mormangeri = Monnageri, 2500 ft, 12°25'56.4"N 75°40'27.5"E, 16.01.1959
- 63 Yodpai, 2000 ft, 16.01.1959
- 64 Kunnimotte, 800–1000 ft, 17.01.1959
- 65 Uppinangadi, 300 ft, 12°50'10.7"N 75°14'56.9"E, 17.01.1959
- 66 Malbidu, 800–2300 ft, 18.01.1959
- 67 Sakleshpur, 2950 ft, 12°56'12.0"N 75°47'15.1"E, 19.01.1959
- 68 Honnatlu, 2700 ft, 20.01.1959
- 69 Kulgunda, 1000–1250 ft, 20–21.01.1959
- 70 Subrahmanya, 400 ft, 20.01.1959
- 71 Jannapura, 2959 ft, 13°05'00.1"N 75°41'18.6"E, 22.01.1959



Map 7b. Schmid's road in Tamil Nadu.

72 Kotigehara = Kottigehara, 2900 ft, 13°07' 19.2"N 75°31'23.3"E, 23.01.1959

73 Anjadi, 287 ft, 23.01.1959

74 Mahagundi = Magundi, 2350 ft, 13°16'18.2"N 75°29'15.6"E, 24.01.1959

75 Hariharpur, 2043 ft, 25.01.1959

76 Koppa, 2300 ft, 13°31'44.2"N 75°21'34.4"E, 26.01.1959

77 Someshwar = Someshwara Wildlife Sanctuary, 295 ft, 13°29'26.2"N 75°04'03.4"E, 27.01.1959

78 Nagodi, 2500 ft, 13°55'31.3"N 74°54'42.5"E, 28.01.1959

79 Talgappa, 1941 ft, 14°12'49.4"N 74°54'25.0"E, 29.01.1959

80 Yellapur, 1500 ft, 14°57'08.4"N 74°42'01.3"E, 30.01.1959

Bombay (Mumbai)

81 Nandipur, 300 ft, 1.02.1959

82 Rajapur, 300 ft, 2.02.1959

83 Patan, 2500 ft, 3.02.1959

84 Sykes, 2000 ft, 5.02.1959

Madhya Pradesh

85 Phalghat, 2000 ft, 6.02.1959

86 Guna, 2000 ft, 24°37'11.7"N 77°16'23.6"E, 7.02.1959

87 Satanwara = Satanwada, 1308 ft, 25°44'51.21" N 77°24'29.44"E, 8.02.1959

South India 1961–1962

Madhya Pradesh

- 88 idem 87, Satamara = Satanwada (Lonsdale 2020), 1308 m, $25^{\circ}44'51.21''N$ $77^{\circ}24'29.44''E$, 28.11.1961
 89 Sarangpur, 2000 ft, 29.11.1961

Bombay (Mumbai)

- 90 idem 84, Sykes, 2000 ft, 30.11.1961

Mysore (Karnataka)

- 91 Haveri, 2000 ft, $14^{\circ}46'43.4''N$ $75^{\circ}23'37.1''E$, 2.12.1961

Tamil Nadu (Madras)

- 92 Velor, 1500 ft, 4.12.1961
 93 idem 25, Perumalmalai, 4000–4500 ft, $10^{\circ}16'15.6''N$ $77^{\circ}33'55.6''E$, 5.12.1961
 94 idem 27, Kodaikanal, 7300 ft, $10^{\circ}12'54.0''N$ $77^{\circ}28'45.5''E$, 6.12.1961
 95 idem 25, Perumalmalai, 5000–7000 ft, $10^{\circ}17'52.1''N$ $77^{\circ}33'53.0''E$, 5.12.1961
 96 Senbaganur = Senbahanoor, 5800 ft, $10^{\circ}14'27.8''N$ $77^{\circ}30'42.2''E$, 8.12.1961
 97 idem 25, Perumalmalai, 5500 ft, $10^{\circ}15'55.7''N$ $77^{\circ}33'14.9''E$, 9.12.1961
 98 idem 30, Swamp Hill, 7300 ft, $10^{\circ}10'01''N$ $77^{\circ}22'36''E$, 10.12.1961
 99 Vandaram, 8000 ft, 11.12.1961

Kerala

- 100 Kandalur = Kanthalloor, 5500 ft, $10^{\circ}12'43.2''N$ $77^{\circ}12'29.7''E$, 12.12.1961
 101 idem 37, Periyakanel = Periakanal, 5000 ft, $10^{\circ}02'11.4''N$ $77^{\circ}09'35.1''E$, 13.12.1961
 102 Silent Valley, 6500 ft, according to the elevation, it should be placed northwards the ‘Silent Valley’ village, in the Eravikulam National Park, $10^{\circ}08'39.5''N$ $77^{\circ}01'57.2''E$, 14.12.1961
 103 idem 34, Munnar, 3500 ft, $10^{\circ}05'04.8''N$ $77^{\circ}04'22.0''E$, 15.12.1961
 104 idem 35, Vellala Mudi, 3000 ft, $10^{\circ}01'56.0''N$ $76^{\circ}59'06.9''E$, 15.12.1961
 105 idem 100, Kandalur = Kanthalloor, 5500 ft, $10^{\circ}12'43.2''N$ $77^{\circ}12'29.7''E$, 16.12.1961
 106 Neriyamangalem = Neriamangalam, 800 ft, $10^{\circ}03'07.6''N$ $76^{\circ}47'01.5''E$, 17.12.1961

- 107 idem 17, Adur = Adoor, 400 ft, $9^{\circ}08'57.5''N$ $76^{\circ}43'58.4''E$, 19.12.1961

- 108 idem 10, Kolattupugha = Kolattupula = Kulathupuzha, 400 ft, $8^{\circ}53'47.0''N$ $77^{\circ}03'27.4''E$, 19.12.1961

- 109 Sangalipalam, 475 ft, 20–21.12.1961

- 110 idem 108, Kolattupugha = Kolattupula, 400 ft, $8^{\circ}53'47.0''N$ $77^{\circ}03'27.4''E$, 22.12.1961

Tamil Nadu (Madras)

- 111 idem 12, Kuttalam = Courtallam, 500–1500 ft, $8^{\circ}55'10.4''N$ $77^{\circ}15'53.7''E$, 23.12.1961

- 112 idem 13, Aindalai Aruri, 800–1500 ft, 24.12.1961

- 113 idem 14, Kattalaimala in the surroundings of Courtallam and Tenkasi probably corresponds to Kottamalai, 1000 ft, $9^{\circ}13'33.3''N$ $77^{\circ}19'06.9''E$, 25–26.12.1961

- 114 Tenkari = Tenkasi, 400 ft, $8^{\circ}57'08.5''N$ $77^{\circ}18'49.5''E$, 27.12.1961

Kerala

- 115 Kughittùai, 200 ft, 30.12.1961

Tamil Nadu (Madras)

- 116 Neyyur = Neiyur = Neyyoor, 100 ft, $8^{\circ}12'52.1''N$ $77^{\circ}18'11.7''E$, 31.12.1961

- 117 Naquroil, 200 ft, 1.01.1962

- 118 Kunjankhuji, 400 ft, 2.01.1962

- 119 Balamou, 1500 ft, 3–4.01.1962

- 120 Ottakada, 350 ft, 5.01.1962

- 121 Kalial, 200 ft, $8^{\circ}23'58.3''N$ $77^{\circ}18'00.7''E$, 7.01.1962

Kerala

- 122 Neyyartinkara = Neyyattinkara, 200 ft, $8^{\circ}24'36.9''N$ $77^{\circ}05'17.1''E$, 8.01.1962

Tamil Nadu (Madras)

- 123 Udayagiri, 200 ft, $8^{\circ}14'31.2''N$ $77^{\circ}20'19.7''E$, 10.01.1962

Kerala

- 124 idem 9, Palode, 300 ft, $8^{\circ}43'21.9''N$ $77^{\circ}01'30.1''E$, 11.01.1962

- 125 Ponmudi, 3500 ft, $8^{\circ}45'36.2''N$ $77^{\circ}06'51.8''E$, 12.01.1962

- 126 Kalpatti, 250 ft, 13.01.1962

127 Ariankavu = Aryankavu, 750 ft, 8°58'27.7"N
77°08'59.3"E, 14.01.1962

Tamil Nadu (Madras)

128 idem 12, Old Kuttalam Falls = Old Courtallam Falls, 80 ft, 8°54'04.3"N 77°17'47.9"E, 15.01.1962

129 idem 14, Kattalaimala in the surroundings of Courtallam and Tenkasi probably corresponds to Kottamalai, 1000 ft, 9°13'33.3"N 77°19'06.9"E, 16–17.01.1962

130 Komadi, 950 ft, 18–19.01.1962

131 idem 21, Krishnappanayakkan = Krishnappa-nayakkan Tope (close to Kumbakkrai Falls), 1200 ft, 10°10'46.8"N 77°31'51.5"E, 21.01.1962

132 idem 23, Sathuparai = Sothuparai dam, 1200 ft, 10°07'48.8"N 77°28'03.2"E, 22.01.1962

133 idem 22, Kottagudi = Kottakudi, 2500 ft, 10°04'43.9"N 77°15'44.4"E, 23.01.1962

134 Bodi Mettu = Bodimettu, 3000 ft, 10°01'25.4"N 77°15'50.1"E, 24.01.1962

Kerala

135 Pannujar, 3000–4000 ft, 24.01.1962

136 idem 37, Perujakanal = Periakanal, 5000 ft, 10°02'11.4"N 77°09'35.1"E, 25.01.1962

137 idem 102, Silent Valley, 6500 ft, according to the elevation, it should be placed much northwards the 'Silent Valley' village, in the Eravikulam National Park, 10°08'39.5"N 77°01'57.2"E, 29.01.1962

138 idem 100, Kandalur = Kanthalloor, 5500 ft, 10°12'43.2"N 77°12'29.7"E, 31.01.1962

Tamil Nadu (Madras)

139 idem 30, Swarup hill = Swamp Hill, 7300 ft, 10°10'01"N 77°22'36"E, 2.02.1962

140 idem 27, Kodaikanal, 7300 ft, 10°12'54.0"N 77°28'45.5"E, 3.02.1962

Madhya Pradesh

141 idem 2, Satanmara= Satanwada?, 1308 m, 25°44'49.2"N 77°23'48.9"E, 6.02.1962

DEPOSITORIES

The Natural History Museum, London, England (BMNH)

Canadian National Collection, Ottawa, Canada (CNC)

Department of Plant Protection, Henan Institute of Science and Technology, Henan, China (DPP-HIST)

Hungarian natural History Museum, Budapest, Hungary (HNHM)

Malicky Private Collection, Lunz am See, Austria (MPC).

Museum for Natural History of the Humboldt University of Berlin, Germany (ZMB).

Oláh Private Collection, Debrecen, Hungary. Under national protection by the Hungarian Natural History Museum, Budapest, Hungary (OPC).

Royal Ontario Museum, Toronto, Canada (ROM)

Swedish Museum of Natural History, Stockholm, Sweden (SMNH)

US National Museum, Natural History, Washington DC (USNM)

Zoologisches Museum, Centrum für Naturkunde, Hamburg, Germany (CeNak)

TAXONOMY

Hydropsychidae Curtis, 1835

Diplectroninae Ulmer, 1951

Diplectrona Westwood, 1840

The genital structure of the genus *Diplectrona* is usually blunt, often lack conspicuous characters, and exhibits minor differences requiring careful examination of several specimens to recognise trait stability and the ranges of variability. Combination of following additional body characters may help to differentiate among species: (1) magnitude of eye enlargement; (2) presence or absence of setae on eye; (3) maxillary palp formula; (4) suture and setal wart pattern on head; (5) length of lateral filament, (6) cuticular structures associated with the opening of sternum V gland; (7) presence or absence and the number of reticulated sacs in abdominal segments; (8) pre-

sence or absence of fork I on hindwing. However, at the present knowledge we do not know how stable some of these additional body characters are.

We have recorded the shape of paraproct (lateral plate of segment X) as well as the lateral profile of the phallotheca and especially the ventral profile of the phallic head rather stable even with minor shape modification of subtle divergences.

It seems, these structures diverge rapidly, subtly and stably in contemporary speciation processes of the *Diplectrona* genus (Oláh 2013). Moreover, they appear subtle and varying for us if we apply inadequate microscope of low resolution level with unstable angle of observation and without examination of variability and stability ranges, but robust enough for mate recognition of caddisflies in building their reproductive isolation (Oláh 2017).

The discovery of speciation super strait was particularly productive to delineate closely related phylogenetic incipient sibling species in the Hydropsychidae family (Oláh 2018a, 2018b, Oláh & Jan de Vries 2019). In the hydropsychid *Diplectrona atra* species complex we have found the lateral profile of the entire phallic organ and the lateral profile of the pair of phallotremal sclerites very diverse, stable and reliable to delineate and establish sibling species in this small species complex (Oláh *et al.* 2020a).

Based on the principle of “widely varying species of wide distribution”, Malicky (2002) has synonymized or listed several taxa with well-discriminable divergences in the paraproct and in the phallic organ, under the following species name: *D. dilutensis*, *D. fama*, *D. kallirrhoe*, *C. aurovittata*, *C. sanguana*, *C. burha*, *C. hermione*, *C. octomaculata*. Malicky’s drawings of specimens from different geographic regions exhibit significant divergences representing incipient sibling species and suggest that the genus *Diplectrona* is very diverse in the Oriental region and that there are probably species complexes represented by only single species names. This hidden diversity

is explorable by examining and comparing populations and focusing on details in paraproct and the phallic organ.

The taxonomic history of *Diplectrona* is accompanied by uncertain determinations. Some authors of species descriptions have declared or remarked the described species with uncertain character states. In order to overcome the unsettled taxonomic position of their described species some have published additional drawings of specimens from different regions (Ulmer 1905a, 1905b, 1907, 1909, 1913, 1930, 1951, Schmid 1961, Malicky 2002). Malicky has frequently explained the existing significant character states’ divergences with the high variability of the widely distributed species. Here we cite some examples.

Under the species name *Diplectrona aurovittata* (Ulmer, 1906), a member of the new *Diplectrona tamdaophila* species complex of the *Diplectrona aurovittata* species group with various spine formations on the paraproct, Malicky (2002) has listed and drawn three different unknown species and one already known species *Diplectrona tamdaophila* from four different countries (Thailand, Vietnam, Malaysia, Indonesia).

Under the species name of *Diplectrona sangiana* Kimmins, 1964, a member of the new *Diplectrona tabrobanes* species group without spines on the paraproct, Malicky (2002) has listed and drawn from Nepal two species from the *Diplectrona tamdaophila* and one species *Diplectrona hasada* new species complexes of the *Diplectrona aurovittata* species group characterized by various spine developments on the paraproct.

Similarly, under the species name *Diplectrona burha* Schmid, 1961, a member of the new *Diplectrona tamdaophila* species complex of the *Diplectrona aurovittata* species group with various spine formations on the paraproct, Malicky (2002) has listed one unknown species (Nepal) from the *Diplectrona tabrobanes* new species group without spines on the paraproct and

three unknown species (Thailand, Vietnam, Taiwan) from the *Diplectrona hasada* new species complex of the *Diplectrona aurovitatta* species group characterized by various spine developments on the paraproct.

In the present study we have delineated four species group for the examined *Diplectrona* species in the Oriental Region. (1) *Diplectrona aurovitatta* new species group having paraproct (lateral plate of segment X) of a pair of mostly setaless plate-like structure with variously formed pointed spine-like processes in various numbers and usually produced in apicodorsal position. (2) *Diplectrona coalescens* species group was established as a *Diagnostic Species Group* by Sun (2017), tacitly contrasting with the expiring epistemic concept of the so called *Phylogenetic Species Group*. This species group is characterized by the loss of segment X (mesal plate or inner lobe). Segment X, the well differentiated mesal plate or inner lobe of segment is highly reduced, almost entirely vestigial, fused to the complex. (3) *Diplectrona gombak* new species group having paraproct (lateral plate or outer lobe of segment X) of a pair of mostly setaless plate-like structure with elongated dorsal and/or lateral profile. (4) *Diplectrona taprobanes* new species group having paraproct (lateral plate or outer lobe of segment X) of a pair of mostly setaless plate-like structure with rounded dorsal or more in lateral profile without any spiny processes.

Diplectrona aurovitatta new species group

Here we group species having paraproct (lateral plate of segment X) of a pair of mostly setaless plate-like structure with variously formed pointed spine-like processes in various numbers and usually produced in apicodorsal position. Most of the Oriental *Diplectrona* species belong to this group. We have established two species complexes in this group: *Diplectrona hasada* new species complex and *Diplectrona tamdaophila* new species complex.

Species of the *Diplectrona taprobanes* new species group have paraproct produced short and

broad in dorsal view as well as *Diplectrona gombak* new species group have paraproct long and narrow. Both species groups are without spiny processes on the paraproct.

However, there is no clear-cut delineation between the species of the *Diplectrona aurovitatta* group with spiny processes and the *D. taprobanes* new species group with short or *D. gombak* new species group with long paraproct in horizontal position without spines. Character combination is always incongruent due to the chimerism in the stochastic universe. Phylogenetic tree branching is just the surface. The reality in the deep is always reticulated, forming a complex network with multiple origins due to integrative forces operating and correcting against random effects.

Diplectrona hasada new species complex

Diplectrona hasada new species complex having paraproct (lateral plate of segment X) of a pair of mostly setaless plate-like structure with doubled pointed spine-like processes in various forms and usually produced in apicodorsal position.

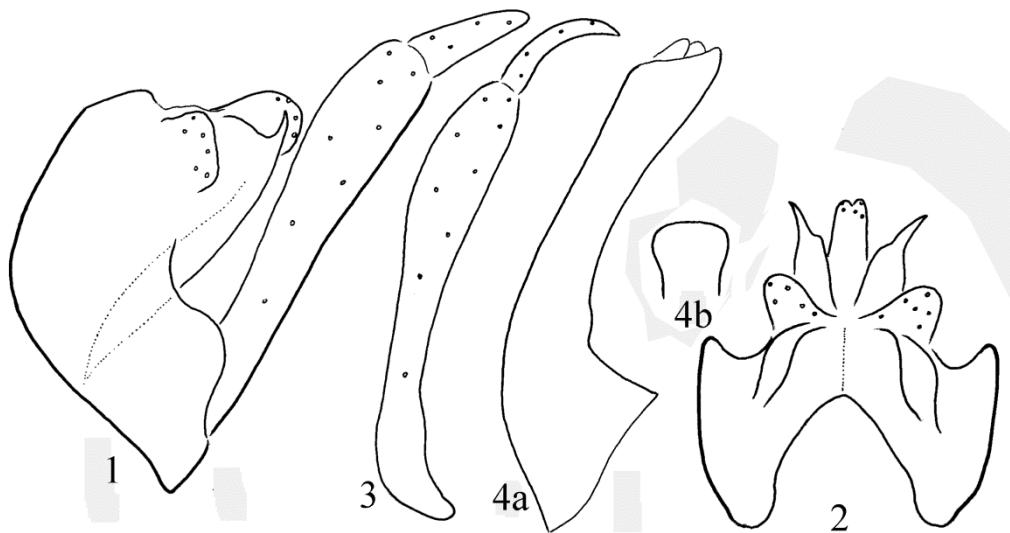
Diplectrona bandara sp. nov.

(Figures 1–4, Map 5: n° 84, Map 8)

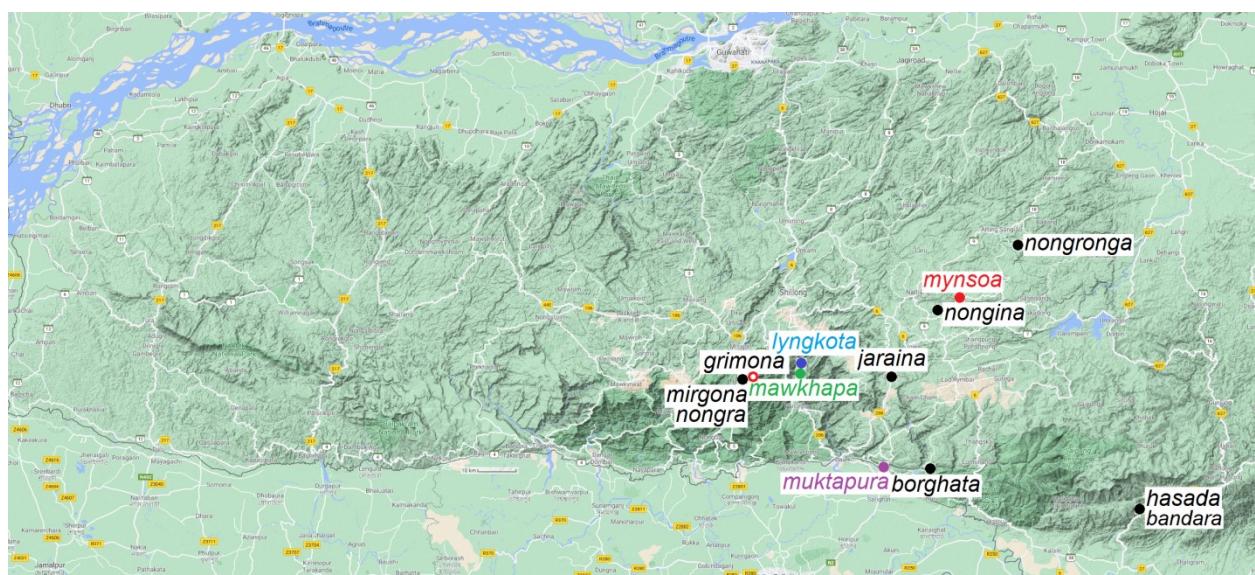
Material examined. Holotype: **India**, Assam, United District of Mikir and North Cachar Hills, Bandarkhal, 300 ft., 25°03'31.1"N 92°48'02.5"E, 9.V.1960, leg. F. Schmid (1 male, CNC).

Diagnosis. This species belongs to the *Diplectrona aurovitatta* species group and to the *D. hasada* species complex. Having double-spined dorsoapical region of the paraproct it is most close to *D. muktapura* sp. nov. It differs by the more produced lateral spine of the paraproct as well as by the ventral profile of the phallic head.

Description. Male (in alcohol). Light brown animal. Forewings without any pattern. Forewing length is 8 mm, apical fork I present on hindwing. Eyes setaless, not enlarged. Maxillary palp formula I-IV-III-II-V. Abdominal segments without



Figures 1–4. *Diplectrona bandara* sp. nov. Holotype: 1 = male genitalia in left lateral view, 2 = male genitalia in dorsal view, 3 = left gonopod in ventral view, 4a = phallic organ in left lateral view, 4b = phallic head in ventral view.



Map 8. *Diplectrona hasada* complex with only Meghalaya.

any reticulated internal sacs; filament of sternite V with length of sternite V and VI.

Male genitalia. Segment IX rounded anterad, dorsum long and flat with a middle depression line, ventrum shorter. Segment X fused to the tergum IX. The dorsoapical setose lobes (inner lobes) of segment X well-developed, protruded narrow in dorsal view and broad in lateral view; seem bilobed, but tightly adhered. Cerci setose,

high and short in lateral view, rounded subtriangularly protruded in dorsal view. Unsetose paraproct (outer lobes or lateral plates of segment X) subtriangular flat plate in lateral view with single upward directed pointed spine-like process; in dorsal profile the lateral spine is produced, the mesal spine less developed. Gonopods robust straight with coxopodite of dilated apical half; harpago mesad turning with sharply ventrad

pointed head. Phallic apparatus with down curving and broadening basal section and with a longer tube-forming horizontal two thirds with obliquely cut apex in lateral view; two pairs of endothecal processes visible, both with blunt apices in lateral view and pointed triangular in ventral view; dorsal endothecal process bigger; phallotremal sclerite less distinct. The phallic organ with rounded capitate head in ventral view.

Etymology. *bandara*, named after the name of locus typicus of the holotype.

***Diplectrona borghata* sp. nov.**

(Figures 5–9, Map 5: n° 17, Map 8)

Material examined. Holotype: **India**, Meghalaya (United Jaintia and Khasi Hills), Borghat, 200 ft., 25°09'50.0"N 92°15'13.4"E, 21–22.XII. 1959, leg. F. Schmid (1 male, CNC).

Diagnosis. This species belongs to the *Diplectrona aurovittata* species group and to the *Diplectrona hasada* species complex. Having double-spined or pointed dorsoapical region of the paraproct it is most close to *D. nongronga* sp. nov. It differs by the much longer mesad turning harpago; by the lateral and dorsal profile of the paraproct; by the lower and broader lateral profile of the phallotheca.

Description. Male (in alcohol). Light brown animal. Forewings without pattern. Forewing length is 8 mm, apical fork I present on hindwing. Eyes setaless, not enlarged. Maxillary palp formula I-IV-III-II-V. Abdominal segment VII without any reticulated internal sacs; filament on sternum V as long as the length of segments V-VI.

Male genitalia. Segment IX rounded anterad with truncated dorsum, dorsum long and flat with a middle depression line, ventrum long. Segment X fused to the tergum IX. The dorsoapical setose lobes (inner lobes) of segment X well-developed, protruded in dorsal view; seem bilobed, but tightly adhered. Cerci setose rather lobe-like, not just a setose surface both in dorsal and lateral views. Unsetose paraproct (outer lobes or lateral

plates of segment X) with wide and shallow apical excision; the mesal pointed processes almost disappeared. Gonopods straight with coxopodite of dilated apical half with very broad ventral profile; harpago mesad turning, long digitiform. Phallic apparatus with down curving and broadening basal section and with a longer tube-forming horizontal two thirds with broadened apex in lateral view; two pairs of endothelial processes visible, both with blunt apices in lateral view and pointed triangular in ventral view; dorsal endothelial process bigger; phallotremal sclerite less distinct. The phallic organ with rounded and dilated head in ventral view.

Etymology. *borghata*, named after the locus typicus of the holotype.

***Diplectrona chiangma* sp. nov.**

(Map 9)

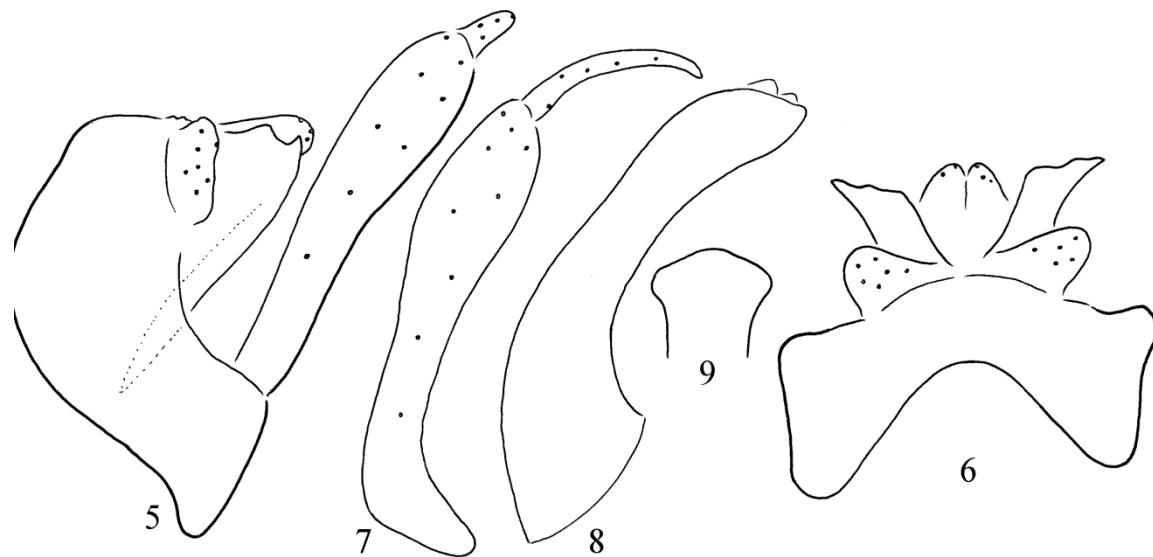
Diplectrona burha Schmid, 1961: Malicky 2002: 1205–1206. Misidentification.

Material. Syntypes: Malicky, 2002:1206: **Thailand**, Prov. Mae Hong Son, Ban Huai Hia, 1100m, 19°39'46.4"N 98°14'36.9"E, 15.IV.2000, leg. Malicky, CM: 1♂. 14♂♂ von 6 Orten in Nord- und Mittel-Thailand, CM, CMU.

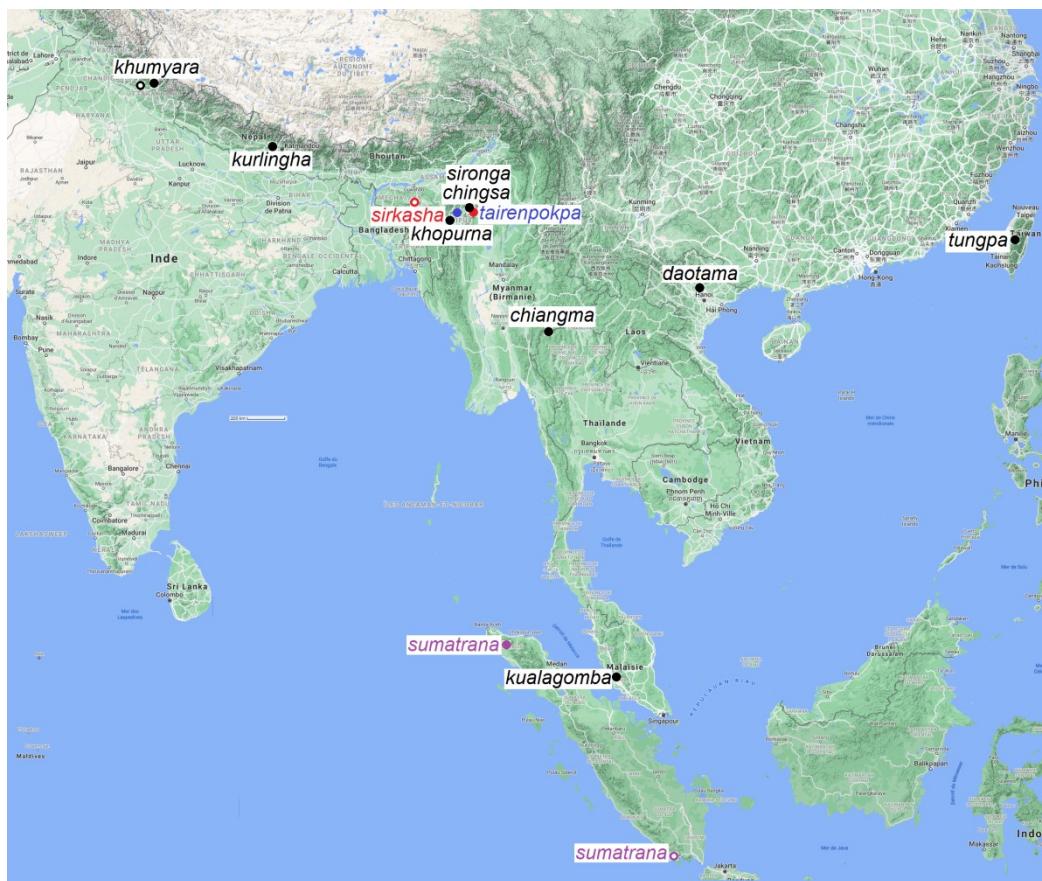
Diagnosis. This species having dorsoapical produced spiny structure on the paraproct belongs to the *Diplectrona aurovittata* new species group, and supplied with double pointed spines belongs to the *Diplectrona hasada* new species complex. Has resemblance to *Diplectrona sironga* sp. nov. described from India, Manipur, but differs by the long and slender harpago, by the more elongated and pointed dorsal profile of the paraproct as well as by the lateral profile of the phallic organ.

Description. Male (Figures: Malicky 2002: Table 14: *burha*, Chiangmai).

Male genitalia. Segment IX convex anterad, dorsum long and convex with a middle depression line, ventrum long. Segment X fused to the tergum IX. The dorsoapical setose lobes (inner lobes) of segment X well-developed, protruded



Figures 5–9. *Diplectrona borghata* sp. nov. Holotype: 5 = male genitalia in left lateral view, 6 = male genitalia in dorsal view, 7 = left gonopod in ventral view, 8 = phallic organ in left lateral view, 9 = phallic head in ventral view.



Map 9. *Diplectrona hasada* complex outside Meghalaya.

and narrowing apicad, broad in lateral view; seem bilobed, but tightly adhered, as long as the paraproct. Cerci setose, high and short in lateral view, elongated in dorsal view. Unsetose paraproct (outer lobes or lateral plates of segment X) subquadrangular plate with two minute spines in lateral view elongated in dorsal view. Gonopods dilated apicad and their harpago mesad turning and narrowing. Phallic apparatus with head of convex apical margin in ventral view.

Etymology. *chiangma*, named after the *locus typicus* of the syntypes. Chiangmai is indicated only on Table 14!

Diplectrona chingsa sp. nov.

(Figures 10–14, Map 6: n° 20, 23, Map 9)

Material examined. Holotype: **India**, Manipur, Chingsao [=Zingsui], 5400 ft, 25°05'43.2"N 94°31'56.0"E, 13.VI.1960, leg. F. Schmid (1 male, CNC). Paratypes: same as holotype (1 male, OPC). India, Manipur, Chingsao [=Zingsui], 4500 ft, 25°05'43.2"N 94°31'56.0"E, 13.VI.1960, leg. F. Schmid (1 male, CNC). India, Manipur, Loni [=Roni], 4500–5500 ft, 25°03'41.8"N 94°34' 18.8"E, 16.VI.1960, leg. F. Schmid (2 males, CNC).

Diagnosis. This species belongs to the *Diplectrona aurovittata* species group and to the *D. hasada* species complex. Having double-spined or pointed dorsoapical region of the paraproct it is most close to *D. nongina* sp. nov. It differs by the presence of a pair of reticulated sacs in abdominal segment VII, by the shorter ventrum of segment IX, the slender, not robust coxopodite, the small cerci, and the lateral and dorsal shape of the paraproct as well as by the ventral profile of the phallus head.

Description. Male (in alcohol). Light brown animal. Forewings without pattern. Forewing length 8 mm, apical fork I present on hindwing. Eyes setaless, not enlarged. Maxillary palp formula I-IV-III-II-V. Not any filament discernible on segment V. Abdominal segment VII with a pair of reticulated internal sacs.

Male genitalia. Segment IX rounded anterad, dorsum medium long and flat with a middle depression line, ventrum very little longer. Segment X fused to the tergum IX. The dorsoapical setose lobes (inner lobes) of segment X well-developed, protruded narrowing; seem bilobed, but tightly adhered. Cerci setose rather lobe-like, not just a setose surface both in dorsal and lateral views. Unsetose paraproct (outer lobes or lateral plates of segment X) subtriangular flat plate in lateral view with a pair of blunt pointed processes as visible both in lateral and dorsal profiles. Gonopods slender straight with coxopodite of dilated apical half; harpago mesad turning with sharply ventrad pointed head. Phallic apparatus with down curving and broadening basal section and with a longer tube-forming horizontal two thirds with rounded obliquely cut apex in lateral view; two pairs of endothecal processes visible, both with blunt apices in lateral and pointed triangular in ventral view; dorsal endothecal process bigger; phallotremal sclerite less distinct. The phallic organ with slightly convex and dilated head in ventral view.

Etymology. *chingsa*, coined from the name of locus typicus of the holotype.

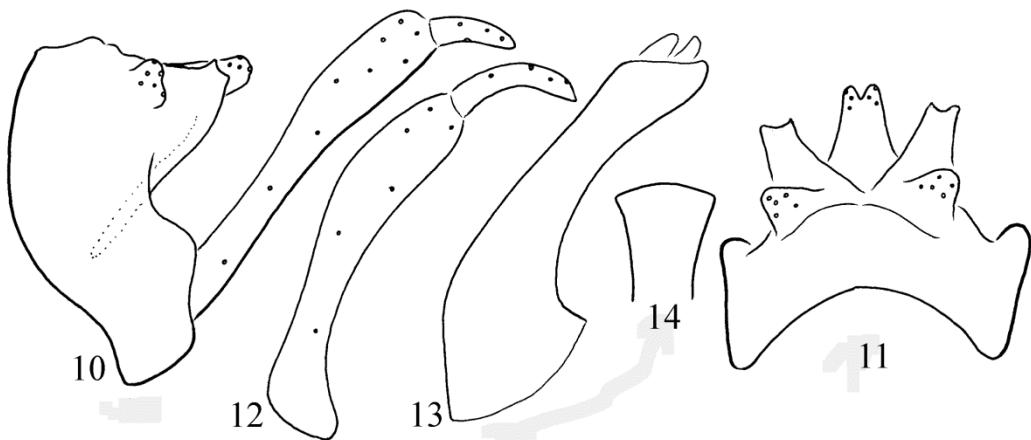
Diplectrona daotama sp. nov.

(Map 9)

Diplectrona burha Schmid, 1961: Malicky 2002:1205–1206. Misidentification.

Material. Syntypes: Malicky, 2002:1206: **Vietnam**, Tam Dao, 800–1100m, 21°27'40.4"N 105°38'33.7"E, 19.V.-13.VI.1995, leg. Malicky, (14♂♂, MPC).

Diagnosis. This species having dorsoapicad produced spiny structure on the paraproct belongs to the *Diplectrona aurovittata* new species group and supplied with double pointed spines belongs to the *Diplectrona hasada* new species complex. Has resemblance to *Diplectrona kurlingha* sp. nov. described from Nepal, but differs by the lateral profile of the paraproct with low and not



Figures 10–14. *Diplectrona chingsa* sp. nov. Holotype: 10 = male genitalia in left lateral view, 11 = male genitalia in dorsal view, 12 = left gonopod in ventral view, 13 = phallic organ in left lateral view, 14 = phallic head in ventral view.

high apical region; by the lateral profile of the phallic organ and by the ventral profile of the phallic head.

Description. Male (Figures: Malicky 2002: Table 14: *burha*, Tam Dao).

Male genitalia. Segment IX convex anterad, dorsum long and convex with a middle depression line, ventrum long. Segment X fused to the tergum IX. The dorsoapical setose lobes (inner lobes) of segment X well-developed, protruded and narrowing apicad, broad in lateral view; seem bilobed, but tightly adhered, longer than the paraproct. Cerci setose, high and short in lateral view, semi-circular in dorsal view. Unsetose paraproct (outer lobes or lateral plates of segment X) subtriangular plate with two blunt spines in lateral view and with more pronounced mesal pointed process in dorsal view. Gonopods robust and their harpago mesad turning with pointed apices. Phallic apparatus with rounded head in ventral view.

Etymology. *daotama*, named after the *locus typicus* of the syntypes.

Diplectrona grimona sp. nov.

(Figures 15–19, Map 5: n° 46, Map 8)

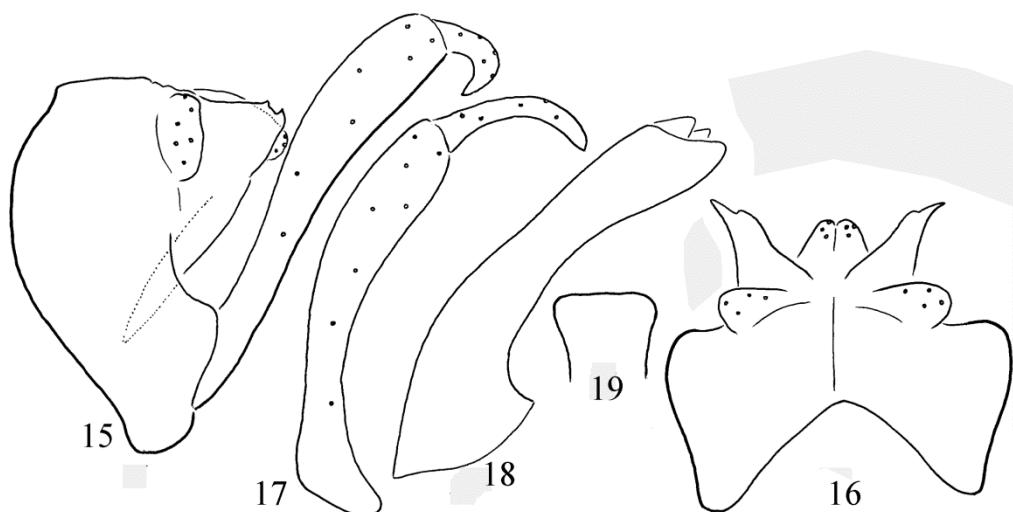
Material examined. Holotype: **India**, Meghalaya (United Jaintia and Khasi Hills), Nongrim

[=Nongtraw], 3000 ft, 25°22'09.8"N 91°45'41.5"E, 28.III.1960, leg. F. Schmid (1 male, CNC).

Diagnosis. This species belongs to the *Diplectrona aurovittata* species group and to the *Diplectrona hasada* species complex. It is most close to *Diplectrona mirgona* sp. nov., but differs by the smaller body size; by regular pointed head of the harpago, not with aviform head; by the different shape of the paraproct both in lateral and dorsal views; as well as by the lateral shape of the phallotheca having low, not high phallobase and by the ventral profile of the phallothecal head with rounded, not triangular lateral lobes.

Description. Male (in alcohol). Light brown animal. Forewings with light spotted pattern. Forewing length is 7 mm, apical fork I present on hindwing. Eyes setaless not enlarged. Maxillary palp formula I-IV-III-II-V. Filament of sternite V indiscernible. Abdominal segments without any reticulated internal sacs.

Male genitalia. Segment IX semicircular anterad, dorsum short and flat with a middle depression line, ventrum shorter than dorsum. Segment X fused to the tergum IX. The dorsoapical setose lobes (inner lobes) of segment X well-developed, rounded broad, short; seem bilobed, but tightly adhered; the ventroapical setose area distinct. Cerci setose, high and long in lateral view, semi-circular in dorsal view. Unsetose para-



Figures 15–19. *Diplectrona grimona* sp. nov. Holotype: 15 = male genitalia in left lateral view, 16 = male genitalia in dorsal view, 17 = left gonopod in ventral view, 18 = phallic organ in left lateral view, 19 = phallic head in ventral view.

proct (outer lobes or lateral plates of segment X) subtriangular flat plate in lateral view with upward directed pair of less developed pointed processes. Gonopods robust straight and their harpago mesad turning with regular pointed head. Phallic apparatus with high low down curving and broadening basal section and with a longer tube-forming horizontal two thirds with little constricted middle and rounded obliquely cut apex in lateral view; two pairs of endothecal processes visible, both with blunt apices in lateral view and pointed triangular in ventral view; dorsal endothecal process larger; phallotremal sclerite less distinct. The phallic organ with produced wing-like rounded lateral lobes of the head in ventral view.

Etymology. *grimona*, coined from the name of *locus typicus* of the holotype.

Diplectrona jaraina sp. nov.

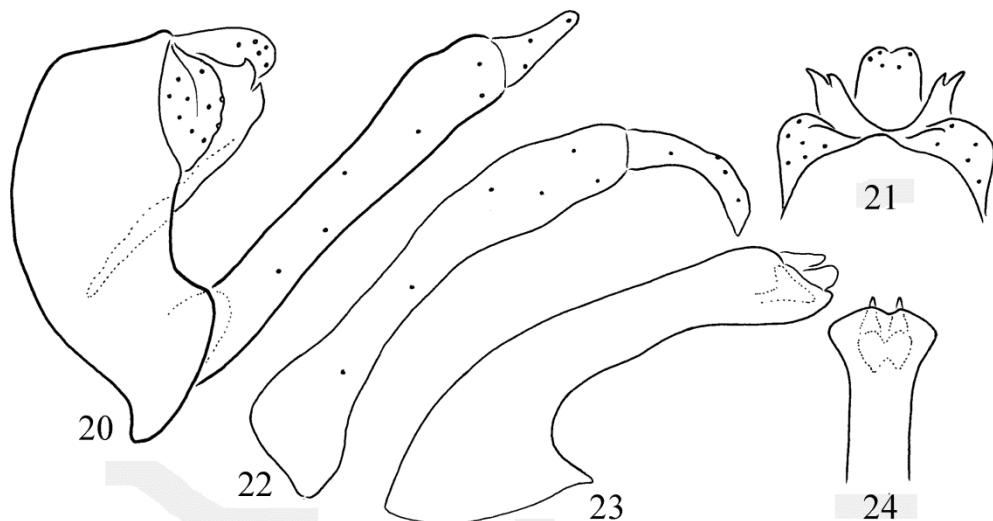
(Figures 20–24, Map 5: n° 63, Map 8)

Material examined. Holotype: **India**, Meghalaya (United Jaintia and Khasi Hills), Jarain, 25°22'23.7"N 92°08'58.9"E, 2800 ft. 13.IV.1960, leg. F. Schmid (1 male, CNC).

Diagnosis. This species belongs to the *Diplectrona aurovittata* species group and to the *D. hasada* species complex. Having double-spined dorsoapical region it is most close to *D. kismada* described from Vietnam. It differs by the character combination of small setaless eyes; without any internal sacs in abdominal segments; antero-dorsal filament on sternite V twice as long as the sternite, presence of fork I on hindwing; short rounded and broad lobes of segment X; enlarged cerci; elongated ventral band of paraproct; almost parallel-sided harpago in ventral view with ventrad pointed head; delta-shaped head of the phallic organ in ventral view. At *D. kismada* cerci are small, ventral band of paraproct short, head of phallic organ not pronounced delta-shaped in ventral view.

Description. Male (in alcohol). Light brown animal. Forewings without pattern. Forewing length 9 mm, apical fork I present on hindwing. Eyes setaless not enlarged. Maxillary palp formula I-IV-III-II-V. Abdominal segments without any reticulated internal sacs.

Male genitalia. Segment IX convex anterad, dorsum long and flat with a middle depression line, ventrum deformed into a ventral narrowing lobe. Segment X fused to the tergum IX. The



Figures 20–24. *Diplectrona jaraina* sp. nov. Holotype: 20 = male genitalia in left lateral view, 21 = male genitalia in dorsal view, 22 = left gonopod in ventral view, 23 = phallic organ in left lateral view, 24 = phallic head in ventral view.

dorsoapical setose lobes (inner lobes) of segment X well-developed, rounded broad, protruded; seem bilobed, but tightly adhered; the ventroapical setose area distinct. Cerci setose, high and long in lateral view, semi-circular in dorsal view. Unsetose paraproct (outer lobes or lateral plates of segment X) subtriangular flat plate in lateral view with upward directed pair of pointed processes, narrow in dorsal view. Gonopods robust straight and their harpago mesad turning with sharply pointed head. Phallic apparatus with down curving and broadening basal section and with a longer tube-forming horizontal two thirds with rounded obliquely cut apex in lateral view; two pairs of endothecal processes visible, both with blunt apices in lateral and pointed triangular in ventral view; dorsal endothecal process smaller; phallo-tremal sclerite less distinct. The phallic organ with produced wing-like triangular delta-shaped head in ventral view.

Etymology. *jaraina*, named after the *locus typicus* of the holotype.

Diplectrona khopurna sp. nov.

(Figures 25–29, Map 6: n° 7, Map 9)

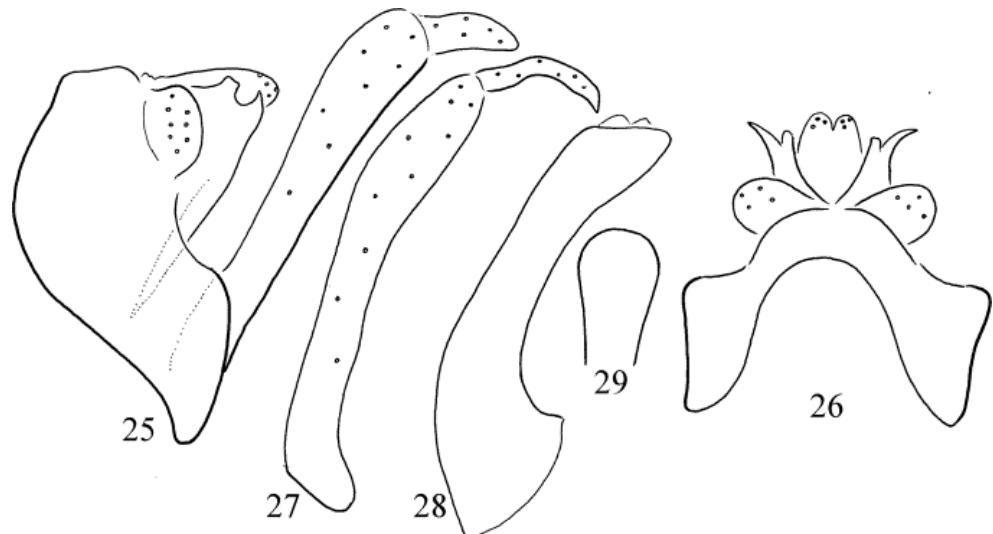
Material examined. Holotype: **India**, Manipur, Khopum [=Khopurn =Khoupum Valley], 2500 ft,

24°40'31.8"N 93°31'07.3"E, 27.V.1960, leg. F. Schmid (1 male, CNC). Paratype: same as holotype (1 male, OPC).

Diagnosis. This species belongs to the *Diplectrona aurovittata* species group and to the *Diplectrona hasada* species complex. It is most close to *Diplectrona mawkhapa* sp. nov. described from Meghalaya, but differs by the uniform forewing without any discernible light spotted pattern; by the small shape modification both in the lateral and dorsal profiles of the paraproct as well as clearly diverged by the head formation of the phallic organ, its ventral profile is rounded, not fan-shaped.

Description. Male (in alcohol). Light brown animal. Forewings without light spotted pattern. Forewing length is 8 mm, apical fork I present on hindwing. Eyes setaless not enlarged. Maxillary palp formula I-IV-III-II-V. Filament of sternite V with length of sternite V and VI. Abdominal segments without any reticulated internal sacs.

Male genitalia. Segment IX semicircular anterad, dorsum short and flat with a middle depression line, ventrum even shorter. Segment X fused to the tergum IX. The dorsoapical setose lobes (inner lobes) of segment X well-developed, rounded broad, protruded; seem bilobed, but



Figures 25–29. *Diplectrona khopurna* sp. nov. Holotype: 25 = male genitalia in left lateral view, 26 = male genitalia in dorsal view, 27 = left gonopod in ventral view, 28 = phallic organ in left lateral view, 29 = phallic head in ventral view.

tightly adhered; the ventroapical setose area distinct. Cerci setose, high and long in lateral view, semi-circular in dorsal view. Unsetose paraproct (outer lobes or lateral plates of segment X) subtriangular flat plate in lateral view with upward directed ending with a pointed lateral and a truncated mesal processes; separated with a deep and wide interspine gap visible in lateral view. Gonopods robust straight and their harpago mesad turning with sharply pointed head. Phallic apparatus with low down curving and broadening basal section and with a longer tube-forming horizontal two thirds without pronounced constricted middle and with rounded obliquely cut apex in lateral view; two pairs of endothecal processes visible, both with blunt apices in lateral view and pointed triangular in ventral view; dorsal endothecal process larger; phallotremal sclerite less distinct. The phallic organ with rounded head in ventral view.

Etymology. *khopurna*, named after the *locus typicus* of the holotype.

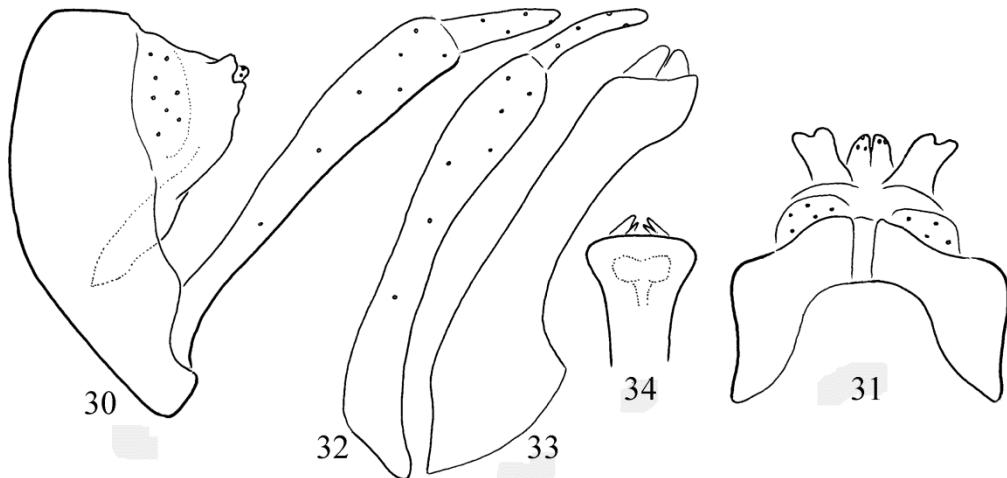
Diplectrona khumyara sp. nov.

(Figures 30–34, Map 2: n° 12, 22, Map 9)

Material examined. Holotype: **India**, Uttarakhand: Pauri Garhwal, Khumyara [=Khumera ac-

cording to Lonsdale (2020)], 2 small brooks in bushes and hygropetric habitat, 30°33'15.4"N 79°03'44.3"E, 4300–5000 ft, 27–28.V.1958, leg. F. Schmid (1 male, CNC). Paratypes: same as holotype (1 male, OPC). India, Pauri Garhwal, Khumyara [probably Khumera], 30°33'15.4"N 79°03'44.3"E, 4300–5000 ft, 3–4.V.1958, leg. F. Schmid (4 males, CNC). India, Tehri Garhwal, Jaspur, small torrent in bushes, 30°23'34.7"N 78°25'21.4"E, 3500–4500 ft, 15.IV.1958, leg. F. Schmid (3 males, CNC; 1 male, SMNH; 1 male, OPC).

Diagnosis. This species belongs to the *Diplectrona aurovittata* species group and to the *D. hasada* species complex. Having double-spined dorsoapical region it is most close to *D. jaraina* sp. nov. described from Meghalaya, India. It differs by the character combination of small setaless eyes; without any internal sacs in abdominal segments; no filament on sternite V discernible, presence of fork I on hindwing. The genital structure is characterized by short and narrow lobes of segment X; by enlarged cerci; bilobed paraproct blunt, not pointed; elongated and broadened ventral band of paraproct, not elongated and narrow; coxopodite of the gonopods narrowing ventrad, not parallel-sided; harpago with rounded head, not ventrad pointed.



Figures 30–34. *Diplectrona khumyara* sp. nov. Holotype: 30 = male genitalia in left lateral view, 31 = male genitalia in dorsal view, 32 = left gonopod in ventral view, 33 = phallic organ in left lateral view, 34 = phallic head in ventral view.

Description. Male (in alcohol). Light brown animal. Forewings without pattern. Forewing length 5 mm, apical fork I present on hindwing. Eyes setaless not enlarged. Maxillary palp formula I-IV-III-II-V. No filament on segment V present; abdominal segments without any reticulated internal sacs.

Male genitalia. Segment IX convex anterad, dorsum long and flat with a middle depression line, ventrum formed into a narrowing band. Segment X fused to the tergum IX. The dorsoapical setose lobes (inner lobes) of segment X narrow slightly protruded, bilobate; the ventroapical setose area distinct. Cerci setose, high and short in lateral view, semi-circular in dorsal view. Unsetose paraproct (outer lobes or lateral plates of segment X) subtriangular flat plate in lateral view with upward directed pair of blunt processes, bilobed also in dorsal view. Gonopods robust straight, narrowing ventrad; their harpago mesad turning, parallel-sided in ventral view with rounded head. Phallic apparatus with down curving and broadening basal section and with a longer tube-forming horizontal section with rounded and obliquely cut apex in lateral view; apicoventrum downward produced; two pairs of endothecal processes visible, both with blunt apices in lateral and pointed triangular in ventral view; phallosomal sclerite distinct. The phallic organ with produced, triangular delta-shaped head in ventral view.

Etymology. *khumyara*, named after the *locus typicus* of the holotype.

Diplectrona kualagomba sp. nov.

(Map 9)

Diplectrona hermione Malicky & Chantaramongkol, 1992 in Malicky 2002: 1210. Misidentification.

Material. Syntypes: Malicky 2002:1210: **Malaysia**, Kuala Lumpur, Gombak, 22.V.1996, leg. Trilar, (7♂♂, one drawn specimen, MPC)

Diagnosis. This species having dorsoapicad produced spiny structure on the paraproct belongs to the *Diplectrona aurowittata* new species group, and supplied with double pointed spines belongs to the *Diplectrona hasada* new species complex. Has resemblance to *Diplectrona sumatrana* sp. nov. described from Indonesia, North and South Sumatra, but differs by the differently shaped dorsal and lateral profiles of the paraproct as well as by the lateral profile of the phallic organ and the ventral profile of the phallic head.

Description. Male (Figures: Malicky 2002: Table 15: *hermione*, Gombak).

Male genitalia. Segment IX convex anterad, dorsum long and convex with a middle depression line, ventrum short. Segment X fused to the tergum IX. The dorsoapical setose lobes (inner

lobes) of segment X well-developed, protruded and narrowing apicad, broad in lateral view; seem bilobed, but tightly adhered basally, slightly longer than paraproct. Cerci setose, high and short in lateral view, semi-circular in dorsal view. Unsetose paraproct (outer lobes or lateral plates of segment X) subquadrangular plate with two minute spines in lateral view elongated in dorsal view. Gonopods dilated apicad and their harpago mesad turning with ventroapical pointed tiny process. Phallic apparatus with head of deeply concave, excised apical margin in ventral view.

Etymology. *kualagomba*, named after the *locus typicus* of the syntype.

***Diplectrona kurlingha* sp. nov.**

(Map 9)

Diplectrona sanguana Kimmins, 1964: Malicky 2002: 1215–1216. Misidentification.

Material. Holotype: **Nepal**, Trisuli River, Kurlinghat, 380m, should be near this point: 27°48'47.7"N 84°49'58.3"E, according to the altitude along the Trisuli River, 27.X.1995, leg. Sivec (1 male, drawn specimen, MPC).

Diagnosis. This species having dorsoapicad produced spiny structure on the paraproct belongs to the *Diplectrona aurowittata* new species group and supplied with two pointed spines belongs to the *Diplectrona hasada* new species complex. Most close to *Diplectrona nongronga* sp. nov., but differs both by the dorsal and lateral profiles of the paraproct; by the lateral profile of the phallotheca as well as by the ventral profile of the phallic head.

Description. Male (Figures: Malicky 2002: Table 11: *sanguana*, Kurlinghat). Eyes setaless, not enlarged. Abdominal segments with reticulated internal sacs; filaments on sternite V present.

Male genitalia. Segment IX convex anterad, dorsum long and convex with a middle depression line, ventrum shorter. Segment X fused to the tergum IX. The dorsoapical setose lobes (inner lobes) of segment X well-developed, protruded

and narrowing apicad, broad in lateral view; seem bilobed, but tightly adhered and longer than paraproct. Cerci setose, high and short in lateral view, semi-circular in dorsal view. Unsetose paraproct (outer lobes or lateral plates of segment X) subquadrangular plate with two dorsoapical elongated spines in lateral view. Gonopods dilated apicad and their harpago mesad turning with ventroapical pointed tiny process. Phallic apparatus with high phallobase and the phallic head with truncated laterad expanding apical margin in ventral view.

Etymology. *kurlingha*, named after the *locus typicus* of the holotype.

***Diplectrona lyngkota* sp. nov.**

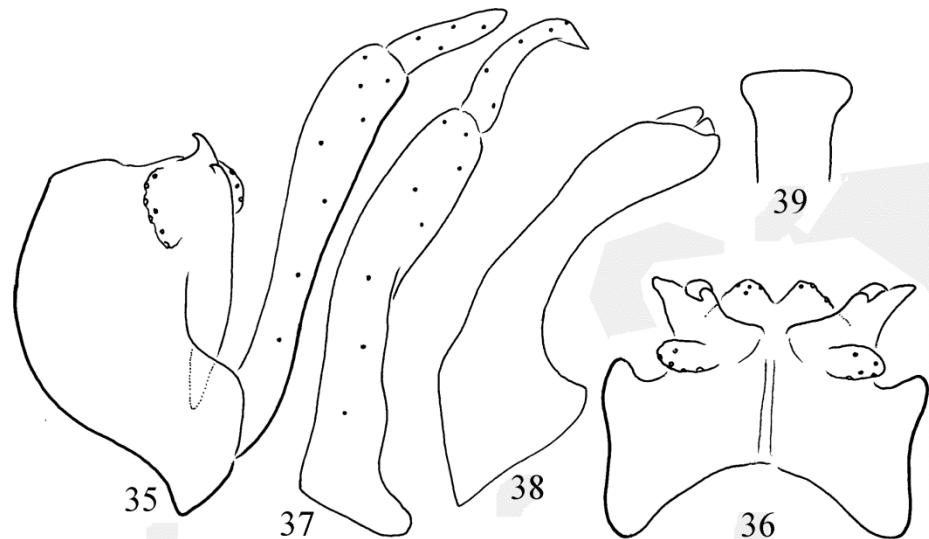
(Figures 35–39, Map 5: n° 38, Map 8)

Material examined. Holotype: **India:** Meghalaya (United Jaintia and Khasi Hills), Laitlyngkot, 2000–2300 ft., 25°24'42.9"N 91°54'35.4"E, 17.III. 1960, leg. F. Schmid (1 male, CNC).

Diagnosis. This species belongs to the *Diplectrona aurowittata* species group and the *D. hasada* species complex. Having double-spined dorsoapical region it is most close to *D. jaraina* sp. nov. but differs by the more produced and curving mesal spine-like process of paraproct, more discernible in lateral view as well as by the small, short and high cerci.

Description. Male (in alcohol). Light brown animal. Forewings without pattern. Forewing length 9 mm, apical fork I present on hindwing. Eyes setaless not enlarged. Maxillary palp formula I-IV-III-II-V. Filaments on sternum V present, its length twice of the segment. Abdominal segments without any reticulated internal sacs.

Male genitalia. Segment IX convex anterad, dorsum long and flat with a middle depression line, ventrum as long as dorsum. Segment X fused to the tergum IX. The dorsoapical setose lobes (inner lobes) of segment X well-developed, as long as paraproct with rounded apical margin in lateral view and with triangular shape in dorsal view. Cerci setose, small and lobe-like. Unsetose



Figures 35–39. *Diplectrona lyngkota* sp. nov. Holotype: 35 = male genitalia in left lateral view, 36 = male genitalia in dorsal view, 37 = left gonopod in ventral view, 38 = phallic organ in left lateral view, 39 = phallic head in ventral view.

paraproct (outer lobes or lateral plates of segment X) subtriangular flat plate in lateral view with upward directed pair of pointed processes, narrow in dorsal view; mesal pointed spine-like process more produced and curving in lateral view. Gonopods robust straight and their harpago mesad turning with sharply pointed head. Phallic apparatus with down curving and broadening basal section and with a longer tube-forming horizontal two thirds with rounded obliquely cut apex in lateral view; two pairs of endothecal processes visible, both with blunt apices in lateral and pointed triangular in ventral view; phallotremal sclerite less distinct. The phallic organ with rounded widening apical region in ventral view.

Etymology. *lyngkota*, coined from the name of the holotype *locus typicus*.

Diplectrona mawkhapa sp. nov.

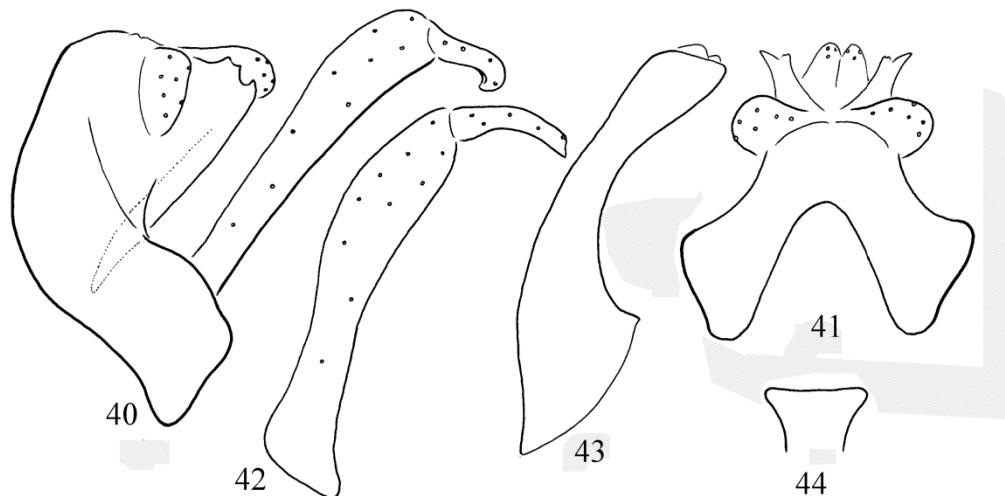
(Figures 40–44, Map 5: n° 40, Map 8)

Material examined. Holotype: **India**, Meghalaya (United Jaintia and Khasi Hills), Mawkhap, 2000 ft., 25°23'27.7"N 91°53'59.0"E, 19.III.1960, leg. F. Schmid (1 male, CNC). Paratypes: same as holotype (1 male, CNC; 1 male, OPC; 1 male, SMNH).

Diagnosis. This species belongs to the *Diplectrona aurovittata* species group and to the *Diplectrona hasada* species complex. It is most close to *Diplectrona mirgona* sp. nov., but differs by the subquadrangular lateral profile of ventrum IX; by the simple, not aviform head of the harpago; by the tripointed paraproct discernible in lateral view, as well as by the low phallobase of the phallotheca and by the ventral profile of the phallothecal head having very pronounced triangular lateral lobes.

Description. Male (in alcohol). Light brown animal. Forewings with light spotted pattern. Forewing length 10 mm, apical fork I present on hindwing. Eyes setaless not enlarged. Maxillary palp formula I-IV-III-II-V. Filament of sternite V with length of sternite V and VI. Abdominal segments without any reticulated internal sacs.

Male genitalia. Segment IX semicircular anterad, dorsum short and flat with a middle depression line, ventrum longer than dorsum. Segment X fused to the tergum IX. The dorsoapical setose lobes (inner lobes) of segment X well-developed, rounded broad, protruded; seem bilobed, but tightly adhered; the ventroapical setose area distinct. Cerci setose, high and long in lateral view, semi-circular in dorsal view. Unsetose paraproct (outer lobes or lateral plates of segment X)



Figures 40–44. *Diplectrona mawkhapa* sp. nov. Holotype: 40 = male genitalia in left lateral view, 41 = male genitalia in dorsal view, 42 = left gonopod in ventral view, 43 = phallic organ in left lateral view, 44 = phallic head in ventral view.

subtriangular flat plate in lateral view with upward directed tripointed ending; separated with a shallow and wide interspine gap. Gonopods robust straight and their harpago mesad turning with sharply pointed head. Phallic apparatus with low down curving and broadening basal section and with a longer tube-forming horizontal two thirds with constricted middle and rounded obliquely cut apex in lateral view; two pairs of endothecal processes visible, both with blunt apices in lateral view and pointed triangular in ventral view; dorsal endothecal process larger; phallotremal sclerite less distinct. The phallic organ with produced wing-like triangular lateral lobes of the head in ventral view.

Etymology. *mawkhapa*, coined from the name of *locus typicus* of the holotype.

Diplectrona mirgona sp. nov.

(Figures 45–49, Map 5: n° 46, Map 8)

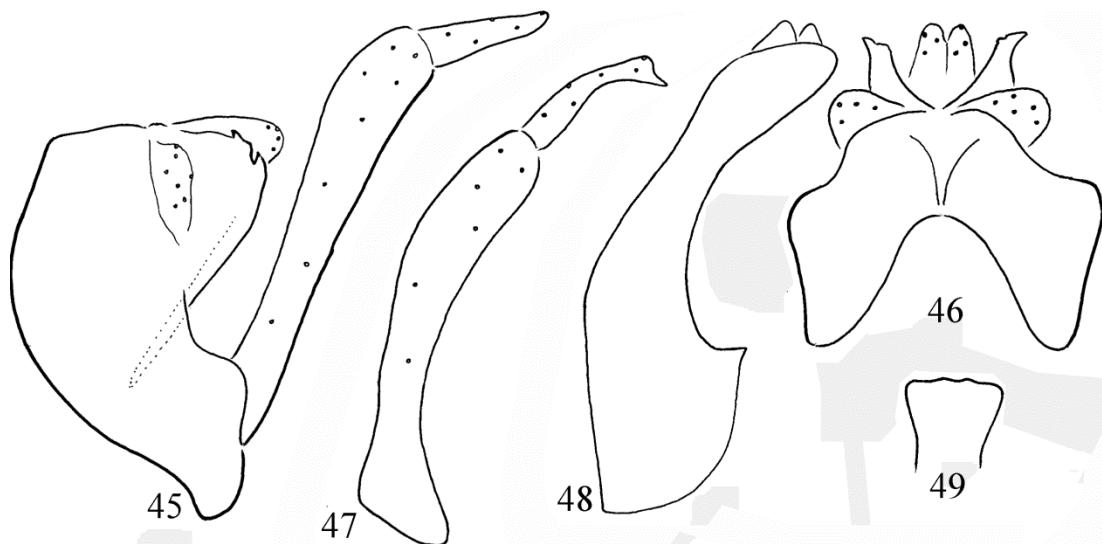
Material examined. Holotype: **India**, Meghalaya (United Jaintia and Khasi Hills), Nongrim [=Nongtrawl], 3000 ft, 25°22'09.9"N 91°45'48.2"E, 28.III.1960, leg. F. Schmid (1 male, CNC).

Diagnosis. This species belongs to the *Diplectrona aurovittata* species group and to the *Diplectrona hasada* species complex. It is most

close to *Diplectrona nongra* sp. nov., but differs by the indistinctly spotted forewing; by the narrow interspine gap of the paraproct well discernible in lateral view, as well as by the lateral shape of the phallotheca and by the ventral profile of the phallothecal head having triangular, not rounded lateral lobes.

Description. Male (in alcohol). Light brown animal. Forewings with light spotted pattern. Forewing length 10 mm, apical fork I present on hindwing. Eyes setaless not enlarged. Maxillary palp formula I-IV-III-II-V. Filament of sternite V with length of sternite V and VI. Abdominal segments without any reticulated internal sacs.

Male genitalia. Segment IX semicircular anterad, dorsum short and flat with a middle depression line, ventrum shorter than dorsum. Segment X fused to the tergum IX. The dorsoapical setose lobes (inner lobes) of segment X well-developed, rounded broad, protruded; seem bilobate, but tightly adhered; the ventroapical setose area distinct. Cerci setose, high and long in lateral view, semi-circular in dorsal view. Unsetose paraproct (outer lobes or lateral plates of segment X) subtriangular flat plate in lateral view with upward directed pair of pointed processes; separated with a narrow interspine gap. Gonopods robust straight and their harpago mesad turning with sharply pointed aviform head. Phallic apparatus



Figures 45–49. *Diplectrona mirgona* sp. nov. Holotype: 45 = male genitalia in left lateral view, 46 = male genitalia in dorsal view, 47 = left gonopod in ventral view, 48 = phallic organ in left lateral view, 49 = phallic head in ventral view.

with high down curving and broadening basal section and with a longer tube-forming horizontal two thirds with constricted middle and rounded obliquely cut apex in lateral view; two pairs of endothecal processes visible, both with blunt apices in lateral view and pointed triangular in ventral view; dorsal endothecal process larger; phallotremal sclerite less distinct. The phallic organ with produced wing-like triangular lateral lobes of the head in ventral view.

Etymology. *mirgona*, coined from the name of *locus typicus* of the holotype.

Diplectrona muktapura sp. nov.

(Figures 50–54, Map 5: n° 11, Map 8)

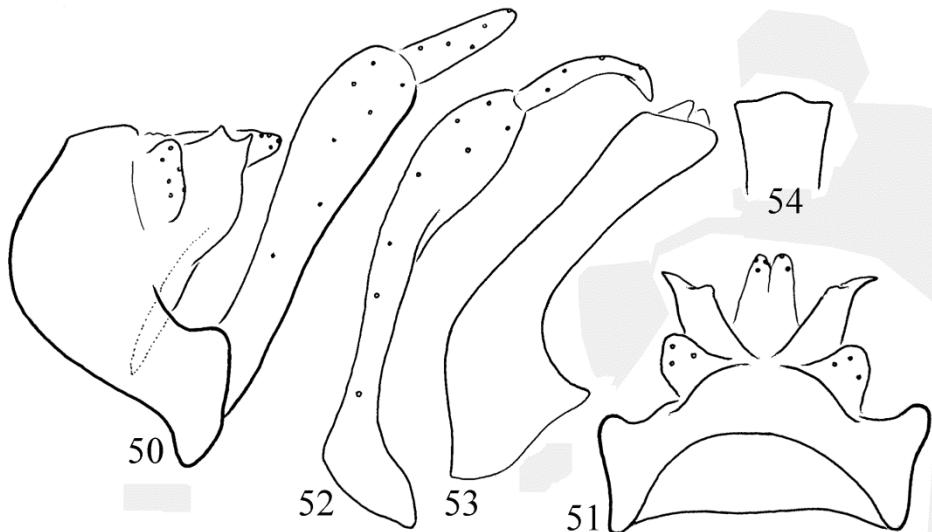
Material examined. Holotype: **India**, Meghalaya (United Jaintia and Khasi Hills), Muktapur, 200 ft., 25°09'48.6"N 92°07'45.4"E, 11–12.XII. 1959, leg. F. Schmid (1 male, CNC). Paratypes: India, Meghalaya (United Jaintia and Khasi Hills), Khasi Hills (Assam, Khasia Hills) McLachlan Coll. B. M. 1938-674 (2 males, BMNH).

Diagnosis. This species belongs to the *Diplectrona aurovittata* species group and to the *D. hasada* species complex. Having double-spined

dorsoapical region of the paraproct, it is most close to *D. nongina* sp. nov. It differs by the upward directed bipointed paraproct in lateral view and the more laterad directed spines in dorsal view; as well as by the shape of the phallic organ, with more produced downward directed phallo-base and by the ventral profile of the head of the phallic organ.

Description. Male (in alcohol). Light brown animal. Forewings without any pattern. Forewing length is 8 mm, apical fork I present on hindwing. Eyes setaless, not enlarged. Maxillary palp formula I-IV-III-II-V. Abdominal segments without any reticulated internal sacs; filament of sternite V with same length of sternite V and VI.

Male genitalia. Segment IX rounded anterad, dorsum long and flat with a middle depression line, ventrum shorter. Segment X fused to the tergum IX. The dorsoapical setose lobes (inner lobes) of segment X well-developed, protruded narrowing; seem bilobed, but tightly adhered. Cerci setose, high and short in lateral view, rounded subtriangular in dorsal view. Unsetose paraproct (outer lobes or lateral plates of segment X) subtriangular flat plate in lateral view with a pair of two upward directed pointed processes; in dorsal profile the lateral spine is produced, the



Figures 50–54. *Diplectrona muktapura* sp. nov. Holotype: 50 = male genitalia in left lateral view, 51 = male genitalia in dorsal view, 52 = left gonopod in ventral view, 53 = phallic organ in left lateral view, 54 = phallic head in ventral view.

mesal spine less developed. Gonopods robust straight with coxopodite of dilated apical half; harpago mesad turning with sharply ventrad pointed head. Phallic apparatus with down curving and broadening basal section and with a longer tube-forming horizontal two thirds with obliquely cut apex in lateral view; two pairs of endothecal processes visible, both with blunt apices in lateral view and pointed triangular in ventral view; dorsal endothecal process bigger; phallotremal sclerite less distinct. The phallic organ without produced wing-like triangular delta-shaped head in ventral view.

Etymology. *muktapura*, named after the name of *locus typicus* of the holotype.

Diplectrona mynsoa sp. nov.

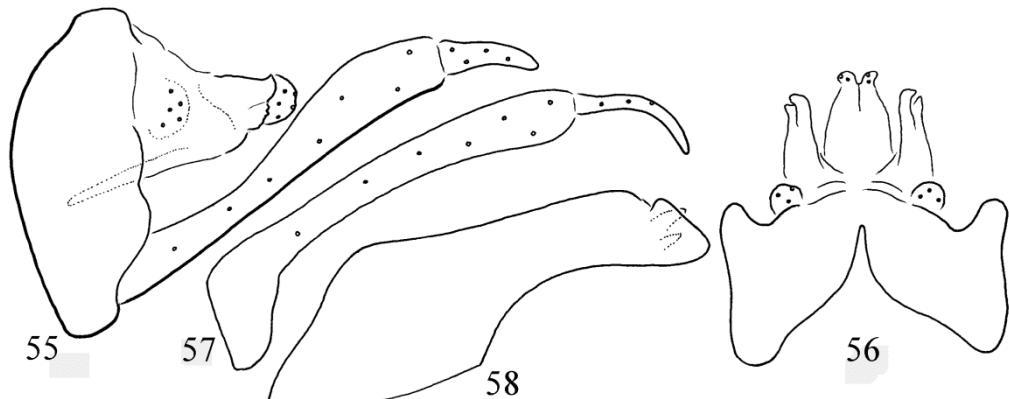
(Figures 55–58, Map 5: n° 46, 69, Map 8)

Material examined. Holotype: India, Meghalaya (United Jaintia and Khasi Hills), Mynso = Mynsoo = Kyndong Tuber, 3500 ft, 25°33'43.5"N 92°19'37.5"E, 20.IV.1960, leg. F. Schmid (1 male, CNC). Paratypes: same as Holotype (5 males, CNC, 2 males, OPC; 1 male, SMNH). India, Meghalaya (United Jaintia and Khasi Hills), Nongrim [=Nongtraw], 3000 ft, 25°22'09.8"N

91°45'41.5"E, 28.III.1960, leg. F. Schmid (1 male, CNC).

Diagnosis. This species having dorsoapicad produced spiny structure on the paraproct belongs to the *Diplectrona aurowittata* new species group, and based on the somehow bipointed paraproct to the *Diplectrona hasada* new species complex. However, it has rather unique genital characters of the very small cerci, the subdivided head of the phallic organ. The rather long phallobase relates *D. mynsoa* sp. nov. to *D. meghalaya* sp. nov. of the *D. tamdaophila* species complex, but differs by the small cerci, by the dorsal elongated profile of the paraproct, by the blunt, not pointed tip of harpago as well as by the head of the phallic organ, that is the very ending of the phallotheca forms a lobe like ventrum. Such a subdivided tube-ending of the phallotheca is unique in the *Diplectrona* genus.

Description. Male (in alcohol). Dark brown animal. Forewings without discernible pattern. Forewing length is 8 mm, apical fork I present on hindwing. Eyes setaless, not enlarged. Abdominal segments without any reticulated internal sacs; filaments on sternite V double long than the sternite.



Figures 55–58. *Diplectrona mynsoa* sp. nov. Holotype: 55 = male genitalia in left lateral view, 56 = male genitalia in dorsal view, 57 = left gonopod in ventral view, 58 = phallic organ in left lateral view.

Male genitalia. Segment IX convex anterad, dorsum long and flat with a middle depression line, ventrum short. Segment X fused to the tergum IX. The dorsoapical setose lobes (inner lobes) of segment X well-developed, rounded broad protruded in lateral view; laterad directed apical pair of setose lobes in dorsal view. Cerci setose, small short semicircular both in lateral and dorsal views. Unsetose paraproct (outer lobes or lateral plates of segment X) long and high plate in lateral view with upward directed pointed spine and slightly elevated middle region, elongated with laterad directed small tip in dorsal view. Gonopods elongated dilating from middle and their harpago mesad turning with blunt tip. Phallic apparatus with down curving and broadening long basal section and with a tube-forming horizontal section with unique subdivided head constituted by ventral lobes; two pairs of endothecal processes discernible, rather pointed in ventral view. In ventral view the phallotheca parallel-sided.

Etymology. *mynsoa*, named after the *locus typicus* of the holotype.

Diplectrona nongina sp. nov.

(Figures 59–63, Map 5: n° 68, Map 8)

Material examined. Holotype: **India**, Meghalaya (United Jaintia and Khasi Hills), Nongjni [=Nongjngi], 3750 ft, 25°32'21.1"N 92°16'12.4"E, 19.IV.1960, leg. F. Schmid (1 male, CNC).

Diagnosis. This species belongs to the *Diplectrona aurovittata* species group and to the *D. hasada* species complex. Having double-spined dorsoapical region of the paraproct it is most close to *D. jaraina* sp. nov. It differs by the rounded anterior margin of segment IX, the more robust coxopodite, by the lateral shape of the paraproct.

Description. Male (in alcohol). Light brown animal. Forewings without pattern. Forewing length 8 mm, apical fork I present on hindwing. Eyes setaless, not enlarged. Maxillary palp formula I-IV-III-II-V. Abdominal segments without any reticulated internal sacs.

Male genitalia. Segment IX rounded anterad, dorsum long and flat with a middle depression line, ventrum little longer. Segment X fused to the tergum IX. The dorsoapical setose lobes (inner lobes) of segment X well-developed, protruded narrowing; seem bilobed, but tightly adhered. Cerci setose, high and long in lateral view, elongated subtriangular in dorsal view. Unsetose paraproct (outer lobes or lateral plates of segment X) subtriangular flat plate in lateral view with a pair of two pointed processes; in lateral profile the upper pointed tip is smaller. Gonopods robust straight with coxopodite of dilated apical half; harpago mesad turning with sharply ventrad pointed head. Phallic apparatus with down curving and broadening basal section and with a longer tube-forming horizontal two thirds with rounded obliquely cut apex in lateral view; two pairs of endothecal processes visible, both with blunt apices in

lateral and pointed triangular in ventral view; dorsal endothecal process bigger; phallotremal sclerite less distinct. The phallic organ with produced wing-like triangular delta-shaped head in ventral view.

Etymology. *nongina*, coined from the name of *locus typicus* of the holotype.

Diplectrona nongra sp. nov.

(Figures 64–68, Map 5: n° 46, Map 8)

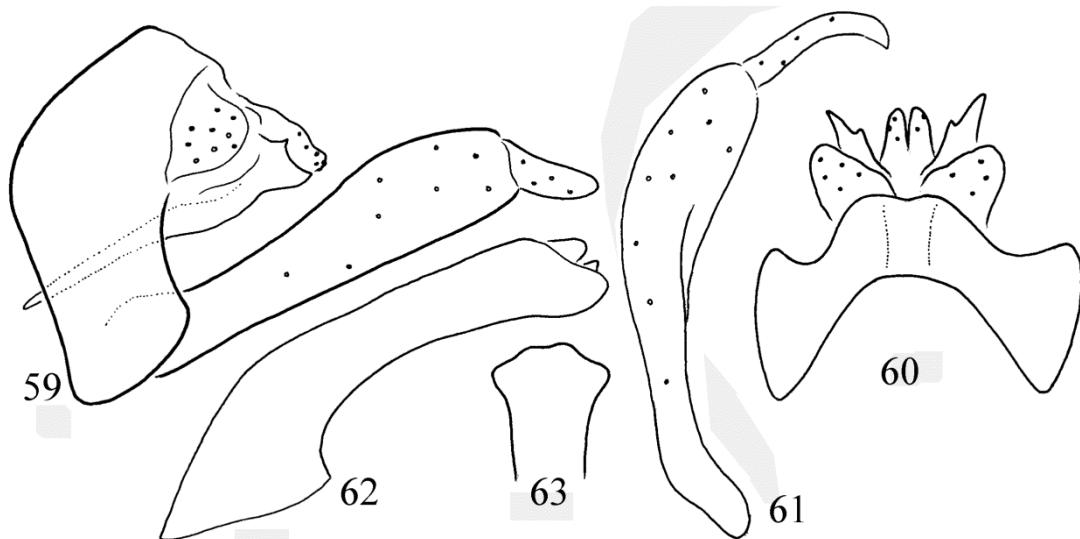
Material examined. Holotype: **India**, Meghalaya (United Jaintia and Khasi Hills), Nongrim [=Nongtraw], 3000 ft, 25°22'09.9"N 91°45'48.2"E, 28.III.1960, leg. F. Schmid (1 male, CNC).

Diagnosis. This species belongs to the *Diplectrona aurovittata* species group and to the *Diplectrona hasada* species complex. It is a sibling species of *Diplectrona jaraina* sp. nov., but differs by the light spotted forewing; by the almost semicircular profile of the anterior margin of segment IX; by the shorter tergum of segment IX, by the wide interspine gap of the paraproct well discernible in lateral view, as well as by the lateral shape of the phallotheca and by the ventral profile

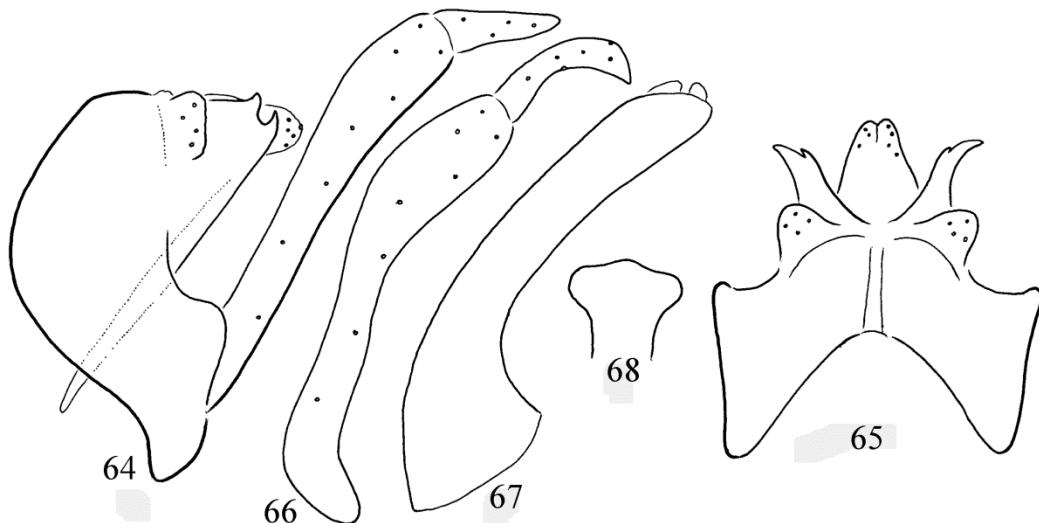
of the phallothecal head having rounded lateral lobes, not triangular.

Description. Male (in alcohol). Light brown animal. Forewings with light spotted pattern. Forewing length 9 mm, apical fork I present on hindwing. Eyes setaless not enlarged. Maxillary palp formula I-IV-III-II-V. Abdominal segments without any reticulated internal sacs.

Male genitalia. Segment IX semicircular anterad, dorsum short and flat with a middle depression line, ventrum shorter than dorsum. Segment X fused to the tergum IX. The dorsoapical setose lobes (inner lobes) of segment X well-developed, rounded broad, protruded; seem bilobed, but tightly adhered; the ventroapical setose area distinct. Cerci setose, high and long in lateral view, semicircular in dorsal view. Unsetose paraproct (outer lobes or lateral plates of segment X) subtriangular flat plate in lateral view with upward directed pair of pointed processes, widely excised, separated with a wide interspine gap, narrow in dorsal view. Gonopods robust straight and their harpago mesad turning with sharply pointed head. Phallic apparatus with down curving and broadening basal section and with a longer tube-forming horizontal two thirds with rounded obliquely cut



Figures 59–63. *Diplectrona nongra* sp. nov. Holotype: 59 = male genitalia in left lateral view, 60 = male genitalia in dorsal view, 61 = left gonopod in ventral view, 62 = phallic organ in left lateral view, 63 = phallic head in ventral view.



Figures 64–68. *Diplectrona nongra* sp. nov. Holotype: 64 = male genitalia in left lateral view, 65 = male genitalia in dorsal view, 66 = left gonopod in ventral view, 67 = phallic organ in left lateral view, 68 = phallic head in ventral view.

apex in lateral view; two pairs of endothecal processes visible, both with blunt apices in lateral and pointed triangular in ventral view; dorsal endothecal process smaller; phallotremal sclerite less distinct. The phallic organ with produced wing-like rounded lateral lobes of the head in ventral view.

Etymology. *nongra*, coined from the name of *locus typicus* of the holotype.

Diplectrona nongronga sp. nov.

(Figures 69–73, Map 5: n° 73, Map 8)

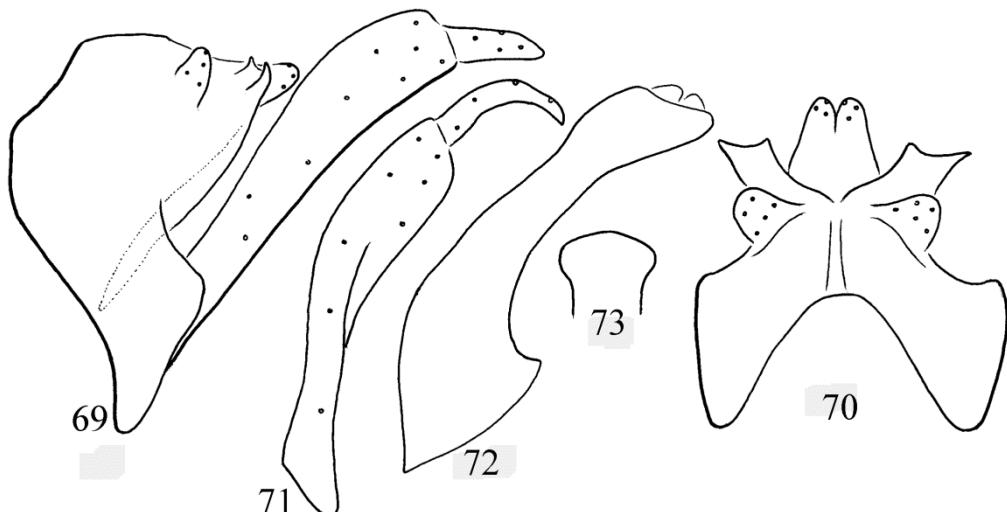
Material examined. Holotype: **India**, Assam, United District of Mikir and North Cachar Hills, Nongjrong [=Nonjirong], 2700 ft, 25°41'29.6"N 92°28'41.3"E, 25.IV.1960, leg. F. Schmid (1 male, CNC).

Diagnosis. This species belongs to the *Diplectrona aurovittata* species group and to the *Diplectrona hasada* species complex. Having double-spined or pointed dorsoapical region of the paraproct it is most close to *D. sirkasha* sp. nov. It differs by the truncated anterior of tergum IX, by the more lobe-like cerci, by the very broad ventral profile of the apical half of the gonopod, by the

abbreviated mesal spine of the bispined head of the paraproct; by the inflated dorsum of the phallic head as well as by the rounded, not truncated ventral profile of the phallic head.

Description. Male (in alcohol). Light brown animal. Forewings without pattern. Forewing length 7 mm, apical fork I present on hindwing. Eyes setaless, not enlarged. Maxillary palp formula I-IV-III-II-V. Abdominal segment VII without a pair of reticulated internal sacs; filament on sternum V as long as the length of segments V-VI.

Male genitalia. Segment IX rounded anterad with truncated dorsum, dorsum long and flat with a middle depression line, ventrum very short. Segment X fused to the tergum IX. The dorsoapical setose lobes (inner lobes) of segment X well-developed, protruded narrowing in dorsal view; seem bilobed, but tightly adhered. Cerci setose rather lobe-like, not just a setose surface both in dorsal and lateral views. Unsetose paraproct (outer lobes or lateral plates of segment X) with wide and shallow apical excision; the mesal pointed processes smaller. Gonopods straight with coxopodite of dilated apical half with very broad ventral profile; harpago mesad turning with narrower subapical-apical region. Phallic apparatus with down curving and broadening basal section and



Figures 69–73. *Diplectrona nongronga* sp. nov. Holotype: 69 = male genitalia in left lateral view, 70 = male genitalia in dorsal view, 71 = left gonopod in ventral view, 72 = phallic organ in left lateral view, 73 = phallic head in ventral view.

with a longer tube-forming horizontal two thirds with broadened apex in lateral view; two pairs of endothecal processes visible, both with blunt apices in lateral and pointed triangular in ventral view; dorsal endothecal process bigger; phallosome sclerite less distinct. The phallic organ with rounded and dilated head in ventral view.

Etymology. *nongronga*, coined from the name of *locus typicus* of the holotype.

Diplectrona sirkasha sp. nov.

(Figures 74–78, Map 6: n° 14, Map 9)

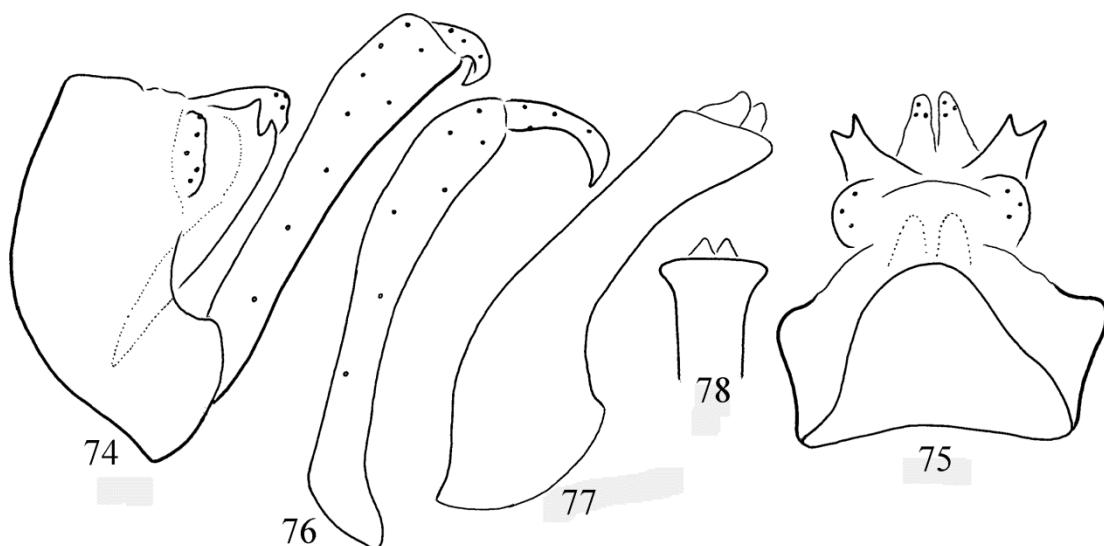
Material examined. Holotype: **India**, Manipur, Sirohi Kashong [=Siruhi Kashong = Shirui Kashong (peak)], 7000–7500 ft, 25°06'44.5"N 94°27'35.4"E, 6.–7.VI. 1960, leg. F. Schmid (1 male, CNC). Paratype: India, Meghalaya (United Jaintia and Khasi Hills), Nongrim [=Nongtraw], 3000 ft, 25°22'09.9"N 91°45'48.2"E, 28.III.1960, leg. F. Schmid (1 male, OPC).

Diagnosis. This species belongs to the *Diplectrona aurovittata* species group and to the *D. hasada* species complex. Having double-spined or pointed dorsoapical region of the paraproct it is most close to *D. jaraina* sp. nov. It differs by the smaller cerci, the wider apical excision with equal

pointed mesal and lateral pointed processes on the dorsal profile of the paraproct head as well as by the truncated phallic head in ventral view, not convex with small mesal excision on the apical margin.

Description. Male (in alcohol). Light brown animal. Forewings without pattern. Forewing length 8 mm, apical fork I present on hindwing. Eyes setaless, not enlarged. Maxillary palp formula I-IV-III-II-V. Abdominal segment VII without a pair of reticulated internal sacs; filament on sternum V short.

Male genitalia. Segment IX rounded anterad, dorsum medium long and flat with a middle depression line, ventrum short. Segment X fused to the tergum IX. The dorsoapical setose lobes (inner lobes) of segment X well-developed protruded narrowing in dorsal view; seem bilobed, but tightly adhered. Cerci setose rather lobe-like, not just a setose surface both in dorsal and lateral views. Unsetose paraproct (outer lobes or lateral plates of segment X) with wide and deep apical excision; the mesal and lateral pointed processes similar, almost equal. Gonopods straight with coxopodite of dilated apical half; harpago sharply mesad turning with ventrad pointed head. Phallic apparatus with down curving and broadening basal section and with a longer tube-forming



Figures 74–78. *Diplectrona sirkasha* sp. nov. Holotype: 74 = male genitalia in left lateral view, 75 = male genitalia in dorsal view, 76 = left gonopod in ventral view, 77 = phallic organ in left lateral view, 78 = phallic head in ventral view.

horizontal two thirds with obliquely cut apex in lateral view; two pairs of endothecal processes visible, both with blunt apices in lateral and pointed triangular in ventral view; dorsal endothecal process bigger; phallotremal sclerite less distinct. The phallic organ with truncated and dilated head in ventral view.

Etymology. *sirkasha*, coined from the name of *locus typicus* of the holotype.

Remarks. The single paratype from Meghaláya has some divergences from the holotype of *D. sirkasha* sp. nov. from Manipur. The phallotheca of the paratype has discernibly more slender middle region on the phallotheca and the harpago is less hooked subapicad. However, these small divergences could be in the range of variabilities. More specimens are required to establish stability of the divergences in order to confirm real species level divergences.

Diplectrona sironga sp. nov.

(Figures 79–83, Map 6: n° 14, Map 9)

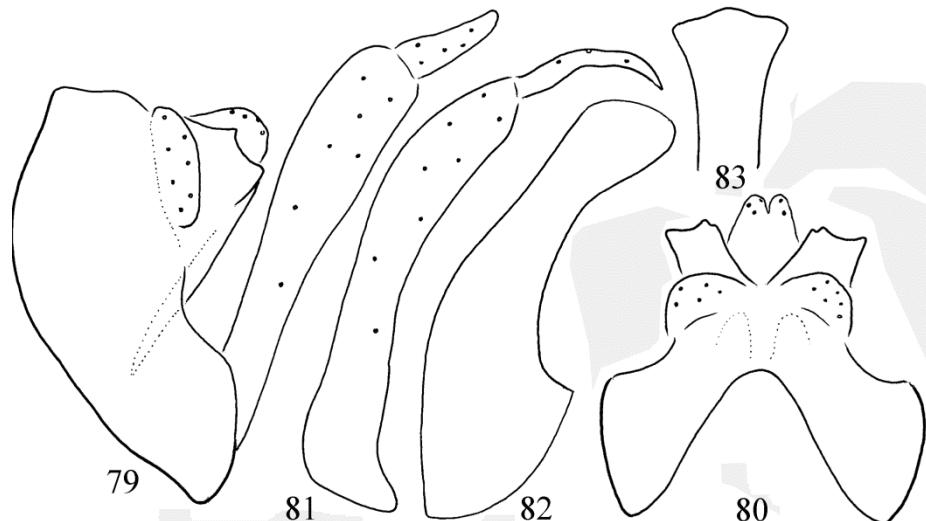
Material examined. Holotype: **India**, Manipur, Sirohi Kashong [=Siruhi Kashong, =Shirui Kashong (peak)], 7000–7500 ft, 25°06'44.5"N 94°

27'35.4"E, 6–7.VI.1960, leg. F. Schmid (1 male, CNC).

Diagnosis. This species belongs to the *Diplectrona aurovittata* species group and to the *D. hasada* species complex. Having double-spined or pointed dorsoapical region of the paraproct with shallow excision it is most close to *D. chingsa* sp. nov. It differs by the presence of a pair of reticulated sacs in abdominal segment VII, by the shorter ventrum of segment IX, the slender, not robust coxopodite, the small cerci, and the lateral and dorsal shape of the paraproct as well as by the ventral profile of the phallus head.

Description. Male (in alcohol). Light brown animal. Forewings without pattern. Forewing length 9 mm, apical fork I present on hindwing. Eyes setaless, not enlarged. Maxillary palp formula I-IV-III-II-V. Abdominal sternum V with a short filament and segment VII with a pair of reticulated internal sacs.

Male genitalia. Segment IX rounded anterad, dorsum medium long and flat with a middle depression line, ventrum short. Segment X fused to the tergum IX. The dorsoapical setose lobes (inner lobes) of segment X well-developed, protruded narrowing in dorsal view; seem bilobed,



Figures 79–83. *Diplectrona sironga* sp. nov. Holotype: 79 = male genitalia in left lateral view, 80 = male genitalia in dorsal view, 81 = left gonopod in ventral view, 82 = phallic organ in left lateral view, 83 = phallic head in ventral view.

but tightly adhered. Cerci setose rather lobe-like, and high in lateral view. Unsetose paraproct (outer lobes or lateral plates of segment X) subtriangular and truncated flat plate with shallow excision in lateral view and subquadrangular with shallow excision in dorsal view; the mesal pointed corner slightly bilobed. Gonopods slender straight with coxopodite of dilating apical half; harpago very slender and mesad turning with sharply ventrad pointed head. Phallic apparatus with down curving and broadening basal section and with a longer tube-forming horizontal two thirds with rounded obliquely cut apex in lateral view; two pairs of endothecal processes visible, both with blunt apices in lateral and pointed triangular in ventral view; dorsal endothecal process bigger; phallotremal sclerite less distinct. The phallic organ with slightly trilobed convex head in ventral view.

Etymology. *sironga*, coined from the name of *locus typicus* of the holotype.

Diplectrona sumatrana sp. nov.

(Map 9)

Diplectrona hermione Malicky & Chantaramongkol, in Malicky, 2002:1210. Misidentification.

Material. Syntypes: Malicky 2002: 1210, **Indonesia**, Sumatra, 15♂♂ von 7 Orten, in Aceh

und Nord-Sumatra, leg. Diehl, Sivec, Malicky, Tarmann, (15 males, one drawn male genitalia, MPC). Paratype: Indonesia, Sumatra, Danau Ranau, Bukit Barisan Selatan NP, 950m, 30.VI. 2009, leg. Z. Ecsedi (1 male, OPC).

Diagnosis. This species having dorsoapicad produced spiny structure on the paraproct belongs to the *Diplectrona aurowittata* new species group and supplied with double pointed spines belongs to the *Diplectrona hasada* new species complex. Has resemblance to *Diplectrona kualagomba* sp. nov. described from Malaysia, but differs by the differently shaped dorsal and lateral profiles of the paraproct as well as by the lateral profile of the phallic organ and the ventral profile of the shallowly excised phallic head.

Description. Male (Figures: Malicky, 2002: Table 15: *hermione*, Sipirok).

Male genitalia. Segment IX convex anterad, dorsum long and convex with a middle depression line, ventrum short. Segment X fused to the tergum IX. The dorsoapical setose lobes (inner lobes) of segment X well-developed, protruded and narrowing apicad, broad-based; seem bilobed, but tightly adhered basally, slightly shorter than paraproct. Cerci setose, high and short in lateral view, semi-circular in dorsal view. Unsetose para-

proct (outer lobes or lateral plates of segment X) elongated subquadrangular plate with two minute blunt spines in lateral view elongated in dorsal view. Gonopods dilated apicad and their harpago mesad turning and narrowing. Phallic apparatus with head of shallowly concave, excised apical margin in ventral view.

Etymology. *sumatrana*, named after the *locus typicus* of the syntype.

Diplectrona tairenkokpa sp. nov.

(Figures 84–88, Map 6: n° 10, Map 9)

Material examined. Holotype: **India**, Manipur, Tairenkokpi, 4000 ft., 24°49'36.7"N 93°48'14.6"E, 31.V.1960, leg F. Schmid (1 male, OPC).

Diagnosis. This species belongs to the *Diplectrona aurovittata* species group and to the *H. hasada* species complex. Having double-spined and pointed dorsoapical region of the paraproct it is most close to and a sibling species of *D. chingsa* sp. nov. It differs by the more produced cerci, broader dorsoapical setose lobe in lateral view, by the narrow dorsal profile of the paraproct as well as by the high phallobase, slimmer phallothecal shaft and the straight truncated apical end of the phallotheca in ventral view.

Description. Male (in alcohol). Light brown animal. Forewings without pattern. Forewing length 8 mm, apical fork I present on hindwing. Eyes setaless, not enlarged. Maxillary palp formula I-IV-III-II-V. There is a short filament discernible on segment V. Abdominal segment VII with a pair of reticulated internal sacs.

Male genitalia. Segment IX rounded anterad, dorsum medium long and flat with a middle depression line, ventrum shorter. Segment X fused to the tergum IX. The dorsoapical setose lobes (inner lobes) of segment X well-developed, protruded, broad in lateral view; seem bilobed, but tightly adhered. Cerci setose rather lobe-like, not just a setose surface both in dorsal and lateral views. Unsetose paraproct (outer lobes or lateral plates of segment X) subtriangular flat plate in lateral view with a pair of two blunt pointed

processes as visible both in lateral and dorsal profiles. Gonopods slender straight with coxopodite of dilated apical half; harpago mesad turning with sharply ventrad pointed head. Phallic apparatus with down curving and broadening high basal section and with a longer tube-forming horizontal two thirds with rounded obliquely cut apex in lateral view; two pairs of endothecal processes visible, both with blunt apices in lateral and pointed triangular in ventral view; dorsal endothecal process bigger; phallotremal sclerite less distinct. The phallic organ with slightly convex and dilated head in ventral view.

Etymology. *tairenkokpa*, named after the *locus typicus* of the holotype.

Diplectrona tungpa sp. nov.

(Map 9)

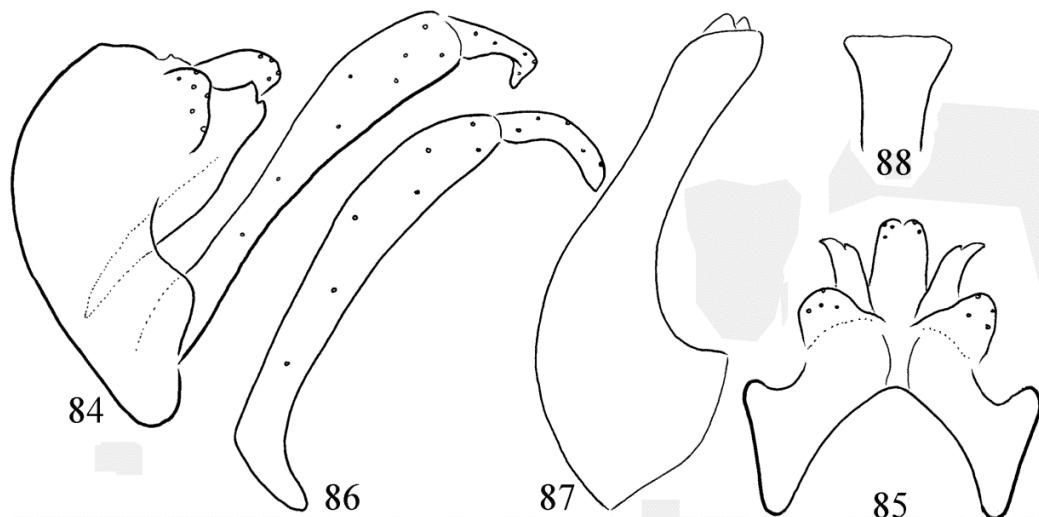
Diplectrona burha Schmid, 1961: Malicky 2002:1205–1206. Misidentification.

Material. Syntypes: Malicky 2002: 1206, **Taiwan**, 11♂♂ von 9 Fundorten aus den Provinzen Taipei, Taitung, Ilan, Tainan, Taichung und Nantou, CM und USNM., (one drawn specimen, MPC).

Diagnosis. This species having dorsoapicad produced spiny structure on the paraproct belongs to the *Diplectrona aurovittata* new species group, and supplied with double pointed spines belongs to the *Diplectrona hasada* new species complex. Has resemblance to *Diplectrona kallisto* Malicky, 2002 described from Malaysia, Sabah, but differs by the blunt, not pointed apex of harpago; by both the lateral and dorsal profiles of the paraproct; as well as by the lateral profile of the phallic organ and by the ventral profile of the phallic head.

Description. Male (Figures: Malicky 2002: Table 14: *burha*, Tungpu).

Male genitalia. Segment IX convex anterad, dorsum long and convex with a middle depression line, ventrum long. Segment X fused to the tergum IX. The dorsoapical setose lobes (inner lobes) of segment X well-developed, protruded



Figures 84–88. *Diplectrona tairenpokpa* sp. nov. Holotype: 84 = male genitalia in left lateral view, 85 = male genitalia in dorsal view, 86 = left gonopod in ventral view, 87 = phallic organ in left lateral view, 88 = phallic head in ventral view.

and narrowing apicad, broad in lateral view; seem bilobed, but tightly adhered, longer than paraproct. Cerci setose, high and short in lateral view, semi-circular in dorsal view. Unsetose paraproct (outer lobes or lateral plates of segment X) upward directed plate with two spines visible both in lateral and dorsal views. Gonopods slender and their harpago mesad turning with blunt apices. Phallic apparatus with rounded, concave head in ventral view.

Etymology. *tungpa*, named after the *locus typicus* of the syntype.

Diplectrona tamdaophila new species complex

Diplectrona tamdaophila new species complex having paraproct (lateral plate of segment X) of a pair of mostly setaless plate-like structure with single pointed spine-like processes in various forms and usually produced in apicodorsal position.

Diplectrona aisahka sp. nov.

(Figures 89–93, Map 10)

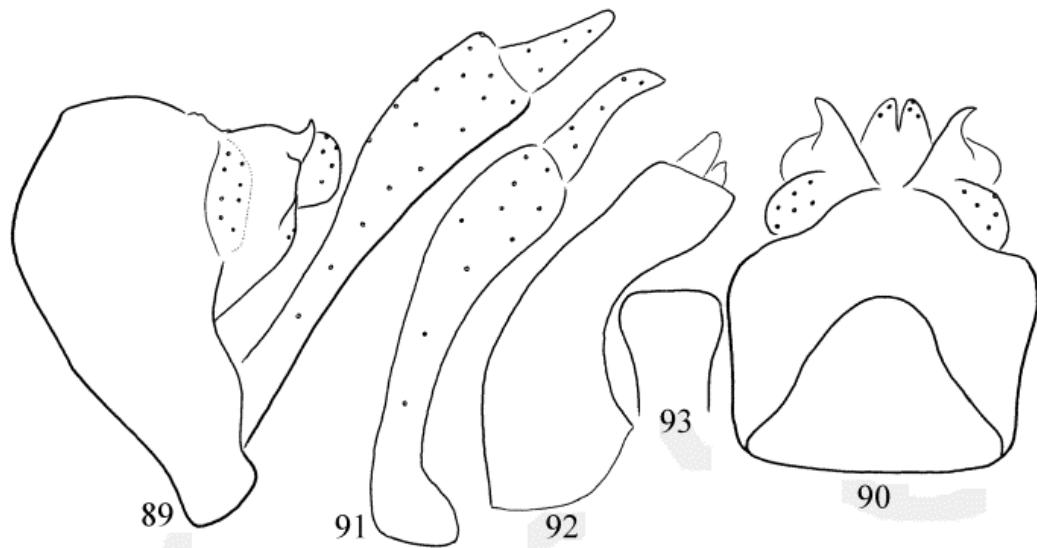
Material examined. Holotype: **India**, Meghalaya (United Jaintia and Khasi Hills), Khasi Hills (Assam, Khasia Hills) McLachlan Coll. B. M.

1938-674 (1 male, BMNH). Paratypes: same as holotype (1 male, BMNH).

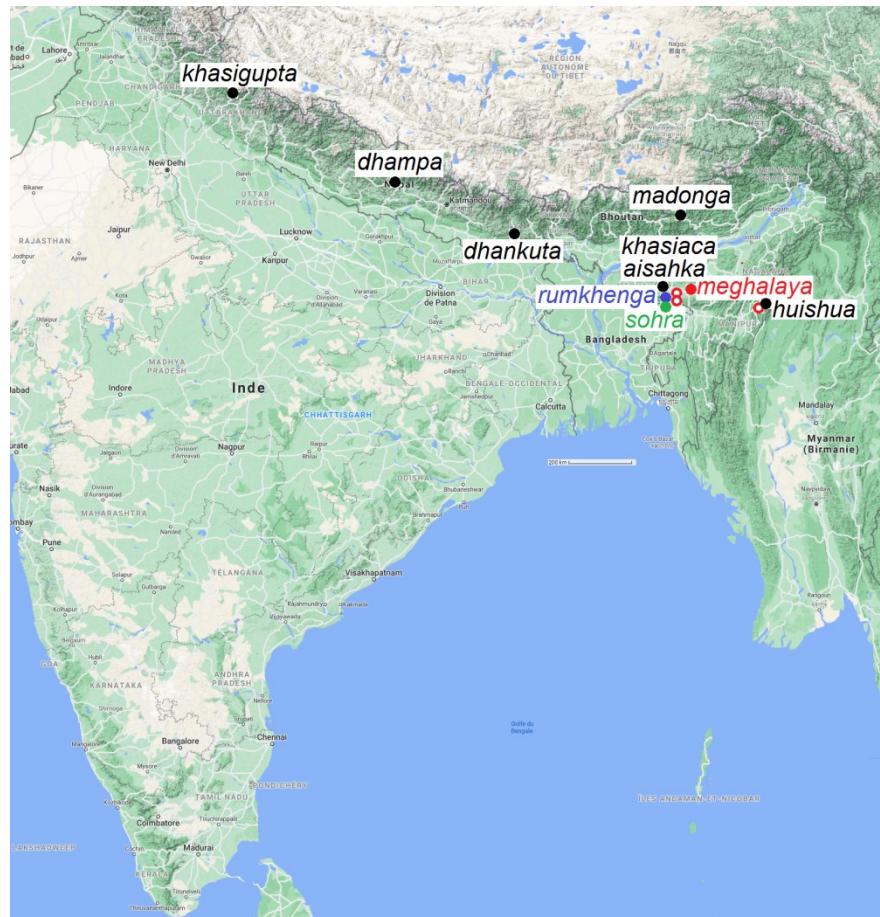
Diagnosis. This species having dorsoapicad produced spiny structure on the paraproct belongs to the *Diplectrona aurowittata* new species group, and to the *Diplectrona tamdaophila* new species complex. Most close to the *D. khasiaca* sp. nov., but differs by the very dilated apical half of the coxopodite; by the dorsal profile of the dorsoapical setose lobes, that is narrowing apicad, not capitate; by the diverged lateral profile of the phallic organ; it is more robust; the phallobase is curving, not subquadratic; the dorsum of the phallotheca gradually curving downward, not straight; the ventral profile of the phallic head is produced laterad rounded, not straight.

Description. Male (in alcohol). Dark brown animal. Forewings without discernible pattern. Forewing length is 8 mm, apical fork I present on hindwing. Eyes setaless, not enlarged. Maxillary palp formula I-III-IV-II-V. Abdominal segments without any reticulated internal sacs; filaments on sternite V double longer than the sternite.

Male genitalia. Segment IX convex anterad, dorsum long and convex with a middle depression line, ventrum shorter. Segment X fused to the tergum IX. The dorsoapical setose lobes (inner



Figures 89–93. *Diplectrona aisahka* sp. nov. Holotype: 89 = male genitalia in left lateral view, 90 = male genitalia in dorsal view, 91 = left gonopod in ventral view, 92 = phallic organ in left lateral view, 93 = phallic head in ventral view.



Map 10. *Diplectrona tamdaophila* complex with only India and Nepal.

lobes) of segment X well-developed, protruded and narrowing apicad; seem bilobed, but tightly adhered. Cerci setose, high and short in lateral view, semi-circular in dorsal view. Unsetose paraproct (outer lobes or lateral plates of segment X) short and high plate in lateral view with upward directed pointed spine with laterad turning tip. Gonopods very dilated apicad and their harpago mesad turning with ventrad pointed tip. Phallic apparatus very robust with down curving and broadening curving basal section and with a tube-forming horizontal section with downward directed apex in lateral view; one pair of endothecal processes discernible, with blunt apices in lateral and pointed triangular in ventral view; phallotremal sclerite less distinct. In ventral view the head of phallotheca produced rounded laterad.

Etymology. *aisahka*, coined from the name of the locus typicus of the holotype.

***Diplectrona beluma* sp. nov.**

(Map 11)

Diplectrona aurovittata Ulmer, 1906: Malicky 2002: 1205. Misidentification.

Material. Syntypes: **Malaysia**, Hulu, Perak, Belum Expedition, base camp 250m, according to its elevation this locality should placed near this point: 4°37'35.3"N 101°09'37.6"E, 21.III.-14.IV. 1994, leg. Sivec, CM: 3♂♂; do. Sungai Enam, subcamp, 5°30'57.5"N 101°27'56.2"E, 11.-12.IV. 1994 leg. Sivec, CM: 2♂♂.

Diagnosis. This species having dorsoapicad produced spiny structure on the paraproct belongs to the *Diplectrona aurowittata* new species group, and supplied only with a single pointed spine belongs to the *Diplectrona tamdaophila* new species complex. The additional pairs of small spinules on both plates of the paraproct visible in dorsal view differentiate this species from all the others in the complex.

Description. Male (Figures: Malicky 2002: Table 10: *aurovittata*, Belum). Eyes setaless, not enlarged. Abdominal segments without any reti-

culated internal sacs; filaments on sternite V present.

Male genitalia. Segment IX convex anterad, dorsum long and convex with a middle depression line, ventrum shorter. Segment X fused to the tergum IX. The dorsoapical setose lobes (inner lobes) of segment X well-developed, protruded and narrowing apicad, broad in lateral view; seem bilobed, but tightly adhered. Cerci setose, high and short in lateral view, semi-circular in dorsal view. Unsetose paraproct (outer lobes or lateral plates of segment X) subquadrangular plate with dorsoapical elongated spine in lateral view with additional pair of small spines in dorsal view. Gonopods dilated apicad and their harpago mesad turning and narrowing. Phallic apparatus with head of concave apical margin in ventral view.

Etymology. *beluma*, named after the *locus typicus* of the syntypes.

***Diplectrona dhampa* sp. nov.**

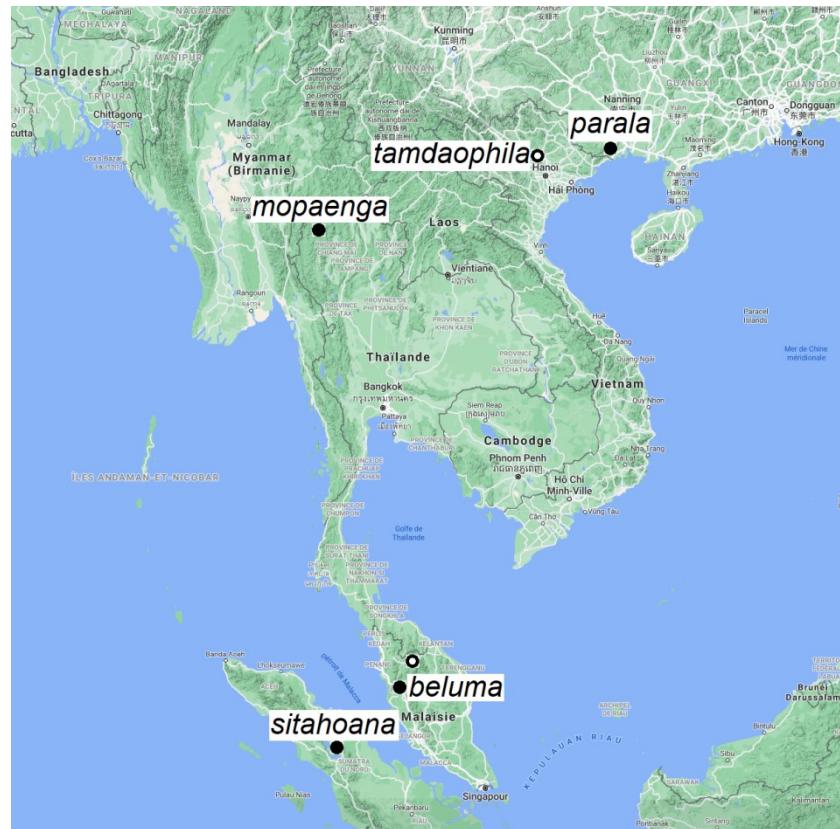
(Map 10)

Diplectrona sanguana Kimmins, 1964: Malicky 2002: 1215-1216. Misidentification.

Material. Holotype: **Nepal**, Phedi, Nebenbäche bei Dhampus Mailee Hotel, 1200m, according to its elevation, this locality should be placed near this point: 28°18'59.4"N 83°51'27.8"E. 21. IV.1995, leg. H. Malicky, (1 male, drawn specimen, MPC).

Diagnosis. This species having dorsoapicad produced spiny structure on the paraproct belongs to the *Diplectrona aurowittata* new species group, and supplied only with a single pointed spine belongs to the *Diplectrona tamdaophila* new species complex. This species has resemblance to *Diplectrona dhankuta* sp. nov., but differs both by the dorsal and lateral profiles of the paraproct; by the lateral profile of the phallotheca as well as by the ventral profile of the phallic head.

Description. Male (Figures: Malicky, 2002: Table 11: *sanguana*, Dhampus Mailee). Eyes setaless, not enlarged. Abdominal segments with reti-



Map 11. *Diplectrona tamdaophila* complex outside India and Nepal.

culated internal sacs; filaments on sternite V present.

Male genitalia. Segment IX convex anterad, dorsum long and convex with a middle depression line, ventrum shorter. Segment X fused to the tergum IX. The dorsoapical setose lobes (inner lobes) of segment X well-developed, protruded and narrowing apicad, broad in lateral view; seem bilobed, but tightly adhered and longer than paraproct. Cerci setose, high and short in lateral view, semi-circular in dorsal view. Unsetose paraproct (outer lobes or lateral plates of segment X) subquadrangular plate with dorsoapical elongated spine in lateral view. Gonopods dilated apicad and their harpago mesad turning with ventroapical pointed tiny process. Phallic apparatus with high phallobase and the phallic head with rounded laterad expanding apical margin in ventral view.

Etymology. *dhampa*, named after the locus typicus of the holotype.

Diplectrona dhankuta sp. nov.

(Map 10)

Diplectrona sanguana Kimmins, 1964: Malicky 2002: 1215–1216: “Nepal, Dhan Kuta [=Dhankuta], 1500 m, according to its elevation, this locality should be placed near this point: 27°00'29.7"N 87°18'35.4"E, 30.VI.1991, leg Allen CM: 1♂, (1 male, CM). Misidentification!

Material. Holotype: **Nepal**, Dhan Kuta, 1500 m, 30.VI.1991, leg Allen CM: 1♂, (1 male, drawn specimen, MPC).

Diagnosis. This species having dorsoapicad produced spiny structure on the paraproct belongs to the *Diplectrona aurowittata* new species group, and supplied only with a single pointed spine belongs to the *Diplectrona tamdaophila* new species complex. This species has resemblance to *Diplectrona dhampa* sp. nov., but differs both by the

dorsal and lateral profiles of the paraproct; by the lateral profile of the phallotheca as well as by the ventral profile of the phallic head.

Description. Male (Figures: Malicky 2002: Table 11: *sanguana*, Dhan Kuta). Eyes setaless, not enlarged. Abdominal segments with reticulated internal sacs; filaments on sternite V present.

Male genitalia. Segment IX convex anterad, dorsum long and convex with a middle depression line, ventrum little shorter. Segment X fused to the tergum IX. The dorsoapical setose lobes (inner lobes) of segment X well-developed, protruded and narrowing apicad, broad in lateral view; seem bilobed, but tightly adhered and longer than paraproct. Cerci setose, high and short in lateral view, semi-circular in dorsal view. Unsetose paraproct (outer lobes or lateral plates of segment X) short subquadrangular plate with dorsoapical elongated spine in lateral view. Gonopods dilated apicad and their harpago mesad turning with ventroapical pointed tiny process. Phallic apparatus with high phallobase and the phallic head with truncated laterad expanding apical margin in ventral view.

Etymology. *dhankuta*, named after the locus typicus of the holotype.

***Diplectrona huishua* sp. nov.**

(Figures 94–98, Map 6: n° 34, Map 10)

Material examined. Holotype: **India**, Manipur, Huiahu, = Huiau in Aubert 1967; according to Lonsdale (2020), this locality corresponds to Huishu, 25°14'47"N, 94°33'10"E, 5000 ft. 2.VII. 1960, leg. F. Schmid (1 male, CNC). Paratypes: same as holotype (1 male, OPC).

Diagnosis. This species having dorsoapicad produced spiny structure on the paraproct belongs to the *Diplectrona aurowittata* new species group, and to the *Diplectrona tamdaophila* new species complex. It has the character combination of small setaless eyes; without any internal sacs in abdominal segments; anterodorsal filament on sternite V as long as sternite V, VI and VII together, presence of fork I on hindwing; elongated

and high rounded lobes of segment X; short cerci; almost parallel-sided harpago with short broad base. Most close to the *D. tamdaophila* species described from nearby Vietnam but differs by the dorsal pattern of the paraproct.

Description. Male (in alcohol). Dark brown animal. Forewings without discernible pattern. Forewing length 9 mm, apical fork I present on hindwing. Eyes setaless, not enlarged. Maxillary palp formula I-(III, IV)-II-V. Abdominal segments without any reticulated internal sacs; filaments on sternite V almost triple longer than the sternite.

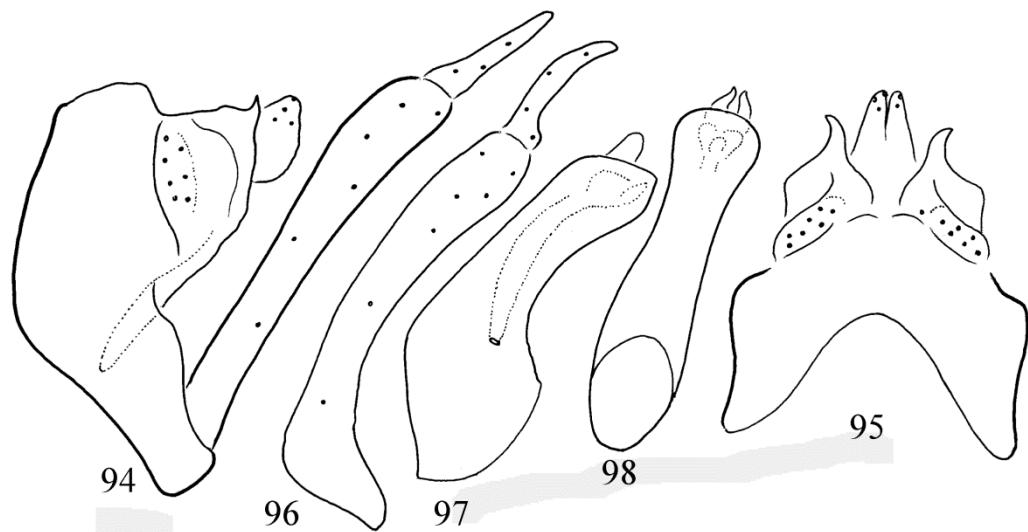
Male genitalia. Segment IX convex anterad, dorsum long and convex with a middle depression line, ventrum short. Segment X fused to the tergum IX. The dorsoapical setose lobes (inner lobes) of segment X well-developed, much longer than paraproct which is rounded broad protruded in lateral view; seems bilobed, but tightly adhered and slender in dorsal view. Cerci setose, high and short in lateral view, elongated in dorsal view. Unsetose paraproct (outer lobes or lateral plates of segment X) short and high plate in lateral view with upward directed pointed spine with laterad turning tip; subquadrangular basement in dorsal view. Gonopods robust straight and their harpago mesad turning with short broad base. Phallic apparatus with down curving and broadening basal section and with a tube-forming horizontal section with downward directed apex in lateral view; one pair of endothecal processes discernible, with blunt apices in lateral and pointed triangular in ventral view; phallotremal sclerite less distinct. In ventral view the phallotheca with rounded slightly broadening apex.

Etymology. *huishua*, named after the locus typicus of the holotype.

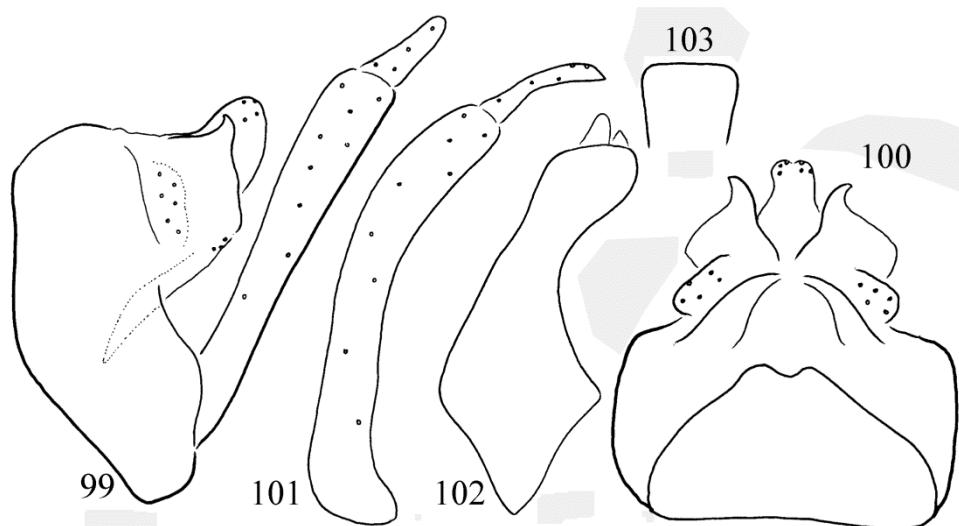
***Diplectrona khasiaca* sp. nov.**

(Figures 99–103, Map 10)

Material examined. Holotype: **India**, Meghaláya (United Jaintia and Khasi Hills), Khasi Hills (Khasia Hills) McLachlan Coll. B. M. 1938-674 (1 male, BMNH). Paratypes: same as holotype (1 males, BMNH; 1 male, OPC).



Figures 94–98. *Diplectrona huishua* sp. nov. Holotype: 94 = male genitalia in left lateral view, 95 = male genitalia in dorsal view, 96 = left gonopod in ventral view, 97 = phallic organ in left lateral view, 98 = phallic head in ventral view.



Figures 99–103. *Diplectrona khasiaca* sp. nov. Holotype: 99 = male genitalia in left lateral view, 100 = male genitalia in dorsal view, 101 = left gonopod in ventral view, 102 = phallic organ in left lateral view, 103 = phallic head in ventral view.

Diagnosis. This species having dorsoapicad produced spiny structure on the paraproct belongs to the *Diplectrona aurowittata* new species group, and to the *Diplectrona tamdaophila* new species complex. Most close to *D. meghalaya* sp. nov., but differs by the dorsal profile of the dorsoapical setose lobes, that is capitate, not narrowing apicad; by the diverged lateral profile of the phallic organ; it is more robust; the phallobase is

subquadric, not curving; the dorsum of the phallotheca straight, not gradually curving downward.

Description. Male (in alcohol). Dark brown animal. Forewings without discernible pattern. Forewing length is 8 mm, apical fork I present on hindwing. Eyes setaless, not enlarged. Maxillary palp formula I-III-IV-II-V. Abdominal segments

without any reticulated internal sacs; filaments on sternite V double longer than the sternite.

Male genitalia. Segment IX convex anterad, dorsum long and convex with a middle depression line, ventrum shorter. Segment X fused to the tergum IX. The dorsoapical setose lobes (inner lobes) of segment X well-developed, rounded broad protruded and capitate; seem bilobed, but tightly adhered. Cerci setose, low and long in lateral view, semi-circular in dorsal view. Unsetose paraproct (outer lobes or lateral plates of segment X) short and high plate in lateral view with upward directed pointed spine with laterad turning tip. Gonopods robust straight and their harpago mesad turning with sharply ventrad pointed tip. Phallic apparatus with down curving and broadening subquadratic basal section and with a tube-forming horizontal section with downward directed apex in lateral view; one pair of endothecal processes discernible, with blunt apices in lateral view and pointed triangular in ventral view; phallotremal sclerite less distinct. In ventral view the phallotheca is parallel-sided.

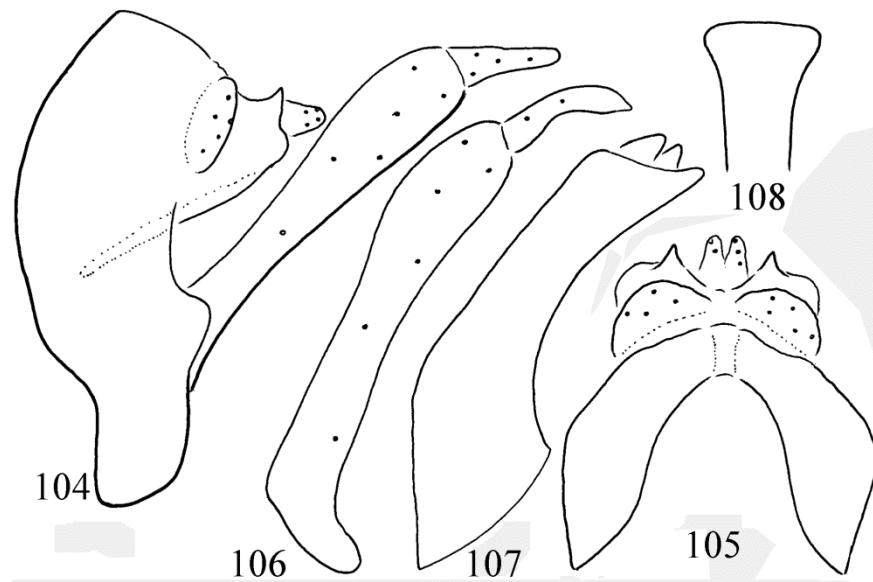
Etymology. *khasiaca*, named after the locus typicus of the holotype.

Diplectrona khasigupta sp. nov.

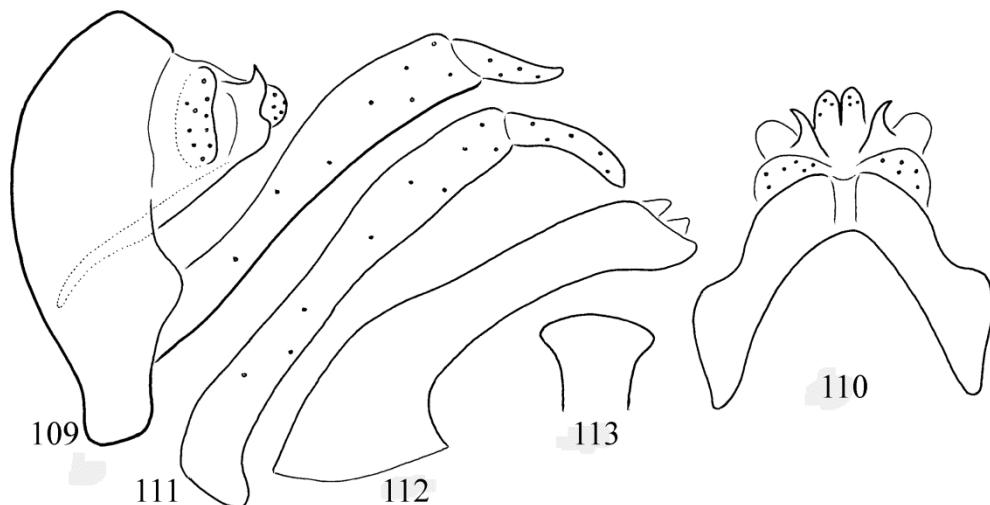
(Figures 104–113, Map 2: n° 21, 22, Map 10)

Material examined. Holotype: **India**, Uttarakhand: Pauri Garhwal District, Gupta Khasi = Guptkashi, 2 small brooks very steep, 3800–4000 ft., 30°31'31.3"N 79°05'20.0"E, 2.IV.1958, leg. F. Schmid (1 male, CNC). Paratype: **India**, Uttarakhand: Pauri Garhwal, Khumyara, probably Khumera according to Lonsdale (2020), 2 small brooks in bushes and hygropetric habitat, 4300–5000 ft., 30°33' 15"N 79°03'44"E, 27-28.V.1958, leg. F. Schmid (1 male, OPC).

Diagnosis. This species having dorsoapicad produced spiny structure on the paraproct belongs to the *Diplectrona aurowittata* new species group, and to the *Diplectrona tamdaophila* species complex. The dorsal profile of the paraproct of the new species most resembles *Diplectrona joannisi* described from Vietnam, but the dorsoapical spine directed straight to posterad, not laterad; the cerci vertically elongated, not horizontally; the harpago has a pointed tip, not blunt; the lateral profile of the phallotheca different,



Figures 104–108. *Diplectrona khasigupta* sp. nov. Holotype: 104 = male genitalia in left lateral view, 105 = male genitalia in dorsal view, 106 = left gonopod in ventral view, 107 = phallic organ in left lateral view, 108 = phallic head in ventral view.



Figures 109–113. *Diplectrona khasigupta* sp. nov. Paratype: 109 = male genitalia in left lateral view, 110 = male genitalia in dorsal view, 111 = left gonopod in ventral view, 112 = phallic organ in left lateral view, 113 = phallic head in ventral view.

robust, not slim, its apicoventrum straight and narrowing, not downward directed and broad.

Description. Male (in alcohol). Light brown animal. Forewings without pattern. Forewing length 9 mm, apical fork I present on hindwing. Eyes setaless, not enlarged. Maxillary palp formula I-IV-III-II-V. Abdominal segment VII with two reticulated internal sacs.

Male genitalia. Segment IX convex anterad, dorsum long and flat with a middle depression line, ventrum deformed into a ventral narrowing lobe. Segment X fused to the tergum IX. The dorsoapical setose lobes (inner lobes) of segment X well-developed, rounded slender, protruded; seem bilobed, but tightly adhered; the ventroapical setose area distinct. Cerci setose, high and short in lateral view, semi-circular in dorsal view. Unsetose paraproct (outer lobes or lateral plates of segment X) subtriangular flat plate in lateral view with upward directed pointed process; straight and posterad directed in dorsal view. Gonopods robust straight and their harpago mesad turning with sharply pointed head. Phallic apparatus with down curving and broadening basal section and with a longer tube-forming horizontal two thirds with rounded obliquely cut apex in lateral view; two pairs of endothecal processes visible, both with blunt apices in lateral and pointed triangular in ventral view; dorsal endothecal process bigger;

phallotremal sclerite less distinct. The phallic organ with produced wing-like triangular delta-shaped head in ventral view.

Etymology. *khasigupta*, named after the locus typicus of the holotype.

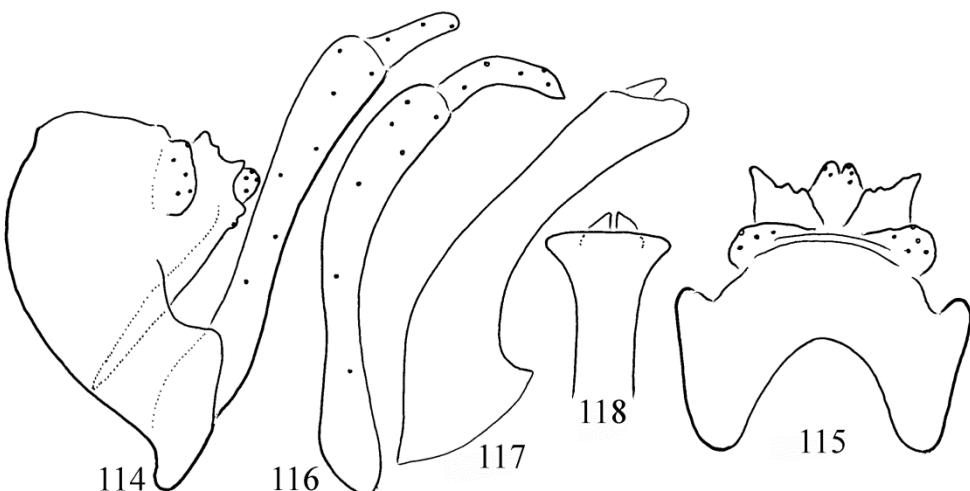
Diplectrona madonga sp. nov.

(Figures 114–118, Map 4: n° 27, Map 10)

Material examined. Holotype: **India**, Arunachal Pradesh (Assam), Kameng, Nyukmadong, 6600–8000 ft., 27°24'32.5"N 92°07'57.3"E, 1. VIII.1961, leg. F. Schmid (1 male, CNC). Paratypes: same as holotype (1 male, OPC; 1 male, SMNH).

Diagnosis. This species having dorsoapicad produced spiny structure on the paraproct belongs to the *Diplectrona aurowittata* new species group, and to the *Diplectrona tamdaophila* new species complex. Most close to *D. kinulta* Oláh & Li described from China (Tibet), but differs by the short segment X, by both the lateral and dorsal profiles of the paraproct as well as by the truncate apex of the phallic organ in ventral view.

Description. Male (in alcohol). Light brown animal. Forewings light spotted brown. Forewing



Figures 114–118. *Diplectrona madonga* sp. nov. Holotype: 114 = male genitalia in left lateral view, 115 = male genitalia in dorsal view, 116 = left gonopod in ventral view, 117 = phallic organ in left lateral view, 118 = phallic head in ventral view.

length is 9 mm, apical fork I present on hindwing. Eyes setaless, not enlarged. Maxillary palp formula I-IV-III-II-V. Anterodorsal filament on sternite V 2.24X as long as the sternite, there are two internal large sacs present in segment VIII.

Male genitalia. Segment IX convex anterad, dorsum long and flat with a middle depression line, ventrum directed anterad. Segment X fused to the tergum IX. The dorsoapical setose lobes (inner lobes) of segment X well-developed, short; seems bilobed, but tightly adhered; the ventroapical setose area distinct. Cerci setose, high and short in lateral view, semi-circular plate-like in dorsal view. Unsetose paraproct (outer lobes or lateral plates of segment X) subquadrangular flat plate in lateral view with five variously sized small outgrowths. Gonopods robust straight and their harpago mesad turning with pointed apex. Phallic apparatus with down curving and broadening basal section and with a longer tube-forming horizontal two thirds with rounded, obliquely cut apex in lateral view; one pair of endothecal processes well discernible, with blunt apices in lateral and pointed triangular in ventral view; phallotremal sclerite less distinct. The phallic organ with much produced wing-like triangular delta-shaped truncated head in ventral view.

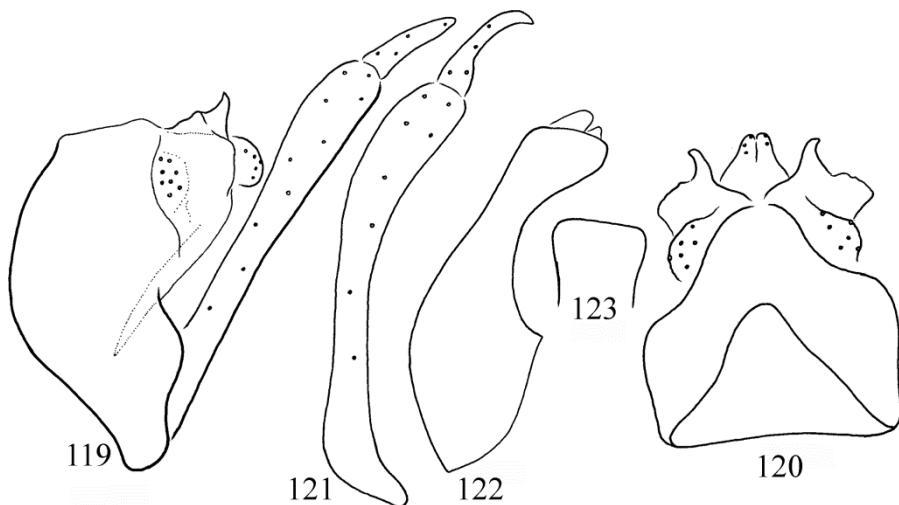
Etymology. *madonga*, coined from the name of the locus typicus of the holotype.

Diplectrona meghalaya sp. nov.

(Figures 119–123, Map 5: n° 8, 62, 70, Map 6: n° 16, Map 10)

Material examined. Holotype: **India**, Meghalaya (United Jaintia and Khasi Hills), Shilliang Myntang [=Shiliangmyntang], 3500 ft, 25°33' 55.6"N 92°21'32.5"E, 21.IV.1960, leg. F. Schmid (1 male, CNC). Paratypes: same as holotype (1 male, CNC; 1 male, OPC). India, Meghalaya (United Jaintia and Khasi Hills), Mawlang, 4000 ft, 25°21'30.3"N 92°04'15.1"E, 12. IV.1960, leg. F. Schmid (1 male, SMNH). India, Meghalaya (United Jaintia and Khasi Hills), Dawki, 200 ft, 25°11'21.1"N 92°01'12.2"E, 8.XII.1959, leg. F. Schmid (1 male, CNC). India, Manipur, Sirohi = Shirui, 4300 ft, 25°07'42.6"N 94°25'14.6"E, 28. IX.1960, leg F. Schmid (1 male, CNC).

Diagnosis. This species having dorsoapicad produced spiny structure on the paraproct belongs to the *Diplectrona aurowittata* new species group, and to the *Diplectrona tamdaophila* new species complex. Most close to the *D. tamdaophila* species described from nearby Vietnam as well as to *D. parala* sp. nov. described from China nearby to Tam Dao of Vietnam. It has the character combination of small setaless eyes; without any internal sacs in abdominal segments; anterodorsal filament on sternite V as long as sternite V and VI to



Figures 119–123. *Diplectrona meghalaya* sp. nov. Holotype: 119 = male genitalia in left lateral view, 120 = male genitalia in dorsal view, 121 = left gonopod in ventral view, 122 = phallic organ in left lateral view, 123 = phallic head in ventral view.

gether, presence of fork I on hindwing; short and high rounded lobes of segment X; enlarged cerci; almost parallel-sided harpago with ventrad pointed head. But differs by the downward curving head of the phallotheca in lateral view that is parallel-sided at *D. parala*, and less curving at *D. tamdaophila*. The ventral profile of the phallotheca constricted subapicad at *D. parala* and almost parallel-sided at *D. tamdaophila* and at *D. meghalaya* sp. nov. *D. meghalaya* sp. nov. has cerci short and high, low and longer at *D. tamdaophila*.

Description. Male (in alcohol). Dark brown animal. Forewings without discernible pattern. Forewing length is 9 mm, apical fork I present on hindwing. Eyes setaless, not enlarged. Maxillary palp formula I-III-IV-II-V. Abdominal segments without any reticulated internal sacs; filaments on sternite V double long than the sternite.

Male genitalia. Segment IX convex anterad, dorsum long and convex with a middle depression line, ventrum short. Segment X fused to the tergum IX. The dorsoapical setose lobes (inner lobes) of segment X well-developed, rounded broad protruded; seem bilobed, but tightly adhered. Cerci setose, low and long in lateral view, semi-circular in dorsal view. Unsetose paraproct (outer lobes or lateral plates of segment X) short and high plate in lateral view with upward direct-

ed pointed spine with laterad turning tip. Gonopods robust straight and their harpago mesad turning with sharply ventrad pointed tip. Phallic apparatus with down curving and broadening basal section and with a tube-forming horizontal section with downward directed apex in lateral view; one pair of endothecal processes discernible, with blunt apices in lateral and pointed triangular in ventral view; phallotremal sclerite less distinct. In ventral view the phallotheca parallel-sided.

Etymology. *meghalaya*, named after the *locus typicus* of the holotype.

Diplectrona mopaenga sp. nov.

(Map 11)

Diplectrona aurovittata Ulmer, 1906: Malicky, 2002: 1205. Misidentification.

Material. Syntypes: Thailand, Mo Paeng, 19° 22'43.6"N 98°22'32.8"E, leg. Malicky, Chantaramongkol, Saengpradab, Rausch, (Zahlreiche exemplare, drawn specimen, MPC).

Diagnosis. This species having dorsoapicad produced spiny structure on the paraproct belongs to the *Diplectrona aurovittata* new species group, and supplied only with a single pointed spine belongs to the *Diplectrona tamdaophila* new spe-

cies complex. Most close to the *D. aisahka* sp. nov. from India, Meghalaya but differs by the longer dorsal profile of the single spine of the paraproct as well as by the slender lateral profile of the phallic organ and the truncated ventral shape of the phallic head.

Description. Male (Figures: Malicky 2002: Table 10: *aurovittata*, Mo Paeng). Eyes setaless, not enlarged. Abdominal segments without any reticulated internal sacs; filaments on sternite V present.

Male genitalia. Segment IX convex anterad, dorsum long and convex with a middle depression line, ventrum shorter. Segment X fused to the tergum IX. The dorsoapical setose lobes (inner lobes) of segment X well-developed, protruded and narrowing apicad, broad in lateral view; seem bilobed, but tightly adhered. Cerci setose, high and short in lateral view, semi-circular in dorsal view. Unsetose paraproct (outer lobes or lateral plates of segment X) subquadangular plate in lateral view with upward directed pointed spine with laterad turning tip. Gonopods dilated apicad and their harpago mesad turning and narrowing. Phallic apparatus with truncated head in ventral view.

Etymology. *mopaenga*, named after the *locus typicus* of the syntypes.

Diplectrona parala sp. nov.

(Figures 124–127, Map 11)

Diplectrona tamdaophila Mey, 1998: Oláh *et al.* 2020: 161 Misidentification!

Material examined. Holotype: China, Guangxi Zhuang Autonomous Region, Shangsi County, Shiwandashan Natural Forest Park, Pearl River above tourist route bridge, N21°53.913' E107°54.283', 375 m, 27.III.2015(15), leg. J. Konstschán, J. N. Li, S. Li, W. H. Li, D. Murányi & G. Q. Wang (1 male, OPC).

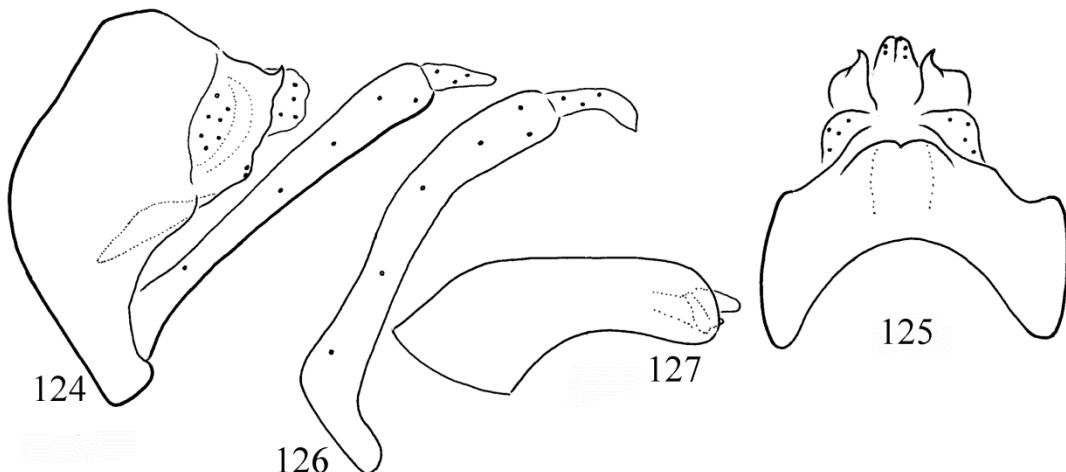
Diagnosis. This species having dorsoapicad produced spiny structure on the paraproct belongs to the *Diplectrona aurowittata* new species group, and to the *Diplectrona tamdaophila* new species

complex. Most close to the *D. tamdaophila* species described from nearby Vietnam. It has the character combination of small setaless eyes; without any internal sacs in abdominal segments; anterodorsal filament on sternite V as long as sternite V and VI together, presence of fork I on hindwing; short and high rounded lobes of segment X; enlarged cerci; almost parallel-sided harpago with ventrad pointed head. But differs by the lateral profile of the phallotheca that is parallel-sided at *D. parala*, constricted middle at *D. tamdaophila* and by the ventral profile that is constricted subapicad at *D. parala* and almost parallel-sided at *D. tamdaophila*.

Description. Male (in alcohol). Dark brown animal. Forewings without discernible pattern. Forewing length 8 mm, apical fork I present on hindwing. Eyes setaless, not enlarged. Maxillary palp formula I-III-IV-II-V. Abdominal segments without any reticulated internal sacs; filaments on sternite V double longer than the sternite.

Male genitalia. Segment IX convex anterad, dorsum long and convex with a middle depression line, ventrum short. Segment X fused to the tergum IX. The dorsoapical setose lobes (inner lobes) of segment X well-developed, rounded broad protruded; seem bilobed, but tightly adhered. Cerci setose, high and short in lateral view, semi-circular in dorsal view. Unsetose paraproct (outer lobes or lateral plates of segment X) short and high plate in lateral view with upward directed pointed spine with laterad turning tip. Gonopods robust straight and their harpago mesad turning with sharply ventrad pointed tip. Phallic apparatus with down curving and broadening basal section and with a longer tube-forming horizontal parallel-sided section with rounded obliquely cut apex in lateral view; one pair of endothecal processes discernible, with blunt apices in lateral and pointed triangular in ventral view; phallotremal sclerite less distinct. In ventral view the phallotheca constricted subapicad.

Etymology. *parala*, coined form “parallel, párhuzamos” parallel in Hungarian, refers to lateral profile of the phallotheca, having almost parallel-sided dorsal and ventral margin.



Figures 124–127. *Diplectrona parala* sp. nov. Holotype: 124 = male genitalia in left lateral view, 125 = male genitalia in dorsal view, 126 = left gonopod in ventral view, 127 = phallic organ in left lateral view.

Diplectrona rumkhenga sp. nov.

(Figures 128–132, Map 5: n° 41, Map 10)

Material examined. Holotype: **India**, Meghalaya (United Jaintia and Khasi Hills), Rumkheng [= Ramkheng], 5500 ft., 25°23'20.0"N 91°50'01.1"E, 20–23.III.1960, leg. F. Schmid (1 male, CNC). Paratypes: same as holotype (1 male, OPC).

Diagnosis. This species having dorsoapicad produced spiny structure on the paraproct belongs to the *Diplectrona aurowittata* new species group, and to the *Diplectrona tamdaophila* new species complex. Most close to the *D. meghalaya* sp. nov. but differs by both the lateral and dorsal profiles of the paraproct as well as by the more robust phallic organ without strongly produced downward directed apical ventrum.

Description. Male (in alcohol). Dark brown animal. Forewings without discernible pattern. Forewing length 9 mm, apical fork I present on hindwing. Eyes setaless, not enlarged. Maxillary palp formula I-III-IV-II-V. Abdominal segments without any reticulated internal sacs; filaments on sternite V double longer than the sternite.

Male genitalia. Segment IX convex anterad, dorsum long with a middle depression line, ventrum short. Segment X fused to the tergum IX.

The dorsoapical setose lobes (inner lobes) of segment X well-developed, rounded broad protruded; seem bilobed, but tightly adhered. Cerci setose, high and short in lateral view, elongated in dorsal view. Unsetose paraproct (outer lobes or lateral plates of segment X) short and high plate in lateral view with upward directed pointed spine with laterad turning tip. Gonopods robust straight and their harpago mesad turning with sharply ventrad pointed tip. Phallic apparatus robust with down curving and broadening basal section and with a tube-forming horizontal section slightly broadening toward the apex in lateral view; one pair of endothecal processes discernible, with blunt apices in lateral view and pointed triangular in ventral view; phallotremal sclerite less distinct. In ventral view the phallotheca parallel-sided, slightly broadening apicad.

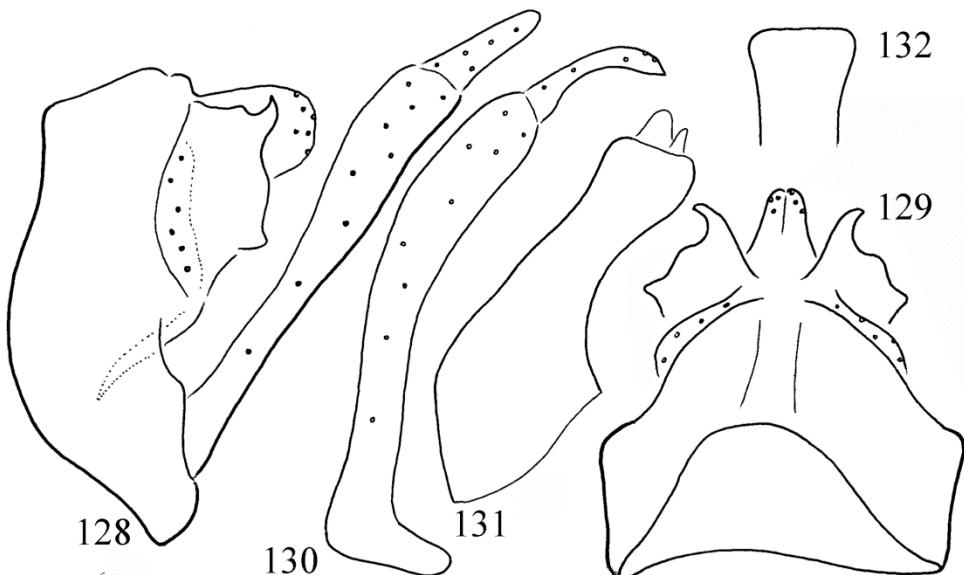
Etymology. *rumkhenga*, named after the *locus typicus* of the holotype.

Diplectrona sitahoana sp. nov.

(Map 11)

Diplectrona aurovittata Ulmer, 1906: Malicky, 2002: 1205. Misidentification.

Material. Syntypes: **Indonesia**, Sumatra, Sita-hoan, 2°40'09.9"N 98°58'50.7"E, zahlreiche ex-



Figures 128–132. *Diplectrona rumkhenga* sp. nov. Holotype: 128 = male genitalia in left lateral view, 129 = male genitalia in dorsal view, 130 = left gonopod in ventral view, 131 = phallic organ in left lateral view, 132 = phallic head in ventral view.

emplare, leg. Malicky, Diehl, CM. Drawn specimen).

Diagnosis. This species having dorsoapicad produced spiny structure on the paraproct belongs to the *Diplectrona aurowittata* new species group, and supplied only with a single pointed spine belongs to the *Diplectrona tamdaophila* new species complex. This species has resemblance to *Diplectrona fissilinea* Mey, 1999 described from Indonesia, Talaud Island, but differs both by the dorsal and lateral profiles of the paraproct; by the shorter harpago; by the longer dorsoapical setose lobe, as well as by the higher phallobase.

Description. Male (Figures: Malicky 2002: Table 10: *aurovittata*, Sitahoan). Eyes setaless, not enlarged. Abdominal segments without any reticulated internal sacs; filaments on sternite V present.

Male genitalia. Segment IX convex anterad, dorsum long and convex with a middle depression line, ventrum shorter. Segment X fused to the tergum IX. The dorsoapical setose lobes (inner lobes) of segment X well-developed, protruded and narrowing apicad, broad in lateral view; seem bilobed, but tightly adhered and longer than

paraproct. Cerci setose, high and short in lateral view, semi-circular in dorsal view. Unsetose paraproct (outer lobes or lateral plates of segment X) subquadrangular plate with dorsoapical elongated spine in lateral view. Gonopods dilated apicad and their harpago mesad turning and narrowing. Phallic apparatus with high phallobase and the phallic head with truncate apical margin in ventral view.

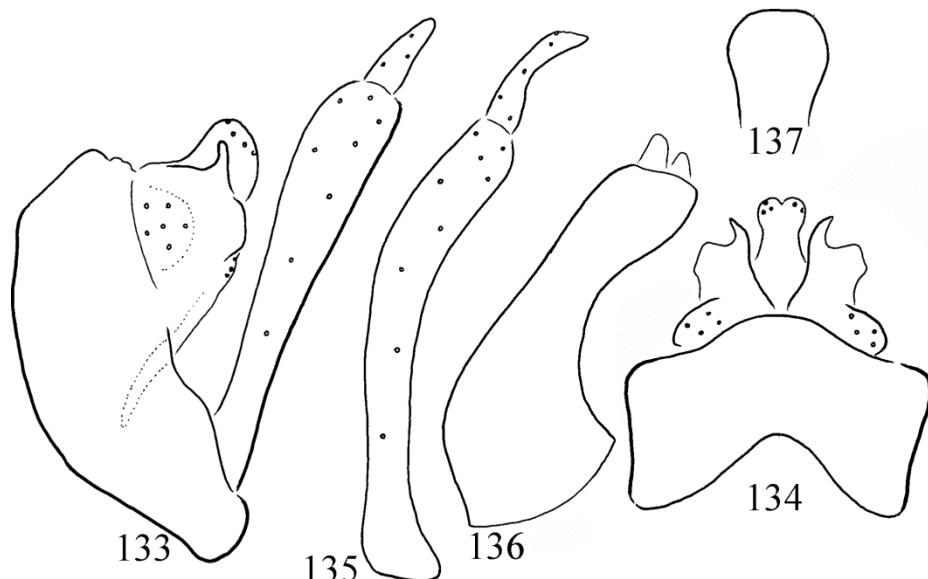
Etymology. *sitahoana*, named after the *locus typicus* of the syntypes.

Diplectrona sohra sp. nov.

(Figures 133–137, Map 5: n° 102, Map 10)

Material examined. Holotype: **India**, Meghalaya (United Jaintia and Khasi Hills), Khasi Hills (Assam, Khasia Hills), Cherrapunji, 25°16'08.1"N 91°44'03.1"E, Native Coll., T. B. Fletcher Coll. Brit. Mus. 1936-643 (1 male, BMNH).

Diagnosis. This species having dorsoapicad produced spiny structure on the paraproct belongs to the *Diplectrona aurowittata* new species group, and to the *Diplectrona tamdaophila* new species complex. Most close to the *D. meghalaya* sp. nov., but differs by both the dorsal and lateral



Figures 133–137. *Diplectrona sohra* sp. nov. Holotype: 133 = male genitalia in left lateral view, 134 = male genitalia in dorsal view, 135 = left gonopod in ventral view, 136 = phallic organ in left lateral view, 137 = phallic head in ventral view.

profiles of the dorsoapical setose lobes, that is capitate apicad in dorsal view and upward directed in lateral view; by the diverged lateral profile of the phallic organ; it is more robust; the phallobase is shorter; the ventral profile of the phallic head is regularly rounded, not straight truncated.

Description. Male (in alcohol). Dark brown animal. Forewings without discernible pattern. Forewing length 8 mm, apical fork I present on hindwing. Eyes setaless, not enlarged. Maxillary palp formula I-III-IV-II-V. Abdominal segments without any reticulated internal sacs; filaments on sternite V double longer than the sternite.

Male genitalia. Segment IX convex anterad, dorsum long and convex with a middle depression line, ventrum shorter. Segment X fused to the tergum IX. The dorsoapical setose lobes (inner lobes) of segment X well-developed, protruded and capitate apicad; seem bilobed, but tightly adhered. Cerci setose, circular in lateral view, semi-circular in dorsal view. Unsetose paraproct (outer lobes or lateral plates of segment X) short and high plate in lateral view with upward directed pointed spine with laterad turning tip. Gonopods straight dilating apicad their harpago mesad turning with ventrad pointed tip. Phallic

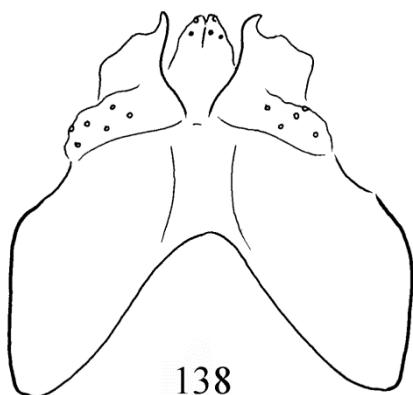
apparatus very robust with down curving and broadening curving basal section and with a tube-forming horizontal section with downward directed apex in lateral view; one pair of endothecal processes discernible, with blunt apices in lateral view and pointed triangular in ventral view; phallosomal sclerite less distinct. In ventral view the head of phallotheca produced rounded laterad.

Etymology. *sohra*, the original name of Cherrapunji, named after the *locus typicus* of the holotype.

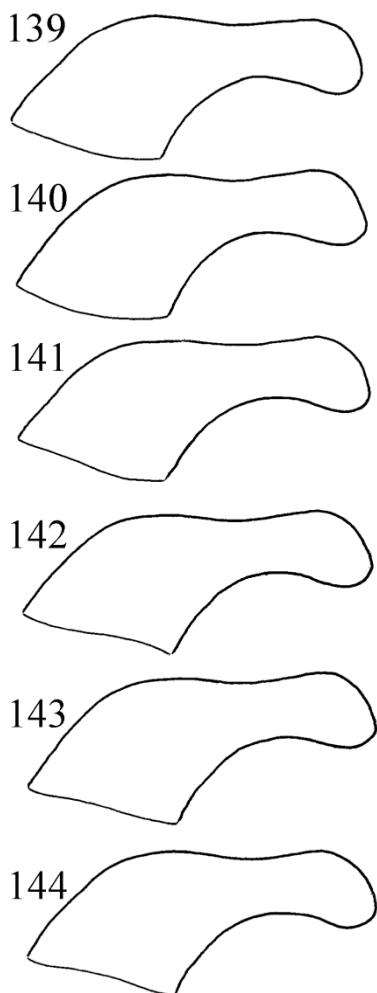
Diplectrona tamdaophila Mey, 1998

(Figures 138–144, Map 11)

Material examined. Vietnam, Tam Dao National Park, Tam Dao City, along the main stream, 1000 m, 21°27'17.0"N 105°38'13.7"E, 14.X.1986, light and singled leg. J. Oláh (13 males, 6 females; OPC). Vietnam, Tam Dao National Park, Tam Dao City, along spring brook of the main stream, 800 m, 10.V.1987, singled leg. J. Oláh (2 males, OPC). Vietnam, Tam Dao National Park, 1994, No. 802 (1 male, HNHM).



Figures 138. *Diplectrona tamdaophila* Mey, 1998, male genitalia in dorsal view.



Figures 139–144. *Diplectrona tamdaophila* Mey, 1998, phallic organ in left lateral view of six specimens from different habitats in Tam Dao, Vietnam.

Remarks. This nominate species of the complex differs from *Diplectrona meghalaya* sp. nov. and *D. parala* sp. nov. by the lateral and ventral profile of the phallic organ as well as from the *D. huishua* sp. nov. by the dorsal pattern of the paraproct. The lateral profile of the phallic organ is very stable in the examined populations of Tam Dao sampled from several habitats a few hundred metres apart.

Diplectrona coalescens species group

Based on character state combination of setal wart pattern on the head and of the structure of male genitalia the *Diplectrona coalescens* species group was established as a *Diagnostic Species Group* by Sun (2017), tacitly contrasting with the expiring epistemic concept of the so called *Phylogenetic Species Group*.

More than ten years ago, at the peak time of modern scientific hubris dominated by naive simplifying, common sense ideas of objectivism, determinism and reductionism we have accepted the editorial policy of the Zootaxa, an international journal on systematic zoology and established our species groups and clusters in the Hydropsychinae subfamily also as diagnostic species groups and clusters (Oláh *et al.* 2008). At that time this “modern” distinction between diagnostic (cluster) and phylogenetic (clade) systems of classification was still dominating as a valid epistemic scenario (Oláh *et al.* 2020b). Today facing the realities of taxonomic/character state incongruences, endless character trees/in a single species tree, and debated dichotomises of analogy/homology, integration/selection, evolution/organisation, branching/reticulation, monophyletic/chimeric, tree-of-life/network-of-life, such a hubristic epistemic distinction between diagnostic and phylogenetic taxa has lost theoretical ground. Every classification is artificial, therefore diagnostic!

The *Diplectrona coalescens* species group is characterized by the basically bilobed fused formation of segment X and XI that is the complex of segment X (mesal plate or inner lobe), setose cerci and less setose almost bare paraprocts (late-

ral plate or outer lobe). Segment X, the well differentiated mesal plate or inner lobe of segment is highly reduced, almost entirely vestigial, fused to the complex.

Diplectrona hongkonga sp. nov.

(Figures 145–148, Map 12)

Material examined. Holotype: **China**, Hong-Kong (Island) Mid-Levels, 150m, 20–31.V.1982, actinic trap, leg. J. Robinson, Brit. Mus. 1982-304 (1 male, BMNH).

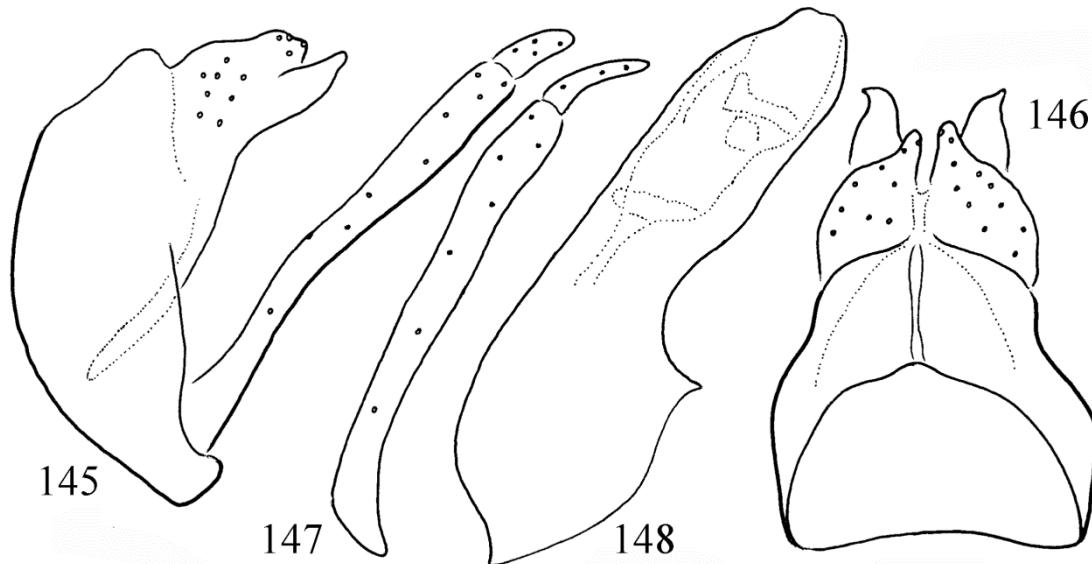
Diagnosis. This new species having bilobed complex of segment X and XI that is the cerci, the paraproct, the remnant of segment XI and the vestigial segment X fused together is a new member of the *Diplectrona coalescens* species group. Most close to the nominate species *D. coalescens* sp. nov. described from China, Guangxi, but differs by having the dorsal view of apical head of the bilobed fused complex pointed, not rounded; the lateral profile of the phallic organ more robust and differently shaped; the setaless paraproct laterad pointed. Homologization of the structures is not clear; the setose structure is probably the fused cerci and segment X (inner lobe)

and the setaless structure is the paraproct, the remnant of the segment XI.

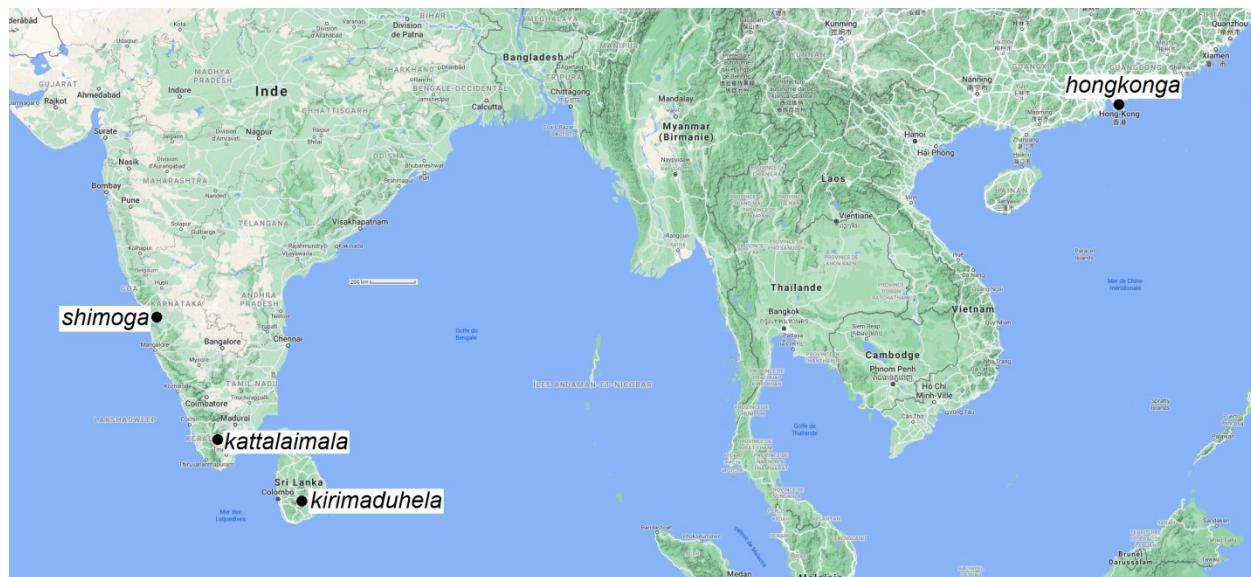
Description. Male (in alcohol). Dark brown animal. Forewings without pattern. Forewing length is 7 mm, apical fork I present on hindwing. Eyes setaless, not enlarged. Maxillary palp formula I-IV-III-II-V. Anterodorsal filament on sternite V very small, there are no any internal reticulated sacs present in segment VIII.

Male genitalia. Segment IX convex anterad, dorsum long and flat with a middle depression line. Segment X fused to the tergum IX. The dorsoapical setose lobes (mesal plate or inner lobes of segment X) and the setose cerci fused together forming a setose structure narrowing in dorsal view; the setaless paraproct (outer lobes or lateral plates of segment X) pointed. Gonopods are slender, almost straight with slightly dilated apical region; the broad harpago mesad turning. Phallic apparatus very robust with low phallobase; endothecal and phallosomal sclerites withdrawn inside the phallotheca.

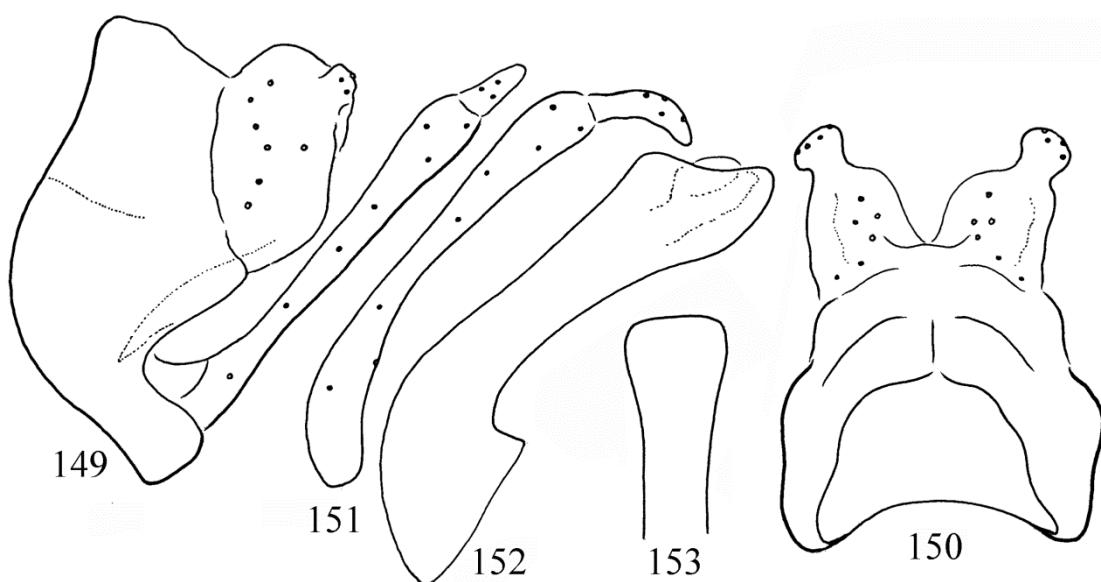
Etymology. *hongkonga* named after the *locus typicus* of the holotype.



Figures 145–148. *Diplectrona hongkonga* sp. nov. Holotype: 145 = male genitalia in left lateral view, 146 = male genitalia in dorsal view, 147 = left gonopod in ventral view, 148 = phallic organ in left lateral view.



Map 12. *Diplectrona coalescens* group.



Figures 149–153. *Diplectrona kattalaimala* sp. nov. Holotype: 149 = male genitalia in left lateral view, 150 = male genitalia in dorsal view, 151 = left gonopod in ventral view, 152 = phallic organ in left lateral view, 153 = phallic head in ventral view.

***Diplectrona kattalaimala* sp. nov.**

(Figures 149–153, Map 7a: near n° 102, Map 12)

Material examined. Holotype: **India**, Tamil Nadu (Madras), Kattalaimala, this locality should be in the surroundings of Courtallam and Kannupulimedu, it probably corresponds to Kottamalai,

1000 ft., 9°13'33.3"N 77°19'06.9"E, 16–17.I. 1962, leg. F. Schmid (1 male, CNC).

Diagnosis. This new species having bilobed complex of segment X and XI that is the cerci, the paraproct, the remnant of segment XI and the vestigial segment X fused together is a new mem-

ber of the *Diplectrona coalescens* species group. Most close to *D. shimoga* sp. nov. described from Karnataka, but differs by having the dorsal view of apical head of the bilobed fused complex capitate, not parallel-sided; the lateral profile of the phallic organ differently shaped with more robust, ventroapicad directed produced lobe; its apical margin truncate in ventral view, not rounded.

Description. Male (in alcohol). Dark brown animal. Forewings without pattern. Forewing length 7 mm, apical fork I present on hindwing. Eyes setaless, not enlarged. Maxillary palp formula I-IV-III-II-V. Anterodorsal filament on sternite V lacking, there are no any internal reticulated sacs present in segment VIII.

Male genitalia. Segment IX convex anterad, dorsum long and flat with a middle depression line. Segment X fused to the tergum IX. The dorsoapical setose lobes (mesal plate or inner lobes) and the unsetose paraproct (outer lobes or lateral plates of segment X) fused together. Cerci form setose area in lateral view, visible both in lateral and dorsal view. Gonopods are robust, almost straight with dilated apical region; the broad harpago mesad turning. Phallic apparatus with slightly downward curving and broadening basal and tube-forming apicad broadening sections; its apicoventrum elongated; two pairs of endothecal processes badly discernible; phallosomal sclerite less distinct.

Etymology. *kattalaimala* named after the *locus typicus* of the holotype.

***Diplectrona kirimaduhela* Schmid, 1958, stat. restit.**

(Map 12)

Diplectrona kirimaduhela Schmid, 1958:117–118. Holotype: Sri Lanka “Horton Plains (C.P., 7000 ft), 6° 48'07.2"N 80°48'31.6"E, 7–8.III.1954”. A species described from Sri Lanka, close to *Diplectrona papillonacea* (Hagen, 1859). non *Diplectrona maligna* (Hagen, 1859); Flint 2001: 93–94: “The collection of material of both sexes and comparison with the lectotype of *D. maligna*

and holotype of *D. kirimaduhela* confirms the synonymy of these species.

Remarks. Among the material examined (Flint 2001), the holotype, collected by Schmid, the only specimen of this species described on was listed together with a male specimen collected from the same habitat by Flint as well as by 15 other male specimens collected from other habitats. However, the drawings of the genital structure of the lectotype of *D. maligna* (Hagen, 1859) drawn by Flint and the genital structure of the holotype of *D. kirimaduhela* Schmid, 1958 drawn in the original description by Schmid are extremely different, representing definitely two different species. Therefore here we reinstate the independent species status of *Diplectrona kirimaduhela* Schmid, 1958 **stat. restit.**

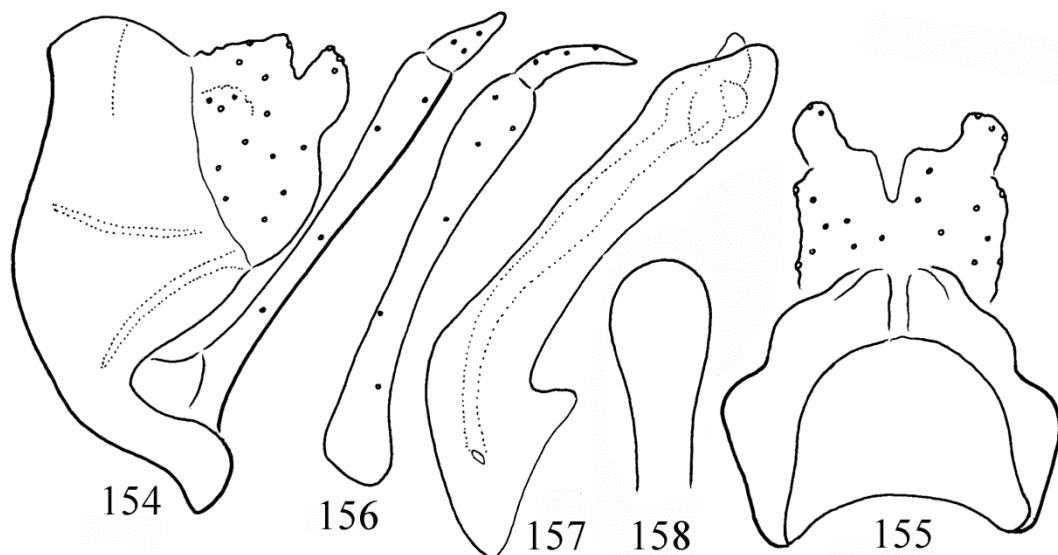
***Diplectrona shimoga* sp. nov.**

(Figures 154–158, Map 12)

Material examined. Holotype: **India**, Karnataka, Shimoge District, Jog Falls, 14°13'45.4"N 74°48'44.9"E, on MV lamps at the bungalows, 2.III.1980, leg. Gy. Topal (1 male, OPC).

Diagnosis. This new species having bilobed complex of segment X and XI that is the cerci, the paraproct, the remnant of segment XI and the vestigial segment X fused together is a new member of the *Diplectrona coalescens* species group. Most close to *D. kattalaimala* sp. nov. described from Tamil Nadu, but differs by having the dorsal view of apical head of the bilobed fused complex parallel-sided, not capitate; the lateral profile of the phallic organ differently shaped with less robust ventroapical lobe; its apical margin rounded in ventral view, not truncate.

Description. Male (in alcohol). Dark brown animal. Forewings without pattern. Forewing length is 7 mm, apical fork I present on hindwing. Eyes setaless, not enlarged. Maxillary palp formula I-IV-III-II-V. Anterodorsal filament on sternite V lacking, there are not any internal reticulated sacs present in segment VIII.



Figures 154–158. *Diplectrona shimoga* sp. nov. Holotype: 154 = male genitalia in left lateral view, 155 = male genitalia in dorsal view, 156 = left gonopod in ventral view, 157 = phallic organ in left lateral view, 158 = phallic head in ventral view.

Male genitalia. Segment IX convex anterad, dorsum long and flat with a middle depression line. Segment X fused to the tergum IX. The dorsoapical setose lobes (mesal plate or inner lobes) and the unsetose paraproct (outer lobes or lateral plates of segment X) fused together. Cerci form a large setose area in lateral view, visible both in lateral and dorsal view. Gonopods are robust, almost straight with less dilated apical region; the tapering harpago mesad turning. Phallic apparatus with slightly downward curving and broadening basal and tube-forming apicad broadening sections; two pairs of endothecal processes badly discernible; phallotremal sclerite less distinct.

Etymology. *shimoga* named after the *locus typicus* of the holotype.

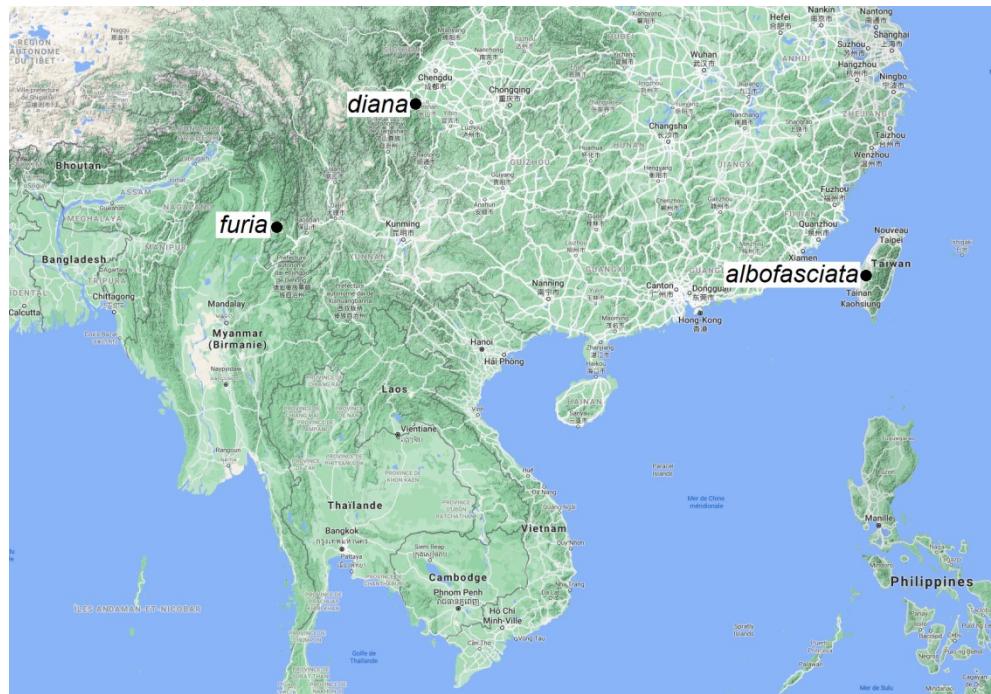
***Diplectrona gombak* new species group**

Species group having paraproct (lateral plate or outer lobe of segment X) with elongated dorsal profile combined with variously long dorsoapical setose lobes of segment X (mesal plate or inner lobe of segment X). The basic structure of the elongated dorsal profile of the paraproct and the variously blunt apex of the dorsoapical setose lobes are rather stable with a small range of shape

divergences. Species delineation in the new species group is based (1) on the lateral and dorsal comparative profiles of the cerci, paraprocts and the dorsoapical setose lobes; (2) on the lateral profile of the phallic organ; (3) on the ventral view of the phallic apex and on the ventral view of the harpago. There are discernible divergences between the species also in the shape of the endothecal processes and the phallotremal sclerite. However these structures are very movable; functional in almost all the three dimensions therefore has no stable and comparable observational view. We have delineated four new species complexes in the *Diplectrona gombak* new species group: *Diplectrona albofasciata* new species complex, *Diplectrona fasciata* new species complex, *Diplectrona gentinga* new species complex, *Diplectrona gombak* new species complex.

***Diplectrona albofasciata* new species complex**

This small new species complex having elongated paraproct belongs to the *Diplectrona gombak* new species group and is characterized by the laterad produced apicolateral region of the setaless paraproct. Three known species comprise the species complex: *D. albofasciata*, *D. diana*, *D. furia*.



Map 13. *Diplectrona albofasciata* complex.

Diplectrona albofasciata (Ulmer, 1913)

(Map 13)

Hydromanicus albofasciatus Ulmer, 1913:49–50,
"Formosa. Leg. Hans Sauter. Material: 16 ♂♀, Taihorinsho, [= currently Dalin of Kagi County, 23.60°N, 120.47°E, found on: <https://zenodo.org/record/5061980#.YPOocOgzZPY>], 23°36'00.0"N 120°28'12.0"E, IX.–X.1909; Taihorin, VIII.1910." "Forderflügel (Figur) graubraun, mit dichter schwarzbrauner Behaarung und drei breiten, oft aus einzelnen Flecken zusammengesetzten, silberweiß behaarten Querbinden."

Diplectrona albofasciata (Ulmer, 1913): Malicky 2002:1204. Based on the genital structure *Diplectrona albofasciata* was related to *D. diana* Malicky, 2002 from China, Sichuan and to *D. furia* Malicky, 2002 from Myanmar.

Remarks. Information cited here for mapping the distribution of the complex.

Diplectrona diana Malicky, 2002

(Map 13)

Diplectrona diana Malicky, 2002:1206. "Material: China, Setschuan, Qingying Pavilion, Jingshui, E-

mei Shan, 180 km SW Chengdu, 800–1200m, [=E-meishan, in the surrounding of Mount Emei], 29°30'45.3"N 103°20'06.5"E, 26.–27.V.1981, leg Ky-selak, CM: 1 ♂ (Holotype)."

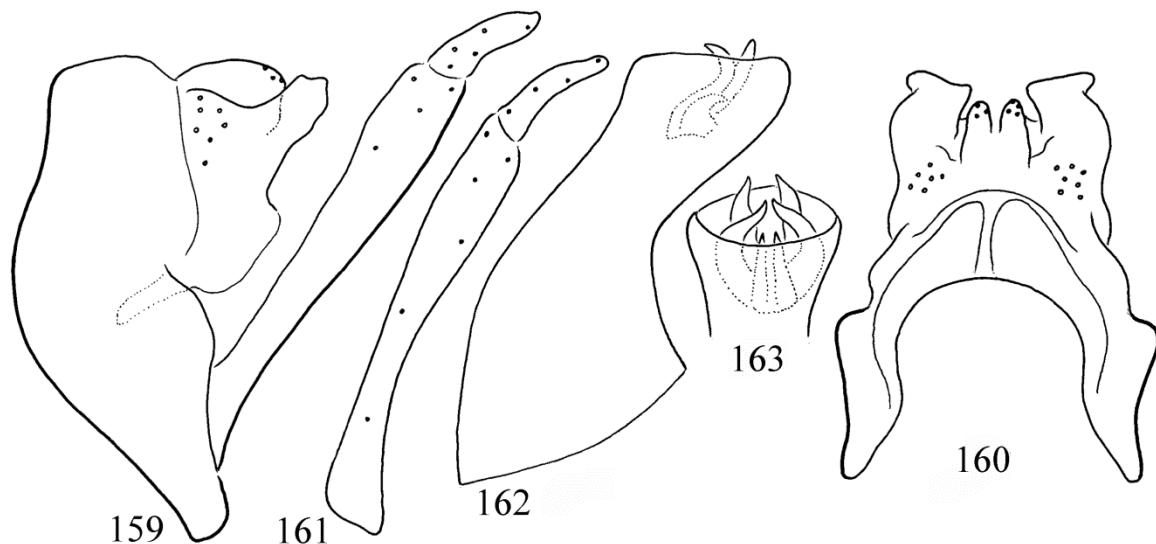
Remarks. Information cited here for mapping the distribution of the complex.

Diplectrona furia Malicky, 2002

(Figures 159–163, Map 13)

Diplectrona furia Malicky, 2002:1209. "Material: Myanmar, Kambaiti, 7000 ft., [=Kan Paik Ti], 25°24'22.8"N 98°07'03.8"E, 11.V.1934, leg. Malaise, NRS: 1 ♂ (Holotype). Do., 25.V.1934, CM: 1 ♂ (paratype)."

Material examined. Myanmar, N.E. Burma, Kambaiti, 2000m, 4.V.1934, leg. R. Malaise, Coll. Malaise B.M. 1938-258, (4 males, BMNH). Myanmar, N.E. Burma, Kambaiti, 2000m, 7.–9.V.1934, leg. R. Malaise, Coll. Malaise B.M. 1938-258, (4 males, BMNH). Myanmar, N.E. Burma, Kambaiti, 2000m, 16.V.1934, leg. R. Malaise, Coll. Malaise B.M. 1938-258, (1 male, BMNH).



Figures 159–163. *Diplectrona furia* Malicky, 2002. 159 = male genitalia in left lateral view, 160 = male genitalia in dorsal view, 161 = left gonopod in ventral view, 162 = phallic organ in left lateral view, 163 = phallic head in ventral view.

Remarks. We have redrawn a male representing the exact lateral profile of the phallic organ of all the examined nine specimens. It is significantly different from the drawings of Malicky (2002). Particularly the lateral profile of the paraproct head differs as well as the lateral profile of the ventroapical region of the phallic organ is more produced.

Diplectrona fasciata new species complex

Species of this complex have been described as near to *Diplectrona fasciata* female holotype. The specific delineation of this colourful female (see Ulmer 1907: Genera Insectorum!) was based on the presence of silverwhite transversal band from costa to postcosta on the forewing before the pterostigma. The true genuine male of this beautiful female has not been associated yet to the *Diplectrona fasciata* female!

Ulmer (1930, 1951) tried to associate and describe *Diplectrona fasciata* males with the holotype female having light crossvein on forewings from Buitenzorg, Java (Ulmer 1909), from Pananon Island and from Mindanao Island (Tonkulon, Port Banga) of Philippines (Ulmer 1930:399–400) as well as from South Sumatra (Wai Lima), North Sumatra (Simalur Island) and West Sumatra (Fort

de Kock) (Ulmer 1930:455–457). However, according to the published drawings they are different species as will be delineated and described here.

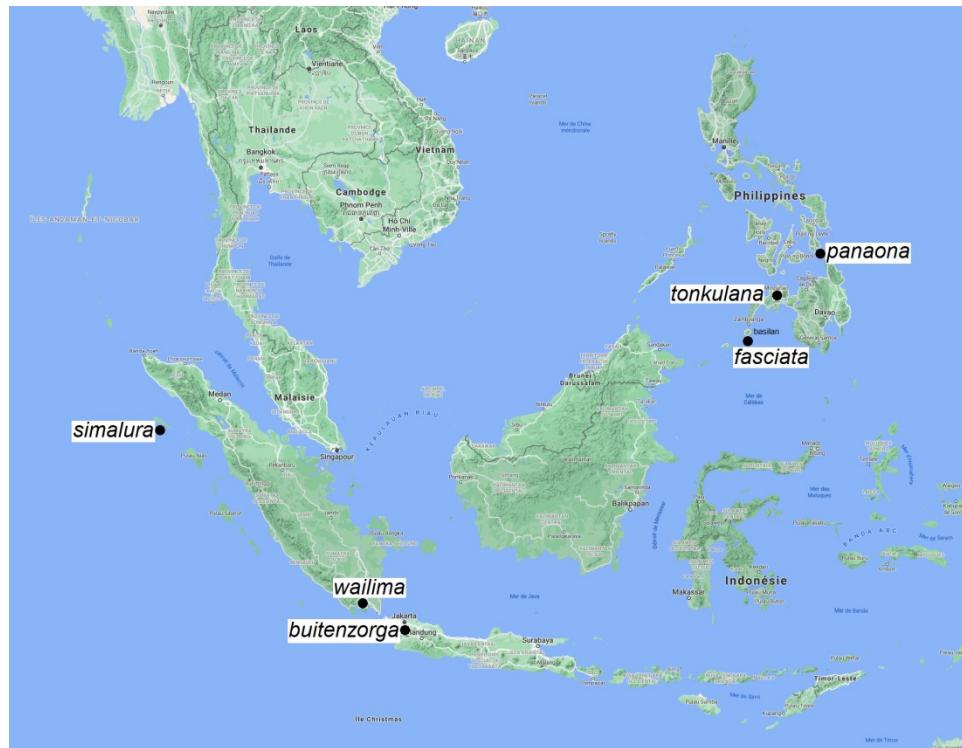
Diplectrona buitenzorga sp. nov.

(Map 14)

Hydromanicus fasciatus Ulmer, 1905a: Ulmer 1909: 138–139. Misidentification.

Material. Syntypes: **Indonesia**, Java, Buitenzorg (Bogor), 6°35'50.8"S 106°48'20.7"E, Sept. 1907, resp. April 1908, leg. E. Jacobson (2 males, Leidener Museum).

Diagnosis. *Diplectrona buitenzorga* sp. nov. from Buitenzorg (Bogor), Java, Indonesia, having elongated paraproct belongs to the *Diplectrona gombak* species group and the silverwhite transversal band on forewing relates it to the *Diplectrona fasciata* species complex. It has resemblance to *Diplectrona wailima* sp. nov. described from South Sumatra, but differs by the cone-shaped fused dorsoapical setose lobes in dorsal view completely fused, not divided and not rounded. The paraproct robust straight pointed in dorsal view, not slender with mesad turning pointed apices.



Map 14. *Diplectrona fasciata* complex.

Description. (Figure: Ulmer, 1909: Figure 13). Antennae two-coloured, the basal region darker, distal region whitish. Forewing steelblue, transversal band sometimes small; body length 6 mm; wingspan 13 mm. Anterodorsal filament on sternite V long reaching to segment IX.

Male genitalia. Dorsoapical setose lobe (inner lobes) fused and cone-shaped in dorsal view, as long as the paraproct (outer lobes); paraproct straight and sharply pointed in dorsal view, downward directed in lateral view. Phallic head seems rounded truncate in dorsal view and supplied with a pair of fine pointed stuctures.

Etymology. *buitenzorga*, named after the locus typicus of the syntypes.

***Diplectrona fasciata* (Ulmer, 1905)**

(Map 14)

Hydromanicus fasciatus Ulmer, 1905a:93. "1 ♀ im Stettiner Museum, bezeichnet: Philippinen, Bazilan. II. III. 98, Doherty."

Hydromanicus fasciatus: Ulmer 1907: "*H. fasciatus*, Ulmer, Stett. Ent. Zeit. Vol. 66, p. 93 (1905) (Philippines). Colourful habitus drawing published: table 38, figure 7.

Remarks. *Diplectrona fasciata* Ulmer, 1905 was described from a single female collected in Basilan (Basilan) Island, Philippines. The description and the delineation are based primarily on the forewing pattern with the light, silverwhite transversal band around middle, from costa to postcosta before the pterostigmal area. The *Diplectrona fasciata* female association with a male from Basilan Island has not been confirmed up to now (Mey 1997).

***Diplectrona panaona* sp. nov.**

(Map 14)

Hydromanicus fasciatus Ulmer, 1905a: Ulmer 1930: 399–400. Philippines: "Material: 1 ♂, leg. Boettcher, in meiner Sammlung: Panaon, 2.XII. 1915."

Material. Holotype: **Philippines**, Panaon Island, 2.XII.1915. leg. Boettcher (1 male, CeNak).

Diagnosis. *Diplectrona panaona* sp. nov. from Panaon Island, Philippines, having elongated paraproct belongs to the *Diplectrona gombak* species group and the silverwhite transversal band on forewing relates to the *Diplectrona fasciata* species complex. It has resemblance to *Diplectrona buitenzorga* sp. nov. described from Java, but differs by the rounded dorsoapical setose lobes in dorsal view that appear with pronounced concave apex, not convex. Dorsoapical setose lobes, the inner lobes of segment X clearly concave, not convex like at *Diplectrona panaona* sp. nov.

Description. (Figures: Ulmer 1930: figure 35 and Ulmer 1951: figures 483–485). Antennae one and a half times longer than forewing, the first 2–3 segment reddish yellow others dark brown or black brown. Forewing greybrown, transversal band silverwhite; body length 6 mm; wingspan 13 mm.

Male genitalia. Dorsoapical setose lobe (inner lobes) fused with rounded apex in dorsal view, slightly shorter than the paraproct (outer lobes); paraproct laterad curving with rounded apex, downward located of the inner lobes in lateral view. Phallic head seems robust and complex.

Etymology. *panaona*, named after the *locus typicus* of the holotype.

***Diplectrona simalura* sp. nov.**

(Map 14)

Hydromanicus fasciatus Ulmer, 1905a: Ulmer 1930: 455–457. Misidentification.

Material examined. Syntypes: **Indonesia**, Sumatra, North Sumatra, Sinabang, Simalur Island, [=Timur, Simeulue, Aceh], 2°28'15.4"N 96°22'04.4"E, VII. 1913. leg. E. Jacobson (2 males, Leidener Museum).

Diagnosis. *Diplectrona simalura* sp. nov. from Sinabang, Simalur Island, North Sumatra, Indo-

nesia, having elongated paraproct belongs to the *Diplectrona gombak* species group and the silverwhite transversal band on forewing relates it to the *Diplectrona fasciata* species complex. It has resemblance to *Diplectrona buitenzorga* sp. nov. described from Java, but differs by the rounded dorsoapical setose lobes in dorsal view that appear with pronounced concave apex, not convex. Dorsoapical setose lobes, the inner lobes of segment X clearly concave, not convex like at *Diplectrona panaona* sp. nov.

Description. (Figure: Ulmer 1930: Figure 121). Antennae two-coloured, the basal region darker, distal region yellowish. Forewing steelblue with light transversal band; Anterodorsal filament on sternite V long reaching to segment IX.

Male genitalia. Dorsoapical setose lobe (inner lobes) fused with concave apex in dorsal view, shorter than the paraproct (outer lobes); paraproct straight and sharply pointed in dorsal view, downward directed in lateral view. Phallic head seems simple.

Etymology. *simalura*, named after the locus typicus of the syntypes.

***Diplectrona tonkulana* sp. nov.**

(Map 14)

Hydromanicus fasciatus Ulmer, 1905a: Ulmer 1930: 399–400. Misidentification.

Material examined. Holotype: **Philippines**, Tonkulan, Mindanao Island, 11.VI.1915. leg. Boettcher (1 male, CeNak).

Diagnosis. *Diplectrona tonkulana* sp. nov. from Tonkulan, Mindanao Island, Philippines, having elongated paraproct belongs to the *Diplectrona gombak* species group and the silverwhite transversal band on forewing relates it to the *Diplectrona fasciata* species complex. It has resemblance to *Diplectrona panaona* sp. nov. described from Panaon Island, Philippines, but differs by the clearly subdivided apex of the dorsoapical setose lobe, the inner lobes of segment X, by the length of the inner lobes that are longer

than paraproct, as well as by the differently patterned apex of the phallic organ.

Description. (Figures: Ulmer 1951: figures 486–487). The first 2–3 segments of antennae reddish yellow others dark brown or black brown. Forewing greybrown, transversal band silverwhite; body length 6 mm; wingspan 13 mm.

Male genitalia. Dorsoapical setose lobe (inner lobes) fused with bilobed apex in dorsal view, slightly longer than the paraproct (outer lobes); paraproct straight with rounded apex. Phallic head seems complex.

Etymology. *tonkulana*, named after the *locus typicus* of the holotype

Diplectrona wailima sp. nov.

(Map 14)

Hydromanicus fasciatus Ulmer, 1905a: Ulmer 1930: 455–457. Misidentification.

Material. Syntypes: **Indonesia**, Sumatra, Wai Lima, 5°25'37.8"S 105°01'26.3"E, XI–XII. 1921. No 432, leg. H. Karny (2 males, Leidener Museum)

Diagnosis. *Diplectrona wailima* sp. nov. from Wai Lima, Sumatra, Indonesia, having elongated paraproct belongs to the *Diplectrona gombok* species group and the silverwhite transversal band on forewing relates to the *Diplectrona fasciata* species complex. It has resemblance to *Diplectrona buitenzorga* sp. nov. described from Java, but differs by the rounded dorsoapical setose lobes in dorsal view that appear divided by a pronounced median keel, not without such a median keel and not cone-shaped. The paraproct slender with mesad turning pointed apices in dorsal view, not robust straight pointed. Phallic head complex, not simple.

Description. (Figure: Ulmer 1930: Figures 122–123). Antennae two-coloured, the basal region darker, distal region yellowish. Forewing steelblue, transversal band sometimes small; body length 6 mm; wingspan 13 mm. Anterodorsal

filament on sternite V long reaching to segment IX.

Male genitalia. Dorsoapical setose lobe (inner lobes) fused and cone-shaped in dorsal view, as long as the paraproct (outer lobes) and armed with a pronounced median keel; paraproct straight and sharply pointed in dorsal view, downward directed in lateral view. Phallic head seems robust and complex.

Etymology. *wailima*, named after the locus typicus of the syntypes.

***Diplectrona gentinga* new species complex**

This small complex of species having elongated paraproct belongs to the *Diplectrona gombok* new species group and delimited by the unique, complex phallic head. Two species are known from this complex: *Diplectrona stigmatica* Banks, 1937 and the nominate species *Diplectrona gentinga* sp. nov.

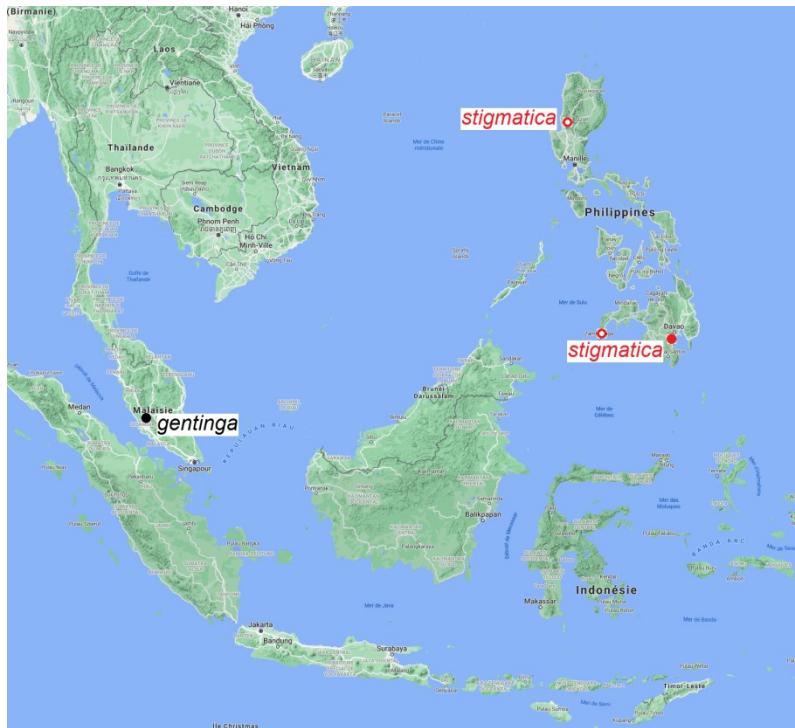
***Diplectrona stigmatica* Banks, 1937, stat. nov.**

(Map 15)

Diplectrona fasciata var. *stigmatica* var. nov. Banks, 1937:164–165. Philippines: “Mindanao, Davao Province, Mount Apo, 6°59'14.1"N 125°16'15.3"E, Mainit River, altitude 6,000 feet, September 7, 10, 14, and 22, October 21; Galog River, altitude 6,000 feet, October 23, November 4 (Clagg); Zamboanga, 7°03'59.4"N 122°06'59.9"E (Clark). Luzon, Mountain Province, Baguio, 16°23'30.5"N 120°37'24.9"E (Baker). Type, M.C.Z. No. 22061.”

Diplectrona fasciata stigmatica Banks, 1937: Mey 1997: “The species was described as a variation of *D. fasciata* (Ulmer, 1905a). The external characters, e.g. wing pattern and body coloration, however, quite distinct. The structure of the genitalia differs from the other known species from the Philippines. At present one can not decide whether it is a valid species or a subspecies or *D. fasciata* itself (see remarks under *D. cinctipennis*). ”

Remarks. *Diplectrona fasciata* (Ulmer, 1905) was described from Basilan Island of Phillipines based on a female having light transversal band on the forewing. Later, Ulmer and Banks have related several species with some kind of transversal



Map 15. *Diplectrona gentinga* complex.

forewing band from various regions including *Diplectrona fasciata* var. *stigmatica* near to *Diplectrona fasciata*. However, this species has a unique phallic head not any other species of the *Diplectrona* genus has such phallic divergence in the Palaearctic and Oriental fauna region except our new species *Diplectrona gentinga* sp. nov. from Malaysia, Pahang. We raise the taxonomic status of this taxon to species rank: *Diplectrona stigmatica* Banks, 1937 stat. nov.

Diplectrona gentinga sp. nov.

(Figures 164–167, Map 15)

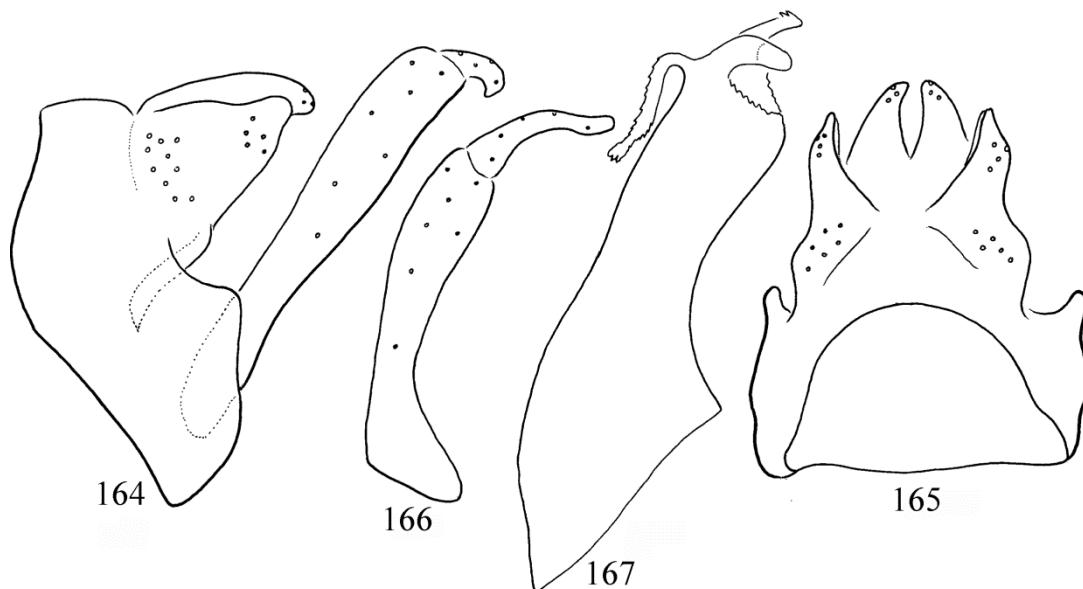
Material examined. Holotype: **Malaysia**, W. Pahang, Genting Tea Estate, 2000 ft., 3°23'43.4"N 101°46'22.1"E, XI.1981, Malaise trap by stream, leg. K. R. Robinson, B.M. 1981-549 (1 male, BMNH).

Diagnosis. This species having elongated dorsal profile of the paraproct with elongated segment X belongs to the *Diplectrona gombak* spe-

cies group. Having the rather conservative, stable, less diverging, not diverse structure of the inner and outer lobes it has slight modification compared to other species. However, it has a rather unique phallic head with a complex of various appendages. A single species has somewhat similarly complex phallic head, *Diplectrona stigmatica* Banks, 1937 stat. nov., but *Diplectrona gentinga* sp. nov differs by having very stout coxopodite, differently shaped ventral profile of the harpago, different dorsal and lateral profiles of the dorsoapical setose lobes and the paraproct as well as the basically similar phallic head has different fine structure.

Description. Male (in alcohol). Dark brown animal. Forewings without pattern. Forewing length 9 mm, apical fork I present on hindwing. Eyes setaless not enlarged. Maxillary palp formula I-III-II-IV-V. Abdominal segments without any reticulated internal sacs. Filaments on sternite V are very long reaching almost to segment IX.

Male genitalia. Segment IX convex anterad. Segment X fused to the tergum IX. The dorso-



Figures 164–167. *Diplectrona gentinga* sp. nov. Holotype: 164 = male genitalia in left lateral view, 165 = male genitalia in dorsal view, 166 = left gonopod in ventral view, 167 = phallic organ in left lateral view.

apical setose lobes (inner lobes) of segment X well-developed, broad both in lateral view, tapering and mesad turning in dorsal view; longer than the paraproct. Cerci setose surface shifted basad. Unsetose paraproct (outer lobes or lateral plates of segment X) triangular in lateral and elongated tapering in dorsal view. Gonopods with robust and straight coxopodite; harpago mesad turning with broad base and slightly broadening apical section. Phallic apparatus very robust, head supplied with a dorsal pair of anterad directed long digitiform processes with corrugated surface, a pair of downward turning processes of probably phallothecal origin as well as a single mesad positioned elongation.

Etymology. *gentinga*, named after the *locus typicus* of the holotype.

Diplectrona gombak new species complex

This small complex of species having elongated paraproct belongs to the *Diplectrona gombak* new species group and is delimited by the upward directed paraproct with narrowing head.

In his treatment on Asian species of the genus *Diplectrona* Malicky (2002) has identified specimens from Malaysia, Perak, Sarawak, Sabah (Borneo), Indonesia, Kalimantan (Borneo), Sumatra and Thailand as *Diplectrona dulitensis* as well as specimens from Malaysia: Selangor, Pahang, Johor, Perak, Penang as well as from Thailand as *Diplectrona gombak* Oláh, 1993. Malicky (2002) himself considered these identifications based on the principles of “species with wide distribution and great variability” as well as on practices of gross phenomics rather doubtful judging from the great shape divergences of the drawn specimens from various localities.

Diplectrona aspersa Ulmer, 1905

Hydromanicus aspersus Ulmer 1905b:95–96. “2 ♀, bez. Java im Stettiner Museum; ferner 4 Exemplare (1♂, 3♀) im Wiener Museum, bez. Fruhstorfer. Java, [this locality remains unknown in the Java Island]. 1894;”

Diplectrona aspersa (Ulmer, 1905): Ulmer, 1951: 314–317: “Heimat: Java, Type (♂) im Museum Wien.” Transferred from *Hydromanicus* genus to the *Diplectrona* genus.

Diplectrona aspersa (Ulmer, 1905): Malicky 2002: 1204. "Material: Java 1894, Fruhstorfer, NHMW: 1♂ (Holotypus)." Partially injured genitalia redrawn.

***Diplectrona barisana* sp. nov.**

(Figures 168–172, Map 16)

Diplectrona dulitensis Kimmins, 1955: Oláh & Johanson 2010:18. Misidentification.

Material examined. Holotype: **Indonesia**, Sumatra, Bukit Barisan Selatan National Park, Barisan Mts., around this point: 3°00'25.3"S 102°15'03.2"E, Way Pitias, 800m, 17–19.VI.2008, light trap leg. J. Oláh jr. (1 male, OPC). Paratypes: same as holotype (2 males, SMNH; 1 male, OPC). Indonesia, Sumatra, Way Titias, Bukit Barisan Selatan NP, 850 m, 4.VI.2012, UV light trap leg. J. Oláh jr. (1 male OPC).

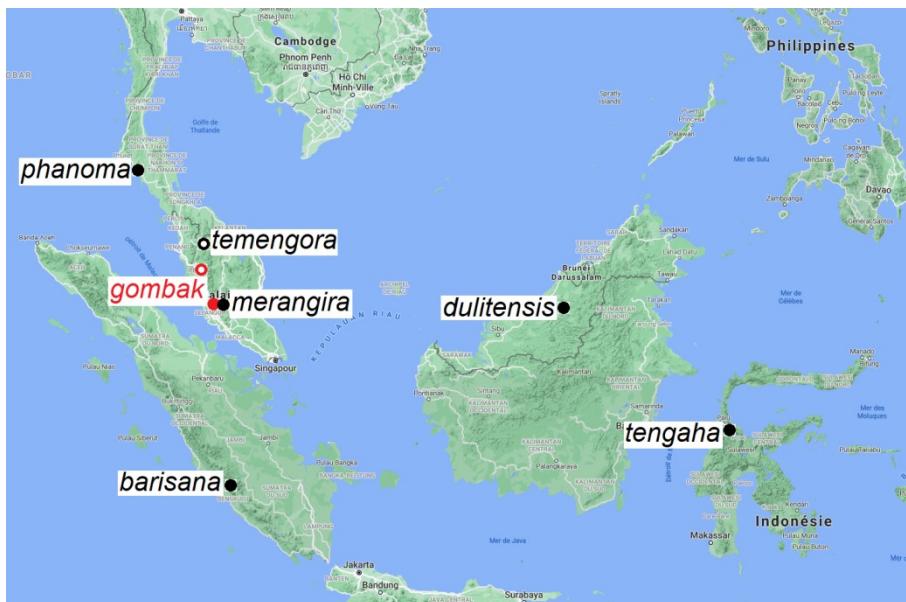
Diagnosis. This species having elongated dorsal profile of the paraproct with elongated segment X belongs to the *Diplectrona gombak* species group and the elongated upward directed paraproct relates it to the *Diplectrona gombak* species complex. It is most close to *Diplectrona dulitensis* Kimmins, 1955, but differs by the robust broad lateral profile of the paraproct, by pronounced lobe-like cerci, by the sagittally very

flat coxopodite of the gonopods and the harpago with its basal constriction.

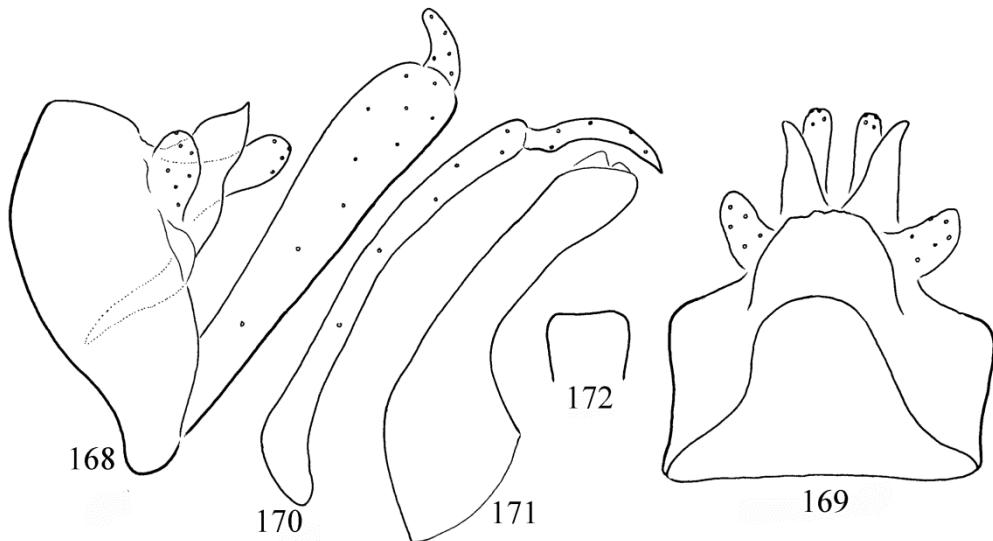
Description. Male (in alcohol). Dark brown animal. Forewings without pattern. Forewing length 9 mm, apical fork I present on hindwing. Eyes setaless not enlarged. Maxillary palp formula I-III-II-IV-V. Abdominal segments without any reticulated internal sacs. Filaments on sternite V are very long reaching almost to segment IX.

Male genitalia. Segment IX convex anterad, dorsum longer than ventrum. Segment X fused to the tergum IX. The dorsoapical setose lobes (inner lobes) of segment X well-developed, broad in lateral view, digitiform in dorsal view, well-separated from each others and little longer than the paraproct. Cerci setose, elongated both in lateral and dorsal views. Unsetose paraproct (outer lobes or lateral plates of segment X) upward directed with pointed apex. Gonopods with robust and straight coxopodite, very flat in saggital plane; harpago mesad turning with constricted base. Phallic apparatus with high and long phallobase; phallothecal shaft tube-like; head of phallotheca truncate. Endothecal and phallotremal sclerites withdrawn.

Etymology. *barisana*, named after the *locus typicus* of the holotype.



Map 16. *Diplectrona gombak* complex.



Figures 168–172. *Diplectrona barisana* sp. nov. Holotype: 168 = male genitalia in left lateral view, 169 = male genitalia in dorsal view, 170 = left gonopod in ventral view, 171 = phallic organ in left lateral view, 172 = phallic head in ventral view.

***Diplectrona dulitensis* Kimmins, 1955**
(Map 16)

Diplectrona dulitensis Kimmins, 1955:393–394. Described from Malaysia, Sarawak.” 1 ♂, foot of Mt. Dulit, junction of rivers Tinjar and Lejok, 30.VIII. 1932. 1 ♂, Mt. Dulit, R. Koyan, 2500 ft., around this point: 3°14'59.0"N 114°14'58.9"E, primary forest, 19.X.1932.” Type depository: BMNH

Diplectrona dulitensis Kimmins, 1955: Malicky 2002: 1206. In his treatment on Asian species of the *Diplectrona* genus applying the principles of “species with wide distribution and great variability” as well as the practice of gross phenomics, Malicky (2002) has identified specimens from Malaysia, Perak, Sarawak, Sabah (Borneo), Indonesia, Kalimantan (Borneo), Sumatra and Thailand as *Diplectrona dulitensis*. These are probably different incipient sibling species. Two specimens were drawn with great structural divergences in the shapes of speciation traits. One specimen from North Sumatra described here as *Diplectrona merangira* sp. nov. an other specimen from Thailand, described here as *Diplectrona phanoma* sp. nov.

***Diplectrona gombak* Oláh, 1993**
(Map 16)

Diplectrona gombak Oláh, 1993:99–100: “Holotype ♂. Tributary of River Sungai Gombak, 30 km from

Kuala Lumpur, around this point: 3°17'00.4"N 101°43'47.5"E, 21.XII.1991. Light collected by Oláh. Paratype ♂. Same as holotype.” Described close to *Diplectrona dulitensis* Kimmins, 1955. Type depository: OPC.

Diplectrona gombak Oláh, 1993 (part.): Malicky 2002: 1209. In his treatment on Asian species of the *Diplectrona* genus Malicky (2002) has identified several specimens from Malaysia: Selangor, Pahang, Johor, Perak, Penang as well as from Thailand as *Diplectrona gombak* Oláh, 1993. Only a single specimen was drawn however, it surely represents a still undescribed species. Unfortunately, it is not indicated whether the drawn specimen is from one of the five Malaysian states or from Thailand. Here thus we are unable to describe it.

Material examined. Holotype and paratype: Malaysia, Selangor, Tributary of River Sungai Gombak, 30 km from Kuala Lumpur, 21.XII.1991, light leg. J. Oláh (Holotype and 1 male paratype, OPC). Malaysia, Perak, Halong stream, IX-XII.1993, light leg. G. S. Robinson (46 males, OPC).

***Diplectrona merangira* sp. nov.**
(Map 16)

Diplectrona dilutensis Kimmins, 1955: Malicky 2002: 1206. Misidentification.

Material. Syntype: Malicky 2002:1206. **Indonesia**, Sumatra, "über 80 ♂♂ von ca. 20 Ort in Nord-Sumatra von verschiedenen Daten, leg. Diehl, Sivec, Malicky, Heiss (1 male, drawn specimen with cleared genitalia, collected in Dolok Merangir, 3°08'50.0"N 99°07'35.7"E, North Sumatra, Indonesia, MPC).

Diagnosis. *Diplectrona merangira* sp. nov. from Dolok Merangir, North Sumatra, Indonesia, having elongated paraproct belongs to the *Diplectrona gombak* species group and the elongated upward directed paraproct relates to the *Diplectrona gombak* species complex. It has resemblance to *Diplectrona barisana* sp. nov. described from South Sumatra, but differs by the lateral profile of the paraproct as well as by the dorsal profile of the dorsoapical setose lobes. Moreover the harpago is broad-based, not constricted basad.

Description. (Figures: Malicky 2002: table 2: under name *dulitensis*, Dolok Merangir). Cerci setose, long. The dorsoapical setose lobes (inner lobes) of segment X well-developed, slender in dorsal view, longer than paraproct, divided only at the very apex. Unsetose paraproct (outer lobes or lateral plates of segment X) with long broad basal section in lateral view. Gonopods robust, with straight coxopodite of dilating apical half in lateral view; harpago broad-based, mesad turning with narrowing apex in ventral view. Phallic head truncate in ventral view.

Etymology. *merangira*, named after the *locus typicus* of the syntypes.

Diplectrona phanoma sp. nov.

(Map 16)

Diplectrona dulitensis Kimmins, 1955; Malicky 2002: 1206. Misidentification.

Material. Syntypes: Malicky 2002:1206. **Thailand**, "über 80 ♂♂ von 8 Orten in Süd- und Mittel-Thailand, leg. Chantaramongkol, Malicky, Schwendinger (1 male, drawn specimen with cleared genitalia, collected in Khao Phanom, Thailand, MPC, 8°14'23.5"N 99°01'26.0"E).

Diagnosis. *Diplectrona phanoma* sp. nov. from Khao Phanom, Thailand, having elongated paraproct belongs to the *Diplectrona gombak* species group and the elongated upward directed paraproct relates to the *Diplectrona gombak* species complex. It has resemblance to *Diplectrona gombak* Oláh, 1993 described from Malaysia, Selangor, but differs by the lateral profile of the paraproct as well as by the dorsal profile of the dorsoapical setose lobes. Moreover the phallic head is excavated with lateral lobes in ventral view, not truncated.

Description. (Figures: Malicky 2002: table 2: under name *dulitensis*, Khao Phanom). Cerci setose, long. The dorsoapical setose lobes (inner lobes) of segment X well-developed, slender in dorsal view, longer than paraproct, with widely and deeply divided apex in dorsal view. Unsetose paraproct (outer lobes or lateral plates of segment X) with short slender apical section in lateral view. Gonopods robust, with straight coxopodite of dilating apical half in lateral view; harpago broad-based, mesad turning with narrowing apex in ventral view. Phallic head excavated with lateral lobes in ventral view.

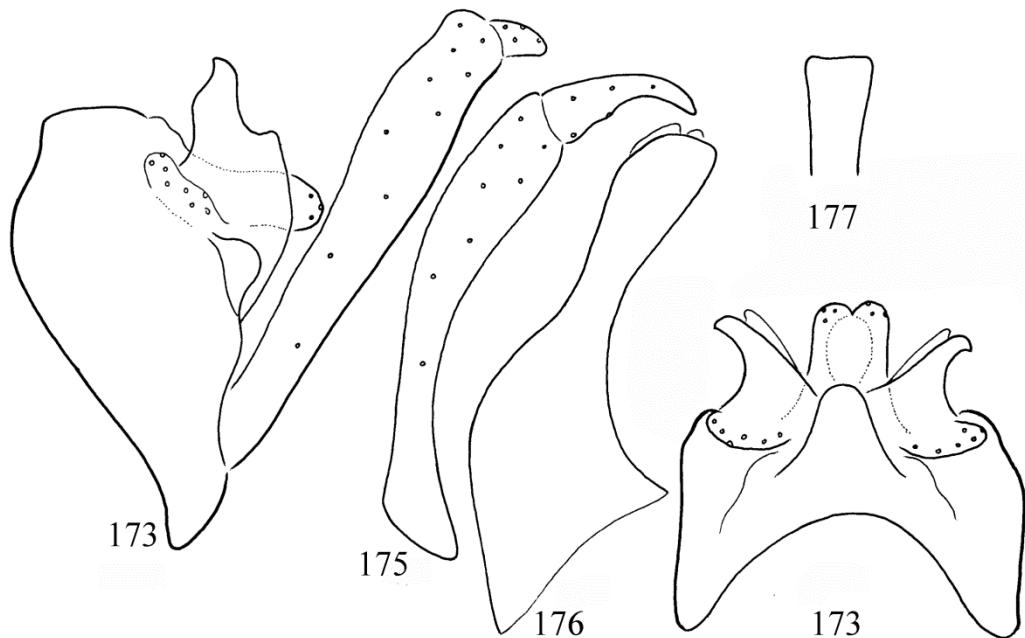
Etymology. *phanoma*, named after the *locus typicus* of the syntype.

Diplectrona temengora sp. nov.

(Figures 173–177, Map 16)

Material examined. Holotype: **Malaysia**, Perak, Temengor Lake, 5°33'27.2"N 101°18'57.4"E, 10.XII.1993, light leg. G. S. Robinson. Schmid (1 male, OPC).

Diagnosis. This species having elongated dorsal profile of the paraproct with elongated segment X belongs to the *Diplectrona gombak* species group and the elongated upward directed paraproct relates to the *Diplectrona gombak* species complex. It is most close to *Diplectrona gombak* Oláh, 1993, but differs by the robust laterad curving dorsal profile of the paraproct, by the short and robust as well as by the differently shaped, highly constricted shaft of the phallotheca.



Figures 173–177. *Diplectrona temengora* sp. nov. Holotype: 173 = male genitalia in left lateral view, 174 = male genitalia in dorsal view, 175 = left gonopod in ventral view, 176 = phallic organ in left lateral view, 177 = phallic head in ventral view.

Description. Male (in alcohol). Dark brown animal. Forewings without pattern. Forewing length 9 mm, apical fork I present on hindwing. Eyes setaless not enlarged. Maxillary palp formula I-III-II-IV-V. Abdominal segments without any reticulated internal sacs. Filaments on sternite V are very long reaching almost to segment IX.

Male genitalia. Segment IX tripartite posterad, dorsal part fused to segment X, middle part slightly rounded, ventral part smallest; dorsum longer than ventrum. Segment X fused to the tergum IX. The dorsoapical setose lobes (inner lobes) of segment X well-developed, broad both in dorsal and lateral views, little longer than the paraproct. Cerci setose, elongated both in lateral and dorsal views. Unsetose paraproct (outer lobes or lateral plates of segment X) upward directed. Gonopods with robust and straight coxopodite; harpago mesad turning with broad base. Phallic apparatus with high and long phallobase; phallothecal shaft constricted middle; head of phallotheca truncate. Endothecal and phallotremal sclerites withdrawn.

Etymology. *temengora*, named after the *locus typicus* of the holotype.

Diplectrona tengaha sp. nov.

(Map 16)

Diplectrona octomaculata (McLachlan, 1866): Malicky 2002:1215. Misidentification.

Material. Holotype: Malicky, 2002:1215: **Indonesia**, Sulawesi Tengah: Palolo valley, E. Palu, 800–900m, around this point: 1°11'08.0"S 120°09'37.5"E, 6.X.1985, leg. Weintraub, (1 male, USNM).

Diagnosis. This species having elongated paraproct belongs to the *Diplectrona gombok* new species group. Has resemblance to *Diplectrona octomaculata* described from Borneo, but differs by the convex and not deeply concave apical margin of the phallic head in ventral view.

Description. Male (Figures: Malicky 2002: Table 17: *octomaculata*, Sulawesi).

Male genitalia. Segment IX convex anterad, dorsum long and convex with a middle depression line, ventrum shorter. Segment X fused to the tergum IX. The dorsoapical setose lobes (inner

lobes) of segment X well-developed, protruded with knob-like narrowing apicad, broad in lateral view; seem bilobed, but tightly adhered, shorter than paraproct. Cerci setose, high and short in lateral view, semi-circular in dorsal view. Unsetose paraproct (outer lobes or lateral plates of segment X) posterad directed plate in lateral view, and supplied with a subapical lateral lobe in dorsal view. Gonopods slender and their harpago slightly mesad turning with blunt apices. Phallic apparatus with rounded, concave head in ventral view.

Etymology. *tengaha*, named after the *locus typicus* of the holotype.

Diplectrona taprobanes new species group

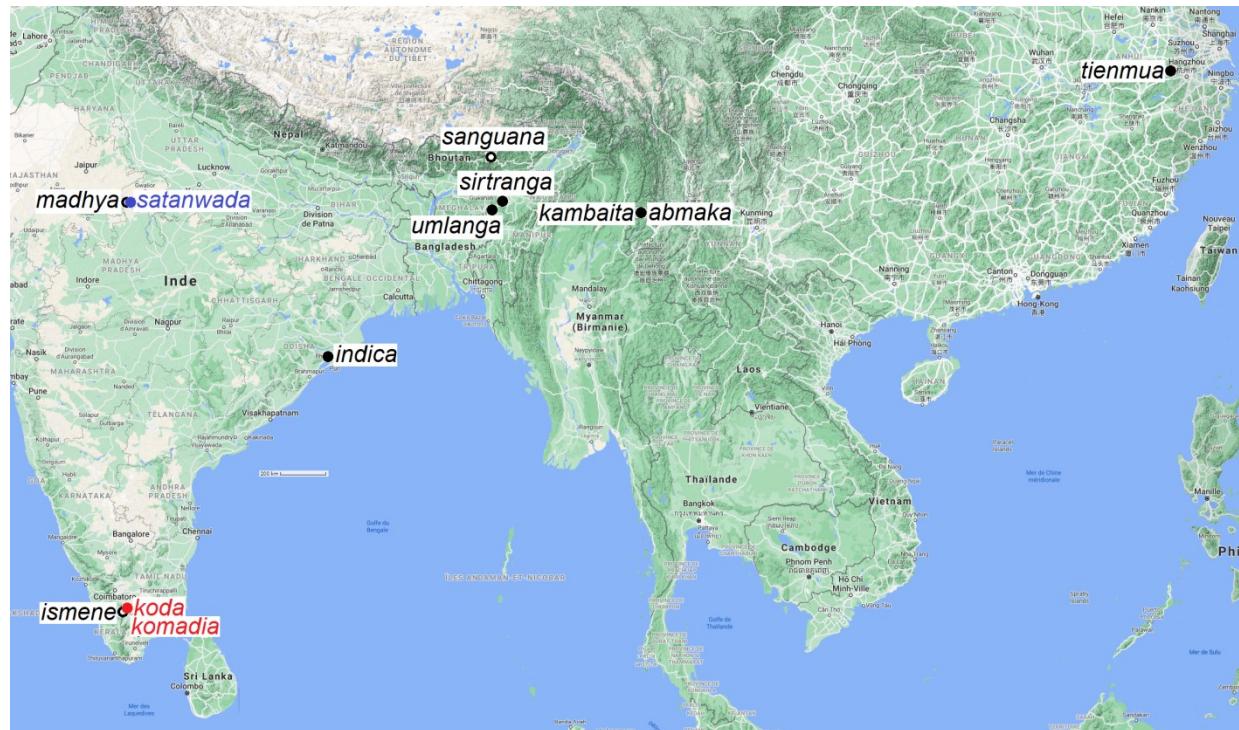
Species group having paraproct (lateral plate or outer lobe of segment X) with rounded lateral and/or dorsal profile combined with variously long segment X (mesal plate or inner lobe of segment X). Species delineation in the new species group is based (1) on the lateral and dorsal

comparative profiles of the cerci and paraprocts; (2) on the lateral profile of the phallic organ; (3) on the ventral view of the phallic apex and on the ventral view of the harpago. There are discernible divergences between the species also in the shape of the endothecal processes and the phallotremal sclerite. However, these structures are very movable; functional in almost all the three dimensions therefore has no stable and comparable observational view.

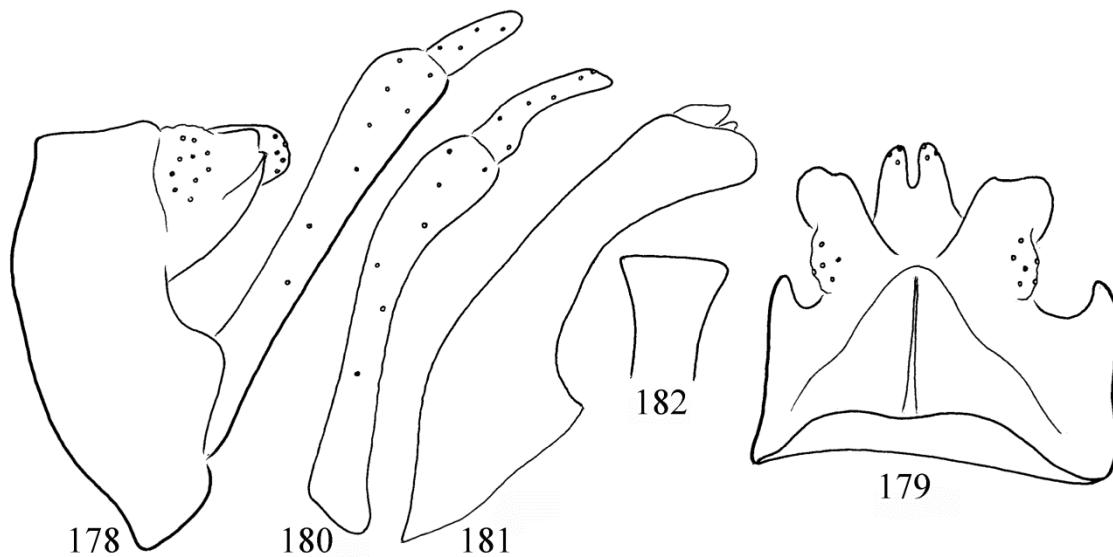
Diplectrona abmaka sp. nov.

(Figures 178–182, Map 17)

Material examined. Holotype: **Myanmar**, North East Burma, Kambaiti, 2000 m, [=Kan Paik Ti], 25°24'22.8"N 98°07'03.8"E, 12.V.1934, leg. R. Malaise, B.M. 1938-258 (1 male, BMNH). Paratypes: Myanmar, North East Burma, Kambaiti, 2000 m, 18.V.1934, leg. R. Malaise, B. M. 1938-258 (7 males, BMNH). Myanmar, North East Burma, Kambaiti, 7000 ft, 8.VI.1934, leg. R. Malaise, B. M. 1938-258 (1 male, BMNH).



Map 17. *Diplectrona taprobanes* group.



Figures 178–182. *Diplectrona abmaka* sp. nov. Holotype: 178 = male genitalia in left lateral view, 179 = male genitalia in dorsal view, 180 = left gonopod in ventral view, 181 = phallic organ in left lateral view, 182 = phallic head in ventral view.

Diagnosis. This species having rounded broad dorsal profile of the paraproct with elongated segment X belongs to the *Diplectrona taprobanes* species group. It has similarity to *Diplectrona kambaita* sp. nov., but differs by the dorsal profile of the paraproct that is less turning laterad and with simple apical margin as well as by the lateral profile of the phallic organ with its less downward directed apicoventrum and by the ventral shape of the phallic head truncated.

Description. Male (in alcohol). Dark brown animal. Forewings without pattern. Forewing length is 9 mm, apical fork I present on hindwing. Eyes setaless not enlarged. Maxillary palp formula I-III-II-IV-V. Abdominal segments without any reticulated internal sacs. Pair of large, elongated sacs present in segment V and the filaments on sternite V are long reaching to segment VIII.

Male genitalia. Segment IX convex anterad. Segment X fused to the tergum IX. The dorsoapical setose lobes (inner lobes) of segment X well-developed, digitiform in dorsal view and rounded in lateral view, slightly longer than the paraproct. Cerci setose, low and short in lateral view. Unsetose paraproct (outer lobes or lateral plates of segment X) long in lateral view and less turning laterad in dorsal view with rounded apical

margin. Gonopods robust; coxopodite with dilated apical half; harpago robust, mesad turning. Phallic apparatus with high and long phallobase with less downward curving apicoventrum. Endothecal and phallotremal sclerites withdrawn.

Etymology. *abmaka*, coined from the inverse name of *locus typicus* of the holotype.

Diplectrona indica (Moseley, 1931)

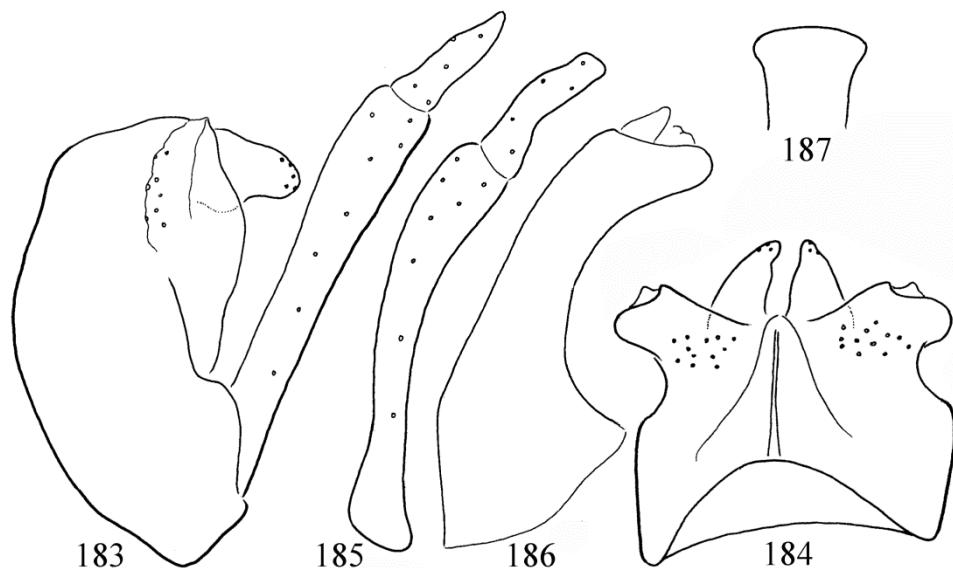
(Map 17)

Material examined. **India**, Orissa State [=Odisha State], Chilika Lake, Narayana valley, 19°52' 22.3"N 85°33'13.8"E, 21.II.1987, singled and light leg. J. Oláh (32 males, OPC).

Diplectrona ismene Malicky, 2002

(Map 7a: n° 100, 101, Map 17)

Material examined. Holotype: **India, Kerala**, Kandalur [=Kanthalloor], 5500 ft, 10°12'43.2"N 77°12'29.7"E, 31.I.1962, leg. F. Schmid (1 male, CNC). India, Kerala, Periyakanal [=Periakanal], 5000 ft, 10°02'11.4"N 77°09'35.1"E, 10°2'4"N 77°10'9"E, 25.I.1962, leg. F. Schmid (1 male, CNC; 1 male, OPC).



Figures 183–187. *Diplectrona kambaita* sp. nov. Holotype: 183 = male genitalia in left lateral view, 184 = male genitalia in dorsal view, 185 = left gonopod in ventral view, 186 = phallic organ in left lateral view, 187 = phallic head in ventral view.

***Diplectrona kambaita* sp. nov.**

(Figures 183–187, Map 17)

Material examined. Holotype: **Myanmar**, North East Burma, Kambaiti, 7000 ft., [=Kan Paik Ti], 25°24'22.8"N 98°07'03.8"E, 9.V.1934, leg. R. Malaise, B.M. 1938-258 (1 male, BMNH).

Diagnosis. This species having rounded broad dorsal profile of the paraproct with elongated segment X belongs to the *Diplectrona taprobanes* species group. It is most close to *Diplectrona tianmua* sp. nov., but differs by the dorsal profile of the paraproct that is more patterned, not simple rounded as well as by the lateral profile of the phallic organ with its downward directed apicoventrum and by the ventral shape of the phallic head broadening apicad.

Description. Male (in alcohol). Dark brown animal. Forewings without pattern. Forewing length 9 mm, apical fork I present on hindwing. Eyes setaless not enlarged. Maxillary palp formula I-III-II-IV-V. Abdominal segments without any reticulated internal sacs. Pair of large, elongated sacs present in segment V and the filaments on sternite V are long reaching to segment VIII.

Male genitalia. Segment IX convex anterad. Segment X fused to the tergum IX. The dorso-apical setose lobes (inner lobes) of segment X well-developed, triangular in dorsal view and rounded in lateral view, significantly longer than the paraproct. Cerci setose, high and short in lateral view. Unsetose paraproct (outer lobes or lateral plates of segment X) short in lateral view and laterad turning in dorsal view with patterned apical margin. Gonopods robust; coxopodite with dilated apical half; harpago robust, mesad turning. Phallic apparatus with high and long phallobase with downward curving apicoventrum. Endothecal and phallotremal sclerites withdrawn.

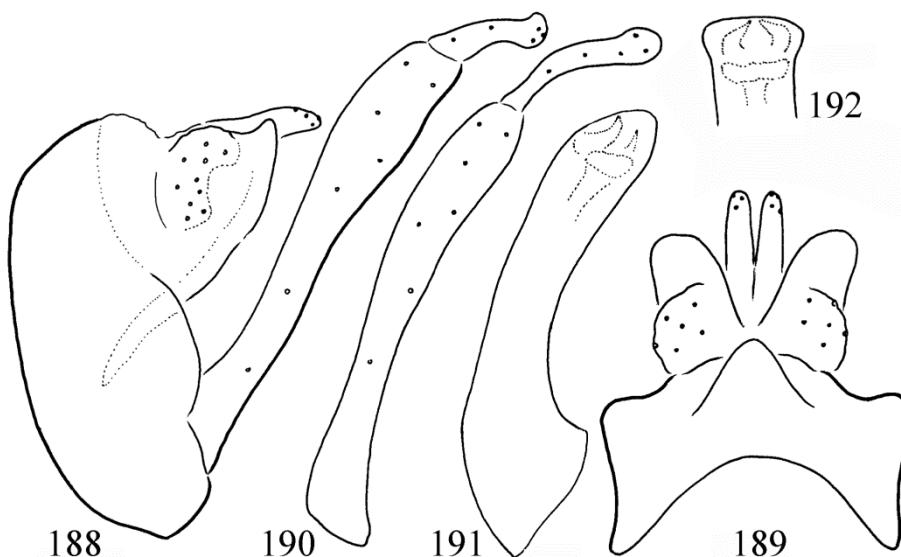
Etymology. *kambaita*, named after the *locus typicus* of the holotype.

***Diplectrona kamikarka* sp. nov.**

(Map 17)

Diplectrona burha Schmid, 1961: Malicky 2002:1205–1206. Misidentification.

Material. Syntypes: Malicky, 2002:1206. **Nepal**, Kamikarna-Südhang, Quellbächlein bei 2600 m, 11.IV.1995, leg. Malicky, (4 males, drawn specimen with cleared genitalia, MPC).



Figures 188–192. *Diplectrona koda* sp. nov. Holotype: 188 = male genitalia in left lateral view, 189 = male genitalia in dorsal view, 190 = left gonopod in ventral view, 191 = phallic organ in left lateral view, 192 = phallic head in ventral view.

Diagnosis. *Diplectrona kamikarka* sp. nov. from Kamikarna, Nepal, having rounded paraproct belongs to the *Diplectrona taprobanes* species group. It has resemblance to *Diplectrona ismene* Malicky, 2002 described from South India, but differs by the parallel-sided, not broad based harpago; by the lateral profile of the paraproct as well as by the dorsal profile of the dorsoapical setose lobes that is longer than paraproct. Moreover the phallic head is rounded, not truncated in ventral view.

Description. (Figures: Malicky 2002: table 14: under name *burha*, Kamikarna). Cerci setose, long. The dorsoapical setose lobes (inner lobes) of segment X well-developed, slender in dorsal view, longer than paraproct. Unsetose paraproct (outer lobes or lateral plates of segment X) low and small in lateral view. Gonopods robust, with straight coxopodite of slightly dilating apical half in lateral view; harpago almost parallel-sided, mesad turning with narrowing apex in ventral view. Phallic head rounded in ventral view.

Etymology. *kamikarka*, named after the *locus typicus* of the syntypes.

Diplectrona koda sp. nov.

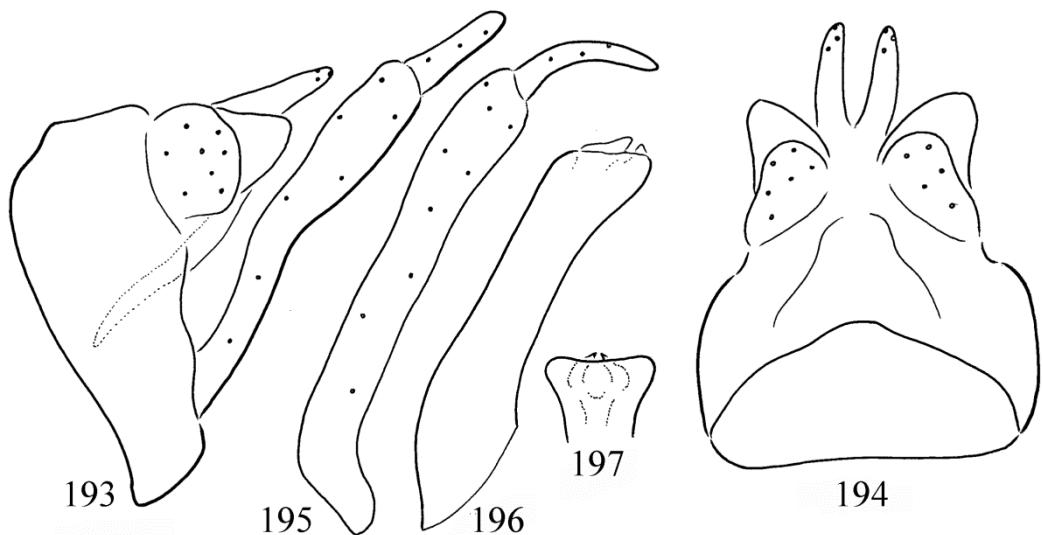
(Figures 188–192, Map 7a: n° 27, Map 17)

Material examined. Holotype: **India**, Tamil Nadu (Madras), Kodaikanal, 7300 ft., 10°14'22.4"N, 77°28'45.4"E, 3.II.1962, leg. F. Schmid (1 male, CNC).

Diagnosis. This species having rounded broad dorsal profile of the paraproct with elongated segment X belongs to the *Diplectrona taprobanes* species group. It is most close to *Diplectrona ismene*, but differs by the capitate head of the harpago and the longer dorsoapical setose lobes, the inner lobes.

Description. Male (in alcohol). Dark brown animal. Forewings without pattern. Forewing length is 12 mm, apical fork I present on hindwing. Eyes setaless not enlarged. Maxillary palp formula I-III-II-IV-V. Abdominal segments without any reticulated internal sacs. Filaments on sternite V are very long reaching almost to segment IX.

Male genitalia. Segment IX tripartite posterad, dorsal part fused to segment X, middle part slight-



Figures 193–197. *Diplectrona komadia* sp. nov. Holotype: 193 = male genitalia in left lateral view, 194 = male genitalia in dorsal view, 195 = left gonopod in ventral view, 196 = phallic organ in left lateral view, 197 = phallic head in ventral view.

ly rounded, ventral part smallest; dorsum and ven- trum with equal length. Segment X fused to the tergum IX. The dorsoapical setose lobes (inner lobes) of segment X well-developed, slender both in dorsal and lateral views, significantly longer than the paraproct. Cerci setose, fat falciform in lateral and semicircular horizontally in dorsal view. Unsetose paraproct (outer lobes or lateral plates of segment X) subtriangular flat plate in lateral view and rounded in dorsal view. Gonopods robust straight with coxopodite of dilated apical half; harpago mesad turning with capitate head. Phallic apparatus slightly curving tube with narrowing rounded head. Endothecal and phal- lotremal sclerites withdrawn.

Etymology. *koda*, coined from the name of *locus typicus* of the holotype.

Diplectrona komadia sp. nov.

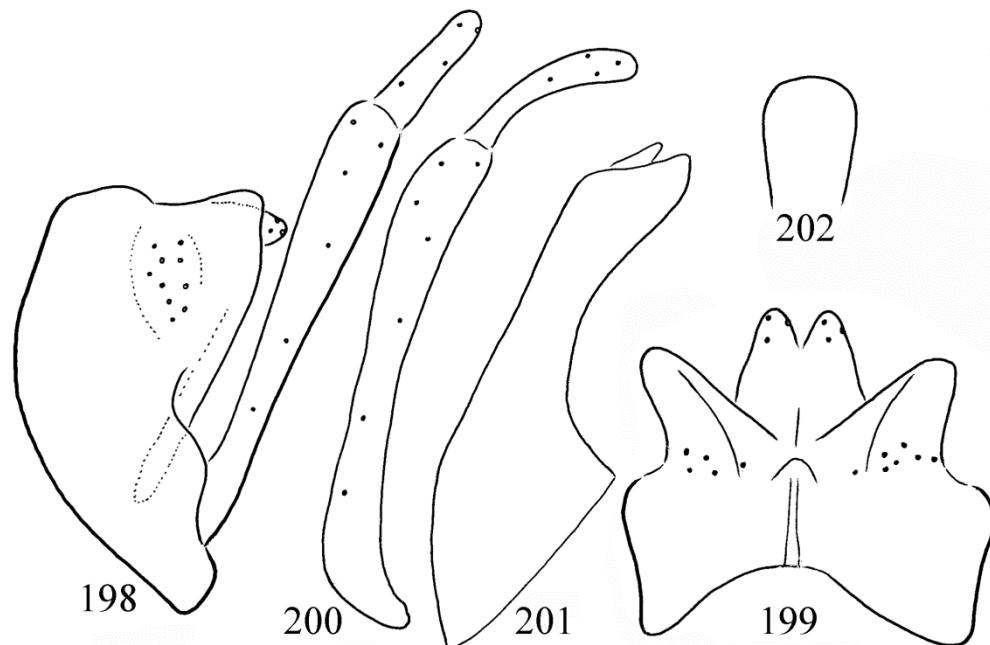
(Figures 193–197, Map 7a: between n° 12 and n° 23, Map 17)

Material examined. Holotype: **India**, Tamil Nadu, Komadi. This locality remains unknown; it should be placed between Courtallam and Sothuparai, 950 ft., 18.-19.I.1962, leg. F. Schmid (1 male, CNC).

Diagnosis. This species having rounded broad dorsal profile of the paraproct with elongated segment X belongs to the *Diplectrona taprobanes* species group. It is most close to *Diplectrona koda* sp. nov., but differs by the bigger cerci, longer and slender segment X, as well as by the less curved lateral profile of the phallic organ and the concave, not convex apical ending of the phallic head in ventral view. The harpago is digitate without capitate ending.

Description. Male (in alcohol). Dark brown animal. Forewings without pattern. Forewing length 9 mm, apical fork I present on hindwing. Eyes setaless not enlarged. Maxillary palp formula I-III-II-IV-V. Abdominal segments without any reticulated internal sacs. Pair of large, elongated sacs present in segment V and the filaments on sternite V are long reaching to segment VIII.

Male genitalia. Segment IX tripartite posterad, dorsal part fused to segment X, middle part slightly rounded, ventral part smallest; dorsum and ventrum with equal length. Segment X fused to the tergum IX. The dorsoapical setose lobes (inner lobes) of segment X well-developed, very slender both in dorsal and lateral views, significantly longer than the paraproct. Cerci setose, almost circular in lateral view and semicircular horizontally in dorsal view. Unsetose paraproct (outer



Figures 198–202. *Diplectrona madhya* sp. nov. Holotype: 198 = male genitalia in left lateral view, 199 = male genitalia in dorsal view, 200 = left gonopod in ventral view, 201 = phallic organ in left lateral view, 202 = phallic head in ventral view.

lobes or lateral plates of segment X) subtriangular flat plate both in lateral and dorsal views. Gonopods robust; coxopodite angled in middle with dilated apical half; harpago mesad turning digitate. Phallic apparatus slightly curving tube with narrowing rounded head. Endothecal and phalotremal sclerites withdrawn.

Etymology. *komadia*, coined from the name of *locus typicus* of the holotype.

Diplectrona madhya sp. nov.

(Figures 198–202, Map 7a: n° 87, Map 17)

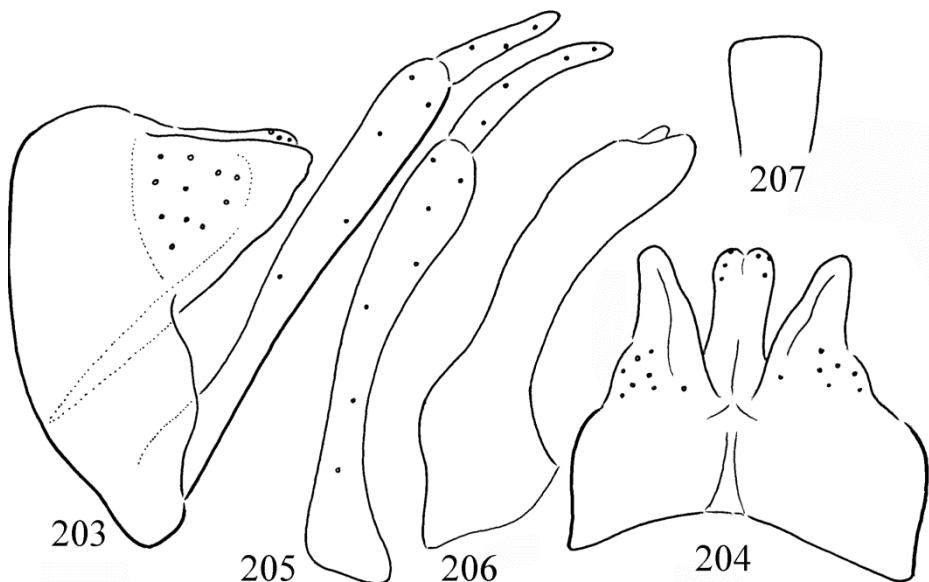
Material examined. Holotype: **India**, Madhya Pradesh, Satanwara [=Satanwada according to Lonsdale (2020)], 1308 ft, 25°44'51.21"N 77°24'29.44"E, 28.XI.1961, leg. F. Schmid (1 male, CNC).

Diagnosis. This species having rounded broad dorsal profile of the paraproct with elongated segment X belongs to the *Diplectrona taprobanes* species group. It is most close to *Diplectrona satanwada* sp. nov., but differs by the triangular

shape of segment X, the more robust paraproct, the smaller cerci as well as both the lateral and ventral shape of the phallotheca.

Description. Male (in alcohol). Dark brown animal. Forewings without pattern. Forewing length 9 mm, apical fork I present on hindwing. Eyes setaless not enlarged. Maxillary palp formula I-III-II-IV-V. Abdominal segments without any reticulated internal sacs. Filaments on sternite V are very long reaching almost to segment VIII.

Male genitalia. Segment IX tripartite posterad, dorsal part fused to segment X, middle part slightly rounded, ventral part smallest; dorsum little longer than ventrum. Segment X fused to the tergum IX. The dorsoapical setose lobes (inner lobes) of segment X well-developed, triangular both in dorsal and lateral views, little longer than paraproct. Cerci setose, short. Unsetose paraproct (outer lobes or lateral plates of segment X) subtriangular flat plate in lateral view and rounded in dorsal view. Gonopods robust straight with coxopodite of dilated apical half; harpago mesad turning with broadening apical region. Phallic apparatus slightly curving tube with ventrally e-



Figures 203–207. *Diplectrona satanwada* sp. nov. Holotype: 203 = male genitalia in left lateral view, 204 = male genitalia in dorsal view, 205 = left gonopod in ventral view, 206 = phallic organ in left lateral view, 207 = phallic head in ventral view.

longated lobe in lateral view, the head is rounded in ventral view. Endothecal and phallotremal sclerites withdrawn.

Etymology. *madhya*, coined from the name of *locus typicus* of the holotype.

Diplectrona sanguana Kimmins, 1964

(Map 17)

Diplectrona sanguana Kimmins, 1964:45.

Material examined. **India**, Arunachal Pradesh (Assam), Kameng, Nyukmadong, 6600-8000 ft., 27°24'32.5"N 92°07'57.3"E, 1.VIII.1961, leg. F. Schmid, (1 male, OPC).

Diplectrona satanwada sp. nov.

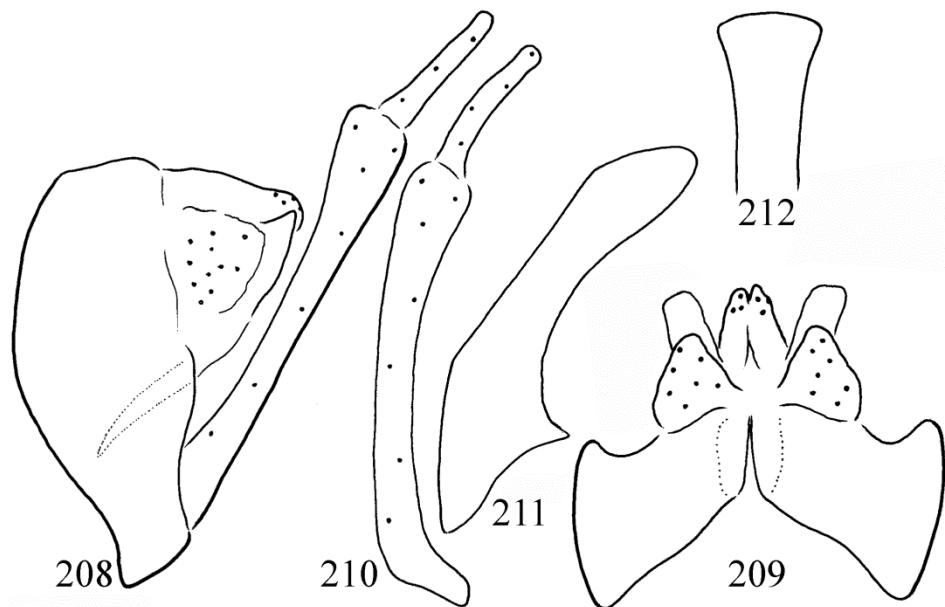
(Figures 203–207, Map 7a: n° 87, Map 17)

Material examined. Holotype: **India**, Madhya Pradesh, Satanwara [=Satanwada according to Lonsdale (2020)], 1308 ft, 25°44'51.21"N 77°24'29.44"E, 28.XI.1961, leg. F. Schmid (1 male, CNC).

Diagnosis. This species having rounded broad dorsal profile of the paraproct with elongated segment X belongs to the *Diplectrona taprobanes* species group. It is most close to *Diplectrona madhya* sp. nov., but differs by the slender segment X, the slender paraproct, the longer cerci as well as both the lateral and ventral shape of the phallotheca.

Description. Male (in alcohol). Dark brown animal. Forewings without pattern. Forewing length 9 mm, apical fork I present on hindwing. Eyes setaless not enlarged. Maxillary palp formula I-III-II-IV-V. Abdominal segments without any reticulated internal sacs. Filaments on sternite V are very long reaching almost to segment VIII.

Male genitalia. Segment IX tripartite posterad, dorsal part fused to segment X, middle part slightly rounded, ventral part smallest; dorsum little longer than ventrum. Segment X fused to the tergum IX. The dorsoapical setose lobes (inner lobes) of segment X well-developed, slender in dorsal view, little shorter than paraproct. Cerci setose, long. Unsetose paraproct (outer lobes or lateral plates of segment X) subtriangular flat plate in lateral view and rounded in dorsal view.



Figures 208–212. *Diplectrona sirtranga* sp. nov. Holotype: 208 = male genitalia in left lateral view, 209 = male genitalia in dorsal view, 210 = left gonopod in ventral view, 211 = phallic organ in left lateral view, 212 = phallic head in ventral view.

Gonopods robust straight with coxopodite of dilated apical half; harpago mesad turning with slightly tapering apical region. Phallic apparatus with waving dorsum, the head is truncated in ventral view. Endothecal and phallotremal sclerites withdrawn.

Etymology. *satanwada*, coined from the name of *locus typicus* of the holotype.

Diplectrona sirtranga sp. nov.

(Figures 208–212, Map 5: between n° 75 and n° 77, Map 17)

Material examined. Holotype: **India**, Assam, United District of Mikir and North Cachar Hills, Sirtrang (it should be located between Rongbong Ronghang and Terang Gaon, 1400 ft, 28.IV.1960, leg. F. Schmid (1 male, CNC). Paratypes: same as holotype (1 male, genitalia injured without left gonopod; OPC). India, Assam, United District of Mikir and North Cachar Hills, Nongjrong [=Non-jirong], 2700 ft, 25°41'29.6"N 92°28'41.3"E, 25. IV.1960, leg. F. Schmid (2 males, CNC; 1 male, OPC; 1 male, SMNH).

Diagnosis. This species having rounded broad dorsal profile of the paraproct with elongated segment X belongs to the *Diplectrona taprobanes* species group. It is most close to *Diplectrona madhya* sp. nov., but differs by the triangular, highly produced cerci, the quadrangular dorsal profile of the paraproct as well as by the truncated, not rounded ventral apical profile of the phallic head.

Description. Male (in alcohol). Dark brown animal. Forewings without pattern. Forewing length is 8 mm, apical fork I present on hindwing. Eyes setaless not enlarged. Maxillary palp formula I-III-II-IV-V. Abdominal segments without any reticulated internal sacs. Filaments on sternite V are long reaching almost to segment VII.

Male genitalia. Segment IX tripartite posterad, dorsal part fused to segment X, middle part slightly rounded, ventral part smallest; dorsum little longer than ventrum. Segment X fused to the tergum IX. The dorsoapical setose lobes (inner lobes) of segment X well-developed, slender in dorsal view and rounded in lateral view, little longer than paraproct. Cerci setose, produced, triangular both in lateral and dorsal views. Un-

setose paraproct (outer lobes or lateral plates of segment X) subtriangular flat plate in lateral view and rounded quadrangular in dorsal view. Gonopods robust straight with coxopodite of dilated apical region; harpago slightly mesad turning digitiform. Phallic apparatus slightly curving tube with ventrally elongated lobe in lateral view, the head is truncated and widening apicad in ventral view. Endothecal and phallotremal sclerites withdrawn.

Etymology. *sirtranga*, coined from the name of *locus typicus* of the holotype.

Diplectrona tienmua sp. nov.

(Map 17)

Diplectrona kallirrhoe Malicky, 2002:1211–1212.
“China, Zhejiang, Tienmu Mt., 30.V.1989, leg. Kyselak, CM: 3 ♂♂ (Paratypen).” determined as paratype of *Diplectrona kallirrhoe* Malicky, 2002. Misidentification.

Material. Syntypes: **China**, Zhejiang Province, Tienmu Mt. [=Thianmu Mt.], 30°21'43.2"N 119°30'52.2"E, 30.V.1989 leg. Kyselak, (3 males, drawn specimen, MPC).

Diagnosis. *Diplectrona tienmua* sp. nov. from the Tienmu Mountains (China) differs from *D. kallirrhoe* described from the Long Wang Mountains (China) having not any spine-like or pointed structures on the paraproct as well as by the ventral profile of the phallic head without pronounced apical widening. Without spine-like processes *D. tienmua* sp. nov. belongs to the *Diplectrona taprobanes* species group and *D. kallirrhoe* with bifid, not rounded dorsal profile of the paraproct is a member of *Diplectrona aurovittata* species group. *D. tienmua* sp. nov. has the character state of the strongly laterad directed rounded paraproct diverged from all the known members of the species group. Only *D. madhya* sp. nov. has somewhat, but much less laterad directed paraproct as well as shorter cerci and rounded, not truncate phallic head in ventral view.

Description. (Figures: Malicky 2002: table 8: under names *kallirrhoe*, *Tienmu*). Sternum V filament of 1.5–2 segment lengths. Pair of reticulated sacs present in segment VIII. Cerci setose, long. The dorsoapical setose lobes (inner lobes) of segment X well-developed, slender in dorsal view, longer than paraproct. Unsetose paraproct (outer lobes or lateral plates of segment X) subtriangular flat plate in lateral view and rounded, laterad directed without any spine-like processes in dorsal view. Gonopods robust, with straight coxopodite of dilating apicad in lateral view; harpago mesad turning with rounded apex in ventral view. Phallic head truncate in ventral view.

Etymology. *tienmua*, named after *locus typicus* of the syntypes.

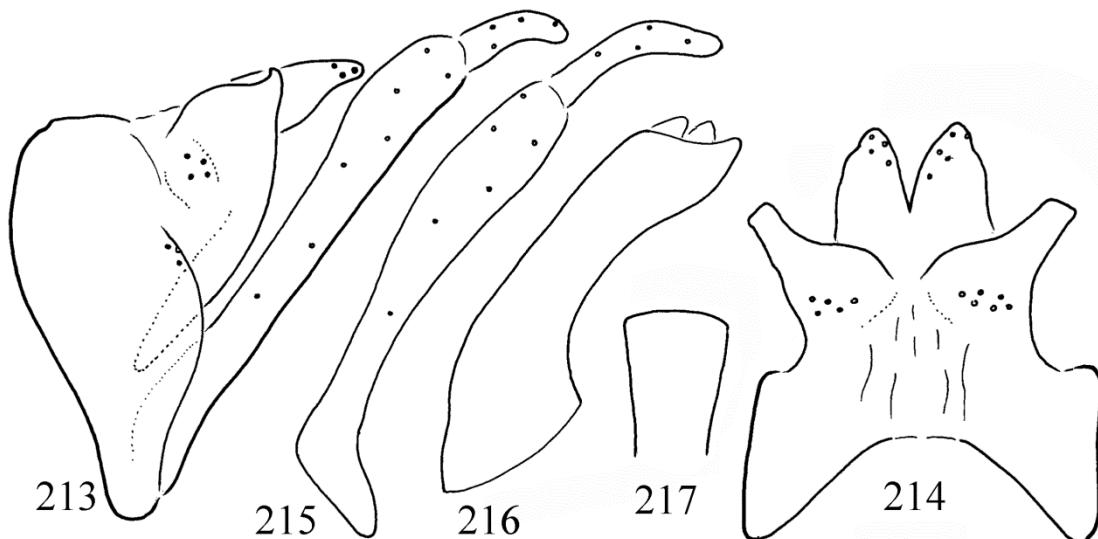
Diplectrona umlanga sp. nov.

(Figures 213–217, Map 5: n° 67, Map 17)

Material examined. Holotype: **India**, United Jaintia et Khasi Hills, Umlangshor, 4100 ft., 25°28'32.3"N 92°12'49.0"E, 18.VI.1960, leg. F. Schmid (1 male, CNC).

Diagnosis. This species belongs to the *Diplectrona taprobanes* species group, although there is some apparently blunt narrowing structure on the dorsoapical region of the paraproct visible in lateral view. However, that is the result of the transversally flat terminal region of apical ending of the paraproct. Most close to *D. madhya* sp. nov., but differs by the different dorsal profile of the paraproct and by the rounded, not slightly widening and truncated apex of the phallic organ in ventral view.

Description. Male (in alcohol). Light brown animal. Forewings without pattern. Forewing length is 10 mm, apical fork I present on hindwing. Eyes setaless, not enlarged. Maxillary palp formula I-IV-III-II-V. There is a very long filament on segment V. Abdominal segment VII without any reticulated internal sacs.



Figures 213–217. *Diplectrona umlanga* sp. nov. Holotype: 213 = male genitalia in left lateral view, 214 = male genitalia in dorsal view, 215 = left gonopod in ventral view, 216 = phallic organ in left lateral view, 217 = phallic head in ventral view.

Male genitalia. Segment IX less convex anterad, dorsum long and flat with a middle depression line, ventrum very short. Segment X fused to the tergum IX. The dorsoapical setose lobes (inner lobes) of segment X well-developed, bilobed, protruded broad based and narrowing apicad. Cerci just a small setose surface both in dorsal and lateral views. Unsetose paraproct (outer lobes or lateral plates of segment X) subtriangular flat plate in lateral view with a blunt pointed process only visible in lateral view. Gonopods slender straight with coxopodite of dilated apical third; harpago mesad turning with rounded head. Phallic apparatus with down curving and broadening basal section and with a longer tube-forming horizontal two thirds with rounded obliquely cut apex in lateral view; two pairs of endothecal processes visible, both with blunt apices in lateral and pointed triangular in ventral view; dorsal endothecal process bigger; phallosremal sclerite less distinct. The phallic organ with slightly convex and dilated head in ventral view.

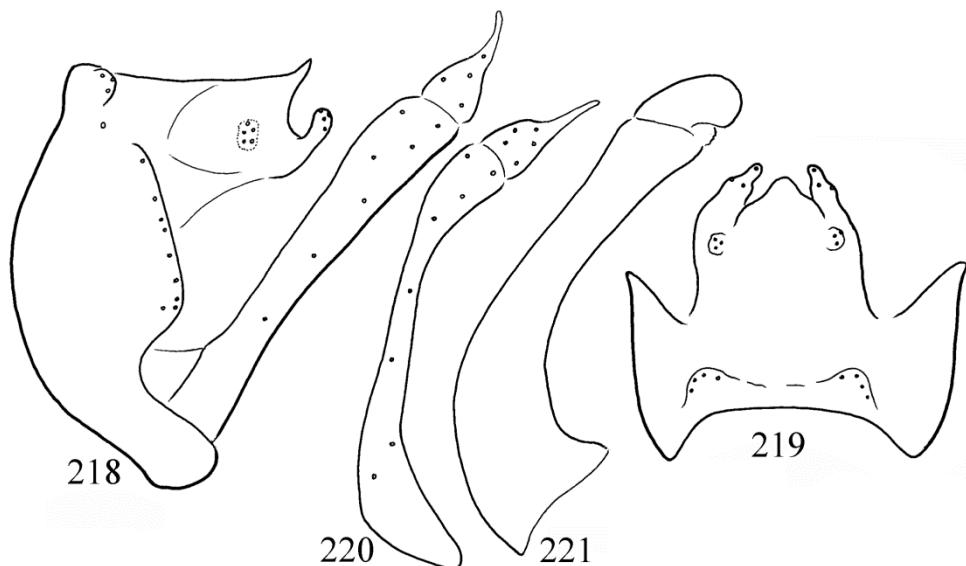
Etymology. *umlanga*, coined from the name of *locus typicus* of the holotype.

Hydropsychinae Curtis, 1835

Cheumatopsyche Wallengren, 1891

Cheumatopsyche lepida species group

The morphology of the genitalia in this species group follows the plesiomorphic, ancestral *Cheumatopsyche* genital plan, although without elongated cerci, but having the most complete processes on the apical region of segment X (Oláh *et al.* 2008a): the characteristically trilobed segment X with long and upcurving ventroapical setose lobe. The unsetose mesocaudal lobe is mostly well developed, triangular, rounded or quadrangular. This mesocaudal lobe, the third lobe on the apical region of segment X, the main distinguishing character state of this species group is sometimes less developed or upward turning, and as a result it is difficult to discern exactly its real extension. Therefore, it is hard to delineate clearly from the species in the *Cheumatopsyche dubitans* species group having similar long ventroapical setose lobe, but having no or slightly developed mesocaudal lobes. The distribution range of *Cheumatopsyche lepida* species group covers the Oriental, West Palearctic, East Palearctic and Afrotropical biogeographic regions.



Figures 218–221. *Cheumatopsyche assamha* sp. nov. Holotype: 218 = male genitalia in left lateral view, 219 = male genitalia in dorsal view, 220 = left gonopod in ventral view, 221 = phallic organ in left lateral view.

Cheumatopsyche assamha sp. nov.

(Figures 218–221, Map 6: n° 8, Map 18)

Material examined. Holotype: **India**, Assam, United District of Mikir and North Cachar Hills, Haflong, 1500 ft., 25°09'43.8"N 93°00'54.3"E, 5.V.1960, leg. F. Schmid (1 male, CNC). Paratypes: same as holotype (1 male, CNC; 1 male, OPC; 1 male SMNH). India, Manipur, Luanglong Khunau [= Lubanglong], 2500 ft., 24°41'08.8"N 93°31'27.2"E, 28.V.1960, leg. F. Schmid (1 male, CNC).

Diagnosis. This new species having trilobed segment X with elongated upward directed ventroapical setose lobe belongs to the *Cheumatopsyche lepida* species group (Oláh *et al.* 2008a). It has relation to *Cheumatopsyche fordula* sp. nov. described from Meghalaya, but differs by the wide lateral gap between the ventroapical setose lobe and the unsetose mesocaudal lobe; by the tripartite dorsal profile of the ventroapical setose lobe, by the lateral and ventral shape of harpago as well as by the slender phallic organ.

Description. A uniformly brown coloured small species with forewing length of 5 mm.

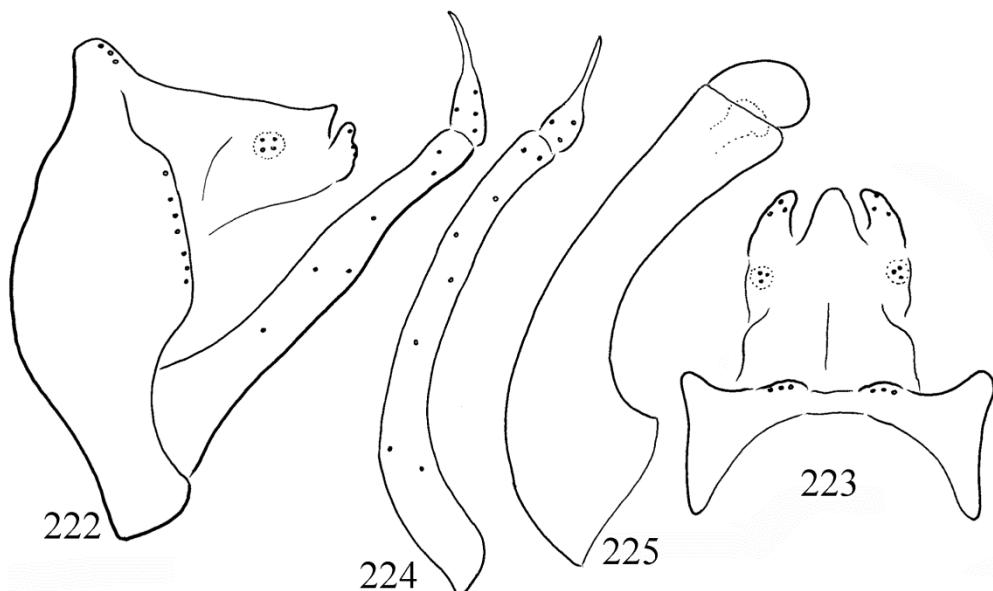
Male genitalia. Abdominal segment IX fused annular, short; anterior margin arciform, resulted in a very short dorsum and short but slightly longer ventrum; the ventrum is without spiny ventrocaudal mesal lobe; apical margin is produced into a flat and high lobe above the gonopods, marked with a row of strong spines; intersegmental depression between the ninth and tenth segments low, almost disappeared in lateral view. Body of segment X longer than high; circular lateral setose area (cerci) in middle position; apicoventral setose lobe discernible as a tripartite setose lobe turning mesad. The basal segment of the gonopods straight in lateral view and curving in ventral view; harpago, the terminal segment of gonopod broad based and filiform on its apical half. Phallic apparatus slender and low with slightly convex dorsum.

Etymology. *assamha*, coined from the names of the holotype's *locus typicus*.

Cheumatopsyche fordula sp. nov.

(Figures 222–225, Map 5: n° 72, Map 18)

Material examined. Holotype: **India**, Meghalaya (United Jaintia and Khasi Hills), Barato,



Figures 222–225. *Cheumatopsyche fordula* sp. nov. Holotype: 222 = male genitalia in left lateral view, 223 = male genitalia in dorsal view, 224 = left gonopod in ventral view, 225 = phallic organ in left lateral view.

2500 ft., 25°36'24.1"N 92°27'23.1"E, 24.IV.1960, leg. F. Schmid (1 male, CNC). Paratype: same as holotype (1 male, OPC).

Diagnosis. This new species having trilobed segment X with elongated upward directed ventroapical setose lobe belongs to the *Cheumatopsyche lepida* species group (Oláh *et al.* 2008a). It has relation to *Cheumatopsyche criseyde* described from Thailand and to *C. gaia* described from Nepal, but differs from both species by the low and robust lateral profile of the phallic organ with convex dorsum and by the long backward (anterad) directed filament representing the apical two thirds of the harpago.

Description. A uniformly brown coloured small species with forewing length of 5 mm.

Male genitalia. Abdominal segment IX fused annular, short; anterior margin arciform, resulted in a very short dorsum and short but slightly longer ventrum; the ventrum is without spiny ventrocaudal mesal lobe; apical margin is produced into a flat and high lobe above the gonopods, marked with a row of strong spines; intersegmental depression between the ninth and tenth segments oblique in lateral view. Body of seg-

ment X longer than high; circular lateral setose area (cerci) in middle position; apicoventral setose lobe discernible as a small setose lobe turning mesad. The basal segment of the gonopods straight in lateral view and curving in ventral view; harpago, the terminal segment of gonopod broad based and filiform on its apical two thirds. Phallic apparatus robust and low with convex dorsum.

Etymology. *fordula*, coined from “vissza forduló, forduló” backward directed in Hungarian, refers to the unique, unusual direction of the harpago.

Cheumatopsyche gaia Malicky, 1997

(Map 2: n° 14, Map 18)

Cheumatopsyche gaia Malicky, 1997:1029. “Holotype: Nepal, Janakpur SE Charikot, 900–1200m, 27°37'36.0"N 86°04'35.0"E, 5.–10.VI.1987, leg. Holzschuh.”

Material examined. India, Uttarakhand, Pauri Garhwal, Pau Kal = Paukhali Gaon, 4000–5000 ft., river tributary of Bhillangana River and hygropetric habitat, 30°21'48.9"N 78°36'36.7"E, 21.–23.IV.1958, leg. F. Schmid (1 male, OPC).



Map 18. *Cheumatopsyche lepida* group.

***Cheumatopsyche jiriana* Malicky, 1997**

(Map 6: n° 18, Map 18)

Cheumatopsyche jiriana Malicky, 1997:1026. "HT ♂: Nepal, Jiri, 1800m, 27°36'04.6"N 86°13'35.9"E, 25.V.1991, leg. Allen."

Material examined. **India**, Manipur, Mapum, 5000 ft., 25°04'55.9"N 94°30'16.9"E, 11.VI.1960, leg. F. Schmid (1 male, OPC).

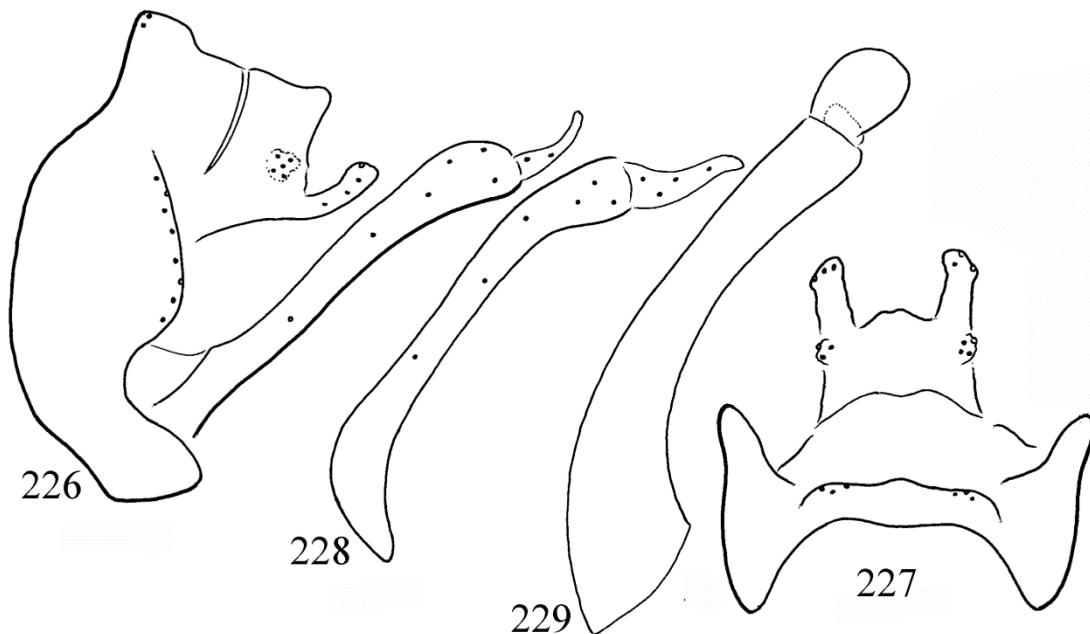
***Cheumatopsyche madpradha* sp. nov.**

(Figures 226–229, Map 7a: n° 2, Map 18)

Material examined. Holotype: **India**, Madhya Pradesh, Satanwara [=Satanwada according to

Lonsdale (2020)], 1308 ft, 25°44'51.21"N 77° 24' 29.44"E, 28.XI.1961, leg. F. Schmid (1 male, CNC).

Diagnosis. This new species having trilobed segment X with elongated upward directed ventroapical setose lobe belongs to the *Cheumatopsyche lepida* species group (Oláh *et al.* 2008a). Its dorsal profile of the apicoventral setose lobe has relation to *Cheumatopsyche barakambra* Oláh & Johanson, 2008 described from Orissa, but differs by the lateral profile of the phallic organ having long and slender phallobase, not broad and not curving more downward, by the elongated endothecal sclerite, as well as by the very high and flat apical lobe on segment IX, not low and triangular.



Figures 226–229. *Cheumatopsyche madpradha* sp. nov. Holotype: 226 = male genitalia in left lateral view, 227 = male genitalia in dorsal view, 228 = left gonopod in ventral view, 229 = phallic organ in left lateral view.

Description. A uniformly brown coloured small species with forewing length of 6 mm.

Male genitalia. Abdominal segment IX fused annular, short; anterior margin arciform, resulted in short dorsum and ventrum; the ventrum without spiny ventrocaudal mesal lobe; apical margin produced into a flat and high lobe above the gono-pods, marked with a row of strong spines; inter-segmental depression between the ninth and tenth segments low and obtuse-angled in lateral view. Body of segment X subquadrangular both in lateral and dorsal views; circular lateral setose area (cerci) in apical position; apicoventral setose lobe well produced straight, posterad directed with head slightly laterad produced. The basal segment of the gonopods straight with curving and capitate head visible both in lateral and ventral views; harpago, the terminal segment of gonopod broad based, filiform in lateral and S-forming in ventral view. Phallic apparatus with tube shaped along almost the entire length, including phallobase; endothecal sclerite elongated ovoid.

Etymology. *madpradha*, coined from the name of *locus typicus* of the holotype.

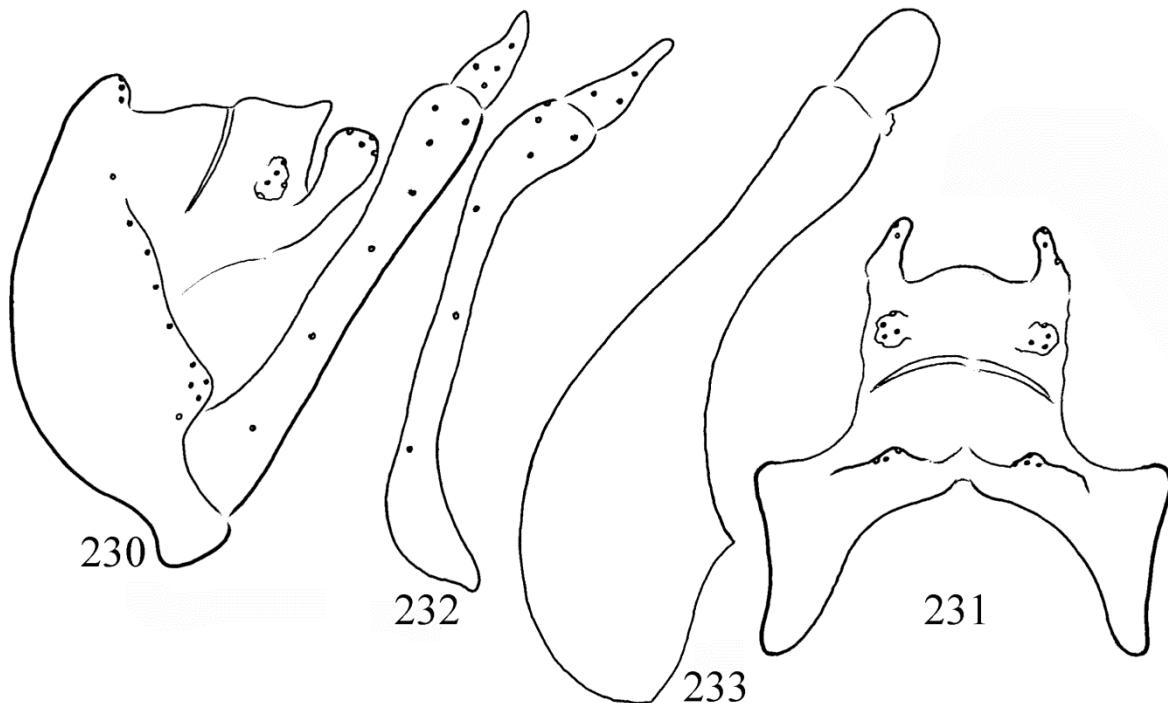
Cheumatopsyche manimapa sp. nov.

(Figures 230–233, Map 6: n° 13, 19, Map 18)

Material examined. Holotype: **India**, Manipur, Mapum, 3300 ft., 25°03'23.2"N 94°30'33.5"E, 12.VI.1960, leg. F. Schmid (1 male, CNC). Paratype: India, Manipur, Langdan, 5300 ft., 5.VI.1960, leg. F. Schmid (1 male, OPC; 1 male, SMNH).

Diagnosis. This new species having trilobed segment X with elongated upward directed ventroapical setose lobe belongs to the *Cheumatopsyche lepida* species group (Oláh *et al.* 2008a). Its dorsal profile of the apicoventral setose lobe has relation to *Cheumatopsyche madpradha* sp. nov., but differs by the shape of the apicoventral setose lobe broadening apicad in lateral view and narrowing apicad in dorsal view; by the lateral profile of the phallic organ having broad phallobase not slender, by the more elongated endothecal sclerite, as well as by the shape of the harpago both in lateral and ventral views.

Description. A uniformly brown coloured small species with forewing length of 7 mm.



Figures 230–233. *Cheumatopsyche manimapa* sp. nov. Holotype: 230 = male genitalia in left lateral view, 231 = male genitalia in dorsal view, 232 = left gonopod in ventral view, 233 = phallic organ in left lateral view.

Male genitalia. Abdominal segment IX fused annular, short; anterior margin arciform, resulted in short dorsum and slightly longer ventrum; the ventrum without spiny ventrocaudal mesal lobe; apical margin produced into a flat and high lobe above the gonopods, marked with a row of strong spines; intersegmental depression between the ninth and tenth segments low and right-angled in lateral view. Body of segment X subquadrangular both in lateral and dorsal views; circular lateral setose area (cerci) in middle position; apicoventral setose lobe well produced straight, tapering in dorsal and broadening in lateral views. The basal segment of the gonopods regular straight ventrad in lateral view and capitate, mesad turning in ventral view; harpago, the terminal segment of gonopod broad based and tapering apicad. Phallic apparatus with tube shaped along almost the entire length with broad phallobase; endothecal sclerite elongated ovoid.

Etymology. *manimapa*, coined from the names of *locus typicus* of the holotype.

Cheumatopsyche pondora sp. nov.

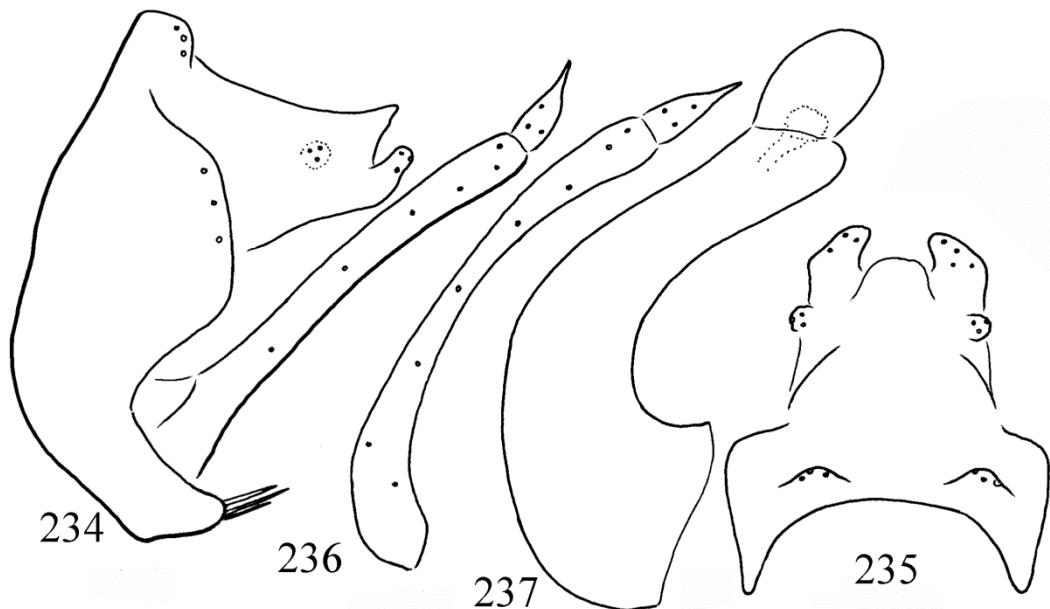
(Figures 234–237, Map 5: n° 68, Map 18)

Material examined. Holotype: **India**, Meghalaya (United Jaintia and Khasi Hills), Nongjni [=Nongjngi], 3750 ft, 25°32'21.1"N 92°16'12.4"E, 19.IV.1960, leg. F. Schmid (1 male, CNC).

Diagnosis. This new species having trilobed segment X with elongated upward directed ventroapical setose lobe belongs to the *Cheumatopsyche lepida* species group (Oláh *et al.* 2008a). It has relation to *Cheumatopsyche gaia* described from Nepal, but differs by the dorsal pattern of the trilobed structure and especially by the robust and strongly curved lateral profile of the phallic organ.

Description. A uniformly brown coloured small species with forewing length of 5 mm.

Male genitalia. Abdominal segment IX fused annular, short; anterior margin arciform, resulted in a very short dorsum and short but little longer ventrum; the ventrum with a short spiny ventro



Figures 234–237. *Cheumatopsyche pondora* sp. nov. Holotype: 234 = male genitalia in left lateral view, 235 = male genitalia in dorsal view, 236 = left gonopod in ventral view, 237 = phallic organ in left lateral view.

caudal mesal lobe; apical margin is produced into a flat and high lobe above the gonopods, marked with a row of strong spines; intersegmental depression between the ninth and tenth segments almost right-angled in lateral view. Body of segment X longer than high; circular lateral setose area (cerci) in middle position; apicoventral setose lobe discernible as a small setose lobe turning upward and mesad. The basal segment of the gonopods straight in lateral and curving in ventral view; harpago, the terminal segment of gonopod broad based and filiform on its apical third. Phallic apparatus robust and strongly curving with convex dorsum.

Etymology. *pondora*, coined from “pöndör” curly in Hungarian, refers to the unique robust and almost re-curving phallotheca.

Cheumatopsyche puramukta sp. nov.

(Figures 238–241, Map 5: n° 11, 84, Map 18)

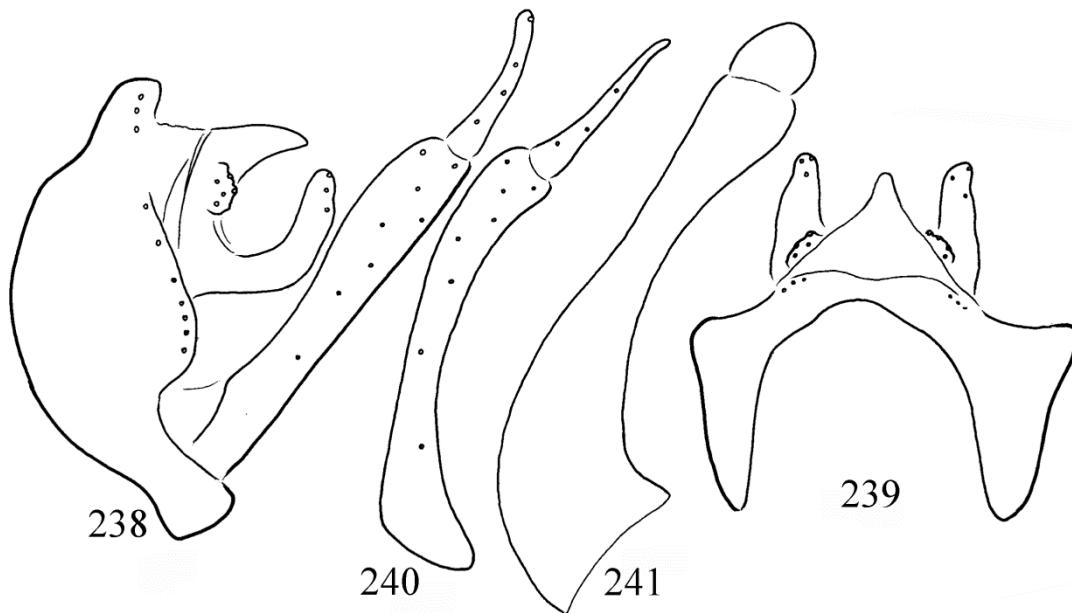
Material examined. Holotype: **India**, Meghalaya (United Jaintia and Khasi Hills), Muktapur, 200 ft., 25°09'48.6"N 92°07'45.4"E, 11–12. XII.1959, leg. F. Schmid (1 male, CNC). Para-

types: same as holotype (1 male, CNC; 1 male, OPC; 1 male, SMNH). India, Assam, United District of Mikir and North Cachar Hills, Bandarkhal, 300 ft., 25°03'31.1"N 92°48'02.5"E, 9.V.1960, leg. F. Schmid (1 male, OPC).

Diagnosis. This new species having setose bilobed segment X that is the ventroapical pair of setose lobes with pronounced setaless apicomesal lobe belongs to the *Cheumatopsyche lepida* species group (Oláh *et al.* 2008). According to the structure of the apicoventral lobes, it is most close to *Cheumatopsyche kurtula* described from China (Fujian) but differs by having smaller size; very long harpago, not very short; well developed apicoventral lobe narrowing apicad, lacking in *C. kurtula*; falciform ventroapical setose lobes, not straight; circular endothecal sclerites, not elongated and downward curving.

Description. Small brown animal without any spots on forewing; forewing length of 6 mm.

Male genitalia. Abdominal segment IX fused annular, short; anterior margin bow-shaped, resulted in a short dorsum and ventrum; apical margin is straight vertical marked with a row of



Figures 238–241. *Cheumatopsyche puramukta* sp. nov. Holotype: 238 = male genitalia in left lateral view, 239 = male genitalia in dorsal view, 240 = left gonopod in ventral view, 241 = phallic organ in left lateral view.

strong spines; intersegmental depression between the ninth and tenth segments deep, right angled in lateral view. Basal body of segment X very short; lateral setose area (cerci) shifted apicad, forming a short setose process packed with alveoli; apicoventral setose lobe very long, straight in dorsal and falciform in lateral view. The basal segment of the gonopods robust, straight with slightly dilated apical half; the terminal segments long digitiform. Phallic apparatus straight horizontal with middle constriction, phallotremal sclerite pronounced large, endothecal sclerites circular.

Etymology. *puramukta*, coined from the names of *locus typicus* of the holotype.

Cheumatopsyche purmapa sp. nov.

(Figures 242–245, Map 6: n° 19, Map 18)

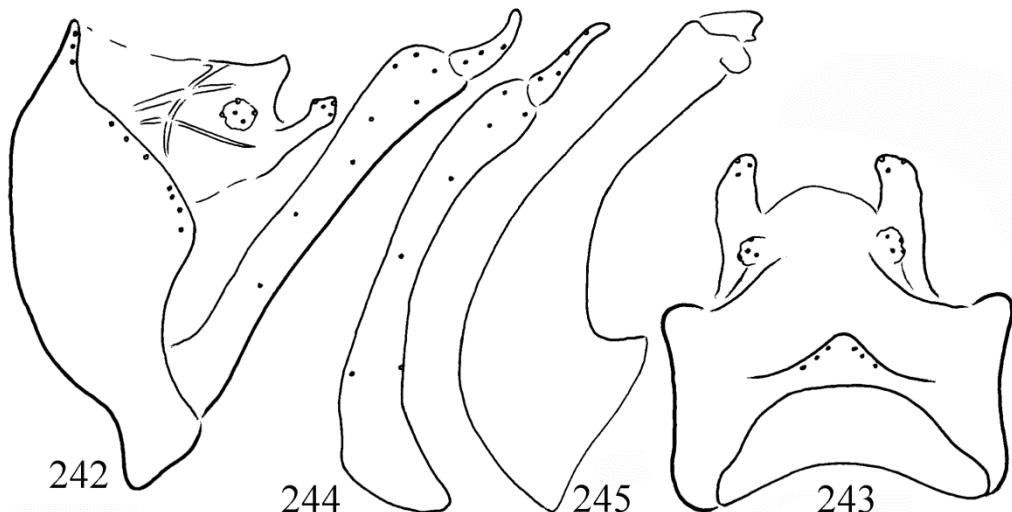
Material examined. Holotype: **India**, Manipur, Mapum, 3300 ft., 25°03'23.2"N 94°30'33.5"E, 12.VI.1960.leg. F. Schmid (1 male, CNC).

Diagnosis. This new species having trilobed segment X with elongated upward directed ven-

troapical setose lobe belongs to the *Cheumatopsyche lepida* species group (Oláh *et al.* 2008a). Its dorsal profile of the apicoventral setose lobe has relation to *Cheumatopsyche madpradha* sp. nov., but differs by the shape of apicoventral setose lobe more capitate in lateral view; by the lateral profile of the phallic organ having broad phallobase not slender, by the small highly modified endothecal sclerite, as well as by the shape of the harpago slender in ventral view.

Description. A uniformly brown coloured small species with forewing length of 5 mm.

Male genitalia. Abdominal segment IX fused annular, short; anterior margin arciform, resulted in very short dorsum and longer ventrum; the ventrum without spiny ventrocaudal mesal lobe; apical margin produced into a rounded lobe above the gonopods, marked with a row of strong spines; intersegmental depression between the ninth and tenth segments low in lateral view. Body of segment X subquadrangular both in lateral and dorsal views, supplied with an elaborated pattern of sutures visible in lateral view; circular lateral setose area (cerci) in middle position; apicoventral setose lobe well produced



Figures 242–245. *Cheumatopsyche purmapa* sp. nov. Holotype: 242 = male genitalia in left lateral view, 243 = male genitalia in dorsal view, 244 = left gonopod in ventral view, 245 = phallic organ in left lateral view.

straight, tapering and slightly mesad turning in dorsal and capitate in lateral views. The basal segment of the gonopods straight in lateral view; harpago, the terminal segment of gonopod slightly broad based and tapering apicad. Phallic apparatus tube shaped along almost the entire length with broad phallobase; endothecal sclerite reduced in size.

Etymology. *purmapa*, coined from the names of *locus typicus* of the holotype.

Cheumatopsyche sohkha sp. nov.

(Figures 246–249, Map 5: n° 7, Map 18)

Material examined. Holotype: **India**, Meghalaya (United Jaintia and Khasi Hills), Sohkhā [= Sohkhā Shnong], 200–300 ft., 25°12'59.3"N 92°01'55.0"E, 7.XII.1959, leg. F. Schmid (1 male, CNC).

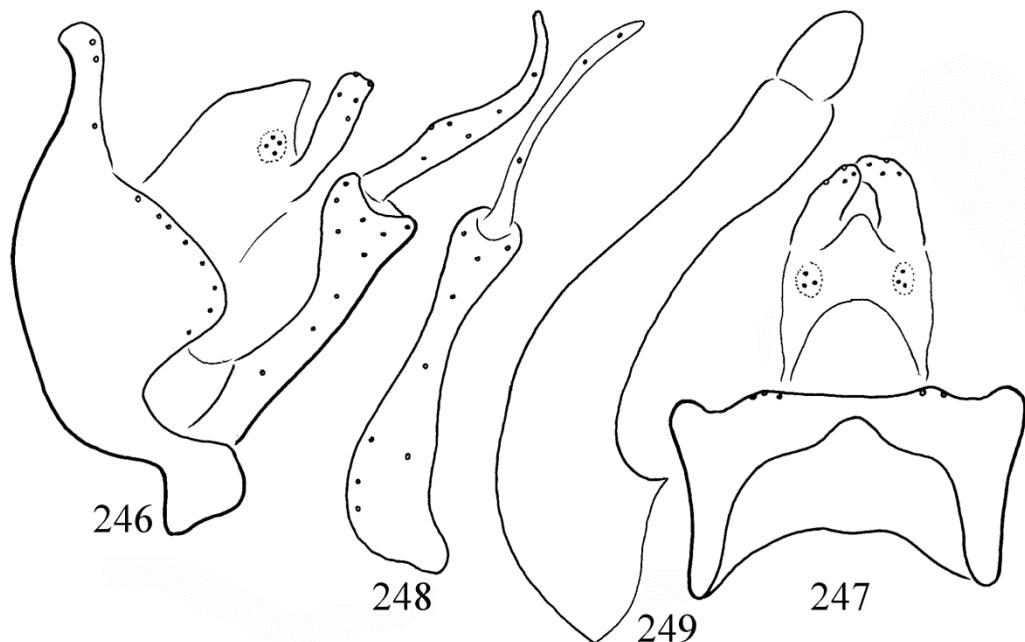
Diagnosis. This new species having setose bilobed segment X that is the ventroapical pair of setose lobes with pronounced setaless apicoventral lobe belongs to the *Cheumatopsyche lepida* species group (Oláh *et al.* 2008). According to the structure of the apicoventral lobes most close to *Cheumatopsyche puramukta* sp. nov., but differs by having unique gopopods with short and broad

coxopodite and slender and long harpago; by the indiscernible probably membranous basodorsum of segment X, disappeared during chemical treatment; by the straight not curving ventroapical setose lobes; as well as by the long endothecal sclerites on the phallic organ.

Description. Small brown animal without any spots on forewing; forewing length of 6 mm.

Male genitalia. Abdominal segment IX fused annular, short; anterior margin bow-shaped, resulted in a short dorsum and longer ventrum; apical margin is rounded triangular marked with a row of strong spines; intersegmental depression between the ninth and tenth segments extraordinary deep probably due to dissolution of the membranous basodorsum. Body of segment X very incomplete; lateral setose area (cerci) shifted apicad; apicoventral setose lobe very long, straight in lateral view and rather flexible mesad turning in dorsal view. The basal segment of the gonopods short, robust, with much dilated apex; harpago long digitiform. Phallic apparatus straight horizontal with slight middle constriction, phallotremal sclerite pronounced large, endothecal sclerites elongated.

Etymology. *sohkha*, coined from the names of *locus typicus* of the holotype.



Figures 246–249. *Cheumatopsyche sohkha* sp. nov. Holotype: 246 = male genitalia in left lateral view, 247 = male genitalia in dorsal view, 248 = left gonopod in ventral view, 249 = phallic organ in left lateral view.

Cheumatopsyche swampa sp. nov.

(Figures 250–253, Map 7a: n° 30, Map 18)

Material examined. Holotype: **India**, Tamil Nadu (Madras), Swamp Hill, South Mannavanur, 7300 ft., 10°10'01"N 77°22'36"E, According to Lonsdale (2020), it corresponds to the Swamp Hill where Schmid collected *Doloclanae acteon*, *D. alcmeon*, *Apsilochorema dakchinam*, 2.II.1962, leg. F. Schmid (1 male, CNC).

Diagnosis. This new species having trilobed segment X with elongated upward directed ventroapical setose lobe belongs to the *Cheumatopsyche lepida* species group (Oláh *et al.* 2008a). Its dorsal profile of the apicoventral setose lobe has relation to *Cheumatopsyche mariannae* and its harpago to *C. sandrae* both described from Karnataka, but differs from both by the lateral profile of the phallic organ having long and broad phallobase, short and narrow at the two Karnatakan species.

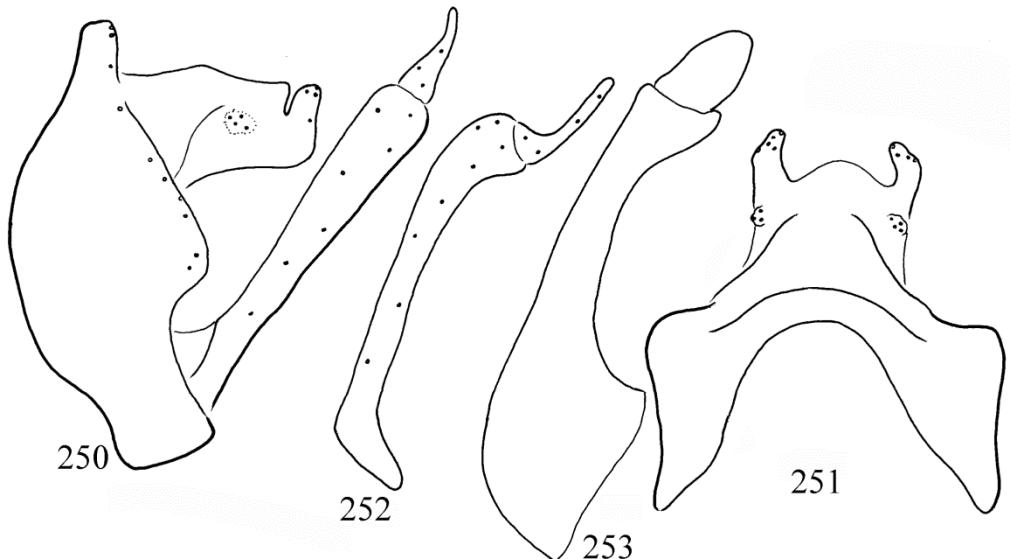
Description. A uniformly brown coloured small species with forewing length of 6 mm.

Male genitalia. Abdominal segment IX fused annular, short; anterior margin arciform, resulted in a very short dorsum and longer ventrum; the ventrum is without spiny ventrocaudal mesal lobe; apical margin is produced into a flat and high lobe above the gonopods, marked with a row of strong spines; intersegmental depression between the ninth and tenth segments deep and right-angled in lateral view. Body of segment X longer than high; circular lateral setose area (cerci) in middle position; apicoventral setose lobe well produced slightly and mesad and in right angle upward directed. The basal segment of the gonopods straight in lateral and curving and capitate in ventral views; harpago, the terminal segment of gonopod broad based, curving and filiform. Phallic apparatus with broad and long phallobase; endothecal sclerite elongated ovoid.

Etymology. *swampa*, named after the *locus typicus* of the holotype.

Cheumatopsyche dubitans species group

Species group of bilobed segment X with long ventroapical lobe (Oláh *et al.* 2008a). A pair of



Figures 250–253. *Cheumatopsyche swampa* sp. nov. Holotype: 250 = male genitalia in left lateral view, 251 = male genitalia in dorsal view, 252 = left gonopod in ventral view, 253 = phallic organ in left lateral view.

setose ventroapical lobe produced into a long process straight or mesad curving in dorsal aspect and straight or dorsad curving in lateral aspect, encircling wide and deep dorsal and lateral interlobular gaps in dorsal and lateral aspects while dominating the termination of segment X. The bare unsetose mesocaudal lobe mostly reduced. Some species have patterned forewing membrane.

Cheumatopsyche dubitans Mosely, 1942

(Map 5: n° 64, 65, 68, 74, Map 19)

Cheumatopsyche dubitans Mosely, 1942:352, 354. “One example dated 27.IV.1938; an example already in the British Museum is labelled China only and is lacking an abdomen.” The examined specimen, the holotype with description and drawings of both the wings and the genitalia is collected by Mr. M. S. Yang in Foochow = Fuzhou, China: “The locality, in every case, is the vicinity of Foochow, and the only dates available, except in a few particular instances which are indicated, are the years 1935-1936, 1936-1937.” Probable approximate collecting site: 26°08'48.0"N 119°17'44.3"E.

Material examined. **India**, Meghalaya (United Jaintia and Khasi Hills), Nongjni [= Nongjngi], 3750 ft, 25°32'21.1"N 92°16'12.4"E, 19.IV.1960, leg. F. Schmid (5 males, CNC; 2 males, OPC).

India, Meghalaya (United Jaintia et Khasi Hills), Mawpyut, 4000 ft, 25°22'20.7"N 92°09'03.7"E, 14.IV.1960, leg. F. Schmid (1 male, OPC). India, Meghalaya (United Jaintia et Khasi Hills), Demthring, 3800 ft, 25°26'09.5"N 92°10'08.0"E, 16.IV.1960, leg. F. Schmid (1 male, CNC; 1 male, OPC). India, Assam, United District of Mikir and North Cachar Hills, Umbaso, 2300 ft, 25°43'46.3"N 92°31'33.5"E, 26.IV.1960, leg. F. Schmid (7 males, 3 females; CNC).

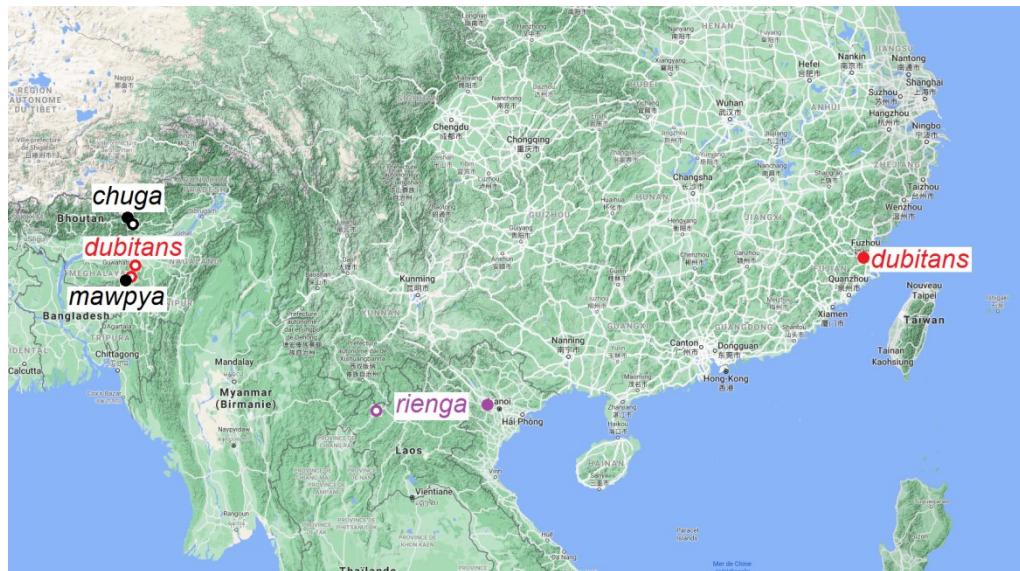
Records. The single specimen from Mawpyut has more scattered pattern on the forewing, but we were unable to find any divergences in the genital structure.

Cheumatopsyche mawpya sp. nov.

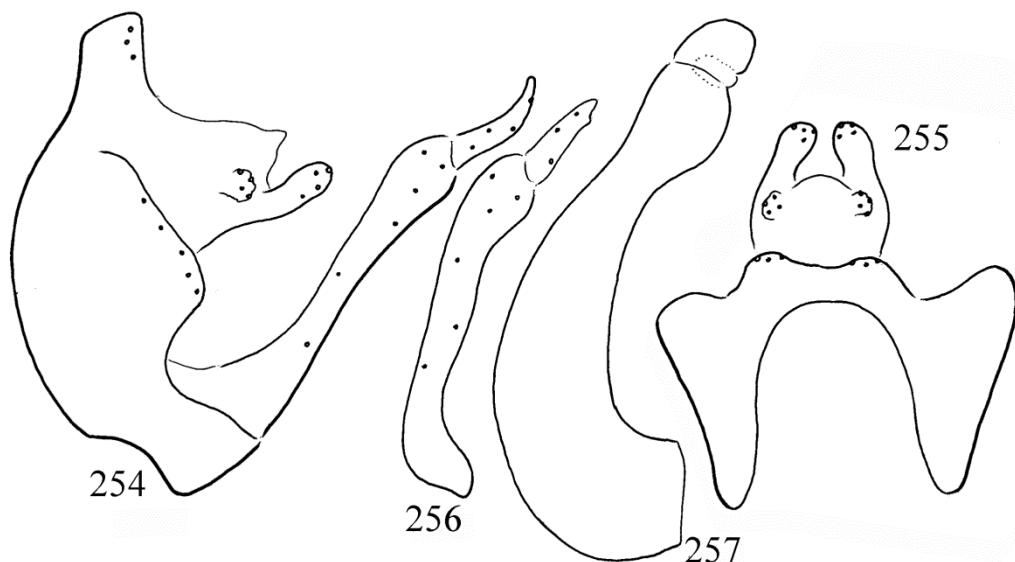
(Figures 254–257, Map 5: n° 64, Map 19)

Material examined. Holotype: **India**, Meghalaya (United Jaintia et Khasi Hills), Mawpyut, 4000 ft, 25°22'20.7"N 92°09'03.7"E, 14.IV.1960, leg. F. Schmid (1 male, OPC).

Diagnosis. This new small species having setose bilobed segment X that is the ventroapical pair of setose lobes are present and elongated, but the setaless apicomesal lobe reduced, belongs to



Map 19. *Cheumatopsyche dubitans* and *excisa* groups.



Figures 254–257. *Cheumatopsyche mawpya* sp. nov. Holotype: 254 = male genitalia in left lateral view, 255 = male genitalia in dorsal view, 256 = left gonopod in ventral view, 257 = phallic organ in left lateral view.

the *Cheumatopsyche dubitans* species group (Oláh *et al.* 2008). Most close to *C. bunkos* Oláh, Li & Oláh, described from China (Guangxi and Fujian Provinces), but differs by having not any spots on forewing, having rounded, but not capitate head of the ventroapical setose lobe in lateral view as well as rounded and not obliquely truncated and mesad turning in dorsal view. The

tip of the harpago excised in ventral view, not rounded intact. The lateral profile of the phallic organ is highly convex dorsad, not concave.

Description. A small dark brown animal without any spots on forewing Sc and R; forewing length is 6 mm.

Male genitalia. Abdominal segment IX fused

annular, short; anterior margin bow-shaped, resulted in a short dorsum and little longer ventrum; apical margin straight, vertical marked with a row of strong spines; intersegmental depression between the ninth and tenth segments deep vertical in lateral view. Body of segment X as high as long; lateral setose area (cerci) in middle position forming a short setose process packed with alveoli; apicoventral setose lobe elongated with rounded head in lateral and slightly mesad turning in dorsal view; apicomesal lobe less produced. The basal segment of the gonopods with dilated and downward turning apex; harpago, the terminal segment short with excised apex in ventral view. Phallic apparatus convex dorsad, phallosomal sclerite pronounced large, endothecal processes short and rounded.

Etymology. *mawpya*, coined from the name of the *locus typicus* of the holotype.

***Cheumatopsyche excisa* species group**

Establishment of this species group was based primarily on the bilobed harpago, accompanied by character combination similar to *Cheumatopsyche dubitans* species group having bilobed segment X with long ventroapical lobe as well as with less developed unsetose mesal plate on segment X (Oláh *et al.* 2008a). The pair of setose ventroapical lobes produced into a long process straight or mesad curving in dorsal aspect and straight or dorsad curving in lateral aspect, encircling the wide and deep dorsal and lateral interlobular gaps in dorsal and lateral views while dominating the termination of segment X. Wart-like lateral setose area, the cerci, the vestigium of preanal appendages located centrally or distad on segment X.

However, several species with bilobed harpago have differently formed ventroapical setose lobe, different unsetose mesal plate and different dorsal interlobular gap. These character state incongruences, like in any other entities, are the result of a reticulated chimeric genesis undermining the naïve religious believe in phylogeny. Reality is rather reticulating than branching in the deep and only superficially discernible directly or even indirectly by human capacity. *Retigeny* (from *rete*,

reticulum=fishing net, network in Latin, Oláh *et al.* 2020b), or if we go back thousand years, *diktiogeny* (from *dictio*=fishing net in old Greek) are behind of any speciation processes (Oláh *et al.* 2021).

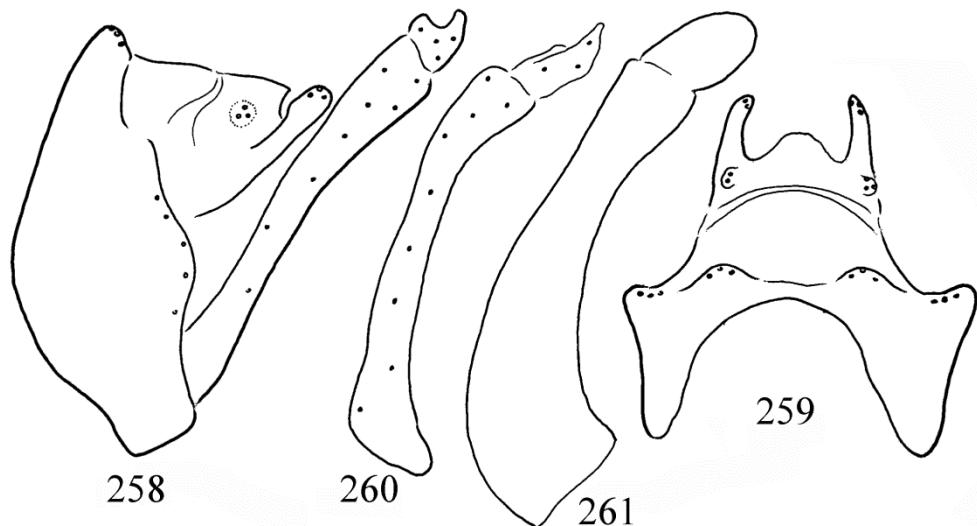
Cheumatopsyche excisa species group created by its bilobous harpago is composed of other characters from several species groups. Most species have long bilobed segment X without well-developed convex mesal plate, a character state of the *Cheumatopsyche dubitans* species group: *C. abhugna*, *C. ceres*, *C. faniel*, *C. guadunica*, *C. rienga*, *C. sara*, *C. transmutata*. Few species have convex mesal plate of *Cheumatopsyche lepida* species group: *C. capronita*, *C. carna*, *C. chuga* sp. nov. *Cheumatopsyche sara* has unsetose mesal plate with convex apical margin, a character state of *Cheumatopsyche lepida* species group. Third and fourth groups of species of bilobed harpago characterized by dorsal interlobular gap very shallow or narrow leading in a few cases to an almost complete fusion of lobes into a monolobed segment X. Shallow dorsal interlobular gap is the character state of *Cheumatopsyche costalis* species group: *C. dangchura* sp. nov., *C. oinamla* sp. nov., *C. excisa*, *C. georgulmeri*, *C. kampuska* sp. nov., *C. mawprana* sp. nov., *C. nonga* sp. nov., *C. nongajra* sp. nov., *C. salaka* sp. nov., *C. trilari*, *C. triptolemos*, *C. yunnana* sp. nov. Narrow dorsal interlobular gap is the character state of *Cheumatopsyche columnata* species group: *C. saltorum*, *C. stigma*. The four types of character combination detected in the *Cheumatopsyche excisa* species group instantiate that retigenetic chimeric structure of integrative organisation is present and functions not only in species level, but also in higher taxa.

This small species group is distributed both in the Oriental mainland and in the Oriental archipelago of Southeast Asia.

***Cheumatopsyche chuga* sp. nov.**

(Figures 258–261, Map 4: n° 69, 87, Map 19)

Material examined. Holotype: **India**, Arunachal Pradesh (Assam), Kameng district, Chug,



Figures 258–261. *Cheumatopsyche chuga* sp. nov. Holotype: 258 = male genitalia in left lateral view, 259 = male genitalia in dorsal view, 260 = left gonopod in ventral view, 261 = phallic organ in left lateral view.

6800–7300 ft., 27°25'07.7"N 92°14'01.0"E, 25–31.VII.1961, leg F. Schmid (1 male, CNC). Paratype: same as holotype (1 male, OPC). India, Assam, Kameng, Bilo La, 5800-6000 ft, [according to the road of Schmid, it should be near Domkho], 27°09'56.4"N 92°13'49.7"E, leg. F. Schmid (1 male, ROM).

Diagnosis. This new species having bilobed harpago belongs to the *Cheumatopsyche excisa* species group. Its trilobed segment X with elongated upward directed ventroapical setose lobe is a character state of the *Cheumatopsyche lepida* species group (Oláh *et al.* 2008a). Most close to *C. abhugna* Oláh & Barnard, 2008, but differs by the longer and more slender ventroapical setose lobes; by the less excised harpago and by the elongated ovoid and not drop-shaped endothecal sclerite.

Description. A uniformly brown coloured small species with forewing length of 7 mm.

Male genitalia. Abdominal segment IX fused annular, short; anterior margin arciform, resulted in a very short dorsum and short but slightly longer ventrum; the ventrum lacks spiny ventrocaudal mesal lobe; apical margin produced into a flat and high lobe above the gonopods, marked with a row of strong spines; intersegmental de-

pression between the ninth and tenth segments low and oblique in lateral view. Body of segment X longer than high, subtriangular in lateral view; circular lateral setose area (cerci) in middle position; apicoventral setose lobe long, elongated capitate in lateral view and slender tapering and slightly mesad turning in dorsal view. The basal segment of the gonopods slightly curving both in lateral and ventral views; harpago, the terminal segment of gonopod bilobed, less excised. Phallic apparatus robust and low with convex dorsum, endothecal sclerites ovoid.

Etymology. *chuga*, named after the *locus typicus* of the holotype.

***Cheumatopsyche rienga* Oláh & Johanson, 2008, stat. restit.**

(Map 19)

Cheumatopsyche rienga Oláh & Johanson, 2008, in Oláh *et al.* 2008a:83–84. Holotype: Vietnam (Ha Son Bin Prov. [=Hà Sơn Bình]), Paratype: Laos (Luang Namtha Prov. [=Louang Namtha]).

Cheumatopsyche carna Malicky & Chantaramongkol, 1997, in Malicky, 1997: Thailand (Tham Than Lod NP, Ban Yang Bong, Mae Rim); Malicky, 2013:48. “*Cheumatopsyche carna* M&C 1997 = *C. rienga* Oláh & Johanson, 2008: Die Abbildungen zeigen keinen Unterschied: NOV. SYN.”

Remarks. Here we cite the original diagnosis of *Cheumatopsyche rienga* Oláh & Johanson, 2008 distinguishing this very small species from its sibling species *C. carna*: “This species is similar to *C. carna* from Thailand, but the lateral interlobular gaps are very short and narrow, not sinuous; the dorsal interlobular is also short and heart-shaped in dorsal view, not deep; the bilobed harpagones have a long undivided basis, which is very short in *C. carna*.”

We have re-examined the holotype and recorded the same delineating characters between the two species. Moreover, the most distinguishing character created by the differently shaped lateral and dorsal interlobular gaps is the shape of the pair of the long ventrolateral setose lobes. Its lateral profile is clearly capitate and obliquely posterad directed in *C. rienga*, but narrowing and upward directed in *C. carna*. The dorsal view confirms these significant divergences between the two species in the shape of the ventrolateral setose lobes. We have also recorded divergences in the position of cerci compared to the positions both to the lateral and dorsal interlobular gaps: gaps are far from cerci in *C. rienga* and nearby in *C. carna*. We have experienced again the inadequacy of apophantic nature of creating synonymies by lumpers applying and relying upon the character states of gross phenomics, while not accepting or rather neglecting the reality of fine phenomics, especially the fine phenomics of speciation traits. However, the real knowledge of the exact taxonomic position of *C. carna* and *C. rienga* requires population sampling and research on the whole distributional area, including contact populations. Here we reinstate the species status of *Cheumatopsyche rienga* Oláh & Johanson, 2008, **stat. restit.**

Cheumatopsyche costalis species group

Species group of bilobed segment X with shortened ventroapical lobe (Oláh *et al.* 2008a). A pair of setose ventroapical lobe shortened into a reduced process or just a wart mostly straight both in dorsal and lateral aspects. Interlobular gaps at the termination of segment X very much reduced, visible only in dorsal aspect, usually as a shallow

and wide gap. However, the length of the ventroapical setose lobes could be intermediate between short (*costalis* group) and long (*dubitans* group). Distributed in South and Southeast Asia, including the Southeast Asian archipelago.

Cheumatopsyche dangchura sp. nov.

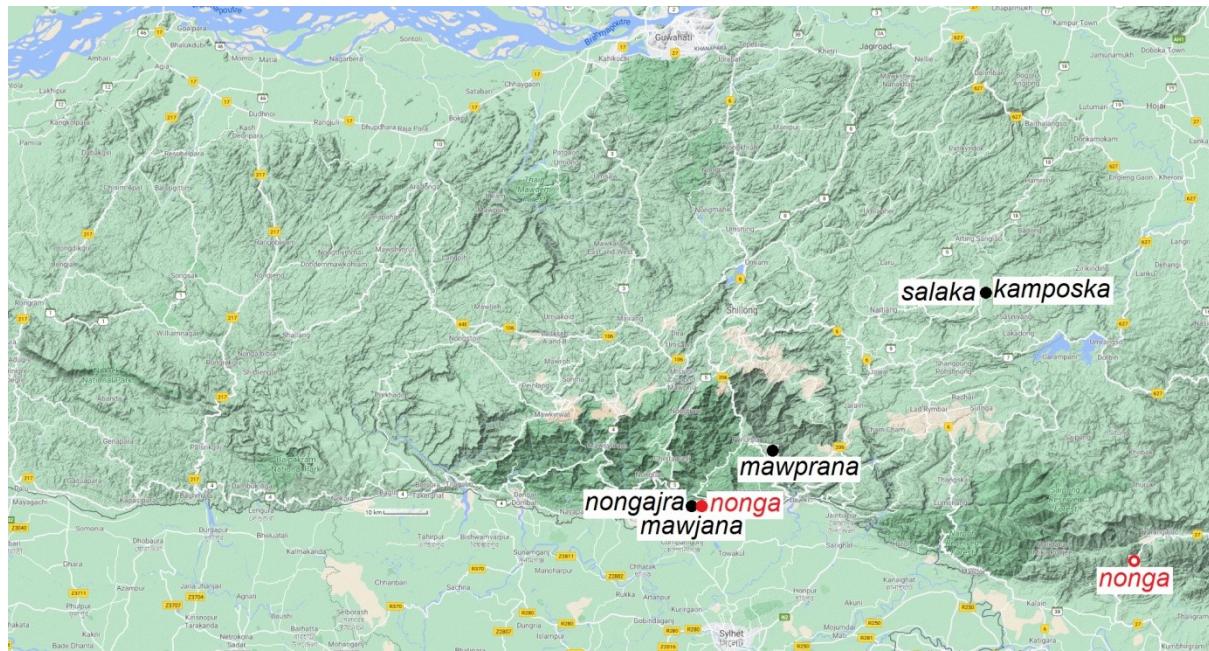
(Figures 262–265, Map 2: n° 16, Map 21)

Material examined. Holotype: **India**, Uttarakhand, Tehri Garhwal, Dangchura = Dang Chanra, 3000–3200 ft., 2 small brooks tributary of Takali Gad, 30°15'55.8"N 78°43'02.2"E, 25.IV. 1958, leg. F. Schmid (1 male, CNC). Paratype: same as holotype (1 male, OPC).

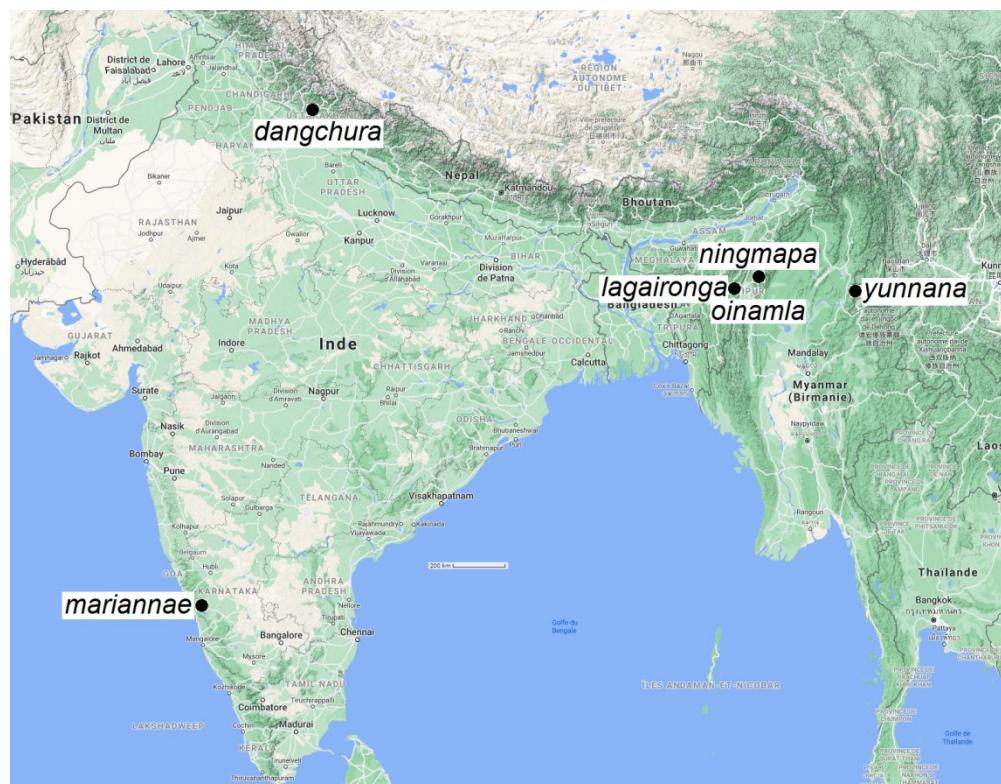
Diagnosis. This new species having bilobed segment X with shortened ventroapical lobe belongs to the *Cheumatopsyche costalis* species group (Oláh *et al.* 2008a). According to the structure of segment X, the gonopod, especially the harpago and the phallic organ, this small, delicate brown species is most close to the *Cheumatopsyche ningmapa* but differs by the dorsal and lateral profiles of segment X. The setose ventroapical lobes has lost its stalk or stem and resulted in a low (shallow) interlobular gap.

Description. A uniformly brown coloured small species with forewing length of 5 mm.

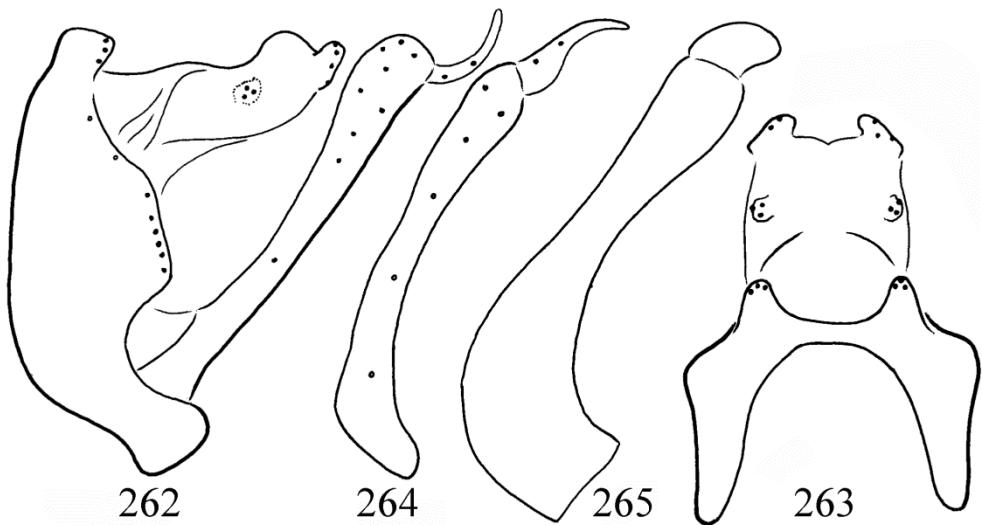
Male genitalia. Abdominal segment IX fused annular, short; anterior margin arciform, resulted in a very short dorsum and short but slightly longer ventrum; the ventrum is without spiny ventrocaudal mesal lobe; apical margin is produced into a flat lobe above the gonopods, marked with a row of strong spines; intersegmental depression between the ninth and tenth segments oblique and deep in lateral view. Body of segment X longer than high; circular lateral setose area (cerci) in middle position; apicoventral setose lobe discernible as an obliquely positioned slightly elongated structure as visible both in dorsal and lateral views. The basal segment of the gonopods straight dilating apicad in lateral view; harpago, the terminal segment, slender digitate arching in lateral and broad-based in ventral views. Phallic apparatus with constricted middle and broadening



Map 20. *Cheumatopsyche costalis* group with only Meghalaya.



Map 21. *Cheumatopsyche costalis* group outside Meghalaya.



Figures 262–265. *Cheumatopsyche dangchura* sp. nov. Holotype: 262 = male genitalia in left lateral view, 263 = male genitalia in dorsal view, 264 = left gonopod in ventral view, 265 = phallic organ in left lateral view.

apicoventrum; the pair of endothecal sclerites elongated, downward directed.

Etymology. *dangchura*, named after the *locus typicus* of the holotype.

Cheumatopsyche kampuska sp. nov.

(Figures 266–269, Map 5: n° 72, Map 20)

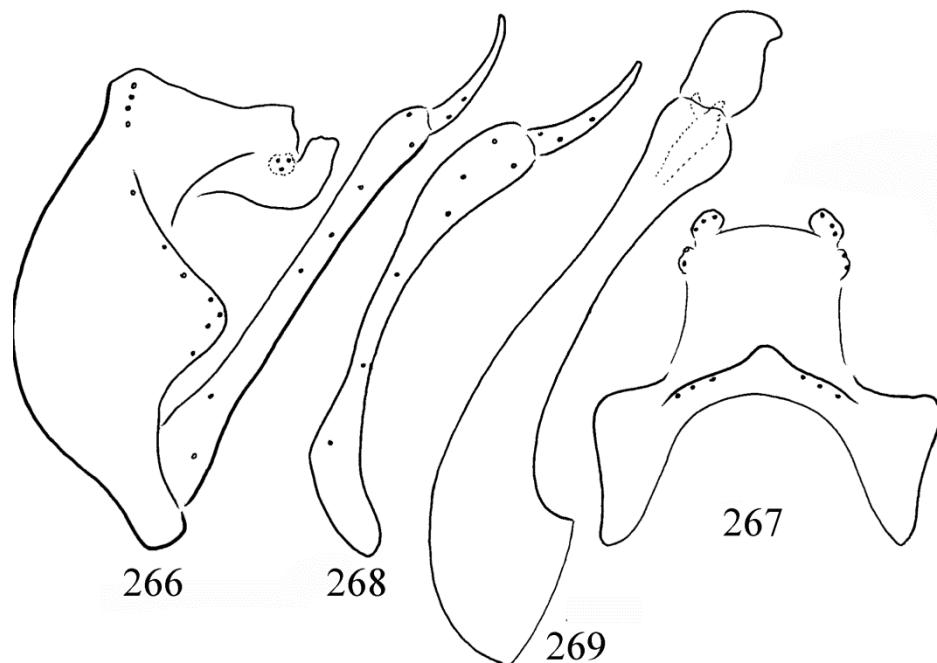
Material examined. Holotype: **India**, Meghalaya (United Jaintia and Khasi Hills), Barato, 2500 ft., 25°36'24.1"N 92°27'23.1"E, 24.IV.1960, leg. F. Schmid (1 male, CNC).

Diagnosis. This new species having bilobed segment X with shortened ventroapical lobe belongs to the *Cheumatopsyche costalis* species group (Olah *et al.* 2008a). According to the structure of segment X, the gonopod, especially the harpago and the phallic organ, this small delicate brown species most close to the *Cheumatopsyche cressida* of the *Cheumatopsyche concava* species group described from Nepal. However, its ventroapical setose lobe clearly enlarged, as visible both in lateral and dorsal views, a character state of the *C. costalis* group and not reduced, not vestigial, a character state of the *C. concava* species group. There are other divergences between the two species. At *C. kampuska*

sp. nov. the coxopodite of gonopods much longer; the hooked endothecal sclerites of the phallic organ much longer as well as the apical region of the phallotheca more produced broad ventrad, than dorsad.

Description. A uniformly brown coloured small species with forewing length of 5 mm.

Male genitalia. Abdominal segment IX fused annular, short; anterior margin arciform, resulted in a very short dorsum and short but slightly longer ventrum; the ventrum is without spiny ventrocaudal mesal lobe; apical margin is produced into a triangular lobe above the gonopods, marked with a row of strong spines; intersegmental depression between the ninth and tenth segments oblique and very shallow in lateral view. Body of segment X longer than high; circular lateral setose area (cerci) in apical position; apicoventral setose lobe discernible as a small rectangular setose lobe as visible both in dorsal and lateral views. The basal segment of the gonopods straight slightly dilating apicad in lateral and more dilated in ventral view; harpago, the terminal segment, slender digitate slightly arching both in lateral and ventral views. Phallic apparatus with constricted middle and broadening apicodorsum and more apicoventrum; the pair of endothecal sclerites hooked, elongated.



Figures 266–269. *Cheumatopsyche kamposka* sp. nov. Holotype: 266 = male genitalia in left lateral view, 267 = male genitalia in dorsal view, 268 = left gonopod in ventral view, 269 = phallic organ in left lateral view.

Etymology. *kamposka*, coined from “kam-póška” diminutive form of hooked in Hungarian, refers to the hook-shaped endothecal sclerite of the phallic organ.

Cheumatopsyche lagaironga sp. nov.

(Figures 270–273, Map 6: n° 6, 50, Map 21)

Material examined. Holotype: **India**, Manipur, Lagairong, 500–1000 ft., 24°42'02.4"N 93°31'55.8"E, 26.V.1960, leg. F. Schmid (1 male, CNC). Paratype: India, Manipur, Chattrik, 1500 ft., 24°57'35.8"N 94°35'30.7"E, 22.VII.1960, leg. F. Schmid (1 male, OPC).

Diagnosis. This new species having bilobed segment X with shortened ventroapical lobe belongs to *Cheumatopsyche costalis* species group (Oláh *et al.* 2008a). According to the structure of segment X and the phallic organ, this small delicate brown species most close to the *Cheumatopsyche salaka* sp. nov. described from Meghalaya, but differs by the lateral profile of segment X having anterad directed hook shaped apicoventral setose lobe, not simple upward turning

lobe as well as the endothecal sclerites are short, not long.

Description. A uniformly brown coloured small species with forewing length of 5 mm.

Male genitalia. Abdominal segment IX fused annular, short; anterior margin arciform, resulted in a very short dorsum and longer ventrum; the ventrum without spiny ventercaudal mesal lobe; apical margin straight vertical, marked with a row of strong spines and ventrad terminated in a blunt triangular lobe above the gonopods; intersegmental depression between the ninth and tenth segments present, right angled in lateral view. Body of segment X longer than high; circular lateral setose area (cerci) in middle position; apicoventral setose lobe discernible as incompletely fused to the apicoventrum of the segment and present as a small setose lobe with anterad directed hook formation as visible both in dorsal and lateral views. The basal segment of the gonopods straight dilating apicad, both in ventral and dorsal views; harpago, the terminal segment broad basal half slender digitate slightly S-forming in ventral view. Phallic apparatus with

straight dorsum and broadening ventrum; the pair of endothecal sclerites rounded, slightly longer than high.

Etymology. *lagaironga*, named after the *locus typicus* of the holotype.

Cheumatopsyche mariannae Oláh & Johanson, 2008

(Map 21)

Cheumatopsyche mariannae Oláh & Johanson, 2008b: 206–207. „Holotype male: India, Karnataka, Shimoga District, Jog Falls, MV lamp, 14°13'45.4"N 74°48'44.9"E, 2–8.III.1980.”

Material examined. **India**, Tamil Nadu (Madras), Komadi.

Remarks: This locality remains unknown; it should be placed between Courtallam and Sothuparai, 950 ft, 18.–19.I.1962, leg. F. Schmid (1 male, CNC; 1 male, OPC, 1 male SMNH). India, Tamil Nadu (Madras), Kattalaimala, this locality should be in the surroundings of Courtallam and Kannupulimedu, it probably corresponds to Kot-

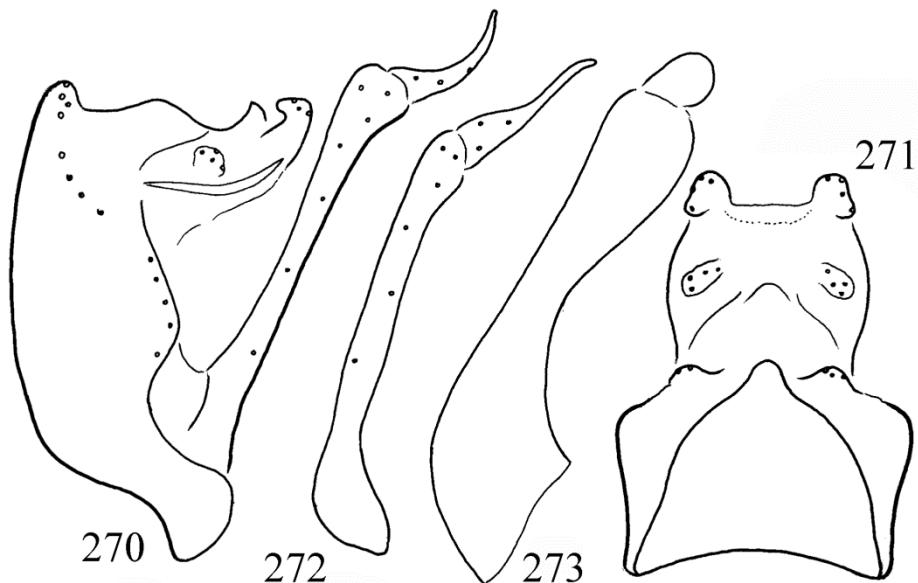
tamalai, 1000 ft, 9°13'33.3"N 77°19'06.9"E, 16.–17.I.1962, leg. F. Schmid (1 male, CNC).

Cheumatopsyche mawjana sp. nov.

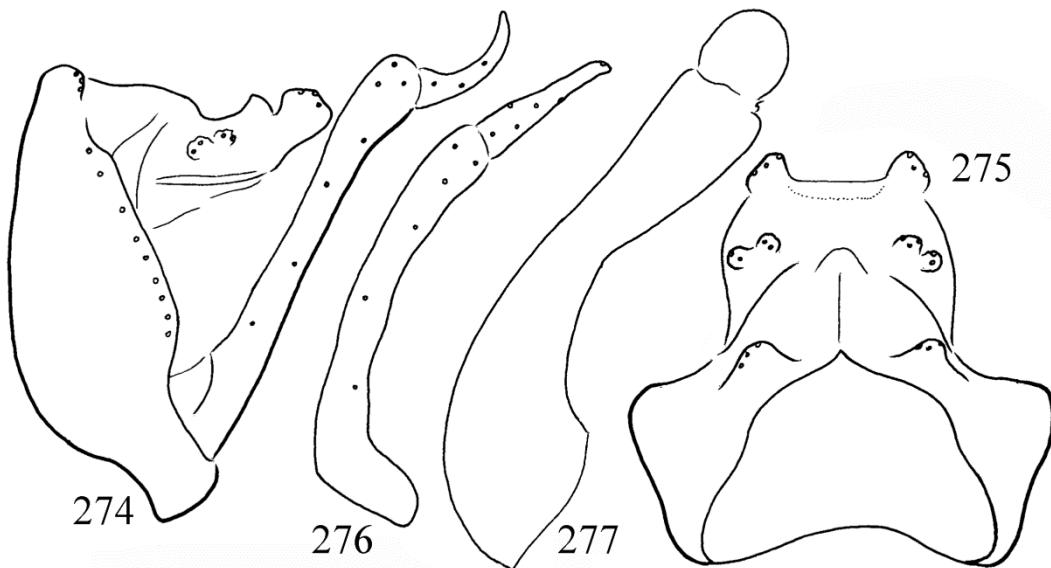
(Figures 274–277, Map 5: n° 48, 49, Map 20)

Material examined. Holotype: **India**, Meghalaya (United Jaintia and Khasi Hills), Mawja, 550ft. *Remarks:* This locality remains unknown but should be close to the next Schmid's locality on its road map (Map 5: n° 49): Hat Nongjri, 350 ft, 25°10'18.4"N 91°46'54.9"E, 30.III.1960, leg. F. Schmid (1 male, CNC). Paratype: same as holotype (1 male, CNC, 1 male, OPC; 1 male, SMNH). India, Meghalaya (United Jaintia and Khasi Hills), Nongiri [=Hat Nongjri], 350 ft, 25°10'18.4"N 91°46'54.9"E, 31.III.1960, leg. F. Schmid (5 males, CNC).

Diagnosis. This new species having bilobed segment X with shortened ventroapical lobe belongs to the *Cheumatopsyche costalis* species group (Oláh *et al.* 2008a). According to the structure of segment X, this small, delicate brown species is most close to *Cheumatopsyche dang-*



Figures 270–273. *Cheumatopsyche lagaironga* sp. nov. Holotype: 270 = male genitalia in left lateral view, 271 = male genitalia in dorsal view, 272 = left gonopod in ventral view, 273 = phallic organ in left lateral view.



Figures 274–277. *Cheumatopsyche mawjana* sp. nov. Holotype: 274 = male genitalia in left lateral view, 275 = male genitalia in dorsal view, 276 = left gonopod in ventral view, 277 = phallic organ in left lateral view.

chura sp. nov., but differs by the subtle divergences in the dorsal and lateral profiles of segment X as well as by the entirely diverged ventral shape of the harpago and the completely circular, not downward bending endothecal sclerites of the phallic organ.

Description. A uniformly brown coloured small species with forewing length of 6 mm.

Male genitalia. Abdominal segment IX fused annular, short; anterior margin arciform, resulted in a short dorsum and short but slightly longer ventrum; the ventrum without spiny ventrocaudal mesal lobe; apical margin produced into a flat lobe above the gonopods, marked with a row of strong spines; intersegmental depression between the ninth and tenth segments oblique and deep in lateral view. Body of segment X longer than high; bilobed cerci in middle position; apicoventral setose lobe discernible as a small knob-structure as visible both in dorsal and lateral views. The basal segment of the gonopods straight dilating apicad in lateral view; harpago, the terminal segment, slender digitate, arching in lateral and straight, evenly narrowing in ventral views. Phallic apparatus with constricted middle and broadening apicoventrum; the pair of endothecal sclerites circular.

Etymology. *mawjana*, named after the *locus typicus* of the holotype.

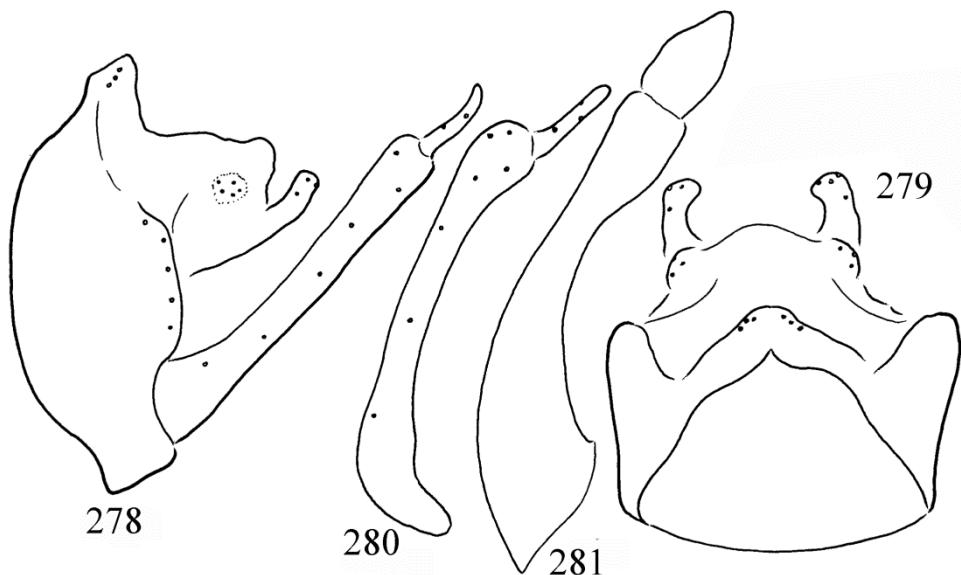
Cheumatopsyche mawprana sp. nov.

(Figures 278–281, Map 5: n° 60, Map 20)

Material examined. Holotype: **India**, Meghalaya (United Jaintia and Khasi Hills), Mawpran, 900 ft., 25°17'21.7"N 91°57'57.3"E, 10.IV.1960, leg. F. Schmid (1 male, CNC).

Diagnosis. This new species having bilobed segment X with shortened ventroapical lobe belongs to the *Cheumatopsyche costalis* species group (Oláh *et al.* 2008a). According to the structure of segment X and the phallic organ this small, delicate brown species is most close to *Cheumatopsyche kampuska* sp. nov. described from Barato, Meghalaya, but differs by the lateral profile of segment X, the intersegmental profile between segments IX and X very deep, not shallow; by the narrowing, almost pointed apical tip of the endothecal sclerites, not hooked and by the shorter digitate harpago.

Description. A uniformly brown coloured small species with forewing length of 5 mm.



Figures 278–281. *Cheumatopsyche mawprana* sp. nov. Holotype: 278 = male genitalia in left lateral view, 279 = male genitalia in dorsal view, 280 = left gonopod in ventral view, 281 = phallic organ in left lateral view.

Male genitalia. Abdominal segment IX fused annular, short; anterior margin arciform, resulted in a short dorsum and short but little longer ventrum; the ventrum is without spiny ventrocaudal mesal lobe; apical margin straight, vertical, marked with a row of strong spines and ventrad terminated in a triangular lobe above the gonopods; intersegmental profile between the ninth and tenth segments present, very deep in lateral view. Body of segment X as long as high; circular lateral setose area (cerci) in subapical position; apicentral setose lobe rather long discernible in lateral view and mesad turning in dorsal view. The basal segment of the gonopods straight almost parallel-sided, without pronounced dilatation in lateral view; harpago, the terminal segment short digitate. Phallic apparatus with a pair of endothecal sclerites narrowing apicad.

Etymology. *mawprana*, named after the *locus typicus* of the holotype.

Cheumatopsyche ningmapa Schmid, 1975

(Map 6: n° 31, Map 21)

Material examined. **India**, Manipur, Khan-gairim. It probably corresponds to Khangkhai

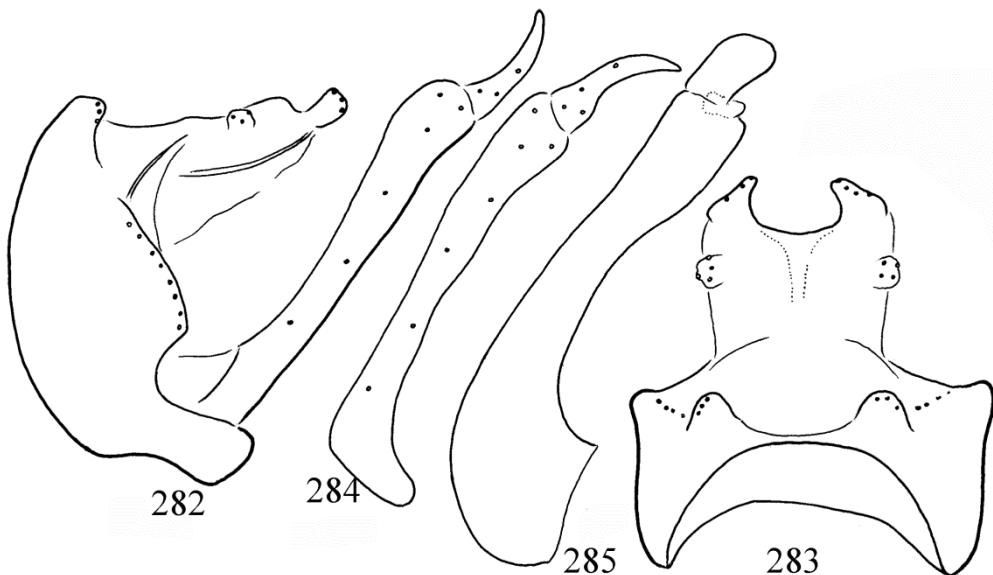
Khullen, 4145 ft, 25°05'58.7"N 94°23'35.8"E, 29. VI.1960, leg. F. Schmid (1 male, 1 female, CNC; 2 males, OPC). India, Manipur, Chattrik, 4500 ft., 23.VII.1960, leg. F. Schmid (1 male, CNC).

Cheumatopsyche nonga sp. nov.

(Figures 282–285, Map 5: n° 50, 82, 84, Map 20)

Material examined. Holotype: **India**, Meghalaya (United Jaintia and Khasi Hills), Nongjri, 300 ft., 25°10'18.4"N 91°46'54.9"E, 1.IV.1960, leg. F. Schmid (1 male, CNC). Paratype: India, Assam, United District of Mikir and North Cachar Hills, Bandarkhal, 300 ft., 25°03'31.1"N 92°48'02.5"E, 9. V. 1960, leg. F. Schmid (1 male, OPC). India, Assam, United District of Mikir and North Cachar Hills, Bangku [= Nangku], 700 ft., 7.V.1960, leg. F. Schmid (2 males, CNC).

Diagnosis. This new species having bilobed segment X with shortened ventroapical lobe belongs to the *C. costalis* species group (Oláh *et al.* 2008a). According to the structure of segment X, the gonopod, especially the harpago and the phallic organ, this small, delicate brown species is most close to the *C. ningmapa* but differs by location of cerci, shifted dorsad, not with middle



Figures 282–285. *Cheumatopsyche nonga* sp. nov. Holotype: 282 = male genitalia in left lateral view, 283 = male genitalia in dorsal view, 284 = left gonopod in ventral view, 285 = phallic organ in left lateral view.

position; by the lateral profiles of segment X; its dorsum flat without the pronounced character state of the definite hump manifested by the elevated basal margin of the interlobular gap or excision; differs also by the abbreviated endothecal sclerite.

Description. A uniformly brown coloured small species with forewing length of 6 mm.

Male genitalia. Abdominal segment IX fused annular, short; anterior margin arciform, resulted in a very short dorsum and short but little longer ventrum; the ventrum without spiny ventrocaudal mesal lobe; apical margin produced into a flat lobe above the gonopods, marked with a row of strong spines; intersegmental depression between the ninth and tenth segments oblique and low in lateral view. Body of segment X longer than high; circular lateral setose area (cerci) in dorsal position; apicoventral setose lobe discernible as a obliquely positioned slightly elongated structure as visible both in dorsal and lateral views. The basal segment of the gonopods straight dilating apicad in lateral view; harpago, the terminal segment, slender digitate arching in lateral and broad-based in ventral views. Phallic apparatus with constricted middle and broadening apico-

ventrum; the pair of endothecal sclerites abbreviated, downward directed.

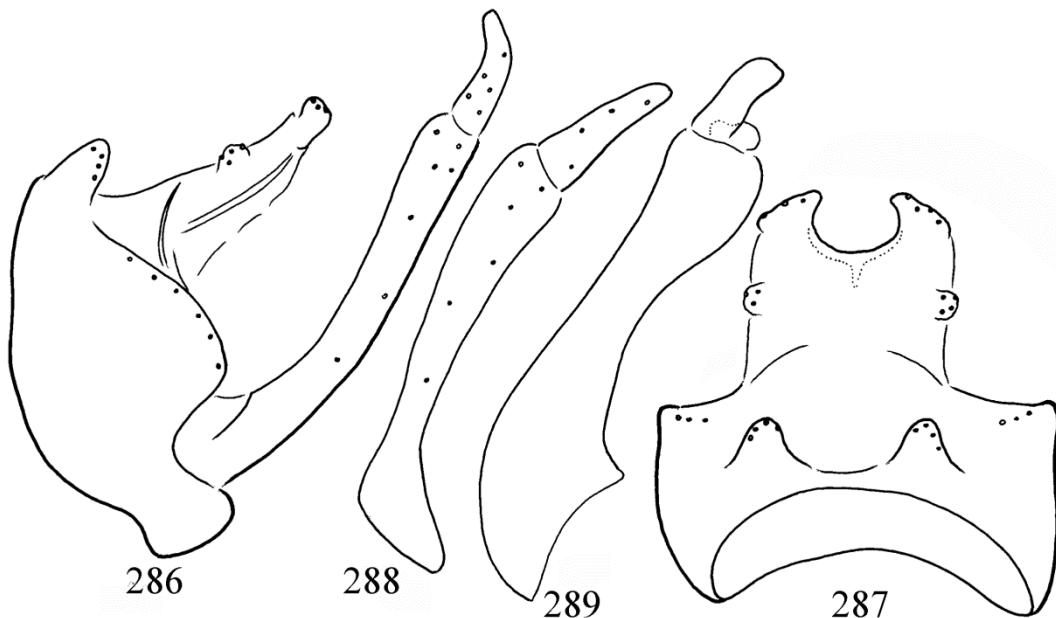
Etymology. *nonga*, coined from the name of the *locus typicus* of the holotype.

Cheumatopsyche nongajra sp. nov.

(Figures 286–289, Map 5: n° 50, Map 20)

Material examined. Holotype: **India**, Meghalaya (United Jaintia and Khasi Hills), Nongjri [=Hat Nongjri], 300 ft, 25°10'18.4"N 91°46'54.9"E, 1.IV.1960, leg. F. Schmid (1 male, CNC).

Diagnosis. This new species having bilobed segment X with shortened ventroapical lobe belongs to the *Cheumatopsyche costalis* species group (Oláh *et al.* 2008a). According to the structure of segment X, the gonopod, especially the harpago and the phallic organ, this small, brown species most close to *Cheumatopsyche nonga* sp. nov. but differs by the lateral profile of segment X; by the robust harpago especially discernible in ventral view, as well as by the lateral profile of the phallotheca with its broad, almost semicircular head in lateral view and by very low endothecal sclerites.



Figures 286–289. *Cheumatopsyche nongajra* sp. nov. Holotype: 286 = male genitalia in left lateral view, 287 = male genitalia in dorsal view, 288 = left gonopod in ventral view, 289 = phallic organ in left lateral view.

Description. A uniformly brown coloured small species with forewing length of 6 mm.

Male genitalia. Abdominal segment IX fused annular, short; anterior margin arciform, resulted in a very short dorsum and short but slightly longer ventrum; the ventrum lacks spiny ventrocaudal mesal lobe; apical margin produced into a flat lobe above the gonopods, marked with a row of strong spines; intersegmental depression between the ninth and tenth segments oblique and low in lateral view. Body of segment X longer than high; circular lateral setose area (cerci) in dorsal position; apicoventral setose lobe discernible as a obliquely positioned slightly elongated structure as visible both in dorsal and lateral views. The basal segment of the gonopods straight dilating apicad in lateral view; harpago, the terminal segment broad, robust. Phallic apparatus with constricted middle and broadening, almost semicircular apicoventrum; the pair of endothecal sclerites low and elongated, slightly downward directed.

Etymology. *nongajra*, coined from the name of the *locus typicus* of the holotype.

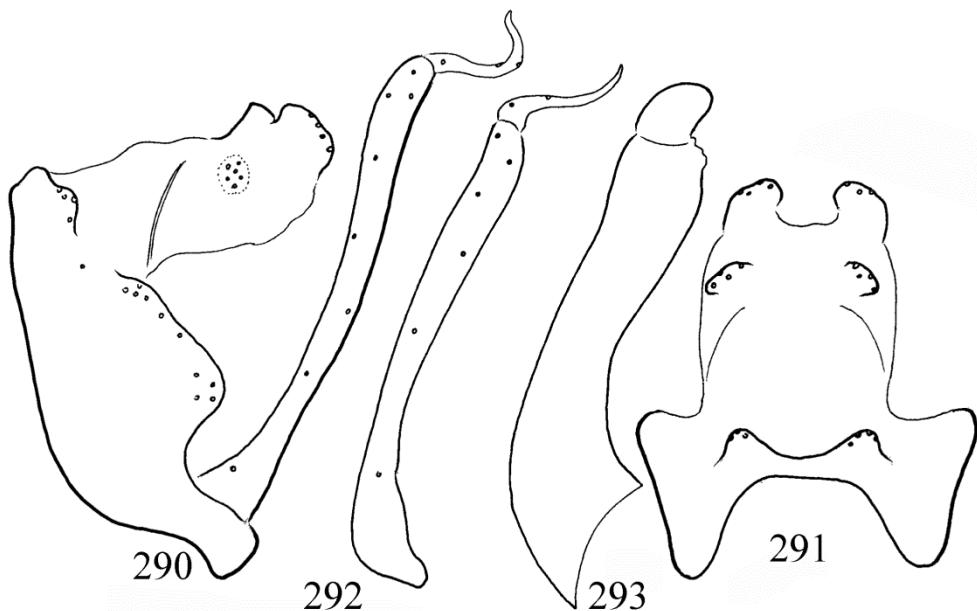
Cheumatopsyche oinamla sp. nov.

(Figures 290–293, Map 6: near n° 4, Map 21)

Material examined. Holotype: **India**, Manipur, (Oinamlong) Dinamlong, 300 ft., 22°–23°V.1960, this locality remains unknown but should be near the next locality on the Schmid's collecting road in Manipur: Kambiron, 24°44'46.9"N 93°23'01.7"E, leg. F. Schmid (1 male, CNC). Paratypes: same as holotype (6 males, CNC; 1 male, OPC; 1 male, SMNH).

Diagnosis. This new species having bilobed segment X with shortened ventroapical lobe belongs to the *Cheumatopsyche costalis* species group (Oláh *et al.* 2008a). According to the structure of segment X, the gonopod, especially the harpago and the phallic organ, this small, delicate brown species is most close to the *Cheumatopsyche dangchura* sp. nov. but differs by the stout ventroapical setose lobe, by the very slender coxopodite, the spiraling harpago, and the low and robust phallic organ.

Description. A uniformly brown coloured small species with forewing length of 5 mm.



Figures 290–293. *Cheumatopsyche oinamla* sp. nov. Holotype: 290 = male genitalia in left lateral view, 291 = male genitalia in dorsal view, 292 = left gonopod in ventral view, 293 = phallic organ in left lateral view.

Male genitalia. Abdominal segment IX fused annular, short; anterior margin arciform, resulted in a very short dorsum and ventrum; the ventrum without spiny ventrocaudal mesal lobe; apical margin produced into a flat lobe above the gonopods, marked with a row of strong spines; intersegmental depression between the ninth and tenth segments low in lateral view. Body of segment X longer than high; circular lateral setose area (cerci) in middle position; apicoventral setose lobe discernible as an obliquely positioned slightly elongated structure as visible both in dorsal and lateral views. The basal segment of the gonopods slim slender in lateral view; harpago, the terminal segment slim and somehow spiraling. Phallic apparatus robust with low phallobase; the pair of endothecal sclerites low, elongated, slightly downward directed.

Etymology. *oinamla*, coined from the name of the *locus typicus* of the holotype.

Cheumatopsyche salaka sp. nov.

(Figures 294–297, Map 5: n° 72, Map 20)

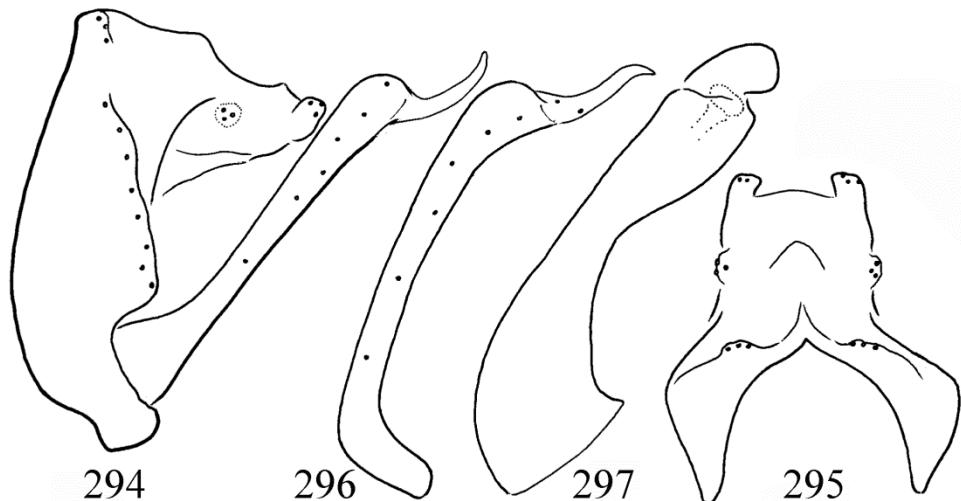
Material examined. Holotype: **India**, Meghalaya (United Jaintia and Khasi Hills), Barato,

2500 ft., 25°36'24.1"N 92°27'23.1"E, 24.IV.1960, leg. F. Schmid (1 male, CNC).

Diagnosis. This new species having bilobed segment X with shortened ventroapical lobe belongs to *Cheumatopsyche costalis* species group (Oláh *et al.* 2008a). According to the structure of segment X and the phallic organ this small, delicate brown species is most close to *Cheumatopsyche jaekam* described from Thailand, but differs by the lateral profile of segment X, by the longer subapical ventral broadening of the phallotheca and by the S-shaped formation on the head of the gonopod.

Description. A uniformly brown coloured small species with forewing length of 5 mm.

Male genitalia. Abdominal segment IX fused annular, short; anterior margin arciform, resulted in a very short dorsum and short but slightly longer ventrum; the ventrum is without spiny ventrocaudal mesal lobe; apical margin is straight vertical, marked with a row of strong spines and ventrad terminated in a triangular lobe above the gonopods; intersegmental depression between the ninth and tenth segments present, shallow in lateral view. Body of segment X longer than high;



Figures 294–297. *Cheumatopsyche salaka* sp. nov. Holotype: 294 = male genitalia in left lateral view, 295 = male genitalia in dorsal view, 296 = left gonopod in ventral view, 297 = phallic organ in left lateral view.

circular lateral setose area (cerci) in middle position; apicoventral setose lobe discernible as incompletely fused to the apicoventrum of the segment and discernible as a small rectangular setose lobe as visible both in dorsal and lateral views. The basal segment of the gonopods straight dilating apicad, both in ventral and dorsal views; harpago, the terminal segment slender digitate S-forming in ventral view. Phallic apparatus with straight dorsum and broadening ventrum; the pair of endothecal sclerites rounded, slightly longer than high.

Etymology. *salaka*, coined from “S-alakú” S-shaped in Hungarian, refers to the S-shaped formation of the gonopod head in ventral view.

Cheumatopsyche yunnana sp. nov.

(Figures 298–301, Map 21)

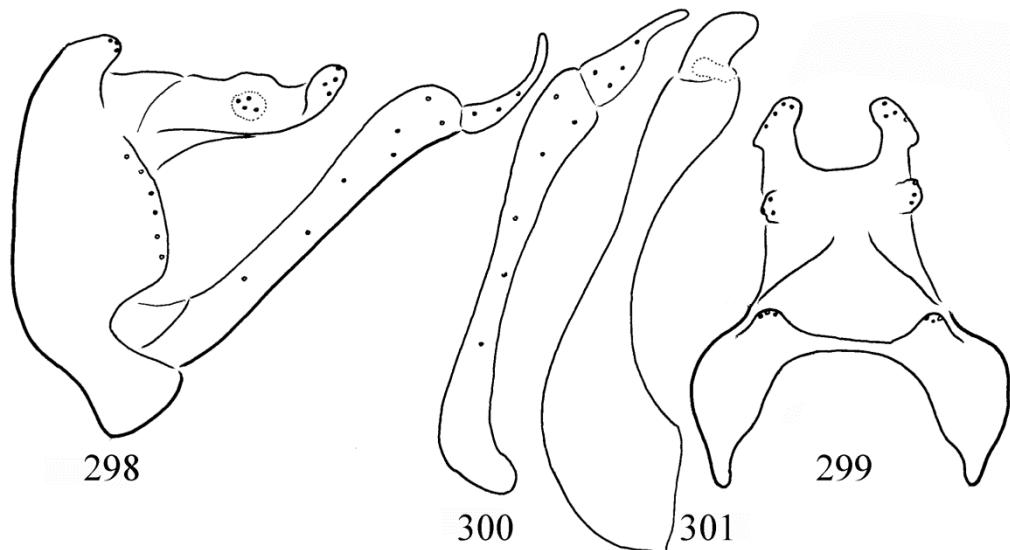
Cheumatopsyche ningmapa Schmid, 1975. Oláh *et al.* 2020b: 201. Misidentification.

Material examined. Holotype: China, Yunnan Province, Tongbiguanxiang, Jinzhuzhai, 1450 m, 24°36'55.8"N 97°36'51.1"E, 3.V.2012, leg. Liu Yuanye (1 male, OPC). Paratype: same as holotype (50 males, DPP-HIST; 49 males, OPC).

Diagnosis. This new species having bilobed segment X with shortened ventroapical lobe belongs to the *Cheumatopsyche costalis* species group (Oláh *et al.* 2008a). According to the structure of segment X, the gonopod, especially the harpago and the phallic organ this small, delicate brown species is most close to *Cheumatopsyche ningmapa* but differs by the more broad-based harpago, by the dorsal and lateral profiles of segment X. The interlobular gap is deeper and wider in dorsal view as well as the setose ventroapical lobes are more developed and more oblique, not at the end of their stalk.

Description. A uniformly brown coloured small species with forewing length of 5 mm.

Male genitalia. Abdominal segment IX fused annular, short; anterior margin arciform, resulted in a very short dorsum and short but slightly longer ventrum; the ventrum lacks spiny ventrocaudal mesal lobe; apical margin produced into a rounded lobe above the gonopods, marked with a row of strong spines; intersegmental depression between the ninth and tenth segments deep in lateral view. Body of segment X longer than high; circular lateral setose area (cerci) in middle position; apicoventral setose lobe discernible as a well produced rectangular setose lobe as visible both in dorsal and lateral views. The basal segment of the



Figures 298–301. *Cheumatopsyche yunnana* sp. nov. Holotype: 298 = male genitalia in left lateral view, 299 = male genitalia in dorsal view, 300 = left gonopod in ventral view, 301 = phallic organ in left lateral view.

gonopods straight slightly dilating apicad in lateral and ventral views; harpago, the terminal segment with more develop basal broadening. Phallic apparatus with constricted middle and broadening apicodorsum and more apicoventrum; the pair of endothecal sclerites elongated, downward directed.

Etymology. *yunnana*, named after the *locus typicus* of the holotype.

***Cheumatopsyche concava* species group**

Species group of monolobed segment X with almost fused ventroapical lobe. All the processes or lobes on segment X are fused, except the small wart-like, more or less elevated lateral setose surface area of cerci. The setose ventroapical lobe regularly fused to the apical margin of segment X and delineated only by its setose surface or by an abbreviated vestigium. As a result, both the dorsal and lateral interlobular gaps disappeared or very reduced. Wart-like lateral setose area, the vestigium of preanal appendages located centrally on segment X. Spiny ventroapical lobe on segment IX present or absent. Distributed in South and Southeast Asia, including the Southeast Asian Archipelago.

***Cheumatopsyche cressida* Malicky, 1997**

(Map 5: n° 59, Map 22)

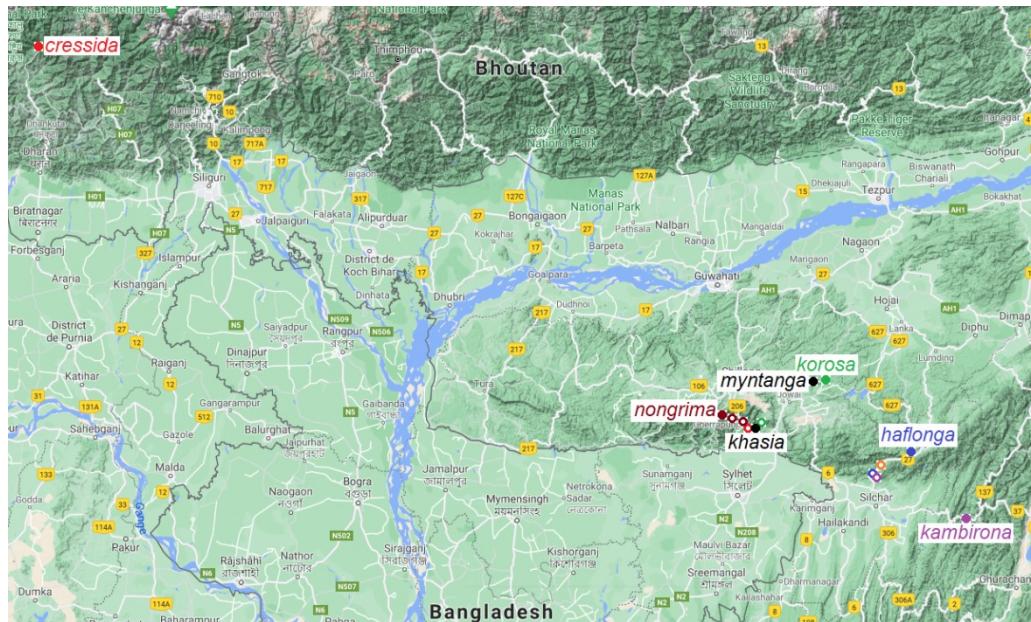
Cheumatopsyche cressida Malicky, 1997:1031. “Holotype: Nepal, Arun River Valley, 1600m, probably near this point: 27°32'52.2"N 87°16'33.3"E, 27.IV.-8.V.1994.”

Material examined. **India**, Meghaláya (United Jaintia and Khasi Hills), Mawpran [=Mawpran Nonglyndiang], 2000 ft, 25°18'27.3"N 91°58'05.7"E, 9.IV.1960, leg. F. Schmid (2 males, CNC; 1 male, SMNH; 1 male, OPC).

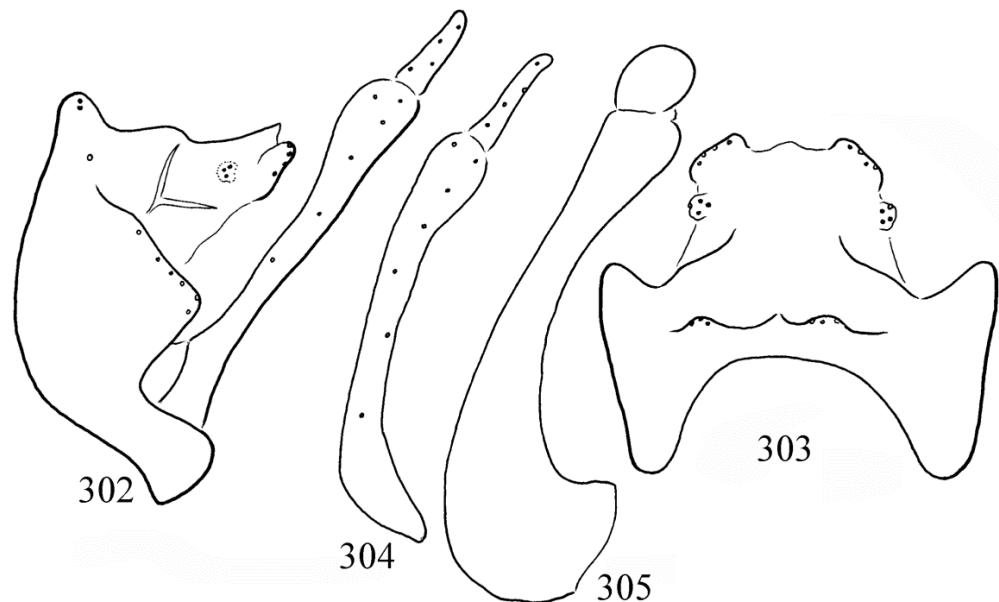
***Cheumatopsyche haflonga* sp. nov.**

(Figures 302–305, Map 5: n° 80, 85, Map 22)

Material examined. Holotype: **India**, Southern Assam, United District of Mikir and North Cachar Hills, Haflong, 1500 ft., 25°09'43.8"N 93°00'54.3"E, 5.V.1960, leg. F. Schmid (1 male, CNC). Paratype: same as holotype (4 males, CNC; 1 male, OPC; 1 male, SMNH). India, Southern Assam, United District of Mikir and North Cachar Hills, Sirtrang (unknown locality between Rongbong Ronghang and Terang Gaon), 1400 ft., 28.IV.1960, leg. F. Schmid (1 male, CNC). India,



Map 22. *Cheumatopsyche concava* group.



Figures 302–305. *Cheumatopsyche haflonga* sp. nov. Holotype: 302 = male genitalia in left lateral view, 303 = male genitalia in dorsal view, 304 = left gonopod in ventral view, 305 = phallic organ in left lateral view.

Southern Assam, United District of Mikir and North Cachar Hills, Damchara, 250 ft., 25°00' 44.8"N 92°44'57.3"E, 10.V.1960, leg. F. Schmid (1 male, CNC).

Diagnosis. This new species having mono-lobed segment X that is the ventroapical pair of setose lobes fused to the body of segment X belongs to the *Cheumatopsyche concava* species

group (Oláh *et al.* 2008a). According to the structure of segment X and the phallic organ this small, delicate brown species is most close to *Cheumatopsyche myntanga* sp. nov., but differs by the slightly light-spotted forewing; the triangular, not rounded triangular apical lobe of segment IX; the very slim middle of the gonopod; the shape and position of the fused ventroapical setose lobe, the rounded, not elongated endothecal sclerites of the phallic organ.

Description. A uniformly brown coloured small species with forewing length of 6 mm.

Male genitalia. Abdominal segment IX fused annular, short; anterior margin arciform, resulted in a very short dorsum and short but slightly longer ventrum; the ventrum is without spiny ventro-caudal mesal lobe; apical margin is straight vertical, its dorsal region is marked with a row of strong spines and ventrad terminated in a triangular lobe above the gonopods; intersegmental depression between the ninth and tenth segments present, deep and step-wise in lateral view. Body of segment X longer than high; slightly elongated lateral setose area (cerci) in middle position; apicoventral setose lobe discernible as incompletely fused to the apicoventrum of the segment and discernible as a small setose lobe with shal-

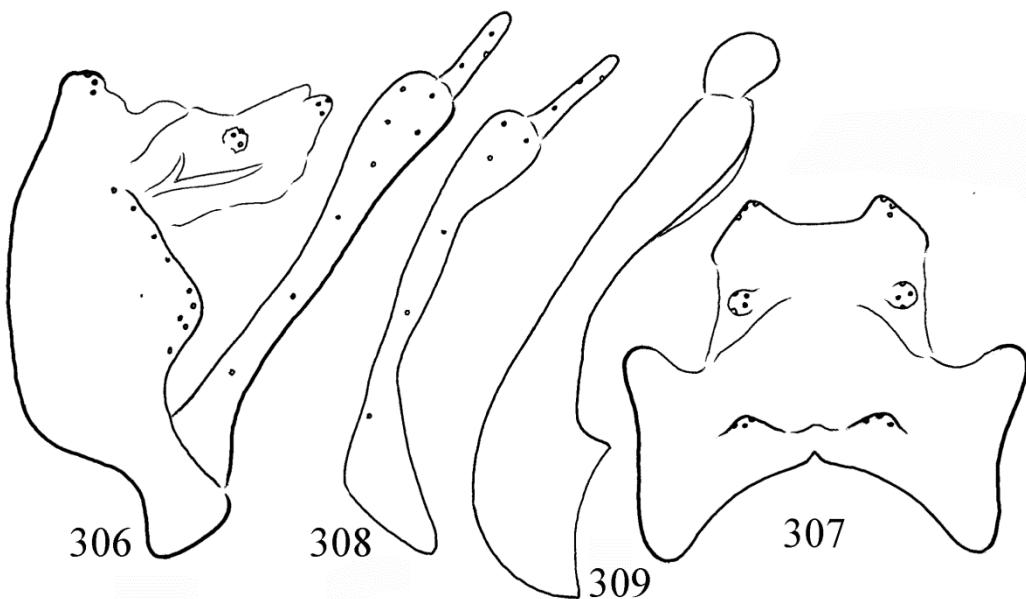
low excision middle as visible both in dorsal and lateral views. The basal segment of the gonopods straight dilating basad and apicad, slim between, especially in lateral view; harpago, the terminal segment slender digitate. Phallic apparatus with straight dorsum, posterad curving basad and broadening apicoventrum; the pair of endothecal sclerites rounded, slightly longer than high.

Etymology. *haflonga*, named after the *locus typicus* of the holotype.

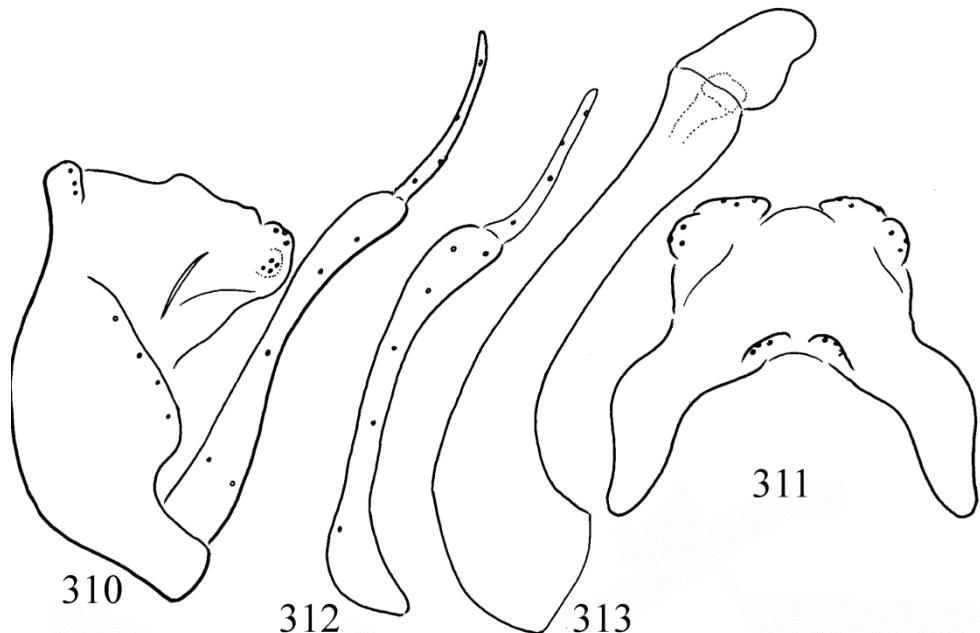
***Cheumatopsyche kambirona* sp. nov.**

(Figures 306–309, Map 5: n° 84, Map 6: n° 4, Map 22)

Material examined. Holotype: **India**, Manipur, Kambiron, 1500 ft., 24°44'46.9"N 93°23'01.7"E, 24.V.1960, leg F. Schmid (1 male, CNC). Paratypes: India, Assam, United District of Mikir and North Cachar Hills, Bandarkhal, 300 ft., 25°03'31.1"N 92°48'02.5"E, 9.V.1960, leg. F. Schmid (13 males, CNC; 5 males, OPC; 5 males, SMNH). India, Assam, United District of Mikir and North Cachar Hills, Bangku [= Nangku], 700 ft., 7.V.1960, leg. F. Schmid (1 male, CNC).



Figures 306–309. *Cheumatopsyche kambirona* sp. nov. Holotype: 306 = male genitalia in left lateral view, 307 = male genitalia in dorsal view, 308 = left gonopod in ventral view, 309 = phallic organ in left lateral view.



Figures 310–313. *Cheumatopsyche khasia* sp. nov. Holotype: 310 = male genitalia in left lateral view, 311 = male genitalia in dorsal view, 312 = left gonopod in ventral view, 313 = phallic organ in left lateral view.

Diagnosis. This new species having monolobed segment X that is the ventroapical pair of setose lobes fused to the body of segment X belongs to the *Cheumatopsyche concava* species group (Oláh *et al.* 2008a). According to the structure of segment X and the phallic organ this small, delicate brown species is the sibling species of *Cheumatopsyche haflonga* sp. nov., but differs by the rounded triangular, not sharp triangular apical lobe of segment IX; the almost regular triangular shape of the fused ventroapical setose lobe, as well as by the lateral profile of the phallic organ with short, not high phallobase and long, not short ventral subapical broadening.

Description. A uniformly brown coloured small species with forewing length of 7 mm.

Male genitalia. Abdominal segment IX fused annular, short; anterior margin arciform, resulted in a very short dorsum and double long ventrum; the ventrum is without spiny ventrocaudal mesal lobe; apical margin is straight vertical, its dorsal region is marked with a row of strong spines and ventrad terminated in a rounded triangular lobe above the gonopods; intersegmental depression between the ninth and tenth segments present,

deep and step-wise in lateral view. Body of segment X longer than high; slightly elongated lateral setose area (cerci) in middle position; apicoventral setose lobe discernible as incompletely fused to the apicoventrum of the segment and discernible as a small setose triangular lobe with shallow middle excision as visible in dorsal view. The basal segment of the gonopods straight dilating basad and apicad, slim between, both in lateral and ventral views; harpago, the terminal segment slender, straight digitate. Phallic apparatus with straight dorsum, posterad curving basad and with broadening apicoventrum; the pair of endothecal sclerites rounded, slightly longer than high.

Etymology. *kambirona*, named after the *locus typicus* of the holotype.

Cheumatopsyche khasia sp. nov.

(Figures 310–313, Map 5: n° 59, Map 22)

Material examined. Holotype: **India**, Meghalaya (United Jaintia and Khasi Hills), Mawpran [=Mawpran Nonglyndiang], 2000 ft, 25°18' 27.3"N 91°58'05.7"E, 9.IV.1960, leg. F. Schmid (1 male, CNC).

Diagnosis. This new species having almost monolobed segment X that is the ventroapical pair of setose lobes almost completely fused to the body of segment X belongs to the *Cheumatopsyche concava* species group (Oláh *et al.* 2008a). According to the structure of segment X and the phallic organ this small, delicate brown species is most close to *Cheumatopsyche lolo* Oláh & Johanson, 2008 but differs by mesad turning apex of the almost fused apicoventral setose lobe, simple at *C. lolo*; by the apicad shifted cerci and by the harpago very long and slender both in lateral and ventral views.

Description. A uniformly brown coloured small species with forewing length of 5 mm. **Male genitalia.** Abdominal segment IX fused annular, short; anterior margin short arciform, resulted in a very short dorsum and short but little longer ventrum; the ventrum is without spiny ventrocaudal mesal lobe; apical margin is straight vertical, its dorsal region is marked with a row of strong spines and ventrad terminated in a rounded lobe above the gonopods; intersegmental depression between the ninth and tenth segments present, low and oblique in lateral view, filled partially by a pair of setose humps. Body of segment X shorter than high; the almost regularly circular lateral setose area (cerci) at apical position superimposed on the apicoventral setose lobes; apicoventral setose lobe discernible as incompletely fused to the apicoventrum of the segment and discernible as a small rounded setose lobe as visible in lateral view; its mesal free apex curving mesad. The basal segment of the gonopods downward arching only slightly dilating apicad in lateral view; harpago, the terminal segment long, slender and digitate both in lateral and ventral views. Phallic apparatus with straight dorsum upward curving apicad and slightly broadening ventrum; the pair of endothecal sclerites elongated with broadening ventrobasal region.

Etymology. *khasia*, named after the region of type locality.

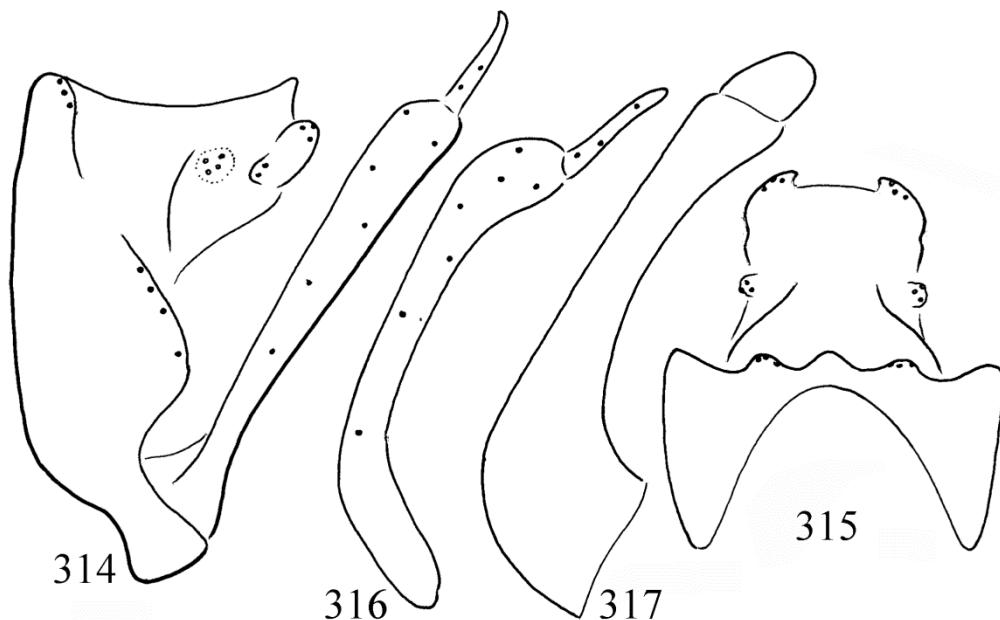
***Cheumatopsyche korosa* sp. nov.**

(Figures 314–317, Map 5: n° 4, 71, Map 22)

Material examined. Holotype: **India**, Meghaláya (United Jaintia and Khasi Hills), Thangrain, 3000 ft., 25°34'45.1"N 92°26'26.7"E, 22.IV.1960, leg. F. Schmid (1 male, CNC). Paratypes: India, Meghaláya (United Jaintia and Khasi Hills), Mawshun, 1500 ft., 25°14'46.7"N 91°58'21.2"E, 4.XII.1959, leg. F. Schmid (1 male, OPC; 1 male, SMNH).

Diagnosis. This new species having monolobed segment X that is the ventroapical pair of setose lobes almost completely fused to the body of segment X belongs to the *Cheumatopsyche concava* species group (Oláh *et al.* 2008a). According to the structure of segment X and the phallic organ, this small, delicate brown species is most close to *Cheumatopsyche myntanga* sp. nov., but differs by the regular rounded lateral margin of the fused ventroapical setose lobe in dorsal view, not concave and the phallobase is more right angled.

Description. A uniformly brown coloured small species with forewing length of 6 mm. **Male genitalia.** Abdominal segment IX fused annular, short; anterior margin short arciform, resulted in a very short dorsum and short but slightly longer ventrum; the ventrum is without spiny ventrocaudal mesal lobe; apical margin is straight vertical, its dorsal region is marked with a row of strong spines and ventrad terminated in a rounded lobe above the gonopods; intersegmental depression between the ninth and tenth segments present, low and oblique in lateral view. Body of segment X longer than high; the almost regularly circular lateral setose area (cerci) in middle position; apicoventral setose lobe discernible as incompletely fused to the apicoventrum of the segment and discernible as a small setose lobe rounded circular as visible both in dorsal and lateral views. The basal segment of the gonopods straight only slightly dilating apicad in lateral



Figures 314–317. *Cheumatopsyche korosa* sp. nov. Holotype: 314 = male genitalia in left lateral view, 315 = male genitalia in dorsal view, 316 = left gonopod in ventral view, 317 = phallic organ in left lateral view.

view; harpago, the terminal segment slender digitate. Phallic apparatus with straight dorsum and broadening ventrum; the pair of endothecal sclerites rounded, slightly longer than high.

Etymology. *korosa*, coined from “körös” circular in Hungarian, refers to the extremely regular round or circular slice of the almost fused ventroapical lobe in dorsal view.

Cheumatopsyche myntanga sp. nov.

(Figures 318–321, Map 5: n° 70, Map 22)

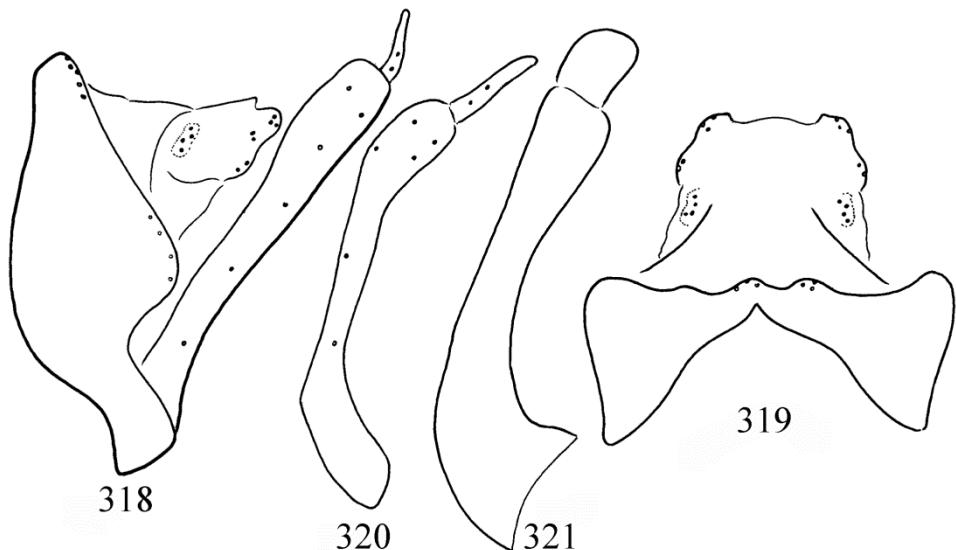
Material examined. Holotype: **India**, Meghalaya (United Jaintia and Khasi Hills), Shilliang Myntang [=Shiliangmyntang], 3500 ft, 25°33' 55.6"N 92°21'32.5"E, 21.IV.1960, leg. F. Schmid (1 male, CNC). Paratypes: same as holotype (2 males, CNC; 1 male, OPC; 1 male, SMNH).

Diagnosis. This new species having monolobed segment X that is the ventroapical pair of setose lobes fused to the body of segment X or very abbreviated belongs to the *Cheumatopsyche concava* species group (Oláh *et al.* 2008a). According to the structure of segment X and the

phallic organ this small, delicate brown species is most close to the following species: *C. cressida* Malicky, 1997, Nepal; *C. copia* Malicky & Chantaramongkol, 1997 Thailand; *C. orthocercata* Sun *et al.* 2011, China (Guangxi), *C. ecsedii* Oláh & Johanson, 2008, Vietnam; *C. lolo* Oláh & Johanson, 2008, Vietnam. This new species from India (Meghalaya) differs by the following character combination: lateral profile of segment X long, short at the other species except *C. ecsedii*; cerci elongated, circular at the other species except *C. cressida*; cerci in middle position, posterad position at the other species; fused apicoventral setose lobe with shallow middle excision lacking at the other species; harpago short and thin, longer and robust at the other species; endothecal sclerite short and rounded, downward hooked at *C. cressida*, *C. copia*, *C. lolo*, *C. orthocercata* and elongated low at *C. ecsedii*.

Description. A uniformly brown coloured small species with forewing length of 6 mm.

Male genitalia. Abdominal segment IX fused annular, short; anterior margin arciform, resulted in a very short dorsum and short but slightly longer ventrum; the ventrum is without spiny ven-



Figures 318–321. *Cheumatopsyche myntanga* sp. nov. Holotype: 318 = male genitalia in left lateral view, 319 = male genitalia in dorsal view, 320 = left gonopod in ventral view, 321 = phallic organ in left lateral view.

trocaudal mesal lobe; apical margin is straight vertical, its dorsal region is marked with a row of strong spines and ventrad terminated in a triangular lobe above the gonopods; intersegmental depression between the ninth and tenth segments present, deep and step-wise in lateral view. Body of segment X longer than high; slightly elongated lateral setose area (cerci) in middle position; apicoventral setose lobe discernible as incompletely fused to the apicoventrum of the segment and discernible as a small setose lobe with shallow excision middle as visible both in dorsal and lateral views. The basal segment of the gonopods straight, only dilating apicad, especially in ventral view; harpago, the terminal segment slender digitate in ventral view. Phallic apparatus with straight dorsum and broadening ventrum; the pair of endothecal sclerites rounded, slightly longer than high.

Etymology. *myntanga*, named after the *locus typicus* of the holotype.

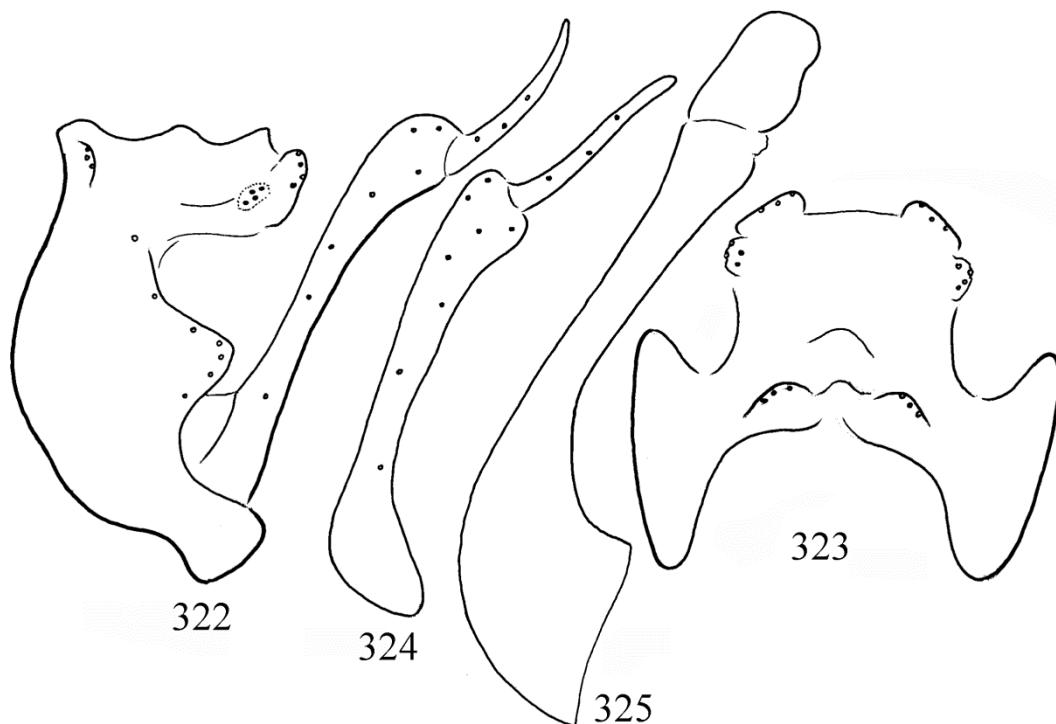
Cheumatopsyche nongrima sp. nov.

(Figures 322–325, Map 5: n° 2, 42, 47, 84,
Map 22)

Material examined. Holotype: **India**, Meghaláya (United Jaintia and Khasi Hills), Nongrim

[according to the Schmid's route it probably corresponds to Nongtraw, 3000 ft, 25°22'09.9"N 91°45'48.2"E, 28.III.1960, leg. F. Schmid] (1 male, CNC). Paratypes: India, Meghaláya (United Jaintia and Khasi Hills), Nongrim [=Nongtraw], 1800 ft, 27.III.1960, leg. F. Schmid (3 males, CNC; 1 male, OPC; 1 male, SMNH). India, Meghaláya (United Jaintia and Khasi Hills), Mawpran [=Mawpran Nonglyndiang], 2000 ft, 25°18'27.3"N 91°58'05.7"E, 9.IV.1960, leg. F. Schmid (1 male, OPC). India, Meghaláya (United Jaintia and Khasi Hills), Mawshuid (Mawshnid), 1400 ft, 29.III.1960, leg. F. Schmid (3 males, CNC). India, Meghaláya (United Jaintia and Khasi Hills), Rumkheng [= Ramkheng], 4500 ft, 25°23'07.2"N 91°50'12.8"E, 24.III.1960, leg. F. Schmid (1 male, CNC). India, Assam, United District of Mikir and North Cachar Hills, Bandarkhal, 300 ft, 25°03'31.1"N 92°48'02.5"E, 9.V.1960, leg. F. Schmid (1 male, OPC).

Diagnosis. This new species having almost monolobed segment X that is the ventroapical pair of setose lobes almost completely fused to the body of segment X belongs to the *Cheumatopsyche concava* species group (Oláh *et al.* 2008a). According to the structure of segment X and the phallic organ this brown species is most close to *Cheumatopsyche khasia* sp. nov. but



Figures 322–325. *Cheumatopsyche nongrima* sp. nov. Holotype: 322 = male genitalia in left lateral view, 323 = male genitalia in dorsal view, 324 = left gonopod in ventral view, 325 = phallic organ in left lateral view.

differs by the rather pronounced triangular shape of the apical lobe of segment IX; by the wide dorsal interlobular gap between the vestigial ventroapical setose lobe; by the subapical, not almost apical position of cerci; by the inflated head of the coxopodite; by the slender middle region of the phallic organ as well as by the lateral shape of the endothecal sclerites.

Description. A uniformly brown coloured species with forewing length of 7 mm. **Male genitalia.** Abdominal segment IX fused annular, short; anterior margin short arciform, resulted in a very short dorsum and short but slightly longer ventrum; the ventrum is without spiny ventrocaudal mesal lobe; apical margin is dominated by the triangular lobe; intersegmental depression between the ninth and tenth segments present, low and oblique in lateral view; dorsoapical setose lobes of segment IX well separated. Body of segment X longer than high; the almost regularly circular lateral setose area (cerci) at subapical position superimposed near to the apicoventral setose

lobes; apicoventral setose lobe discernible as incompletely fused to the apicoventrum of the segment and discernible as a small rounded setose lobe as visible in lateral view; its mesal free apex curving mesad. The basal segment of the gonopods downward arching; apex highly inflated; harpago, the terminal segment long, slender and digitate both in lateral and ventral views. Phallic apparatus with straight dorsum upward curving apicad and slightly broadening ventrum; the pair of endothecal sclerites elongated robust with broadening ventrobasal region.

Etymology. *nongrima*, named after the region of type locality.

***Cheumatopsyche chinensis* species group**

Species group of fused monolobed segment X with upturning mostly spiny apices of the setose ventroapical lobes, variously distanced from each other. The fused setose ventroapical lobes with upturning apices dominate the genital structure;

only the very spiny tip of the lobes remained separated. As a result segment X is nearly monolobed, except a very narrow and shallow dorsal interlobular gap remained between the upturning apices or a small convex unsetose mesal lobe developed as visible in dorsal view. The cerci form an elevated wart-like setose surface. The harpago mostly short and broad, frequently having apices with specific character states (Oláh *et al.* 2008a).

Seven species with character states of the *Cheumatopsyche chinensis* species group are described from the Afrotropical faunal region (Oláh *et al.* 2008a,b). Here we list or treat only species from the Palaearctic and Oriental faunal regions: *Cheumatopsyche amurensis* Martynov, 1934, Russia, Amurland; *C. bandarkhala* sp. nov. India, Assam; *C. banksi* Moseley, 1942, China, Fujian; *C. caieta* Malicky & Chantaramongkol, 1997, Thailand; *C. chinensis* (Martynov, 1930), China, Sichuan; *C. delhia* sp. nov., India, Delhi; *C. diehli* Malicky, 1997, Indonesia, Sumatra; *C. hanoia* sp. nov. Vietnam; *C. hotaya* sp. nov., Vietnam; *C. junolahi* Oláh & Johanson, 2008, Vietnam; *C. pega* sp. nov. Myanmar; *C. processuata* (Martynov, 1927) North Iran; *C. pulchripennis* (Banks, 1939), Indonesia, Sumatra; *C. quangchua* sp. nov., Vietnam; *C. rubachi* Mey, 1995 Philippines; *C. schwendingeri* Malicky & Chantaramongkol, 1997, Thailand; *C. socia* (Navás, 1927), Egypt; *C. tamda* sp. nov., Vietnam; *C. tinjar* (Kimmings, 1955), Malaysia, Sarawak; *C. tongoma* sp. nov., Laos.

Based on the “wide distribution with high variability” principles and practices of the lumpers which is widely applied and practiced in gross phenomics, the taxonomy of this species group is frequently contradictory and puzzling. Here we revise the unsettled species of the group applying the principles and procedures of our fine phenomics.

In species delineation the neutral trait of the first segment of the gonopod, the coxopodites has no real diagnostic value; one species *C. amurensis* has very robust coxopodite, another species *C.*

delhia sp. nov. has very broadened almost capitate apical region on the coxopodite; all the other species have more slender coxopodite, especially on its basal half. The other neutral trait, the cerci are variously lobe-like and have some divergences in their location. The magnitude, direction and development of the spine formation on the ventroapical setose lobes of segment X, especially its lateral profile has high diagnostic value; its dorsal profile is depending on the observation view that is highly unstable; very tiny change in the observation angle creates significant shape alterations. The lateral profile of the phallic organ has high diagnostic value; however, we have to take into consideration a unique feature of the subapical region of the phallotheca in this species group that is frequently less sclerotized, permitting some kind of functional wrist movement, resulted in a downward leaning apical region, a possible anchoring capacity for the post-copulatory sperm selection in the cryptic female choice producing rapid divergences of the reproductive gene sequence complexes.

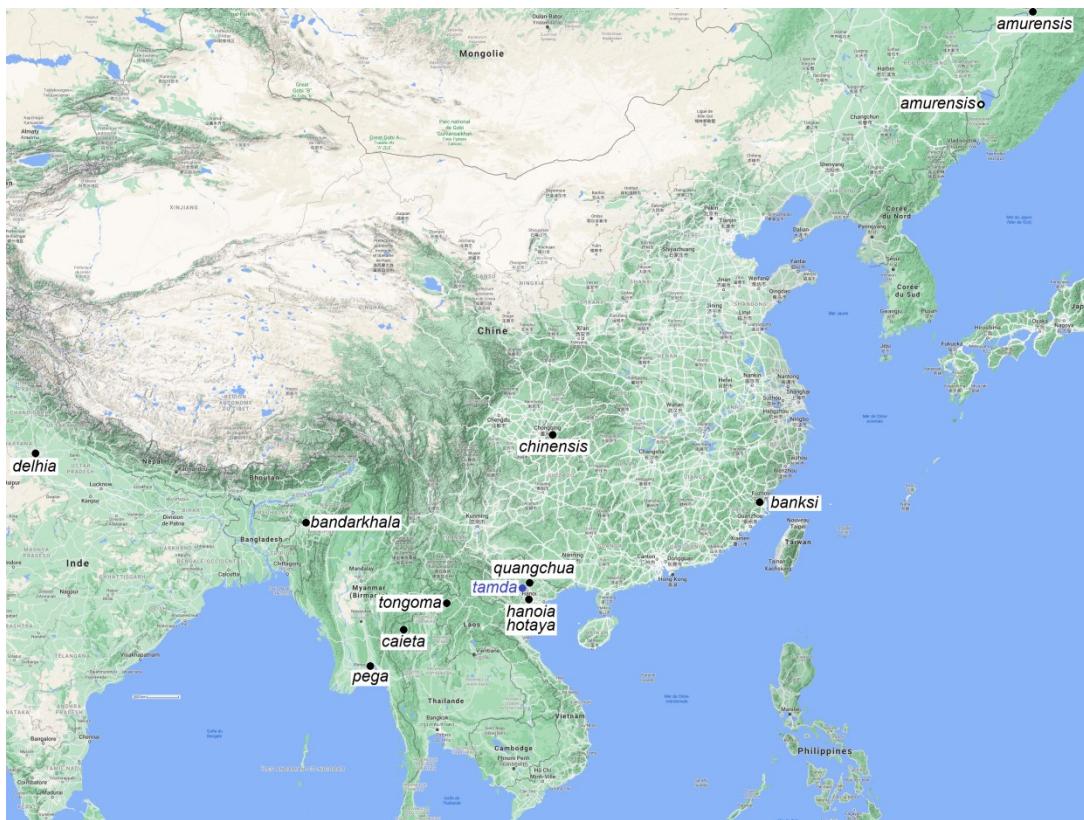
The spine formation on the ventroapical setose lobes and the phallic organ as non-neutral adaptive traits are more diverse than the neutral traits of coxopodites and cerci. Another unique feature of this species group is the extremely high diversity of the head on the harpagones, similarly to the apices of harpago in the *Hydromanicus luctuosus* species complex. These tiny shape divergences on the harpago head is usually not recognised in gross phenomics. However, these divergences organised on the tip of harpagones are very stable as we have examined also in the *Hydromanicus* genus.

***Cheumatopsyche amurensis* Martynov, 1934,
stat. rest.**

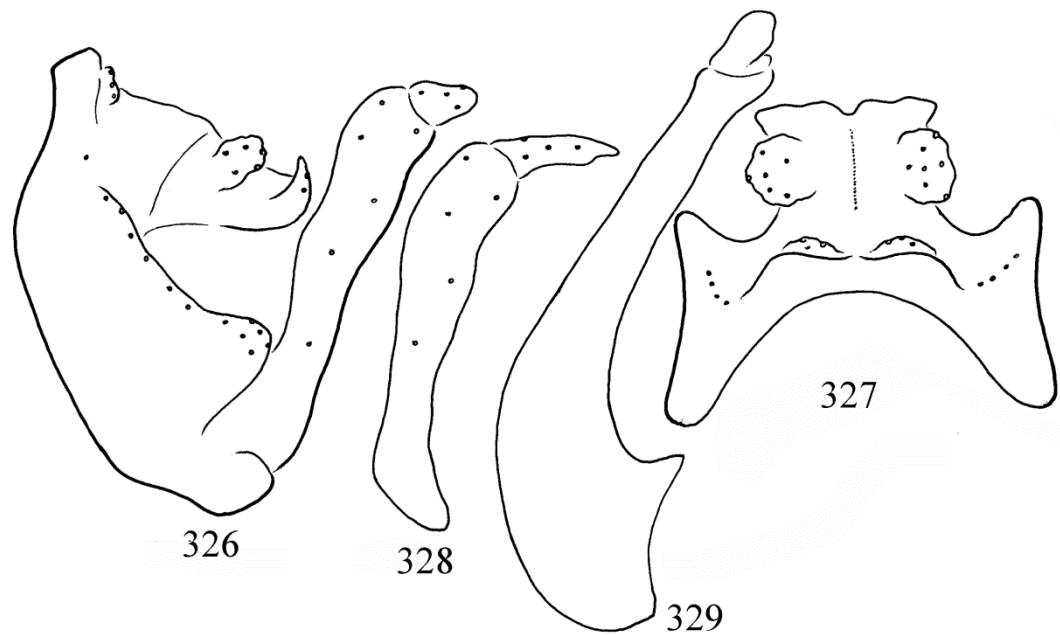
(Figures 326–329, Map 23)

Cheumatopsyche amurensis Martynov, 1934:293. This species is described from the Amur River below Habarovsk, as very close to *Cheumatopsyche processuata* Martynov described from North Iran.

Cheumatopsyche chinensis (Martynov, 1930): Malicky 2013:48. synonymised with *Cheumatopsyche chinensis* (Martynov, 1930).



Map 23. *Cheumatopsyche chinensis* group.



Figures 326–329. *Cheumatopsyche amurensis* Martynov, 1934. 326 = male genitalia in left lateral view, 327 = male genitalia in dorsal view, 328 = left gonopod in ventral view, 329 = phallic organ in left lateral view.

Material examined. Russia, Khabarovsk Ter. Slavyanka at Amur, light trap, 17.VI.1994, light trap, leg. P. Lindskog & B. Viklund (3 males NRM, 3 males OPC). Russia, Khabarovsk Ter. Slavyanka 5km E. Troitskoye, 44°49'32.7"N 132°02'07.2"E, bog margin in dec. forest, light trap, 18-19.VI.1993, leg. P. Lindskog & B. Viklund (3 males NRM).

Remarks. Holotype was not available for examination. We have collected and studied nine specimens from the type locality. *Cheumatopsyche amurensis* Martynov, 1934 is far from all the members of the group and especially well differentiated from *C. chinensis* (Martynov, 1930), having cerci more lobe-like; gonopode extremely robust, not slender; ventroapical setose lobes shorter, phallic organ slender with horizontal, not arching phallothecal shaft. It is not a synonym of *C. chinensis*. Here we reinstate its species status.

***Cheumatopsyche bandarkhala* sp. nov.**

(Figures 330–333, Map 5: n° 83, Map 23)

Material examined. Holotype: India, Assam, United District of Mikir and North Cachar Hills, Bandarkhal, 300 ft., 25°03'31.1"N 92°48'02.5"E, 8.V.1960, leg. F. Schmid (1 male, CNC).

Diagnosis. This new species having monolobed segment X with spiny upward turning apices of the ventroapical pair of setose lobes belongs to the *Cheumatopsyche chinensis* species group (Oláh *et al.* 2008a). According to the structure of segment X and the phallic organ this small, delicate brown species is most close to *C. hanoia* sp. nov., but differs by having longer endothecal sclerites, more robust spiny formation on the ventroapical setose lobes and the digitate apices on harpago right angled.

Description. A uniformly brown coloured small species with forewing length of 7 mm.

Male genitalia. Abdominal segment IX fused annular, short; anterior margin arciform, resulted in a very short dorsum and slightly longer ventrum; the ventrum is without spiny ventrocaudal mesal lobe; apical margin is straight vertical, its

dorsal region is marked with a row of spines and ventrad terminated in a rounded triangular lobe above the gonopods; intersegmental depression between the ninth and tenth segments present, shallow and partially occupied by a pair of setose humps. Body of segment X as long as high, subtriangular; slightly elevated lateral setose area (cerci) in middle position; apicoventral setose lobe discernible as incompletely fused to the apicoventrum of the segment and armed with a pair of up and anterad turning spiny pointed lobes. The basal segment of the gonopods straight with dilating apical half; harpago, the terminal segment slender digitate with right angle in ventral view. Phallic apparatus with arching dorsum and broadening ventrum subapicad; the pair of endothecal sclerites elongated, longer than high.

Etymology. *bandarkhala*, named after the *locus typicus* of the holotype.

***Cheumatopsyche banksi* Mosely, 1942 stat. rest.**

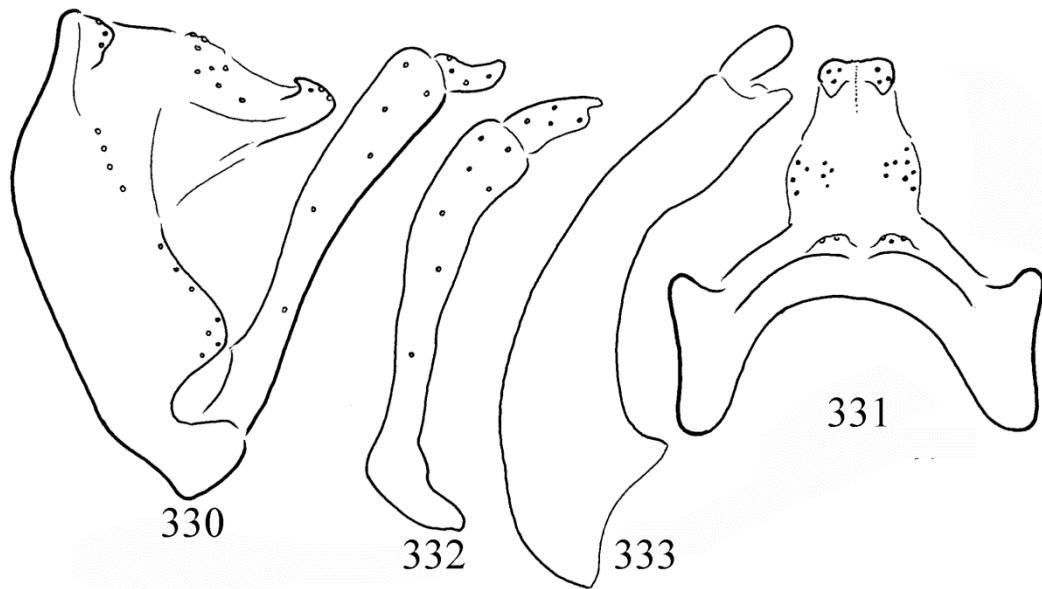
(Figures 334–336, Map 23)

Cheumatopsyche banksi Mosely, 1942:351–352. Described from a single male collected in Foochow [=Fuzhou], Fujian Province, China by M. S. Yang and deposited in the British Natural History Museum.

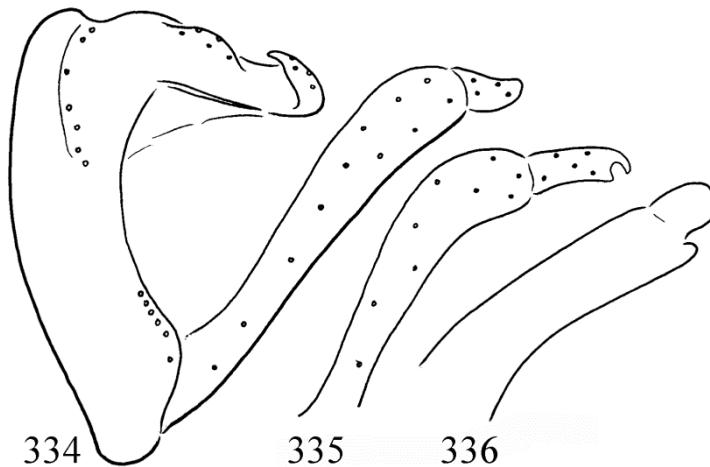
Cheumatopsyche chinensis (Martynov, 1930): Oláh *et al.* 2008a: 150, synonymised with *Cheumatopsyche chinensis* (Martynov, 1930).

Cheumatopsyche chinensis (Martynov, 1930): Malicky, 2013:48. Listed as *Cheumatopsyche chinensis* (Martynov, 1930).

Remarks. After careful examination of details in the genitalia of the type of *C. banksi* and *C. chinensis* significant divergences were detected between the two species. The only known specimen of this species, the holotype has the spiny formation on ventroapical setose lobes anterad, not upward turning, the apical region of the phallotheca strait, not downward directed, the endothecal sclerites short, not long as well as there is an arching digitate process on the tip of harpago, lacking in *C. chinensis*. Here we reinstate the species status of *Cheumatopsyche banksi* Mosely, 1942.



Figures 330–333. *Cheumatopsyche bandarkhala* sp. nov. Holotype: 330 = male genitalia in left lateral view, 331 = male genitalia in dorsal view, 332 = left gonopod in ventral view, 333 = phallic organ in left lateral view.



Figures 334–336. *Cheumatopsyche banksi* Mosely, 1942. 334 = male genitalia in left lateral view, 335 = left gonopod in ventral view, 336 = phallic organ in left lateral view.

***Cheumatopsyche caieta* Malicky &
Chantaramongkol, 1997**
(Map 23)

Cheumatopsyche caieta Malicky & Chantaramongkol, 1997, in Malicky 1997:1032. Described from Thailand, Huai Nam Dang National Park as close to *Cheumatopsyche banksi* Mosely.

***Cheumatopsyche chinensis* (Martynov, 1930)**
(Figures 337–340, Map 23)

Hydropsychodes chinensis Martynov, 1930: 80–81.
Described from China, Chungking [=Chongqing],
Sichuan.
Cheumatopsyche chinensis (Martynov, 1930); Mosely
1939: 27.

Cheumatopsyche chinensis (Martynov, 1930): Oláh *et al.* 2008a: 150. Holotype is examined and deposited in the Natural History Museum, London, UK.

Remarks. The nominate species of the group, *Cheumatopsyche chinensis* (Martynov, 1930) differs from all the other species in the group by the simple rounded tip of the harpago without any specific pattern. That is the apomorphic character state in the species group.

***Cheumatopsyche delhia* sp. nov.**

(Figures 341–344, Map 23)

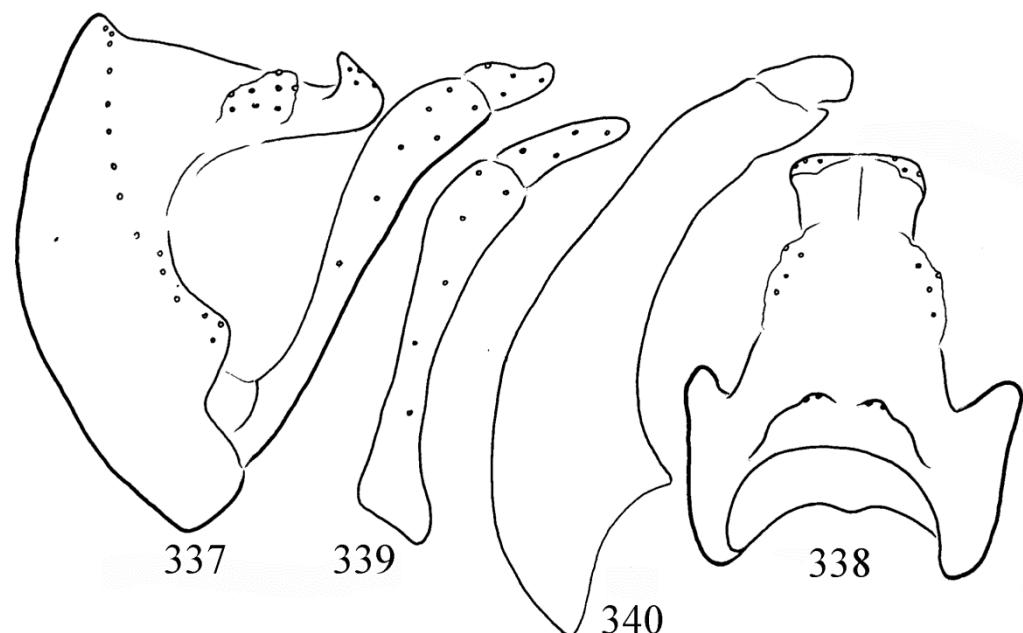
Material examined. Holotype: **India**, New Delhi, 18.III.1967, light trap, leg. K. E. Gibson (1 male, OPC). Paratypes: same as holotype (12 males, 8 females, BMNH; 2 males, 1 female; OPC).

Diagnosis. This new species having monolobed segment X with spiny upward turning apices of the ventroapical pair of setose lobes belongs to the *Cheumatopsyche chinensis* species

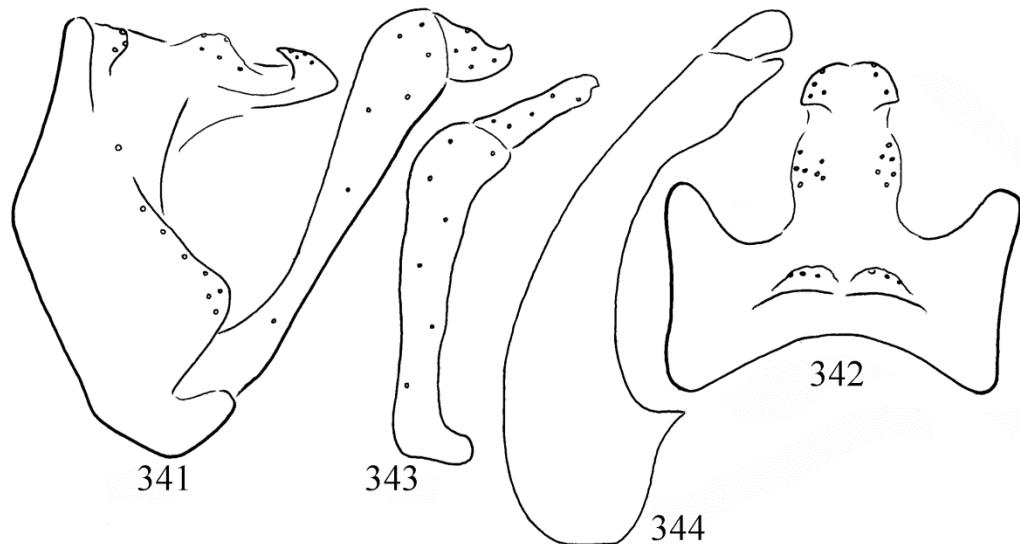
group (Oláh *et al.* 2008a). According to the structure of segment X and the phallic organ this small, delicate brown species is most close to *C. pega* sp. nov., but differs by having capitate coxopodite, more pointed spiny formation on the ventroapical setose lobes, broadening on the ventroapical region of the phallotheca, longer endothecal sclerites as well as blunt and short digitate process on the tip of the harpago.

Description. A uniformly brown coloured small species with forewing length of 7 mm.

Male genitalia. Abdominal segment IX fused annular, short; anterior margin arciform with obliquely cut dorsum, resulted in a very short dorsum and much longer ventrum; the ventrum is without spiny ventrocaudal mesal lobe; apical margin is straight vertical, its dorsal region is marked with a row of spines and ventrad terminated in a rounded triangular lobe above the gonopods; intersegmental depression between the ninth and tenth segments present, shallow and partially occupied by a pair of setose humps. Body of segment X as long as high, subtriangular;



Figures 337–340. *Cheumatopsyche chinensis* (Martynov, 1930). 337 = male genitalia in left lateral view, 338 = male genitalia in dorsal view, 339 = left gonopod in ventral view, 340 = phallic organ in left lateral view.



Figures 341–344. *Cheumatopsyche delhia* sp. nov. Holotype: 341 = male genitalia in left lateral view, 342 = male genitalia in dorsal view, 343 = left gonopod in ventral view, 344 = phallic organ in left lateral view.

elevated lateral setose area (cerci) in middle position; apicoventral setose lobe discernible as incompletely fused to the apicoventrum of the segment and armed with a pair of up and anterad turning spiny pointed lobes. The basal segment of the gonopods straight with highly dilating capitate apex; harpago, the terminal segment blunt digitate with mesad turning tiny tip in ventral view. Phallic apparatus with arching dorsum and broadening ventrum subapicad; the pair of endothecal sclerites elongated, longer than high.

Etymology. *delhia*, named after the *locus typicus* of the holotype.

Cheumatopsyche hanoia sp. nov.

(Figures 345–348, Map 23)

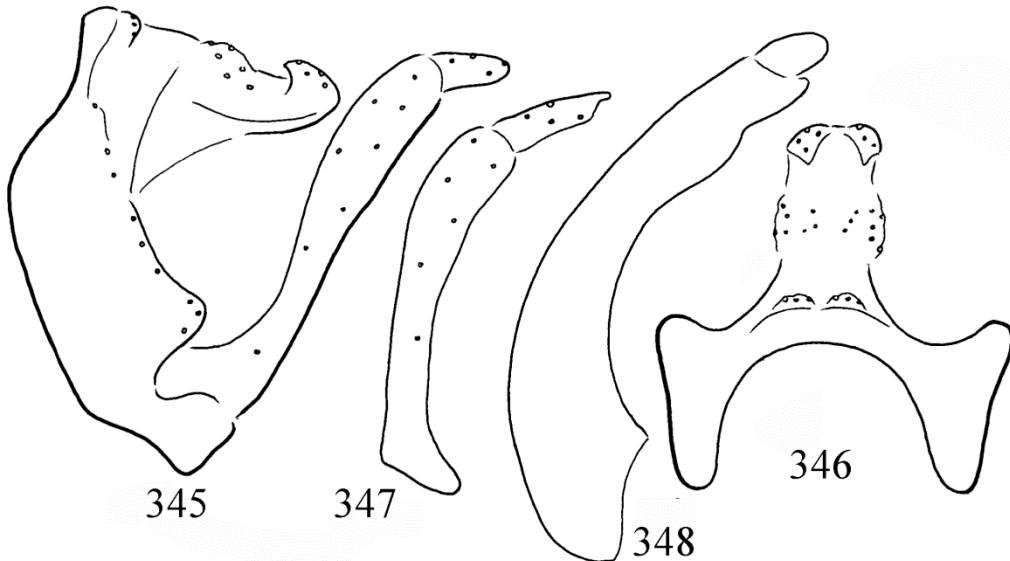
Material examined. Holotype: Vietnam, Hanoi, Ho Tay (West Lake), 28.X.1986, light leg. S. Mahunka & J. Oláh (1 male, OPC). Paratypes: same as holotype (10 males, OPC).

Diagnosis. This new species having monolobed segment X with spiny upward turning apices of the ventroapical pair of setose lobes belongs to the *Cheumatopsyche chinensis* species group (Oláh *et al.* 2008a). According to the struc-

ture of segment X and the phallic organ this small, delicate brown species is most close to *C. bandarkhala* sp. nov., but differs by having shorter endothecal sclerites, less robust spiny formation on the ventroapical setose lobes and the digitate apices on harpago obtuse angled.

Description. A uniformly brown coloured small species with forewing length of 7 mm.

Male genitalia. Abdominal segment IX fused annular, short; anterior margin arciform, resulted in a very short dorsum and slightly longer ventrum; the ventrum is without spiny ventrocaudal mesal lobe; apical margin is straight vertical, its dorsal region is marked with a row of spines and ventrad terminated in a rounded triangular lobe above the gonopods; intersegmental depression between the ninth and tenth segments present, shallow and partially occupied by a pair of setose humps. Body of segment X as long as high, subtriangular; slightly elevated lateral setose area (cerci) in middle position; apicoventral setose lobe discernible as incompletely fused to the apicoventrum of the segment and armed with a pair of up and anterad turning robust spiny pointed lobes. The basal segment of the gonopods straight with dilating apical half; harpago, the terminal segment slender digitate with obtuse angle in



Figures 345–348. *Cheumatopsyche hanoia* sp. nov. Holotype: 345 = male genitalia in left lateral view, 346 = male genitalia in dorsal view, 347 = left gonopod in ventral view, 348 = phallic organ in left lateral view.

ventral view. Phallic apparatus with arching dorsum and broadening ventrum subapicad; the pair of endothecal sclerites ovoid, longer than high.

Etymology. *hanoia*, named after the *locus typicus* of the holotype.

Cheumatopsyche hotaya sp. nov.

(Figures 349–352, Map 23)

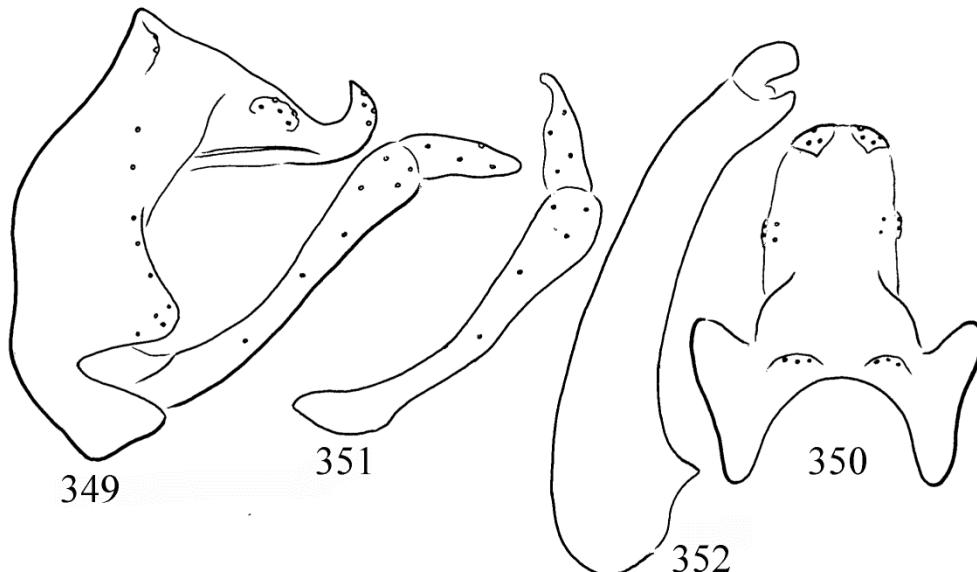
Material examined. Holotype: **Vietnam**, Hanoi, Ho Tay (West Lake), 19.I.1986, light leg. S. Mahunka & J. Oláh (1 male, OPC).

Diagnosis. This new species having monolobed segment X with spiny upward turning apices of the ventroapical pair of setose lobes belongs to the *Cheumatopsyche chinensis* species group (Oláh *et al.* 2008a). According to the structure of segment X and the phallic organ this small, delicate brown species is most close to *C. quang-chua* sp. nov., but differs by having hooked, not upward directed triangular spiny formation on the ventroapical setose lobes and the phallotheca low and straight, not high and not strongly arching.

Description. A uniformly brown coloured small species with forewing length of 7 mm.

Male genitalia. Abdominal segment IX fused annular, short; anterior margin arciform, resulted in a very short dorsum and much longer ventrum; the ventrum lacks spiny ventrocaudal mesal lobe; apical margin straight vertical, its dorsal region marked with a row of spines and ventrad terminated in a rounded triangular lobe above the gonopods; intersegmental depression between the ninth and tenth segments almost disappeared, shallow and partially occupied by a pair of setose humps. Body of segment X as long as high, subtriangular; slightly elevated lateral setose area (cerci) in middle position; apicoventral setose lobe discernible as incompletely fused to the apicoventrum of the segment and armed with a pair of robust hook-shaped spiny pointed lobes. The basal segment of the gonopods straight with dilating apical half; harpago, the terminal segment slender gradually digitate in ventral view. Phallic apparatus with slightly arching dorsum; the pair of endothecal sclerites ovoid, longer than high.

Etymology. *hotaya*, named after the *locus typicus* of the holotype.



Figures 349–352. *Cheumatopsyche hotaya* sp. nov. Holotype: 349 = male genitalia in left lateral view, 350 = male genitalia in dorsal view, 351 = left gonopod in ventral view, 352 = phallic organ in left lateral view.

***Cheumatopsyche pega* sp. nov.**

(Figures 353–356, Map 23)

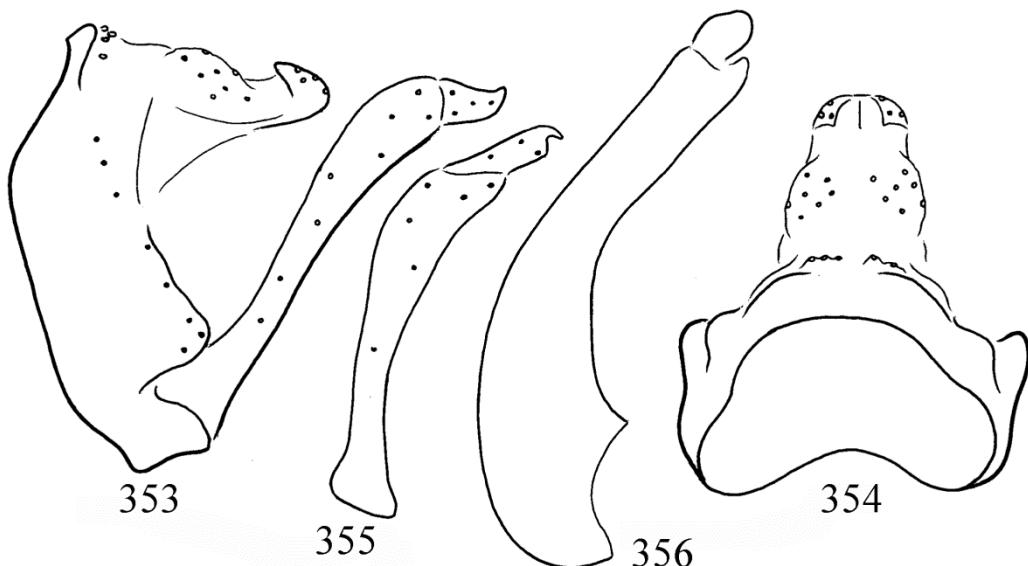
Material examined. Holotype: **Myanmar**, Pe-gu, (Bago), 10.IX.1914, Fletcher collection (1 male, BMNH).

Diagnosis. This new species having mono-lobed segment X with spiny upward turning apices of the ventroapical pair of setose lobes belongs to the *Cheumatopsyche chinensis* species group (Oláh *et al.* 2008a). According to the structure of segment X and the phallic organ this small, delicate brown species is most close to *C. delhia* sp. nov., but differs by having dilated, but not capitate coxopodite, less pointed spiny formation on the ventroapical setose lobes, without broadening on the ventroapical region of the phallotheca, shorter endothecal sclerites as well as falcate, not blunt and short digitate process on the tip of the harpago.

Description. A uniformly brown coloured small species with forewing length of 7 mm.

Male genitalia. Abdominal segment IX fused annular, short; anterior margin arciform with obliquely cut dorsum, resulted in a very short dorsum and much longer ventrum; the ventrum is without spiny ventrocaudal mesal lobe; apical margin is straight vertical, its dorsal region is marked with a row of spines and ventrad terminated in a rounded triangular lobe above the gonopods; intersegmental depression between the ninth and tenth segments present, shallow and partially occupied by a pair of setose humps. Body of segment X as long as high, subtriangular; elevated lateral setose area (cerci) in middle position; apicoventral setose lobe discernible as incompletely fused to the apicoventrum of the segment and armed with a pair of up and anterad turning spiny pointed lobes. The basal segment of the gonopods straight with dilating apex; harpago, the terminal segment with falcate process in ventral view. Phallic apparatus with strait dorsum without broadening ventrum subapicad; the pair of endothecal sclerites short.

Etymology. *pega*, named after the *locus typicus* of the holotype.



Figures 353–356. *Cheumatopsyche pega* sp. nov. Holotype: 353 = male genitalia in left lateral view, 354 = male genitalia in dorsal view, 355 = left gonopod in ventral view, 356 = phallic organ in left lateral view.

***Cheumatopsyche processuata* (Martynov, 1927)
stat. rest.**

(Figures 357–359)

Hydropsyche processuata Martynov, 1927: 190–191.
This species is described from Shellali, North Persia, as related to *Hydropsyche asiatica* Ulmer.
Cheumatopsyche chinensis (Martynov, 1930): Malicky, 2013: 48. Synonymised with *Cheumatopsyche chinensis* (Martynov, 1930).

Remarks. Holotype is lacking. Only the original drawings and the description are available for comparative study. However, Martynov's drawings are ultimate with their high resolution of precise details compared to the poor drawings of his contemporary tricopterologists like Banks, Navas and Ulmer. Our previous reports of *C. processuata* (Martynov, 1927) from India, Myanmar, Pakistan and Vietnam are misidentifications (Oláh *et al.* 2008a,b). The synonymy between *C. processuata* and *C. chinensis* (Martynov, 1930) was suggested by Malicky (2013) with a question mark. In the same paper Malicky (2013) has published a new drawing of *C. processuata* from an unknown specimen without collecting data.

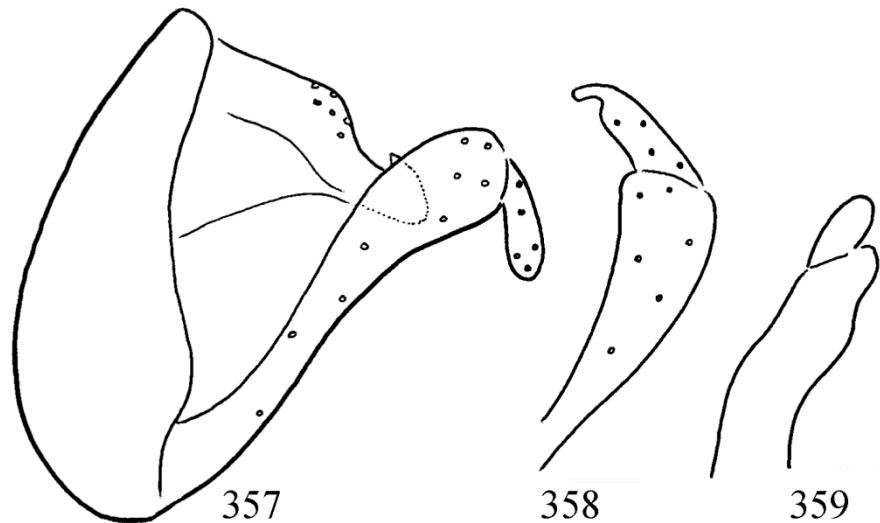
Probably it is modified from an idealised version of the original drawings of Martynov (1927).

The comparison of the holotype drawings of *C. chinensis* with the original drawings of *C. processuata* demonstrates the identity of both species. The shape of spiny formation on the ventro-apical setose lobe and the tip of the harpago are clearly different. The spiny formation on ventro-apical setose lobes anterad, not upward turning, and there is a mesad arching digitate process on the tip of harpago, lacking in *C. chinensis*. *C. processuata* have resemblance to *C. banksi* and *C. pega*, but both species have straight almost regular tube-like apical region of the phallotheca, clearly downward curving and waving at *C. processuata*. Here we reinstate the species status of *Cheumatopsyche processuata* (Martynov, 1927).

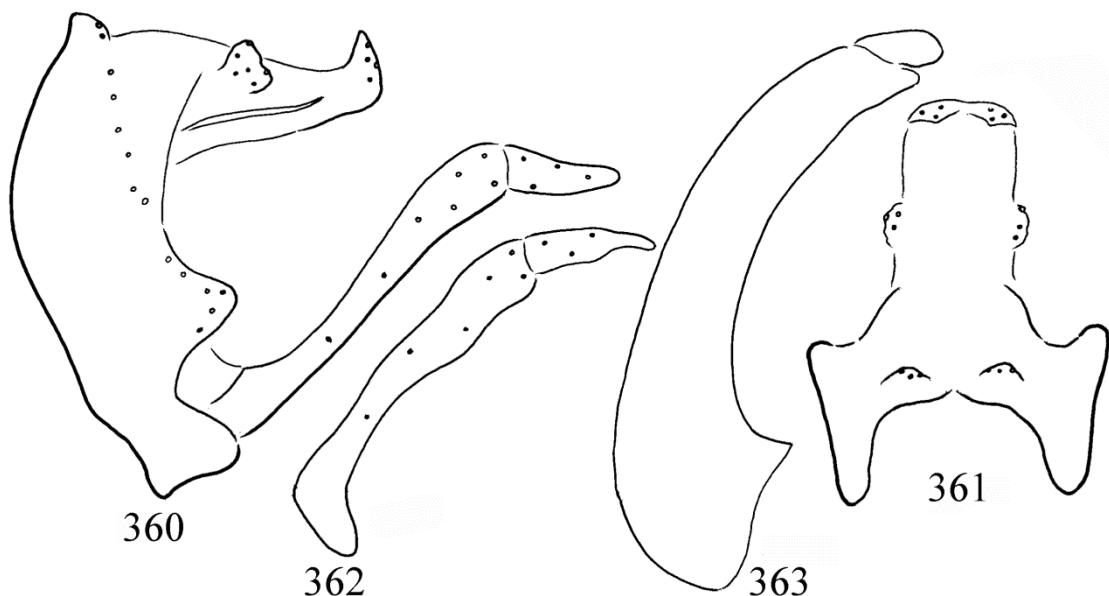
***Cheumatopsyche quangchua* sp. nov.**

(Figures 360–363, Map 23)

Material examined. Holotype: **Vietnam**, Bac Kan province, Cho Moi District, Quang Chu Village, 25.X.1986, light leg. S. Mahunka & J.



Figures 357–359. *Cheumatopsyche processuata* (Martynov, 1927). 357 = male genitalia in left lateral view, 358 = right gonopod in ventral view, 359 = phallic organ in left lateral view.



Figures 360–363. *Cheumatopsyche quangchua* sp. nov. Holotype: 360 = male genitalia in left lateral view, 361 = male genitalia in dorsal view, 362 = left gonopod in ventral view, 363 = phallic organ in left lateral view.

Oláh (1 male, OPC). Paratypes: same as holotype (2 males, OPC).

Diagnosis. This new species having mono-lobed segment X with spiny upward turning apices of the ventroapical pair of setose lobes belongs to the *Cheumatopsyche chinensis* species

group (Oláh *et al.* 2008a). According to the structure of segment X and the phallic organ this small, delicate brown species is most close to *C. hotayaa* sp. nov., but differs by having upward directed triangular, not hooked spiny formation on the ventroapical setose lobes and the phallotheca high and strongly arching, not straight and low.

Description. A uniformly brown coloured small species with forewing length of 7 mm.

Male genitalia. Abdominal segment IX fused annular, short; anterior margin arciform, resulted in a very short dorsum and much longer ventrum; the ventrum lacks spiny ventrocaudal mesal lobe; apical margin straight vertical, its dorsal region marked with a row of spines and ventrad terminated in a rounded triangular lobe above the gonopods; intersegmental depression between the ninth and tenth segments present, shallow and partially occupied by a pair of setose humps. Body of segment X as long as high, subtriangular; slightly elevated lateral setose area (cerci) in middle position; apicoventral setose lobe discernible as incompletely fused to the apicoventrum of the segment and armed with a pair of robust upward directed triangular spiny pointed lobes. The basal segment of the gonopods straight with dilating apical half; harpago, the terminal segment slender gradually digitate in ventral view. Phallic apparatus with arching dorsum; the pair of endothecal sclerites ovoid, longer than high.

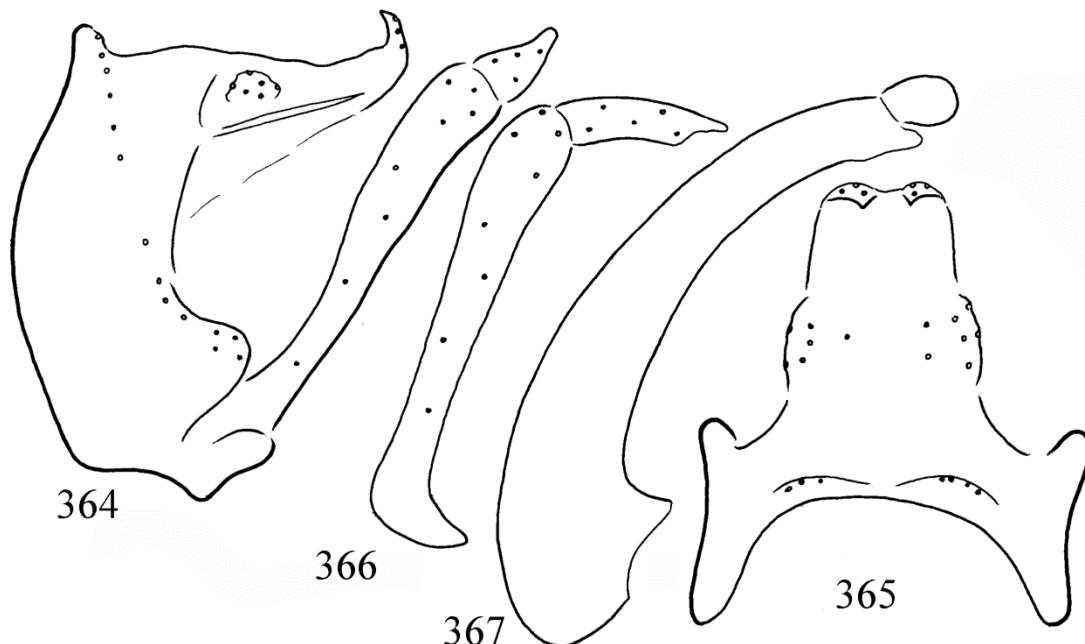
Etymology. *quangchua*, named after the *locus typicus* of the holotype.

Cheumatopsyche tamda sp. nov.

(Figures 364–367, Map 23)

Material examined. Holotype: Vietnam, Tam-dao, 200m, 21°28'16.1"N 105°33'55.6"E, 12.X. 1986, light leg. S. Mahunka & J. Oláh (1 male, OPC).

Diagnosis. This new species having monolobed segment X with spiny upward turning apices of the ventroapical pair of setose lobes belongs to the *Cheumatopsyche chinensis* species group (Oláh *et al.* 2008a). According to the structure of segment X and the phallic organ this small, delicate brown species differs from all the known members of the species group by the slender upward directed spiny formation of ventroapical setose lobes as well as by the very slender and regularly arching phallotheca.



Figures 364–367. *Cheumatopsyche tamda* sp. nov. Holotype: 364 = male genitalia in left lateral view, 365 = male genitalia in dorsal view, 366 = left gonopod in ventral view, 367 = phallic organ in left lateral view.

Description. A uniformly brown coloured small species with forewing length of 7 mm. **Male genitalia.** Abdominal segment IX fused annular, short; anterior margin arciform, resulted in a very short dorsum and much longer ventrum; the ventrum is without spiny ventrocaudal mesal lobe; apical margin is straight vertical, its dorsal region is marked with a row of spines and ventrad terminated in a rounded triangular lobe above the gonopods; intersegmental depression between the ninth and tenth segments present, deep and partially occupied by a pair of setose humps. Body of segment X as long as high, subtriangular; slightly elevated lateral setose area (cerci) in middle position; apicoventral setose lobe discernible as incompletely fused to the apicoventrum of the segment and armed with a pair of very slender upward directed spiny pointed lobes. The basal segment of the gonopods straight with dilating apical half; harpago, the terminal segment slender digitate with obtuse angle in ventral view. Phallic apparatus with slender arching dorsum; the pair of endothecal sclerites ovoid, just longer than high.

Etymology. *tamda*, named after the *locus typicus* of the holotype.

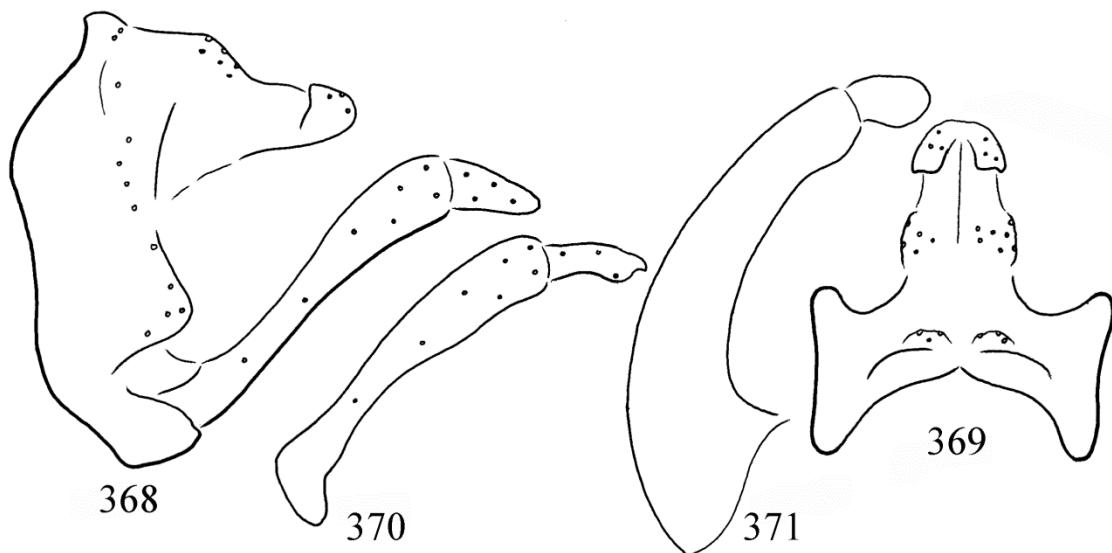
Cheumatopsyche tongoma sp. nov.

(Figures 368–371, Map 23)

Material examined. Holotype: Laos PDR, Luang Namtha Prov., Tong Om Village, 552 mao, 47Q 0750111, UTM 2321825, 1.V.2005, light trap, loc 30 leg. N. Jönsson, T. Malm & B. Viklund (1 male, SMNH).

Diagnosis. This new species having monolobed segment X with spiny upward turning apices of the ventroapical pair of setose lobes belongs to the *Cheumatopsyche chinensis* species group (Oláh *et al.* 2008a). According to the structure of segment X and the phallic organ this small, delicate brown species differs from all the known members of the species group by the robust plate-like spine formation of ventroapical setose lobes.

Description. A uniformly brown coloured small species with forewing length of 7 mm. **Male genitalia.** Abdominal segment IX fused annular, short; anterior margin arciform, resulted in a very short dorsum and much longer ventrum; the ventrum is without spiny ventrocaudal mesal lobe;



Figures 368–371. *Cheumatopsyche tongoma* sp. nov. Holotype: 368 = male genitalia in left lateral view, 369 = male genitalia in dorsal view, 370 = left gonopod in ventral view, 371 = phallic organ in left lateral view.

apical margin is straight vertical, its dorsal region is marked with a row of spines and ventrad terminated in a rounded triangular lobe above the gonopods; intersegmental depression between the ninth and tenth segments present, shallow and partially occupied by a pair of setose humps. Body of segment X as long as high, subtriangular; slightly elevated lateral setose area (cerci) in middle position; apicoventral setose lobe discernible as incompletely fused to the apicoventrum of the segment and armed with a pair of plate-like upward directed pointed lobes. The basal segment of the gonopods straight with dilating apical half; harpago, the terminal segment with a tip of small hook in ventral view. Phallic apparatus with arching dorsum; the pair of endothecal sclerites ovoid, just longer than high.

Etymology. *tongoma*, named after the *locus typicus* of the holotype.

Cheumatopsyche holzschuhi species group

This species group includes species with elongated appendages or processes on segments IX or X of various origin. Usually, tergum IX or only the lateroapical corner of tergum IX and the dorsoapical and ventroapical setose lobes on segment X are elongated (Oláh *et al.* 2008a). It requires a detailed study to homologize these dorsal elongated lobes or processes. These elongated lobes are possibly plesiomorphic with dubious homology, and the elongation of the lateroapical corner of tergum IX is possibly an apomorphic state. This is a rather heterogeneous, possibly polyphyletic group of chimeric species. Most species have short and rather complex second segment of inferior appendages, and some species have unusual terminal structures on the phallotheca. The species group is distributed on the mainland and on islands of Southeast Asia, known from India, Thailand, Laos, Vietnam, Taiwan and the Philippines.

Cheumatopsyche apuma new species complex

This new species complex of the *C. holzschuhi* species group is the most apomorphic lineage of

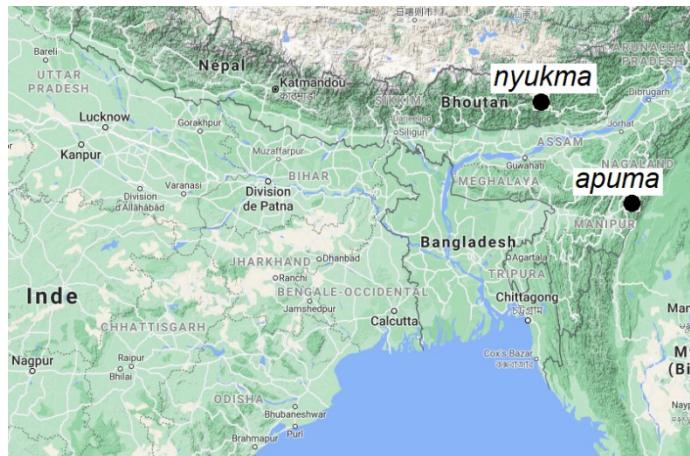
the *Cheumatopsyche* genus. The dorsum of segment IX and the entire segment X are completely restructured, due to drastic or even dramatic perturbation by stochastic internal or external effects and corrected in the protective processes of integrative organisation. The plesiomorphic, ancestral genital plan, with elongated cerci of the *C. pali* species group and the most complete processes on the apical region of segment X in the *C. lepida* species group (Oláh *et al.* 2008a) is so much modified that we have to turn to the structure of wing venation in order to reconstruct the genetic status of these caddisflies. The distance between crossveins *m-cu* to *cu* on forewing is close, a character state of the *Cheumatopsyche* and *Potamyia* genera in the Hydropsychinae subfamily. However, the stem of *M* and *Cu₁* in hind wing is well separated, neither parallel nor close together and the crossvein *m-cu* present and well visible, a character state of the *Cheumatopsyche* genus. In the *Potamyia* genus the stem of *M* and *Cu₁* in hind wing is parallel and close together therefore, the crossvein *m-cu* absent or obscure.

Cheumatopsyche apuma species complex is characterized by the posterad elongated, fused or subdivided tergite IX, the highly reduced almost vestigial unsetose mesocaudal lobe, by the hardly discernible setose surface of cerci, by the apicoventral setose lobes uniquely detached from the body of segment X as well as by the abbreviated coxopodite and harpago of gonopods. The following species belongs to this species complex: *Cheumatopsyche admetos* Malicky & Chantaramongkol (Thailand), *C. apuma* sp. nov. (India, Manipur); *C. automedon* Malicky & Chantaramongkol (Thailand), *C. edom* Malicky & Chantaramongkol (Laos), *C. meyi* Malicky (Vietnam), *C. nyukma* sp. nov. (India, Arunachal Pradesh), *C. saiyok* Malicky & Chantaramongkol (Thailand).

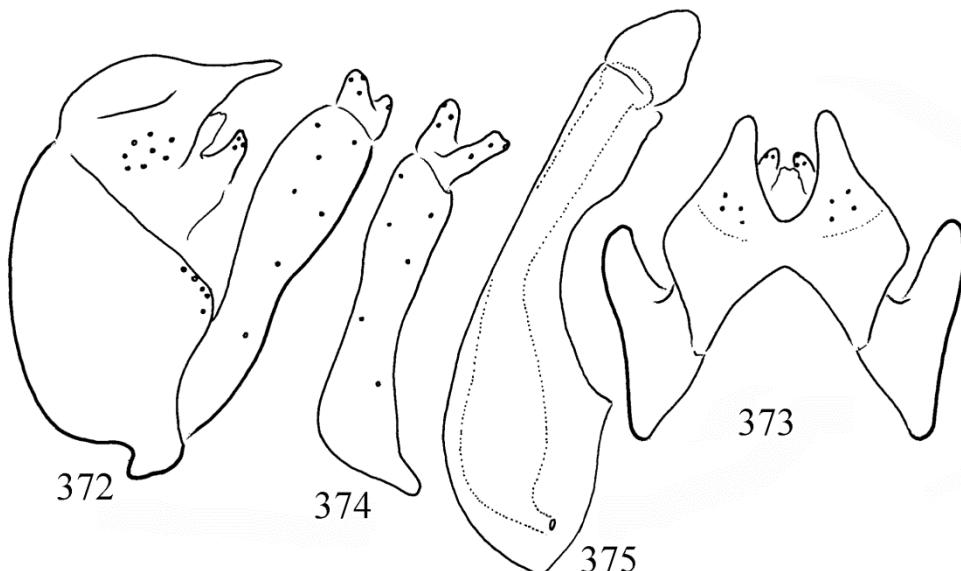
Cheumatopsyche apuma sp. nov.

(Figures 372–375, Map 6: n° 18, Map 24)

Material examined. Holotype: India, Manipur, Mapum, 5000 ft., 25°04'55.9"N 94°30'16.9"E, 11. VI.1960, leg. F. Schmid (1 male, OPC). Paratype: same as holotype (1 male, OPC).



Map 24. *Cheumatopsyche holzschuhi* group.



Figures 372–375. *Cheumatopsyche apuma* sp. nov. Holotype: 372 = male genitalia in left lateral view, 373 = male genitalia in dorsal view, 374 = left gonopod in ventral view, 375 = phallic organ in left lateral view.

Diagnosis. This new species having highly restructured genital components belongs to the *Cheumatopsyche holzschuhi* species group (Oláh *et al.* 2008a). According to the structure of segment X, the gonopod, especially the harpago and the phallic organ this small, delicate brown species gives the nominate species of the *C. apuma* species complex. Most close to *C. edom* Malicky, described from Laos, but differs by trapezoid shape of segment IX in dorsal view; the different shapes of the bilobed harpago as well as

by the more robust phallic organ and the endothecal sclerites with narrowing apical region in lateral view.

Description. A uniformly brown coloured small species with forewing length of 7 mm.

Male genitalia. Abdominal segment IX fused annular, medium long; anterior margin arciform, its tergite elongated posterad; the ventrum is without spiny ventrocaudal mesal lobe; apical margin is produced into a flat triangular lobe

above the gonopods, marked with a row of strong spines. Body of segment X subdivided; elongated lateral setose area (cerci) in middle position; apicoventral setose lobe digitate and detached from the body of segment X. The basal segment of the gonopods the coxopodite is very short, stout; harpago, the terminal segment abbreviated with bilobed terminal pattern. Phallic apparatus with constricted middle and broadening apicoventrum; the pair of endothecal sclerites elongated, ovoid with narrowing apex.

Etymology. *apuma*, coined from the name of the *locus typicus* of holotype.

Cheumatopsyche nyukma sp. nov.

(Figures 376–379, Map 4: n° 27, Map 24)

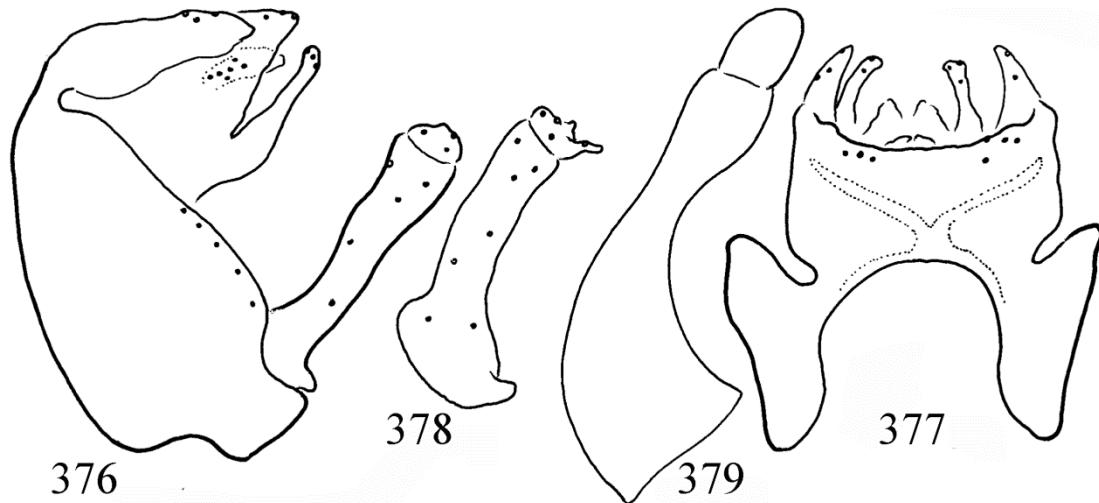
Material examined. Holotype: **India**, Arunachal Pradesh (Assam), Kameng, Nyukmadong, 6600–8000 ft., 27°24'32.5"N 92°07'57.3"E, 1. VIII.1961, leg. F. Schmid, (1 male, OPC).

Diagnosis. This new species having highly restructured genital components belongs to the *Cheumatopsyche holzschuhi* species group (Oláh *et al.* 2008a). According to the structure of segment X, the gonopod, especially the harpago and

the phallic organ this small, delicate brown species is a member of the *C. apuma* species complex. Most close to *C. saiyok* Malicky and Chantaramongkol, described from Thailand, but differs by posterad elongated tergite X without mesal excision, by the more elongated and detached apicoventral setose lobes, by the fine structure of harpago as well as by the lateral profile of the phallic organ.

Description. A uniformly brown coloured small species with forewing length of 7 mm.

Male genitalia. Abdominal segment IX fused annular, medium long; anterior margin arciform, its tergite elongated posterad; the ventrum is without spiny ventrocaudal mesal lobe; apical margin is produced into a flat rounded lobe above the gonopods, marked with a row of strong spines. Body of segment X subdivided; elongated lateral setose area (cerci) in middle position; apicoventral setose lobe digitate and detached from the body of segment X. The basal segment of the gonopods the coxopodite is very short, stout; harpago, the terminal segment abbreviated with small digitiform ventromesal process. Phallic apparatus with constricted middle and broadening apicodorsum and more apicoventrum; the pair of endothecal sclerites elongated, ovoid.



Figures 376–379. *Cheumatopsyche nyukma* sp. nov. Holotype: 376 = male genitalia in left lateral view, 377 = male genitalia in dorsal view, 378 = left gonopod in ventral view, 379 = phallic organ in left lateral view.

Etymology. *nyukma*, coined from the name of the *locus typicus* of holotype.

Potamyia Banks, 1900

Potamyia czeckanovskii species group

Tenth tergum developed with very characteristic upwardly directed pronounced hook formation: hook at least twice as long as wide, base narrow, situated at ventroapical corner (Oláh *et al.* 2006).

Potamyia flavata new species complex

This new species complex is characterized by the medium long upward directed hook formation. The tip of the ventroapically erected hooks reaches about half to the top of segment X.

Potamyia binhoa sp. nov.

(Figures 380–381, Map 25)

Material examined. Holotype: **Vietnam**, Hoabinh [=Hòa Bình], 30.I.1986, light leg. J. Oláh (1 male, OPC).

Diagnosis. *Potamyia binhoa* sp. nov. with upward directed and very pronounced hook formation on segment X belongs to *Potamyia czeckanovskii* species group (Oláh *et al.* 2006) and to the *Potamyia flavata* species complex. Having abbreviated hook formation most close to *P. klahahana* (Ulmer, 1951) described from East Java, but differs by having regularly curving hook reaching over, not below the half of the top of segment X, as well as not angled; cerci lower.

Description. Body and wings light yellowish brown with brown pubescence. Forewing without any maculation. Antennae less than twice length of forewing. Abdominal segment V with very short pointed lobe only. Spur formula 144. Forewing 7 mm. In forewing crossveins *m-cu* and *cu* close; *Cu2* and *A* joining well before wing margin; In hindwing stem of *M* plus proximal part of *M3+4* almost touching and running parallel with *CuI*; fork 1 present.

Male genitalia. Abdominal segment IX fused annular and short, tergum shorter than sternum; anterior margin of segment IX convex; apical lobe on posterolateral margin small above the narrow articulation cavity of the gonopod; spine row on the posterior margin of segment IX almost complete. Intersegmental step between segment IX and segment X low and oblique. The body of segment X as high as long; ventroapical hook formation reaching just above half of the top of segment X. The first segment of the gonopod with broadening apical and thinner ventral half angled and S-forming; harpago truncated. Phallotheca with moderately enlarged phallobase, the straight horizontal shaft with regular straight dorsum, with slightly upward directed apicodorsum; ventral broadening long; endophallus looks a narrow tube at the gonopore near to the bottom of the phallobase; the chitinized endothecal process circular, phallotremal sclerites broad vertical in lateral view.

Etymology. *binhoa*, named after the *locus typicus* of holotype.

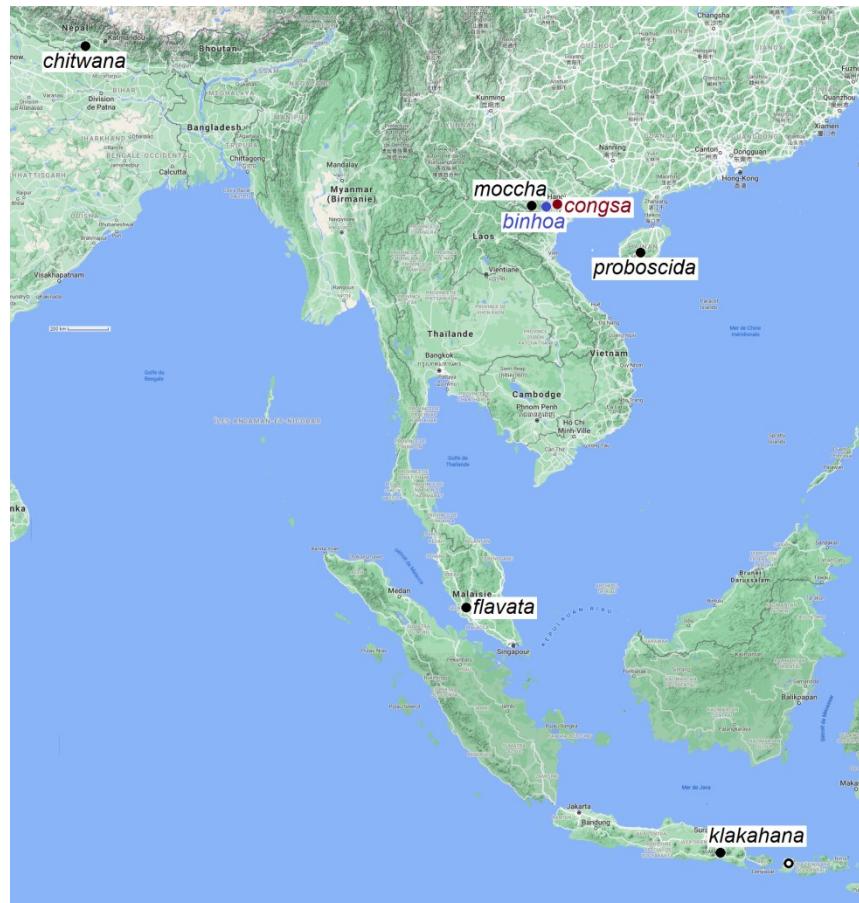
Potamyia chitwana sp. nov.

(Figures 382–383, Map 25)

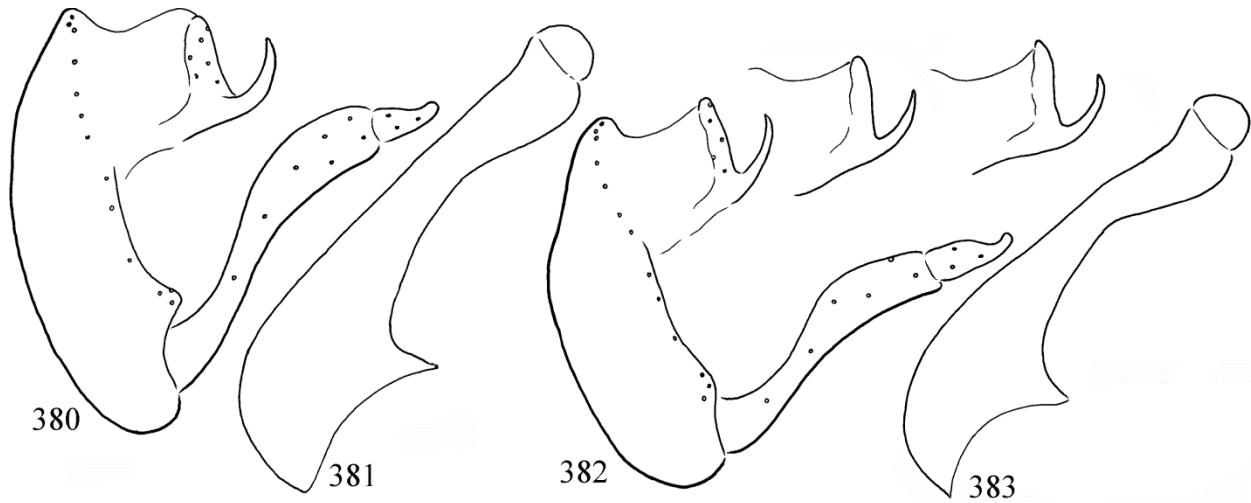
Material examined. Holotype: **Nepal**, Chitwan, Sauraha, 27°30'36.1"N 84°27'12.1"E, 26.XII.1981–9.I.1982, subtropical deciduous forest (mainly *Shorea robusta*), swept from low vegetation, leg. L. Jessop (1 male, OPC). Paratypes: same as holotype (2 males, OPC).

Diagnosis. *Potamyia chitwana* sp. nov. with upward directed and very pronounced hook formation on segment X belongs to *Potamyia czeckanovskii* species group (Oláh *et al.* 2006) and to the *Potamyia flavata* species complex. Having long hook formation most close to *P. flavata* (Banks, 1934) described from Malaysia, but differs by having hook formation less curving and forming a V-shaped, not a U-shaped bottom between cerci and hooks.

Description. Body and wings light yellowish brown with brown pubescence. Forewing without



Map 25. *Potamyia flavata* species complex.



Figures 380–383. *Potamyia binhoa* sp. nov. Holotype: 380 = male genitalia in left lateral view, 381 = phallic organ in left lateral view. *Potamyia chitwana* sp. nov. Holotype: 382 = male genitalia in left lateral view with the spine formation of the paratypes in lateral view, 383 = phallic organ in left lateral view.

any maculation. Antennae less than twice length of forewing. Abdominal segment V with very short pointed lobe only. Spur formula 144. Forewing 7 mm. In forewing crossveins *m-cu* and *cu* close; *Cu2* and *A* joining well before wing margin; In hindwing stem of *M* plus proximal part of *M3+4* almost touching and running parallel with *CuI*; fork 1 present.

Male genitalia. Abdominal segment IX fused annular and short, tergum shorter than sternum; anterior margin of segment IX convex; apical lobe on posterolateral margin small above the narrow articulation cavity of the gonopod; spine row on the posterior margin of segment IX almost complete. Intersegmental step between segment IX and segment X low and oblique. The body of segment X as high as long; ventroapical hook formation reaching just above half of the top of segment X, enclosing a V-shaped bottom between cerci and hooks. The first segment of the gonopod with broadening apical and thinner ventral half angled and S-forming; harpago truncated. Phallotheca with moderately enlarged phallobase, the straight horizontal shaft with regular straight dorsum, with upward directed apicodorsum; ventral broadening long; endophallus looks a narrow tube at the gonopore near to the bottom of the phallobase; the chitinized endothecal process circular, phallotremal sclerites broad vertical in lateral view.

Etymology. *chitwana*, named after the *locus typicus* of holotype.

***Potamyia congsa* sp. nov.**

(Figures 384–385, Map 25)

Material examined. Holotype: Vietnam, Hanoi, Red River, 28.X.1986, singled from below embankment stones on the shoreline, leg. J. Oláh (1 male, BMNH).

Diagnosis. *Potamyia congsa* sp. nov. with upward directed and very pronounced hook formation on segment X belongs to *Potamyia czeckanovskii* species group (Oláh *et al.* 2006) and to the *Potamyia flavata* species complex. Having long hook formation most close to *P. flavata* (Banks, 1934) described from Malaysia, but differs by

having hook formation more curving, even longer and slender and forming a deeper U-shaped bottom between cerci and hooks. The middle region of the phallotheca more constricted and its apicodorsum less curving upward.

Description. Body and wings light yellowish brown with brown pubescence. Forewing without any maculation. Antennae less than twice length of forewing. Abdominal segment V with very short pointed lobe only. Spur formula 144. Forewing 7 mm. In forewing crossveins *m-cu* and *cu* close; *Cu2* and *A* joining well before wing margin; In hindwing stem of *M* plus proximal part of *M3+4* almost touching and running parallel with *CuI*; fork 1 present.

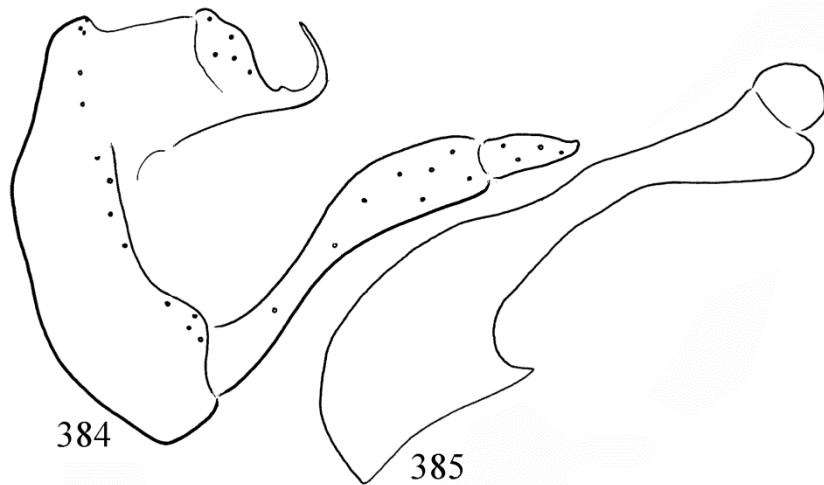
Male genitalia. Abdominal segment IX fused annular and short, tergum shorter than sternum; anterior margin of segment IX convex; apical lobe on posterolateral margin small above the narrow articulation cavity of the gonopod; spines row on the posterior margin of segment IX almost complete. Intersegmental step between segment IX and segment X low and oblique. The body of segment X longer than high; ventroapical hook formation reaching well above half of the top of segment X, enclosing a U-shaped bottom between cerci and hooks. The first segment of the gonopod with broadening apical and thinner ventral half angled and S-forming; harpago truncated. Phallotheca with moderately enlarged phallobase, the straight horizontal shaft with waving dorsum, with slightly upward directed apicodorsum; ventral broadening pronounced and long; endophallus looks a narrow tube at the gonopore near to the bottom of the phallobase; the chitinized endothecal process circular, phallotremal sclerites broad vertical in lateral view.

Etymology. *congsa*, named after the *locus typicus* of holotype Red River Cong Sa in Vietnamese.

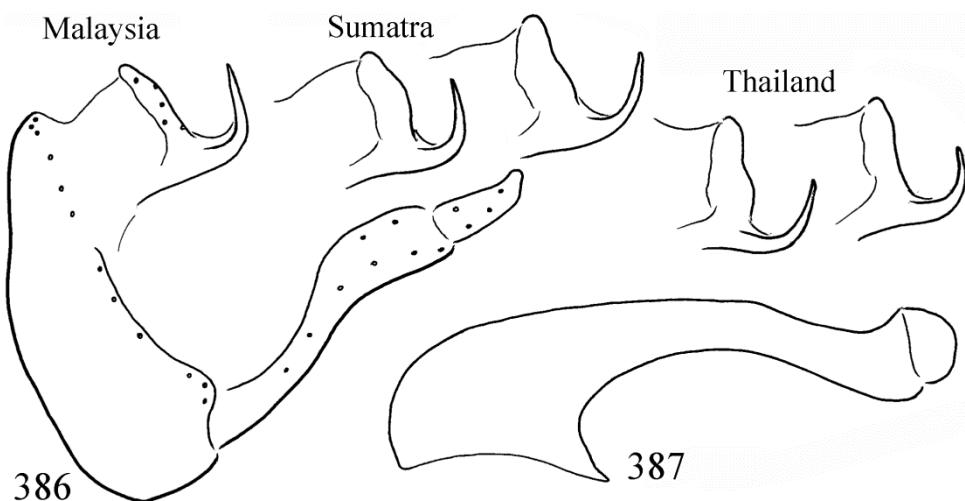
***Potamyia flavata* (Banks, 1934)**

(Figures 386–387, Map 25)

Hydropsyche flavata Banks, 1934: 569. “Kuala Lumpur, 21 April, 2 April, 15 June.” “The union of the anals before margin is unusual in this genus, but otherwise it is a normal *Hydropsyche*.”



Figures 384–385. *Potamyia congsa* sp. nov. Holotype: 384 = male genitalia in left lateral view, 385 = phallic organ in left lateral view.



Figures 386–387. *Potamyia flavata* sp. nov. Holotype: 386 = male genitalia in left lateral view, with spine formation of specimens from Malaysia, Sumatra and Thailand, 387 = phallic organ in left lateral view.

Material examined. **Malaysia**, Kuala Lumpur, 27.X.1938, at light, leg. N. C. E. Miller (1 male, BMNH). *Cheumatopsyche kraepelini* Ulmer? det. by M. E. Mosely. *Synaptopsyche klakahana* Ulmer, det. by D. E. Kimmins, 1961. **Sumatra**, North Sumatra, Dolok Merangir, 23.VII.1972, leg Malicky (6 males, OPC). **Thailand**, Phu Phan National Park, 18.IV.1996 leg. H. Malicky (1 male, 3 females; OPC). Thailand, Bamgsaen, 4.IV.1989, leg H. Malicky (12 males, OPC). Thailand, Chiangmai, 25.IV.1988, Leg. H. Malicky (2 males, OPC).

Potamyia klakahana (Ulmer, 1951), stat. rest.

(Figures 388–389, Map 25)

Synaptopsyche klakahana Ulmer, 1951:254–255.
“Material: 1 ♂, in spiritus, Klakah, Ost-Java, X. 1928, an der lampe, Thienemann leg., in meiner Samlung; dies die Type.” “Am nächsten verwandt mit czeskanovskianovskii Martynov aus Sibirien.”
Potamyia flavata (Banks, 1934): Malicky 1997:1035.
“Mir liegen viele Exemplare von Bali, Sumatra und Thailand vor, und ich konnte den HT von KLakah (Java) aus dem Hamburger Museum untersuchen.”

Herr Dr. W. Mey sandte mir eine Zeichnung von HT der *P. flavata* aus Malaysia. Es besteht daher kein Zweifel an der Synonymie."

Material examined. Holotype: **Indonesia**, East Java, Klakah, X.1928, light leg. A. Thienemann (1 male, ZMB). Indonesia, Lombok, Narmada, leg. Rensch (1 male, ZMB).

***Potamyia moccha* sp. nov.**

(Figures 390–391, Map 25)

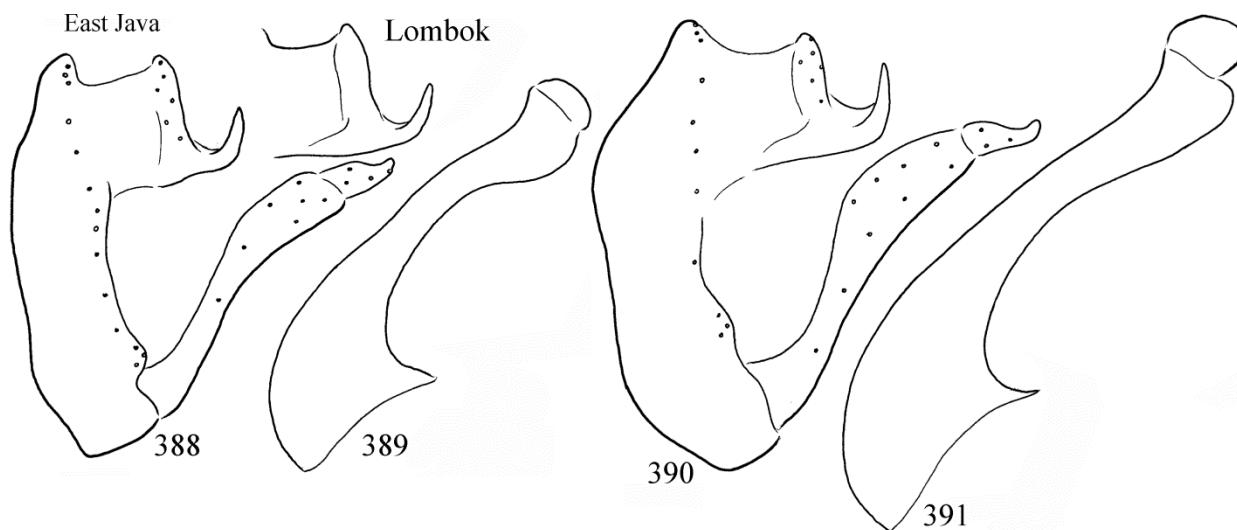
Material examined. Holotype: **Vietnam**, Moc Chau, 26.X.1986, light leg. J. Oláh (1 male, OPC).

Diagnosis. *Potamyia moccha* sp. nov. with upward directed and very pronounced hook formation on segment X belongs to *Potamyia czeckanovskii* species group (Oláh *et al.* 2006) and to the *Potamyia flavata* species complex. Most close to *P. binhoa* sp. nov. described from Vietnam, but differs by having hook formation with very broad basement as well as the apical region of the phallotheca more upward directed.

Description. Body and wings light yellowish brown with brown pubescence. Forewing without any maculation. Antennae less than twice length

of forewing. Abdominal segment V with very short pointed lobe only. Spur formula 144. Forewing 7 mm. In forewing crossveins m-cu and cu close; Cu₂ and A joining well before wing margin; In hindwing stem of M plus proximal part of M₃₊₄ almost touching and running parallel with Cu₁; fork 1 present.

Male genitalia. Abdominal segment IX fused annular and short, tergum shorter than sternum; anterior margin of segment IX convex; apical lobe on posterolateral margin small above the narrow articulation cavity of the gonopod; spines row on the posterior margin of segment IX almost complete. Intersegmental step between segment IX and segment X low and oblique. The body of segment X longer than high; ventroapical hook formation with very broad basement, reaching above half of the top of segment X. The first segment of the gonopod with broadening apical and thinner ventral half angled and S-forming; harpago truncated. Phallotheca with moderately enlarged phallobase, the straight horizontal shaft with slightly convex dorsum, with pronounced upward directed apicodorsum; ventral broadening long; endophallus looks a narrow tube at the gonopore near to the bottom of the phallobase; the chitinized endothecal process circular, phalloscrem sclerites broad vertical in lateral view.



Figures 388–391. *Potamyia klakahana* (Ulmer, 1951). 388 = male genitalia in left lateral view, with spine formation of specimens from the type locality of East Java as well as from Lombok, 389 = phallic organ in left lateral view. *Potamyia moccha* sp. nov. Holotype: 390 = male genitalia in left lateral view, 391 = phallic organ in left lateral view.

Etymology. *moccha*, named after the *locus typicus* of holotype.

***Potamyia proboscida* Li & Tian, 1996, stat. rest.**
(Figures 392–393, Map 25)

Potamyia proboscida, Li et Tian, 1996 in Tian et al. 1996: 136–137 (Chinese), 185 (English): “Holotype ♂, Ba-wang-ling, Hainan, V-23, 1983, Ke Ming-hui. Allotype ♀; paratypes 3♂, Ba-wang-ling, Hainan, V-23, 1983, Ke Ming-hui.”

Potamyia flavata (Banks, 1934): Oláh et al. 2006: 755.
P. proboscida described from China Hainan Island is synonymised with *P. flavata* based on the statement of the third author that *Potamyia flavata* “is a somewhat variable species with wide distribution.”

Material. Drawings from the original description.

Remarks. The lateral profile of the speciation traits, both the segment X and the phallic organ are excellently detailed permitting to delineate this incipient sibling species isolated in allopatric condition of the Hainan Island. **Stat. Rest.**

***Potamyia nikalandugola* new species complex**

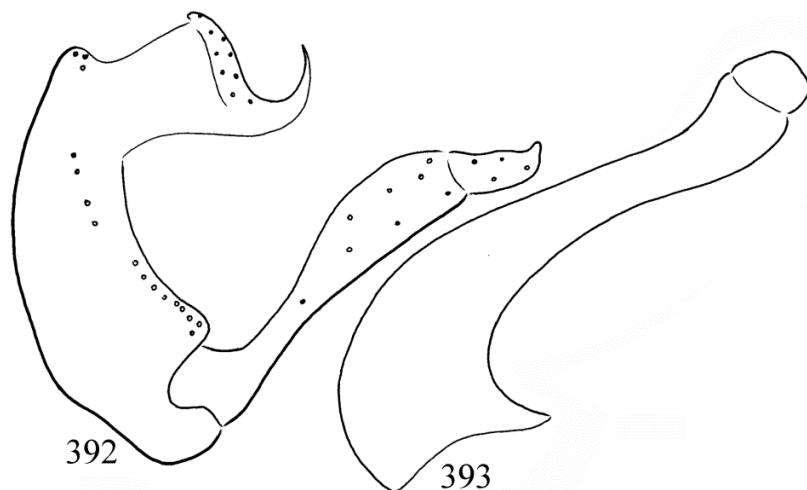
This new species complex is characterized by the very long upward directed hook formation. The tip of the ventroapically erected hook almost reaches or even surpasses the top of segment X.

***Potamyia hasalaka* sp. nov.**
(Figures 394–396, Map 26)

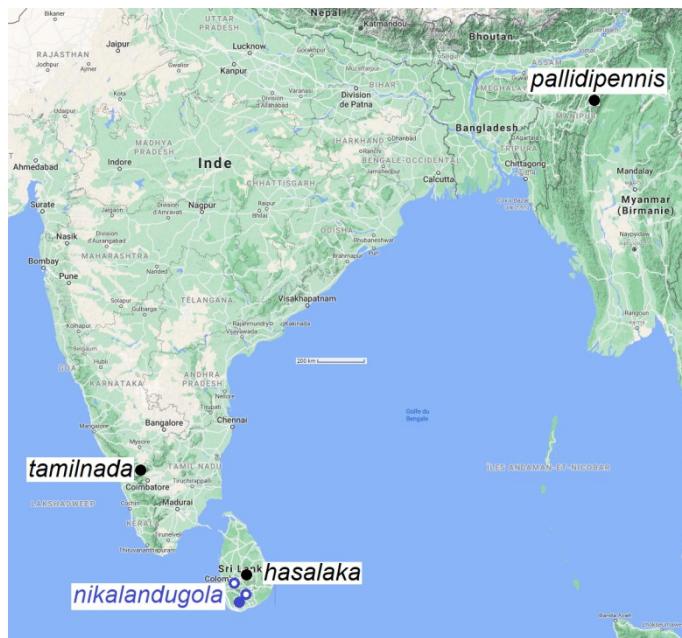
Material examined. Holotype: Sri Lanka, Hasalaka, 300 ft., 7°21'08.9"N 80°56'50.2"E, 23.XI. 1970, leg. O.S. Flint, det. as *Potamyia nikalandugola* by O. S. Flint (1 male, BMNH).

Diagnosis. *Potamyia hasalaka* sp. nov. with upward directed and very pronounced hook formation on segment X belongs to *Potamyia czekanovskii* species group (Oláh et al. 2006) and to the *Potamyia nikalandugola* species complex. Close to *P. nikalandugola* (Schmid, 1958) described from Sri Lanka, but differs by having shorter and curving hook formation, unlike hook formation of *P. nikalandugola* reaching to the top of segment X and straight; the vertical region of hook formation broad middle narrowing apicad and basad, not evenly narrow. The ventral profile of harpago as well as the lateral profile of phallic organ also differs.

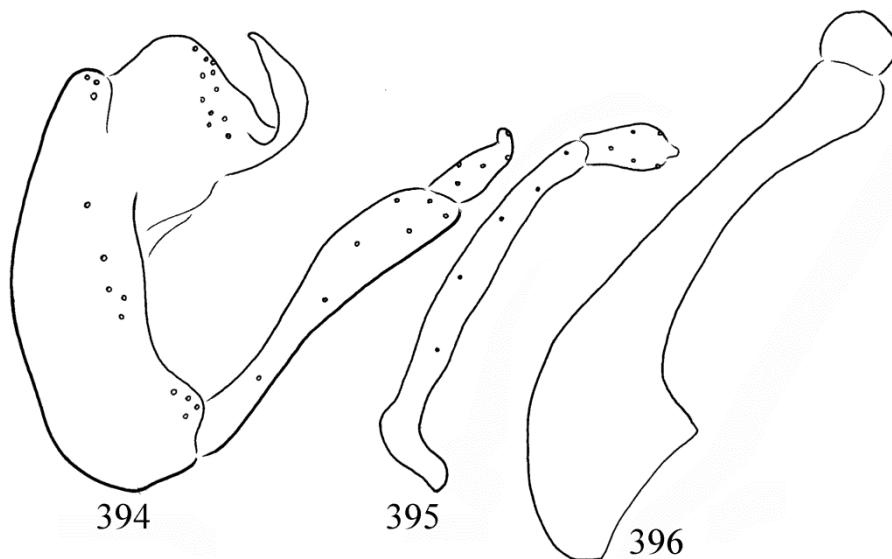
Description. Body and wings light yellowish brown with brown pubescence. Forewing without any maculation. Antennae less than twice length of forewing. Abdominal segment V with very short pointed lobe only. Spur formula 144. Forewing 8 mm. In forewing crossveins *m-cu* and *cu* close; *Cu₂* and *A* joining well before wing mar-



Figures 392–393. *Potamyia proboscida* Li & Tian, 1996. 392 = male genitalia in left lateral view, 393 = phallic organ in left lateral view.



Map 26. *Potamyia nikalandugola* complex and *chinensis* group.



Figures 394–396. *Potamyia hasalaka* sp. nov. Holotype: 394 = male genitalia in left lateral view, 395 = left gonopod in ventral view, 396 = phallic organ in left lateral view.

gin. In hindwing stem of M plus proximal part of $M3+4$ almost touching and running parallel with CuI ; fork 1 present.

Male genitalia. Abdominal segment IX fused annular and short, tergum shorter than sternum; anterior margin of segment IX convex; apical lobe

on posterolateral margin lacking above the narrow articulation cavity of the gonopod; spines row on the posterior margin of segment IX almost complete. Intersegmental step between segment IX and segment X low. The body of segment X higher than long; ventroapical hook formation

long, reaching just below the top of segment X. The first segment of the gonopod with broadening apical and thinner ventral half; harpago broadening apicad in ventral view with mesad turning process. Phallotheca with moderately enlarged phallobase, the straight horizontal shaft with regular straight dorsum, the most striking feature is the short ventral subapical keel; endophallus looks a narrow tube at the gonopore near to the bottom of the phallobase; the chitinized endothecal process circular, phallotremal sclerites broad vertical in lateral view.

Etymology. *hasalaka*, named after the *locus typicus* of holotype.

***Potamyia nikalandugola* (Schmid, 1958)**

(Map 26)

Synaptopsyche nikalandugola Schmid, 1958: 114–115.
"Holotype ♂: Sri Lanka, Deniyaya, 6°20'33.8"N 80°33'36.5"E, 5-II, 1♂; Beliul Oya [=Belihul Oya], 6°43'48.8"N 80°49'26.9"E, 19-II, 1 ♂; Kitulgala, 6°59'25.8"N 80°25'12.2"E, 4-IV, 1 ♀." "Cette espèce très voisine de *S. klakahana* Ulm. de Java."
Potamyia nikalandugola (Schmid, 1958): Oláh *et al.* 2006:755. Transferred from *Synaptopsyche* to *Potamyia*, male redescribed in the *Potamyia czeckanovskii* species group.

***Potamyia tamilnada* sp. nov.**

(Figures 397–399, Map 26)

Potamyia nikalandugola (Schmid, 1958): Oláh & Johanson, 2008b: 231–232. "India: Tamil Nadu, Nilgiri Hills, Doddabetta, 1000 m, 11°24'59.0"N 76°43'52.5"E, 18.III.1980, on mossy tree, leg. Gy. Topan 2 males." Misidentification.

Material examined. Holotype: **India:** Tamil Nadu, Nilgiri Hills, Doddabetta, 1000 m, 11°24'59.0"N 76°43'52.5"E, 18.III.1980, on mossy tree, leg. Gy. Topan (1 male, OPC). Paratype: Same as holotype (1 male, OPC).

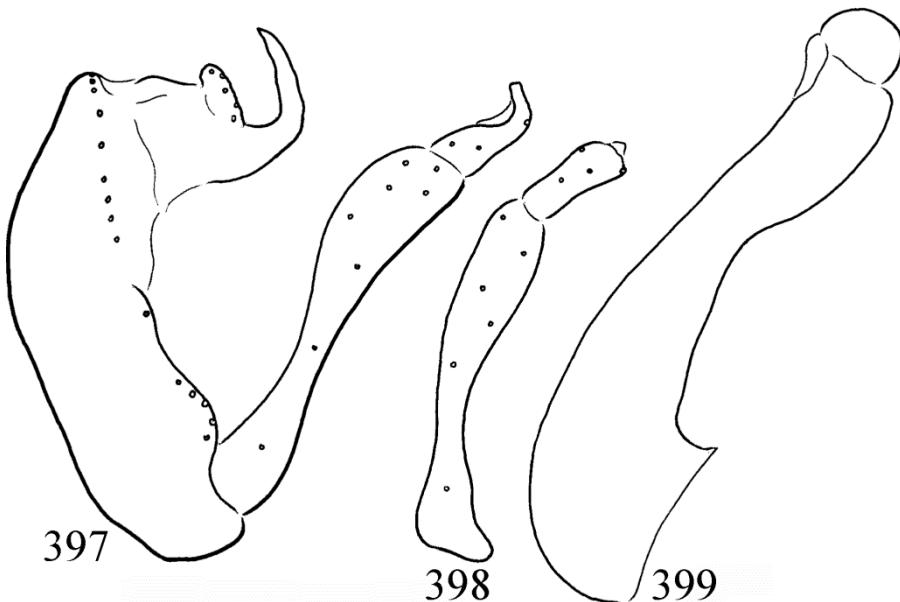
Diagnosis. *Potamyia tamilnada* sp. nov. with upward directed and very pronounced hook formation on segment X belongs to *Potamyia*

czeckanovskii species group (Oláh *et al.* 2006) and to the *Potamyia nikalandugola* species complex. Close to *P. nikalandugola* (Schmid, 1958) described from Sri Lanka, but differs by having longer, over the top of segment X, and slightly curving hook formation, unlike hook formation of *P. nikalandugola* reaching just to the top of segment X and straight. cerci lobe-like emerging over the top of segment X in lateral view. The ventral profile of harpago monolobed, not bilobed due to the mesad turning narrowing lobes.

Description. Body and wings light yellowish brown with brown pubescence. Forewing without any maculation. Antennae less than twice length of forewing. Abdominal segment V with very short pointed lobe only. Spur formula 144. Forewing 6 mm. In forewing crossveins *m-cu* and *cu* close; *Cu₂* and *A* joining well before wing margin; In hindwing stem of *M* plus proximal part of *M₃₊₄* almost touching and running parallel with *CuI*; fork 1 present.

Male genitalia. Abdominal segment IX fused annular and short, tergum shorter than sternum; anterior margin of segment IX convex; apical lobe on posterolateral margin lacking above the narrow articulation cavity of the gonopod; spine row on the posterior margin of segment IX almost complete. Intersegmental step between segment IX and segment X low. The body of segment X as high as long; cerci higher than the top of segment X in lateral view; ventroapical hook formation long, reaching above the top of segment X. The first segment of the gonopod with broadening apical and thinner ventral half; harpago broadening apicad in ventral view with mesad turning process. Phallotheca with moderately enlarged phallobase, the straight horizontal shaft constricted middway; apicodorsum upward produced by wing-like broadenings; endophallus looks a narrow tube at the gonopore near to the bottom of the phallobase; the chitinized endothecal process circular, phallotremal sclerites broad vertical in lateral view.

Etymology. *tamilnada*, named after the *locus typicus* of the holotype.



Figures 397–399. *Potamyia tamlindana* sp. nov. Holotype: 397 = male genitalia in left lateral view
398 = left gonopod in ventral view, 399 = phallic organ in left lateral view.

Potamyia chinensis species group

Tenth tergum long with pair of slightly up-curving small ventrocaudal hooks or rather small spines (Oláh *et al.* 2006).

Potamyia pallidipennis (Martynov, 1935)

(Figures 400–403, Map 6: n° 18, Map 26)

Material examined. India, Manipur, Mapum, 5000 ft., 25°04'55.9"N 94°30'16.9"E, 11.VI.1960, leg. F. Schmid (1 male, OPC). India, Manipur, Sihai Khullen, 4700 ft., 25°11'32.1"N 94°29'31.5"E, 25.VI.1960, leg. F. Schmid (1 male, CNC).

Potamyia flava species group

Tenth tergum without any, or with very small hook formation, variable in position, or even with just the upward curving apices of the apical lobes (Oláh *et al.* 2006). Apical lobes of tergum X usually close mesally with short (narrow) interlobular gap, seldom wide or disappeared and the lobes are fused.

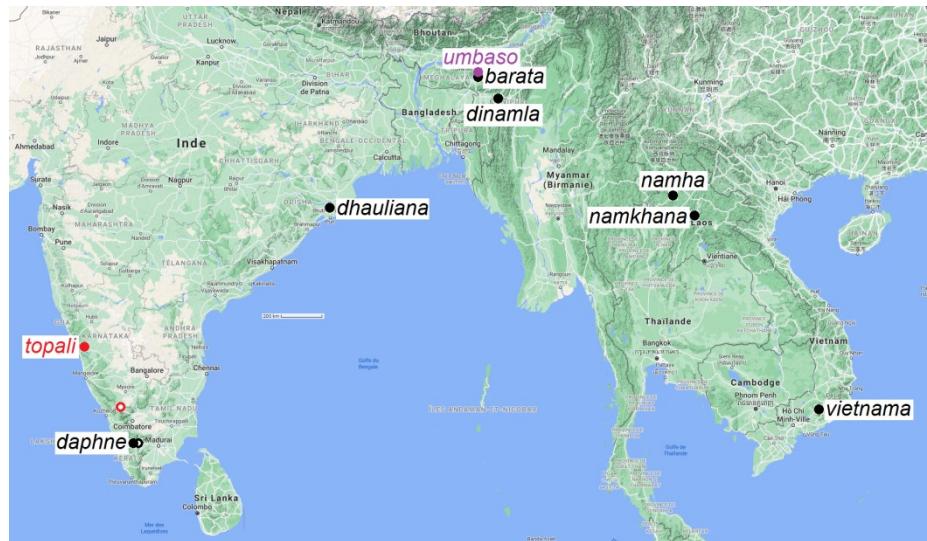
Potamyia dinamla sp. nov.

(Figures 404–407, Map 6: near n° 4, Map 27)

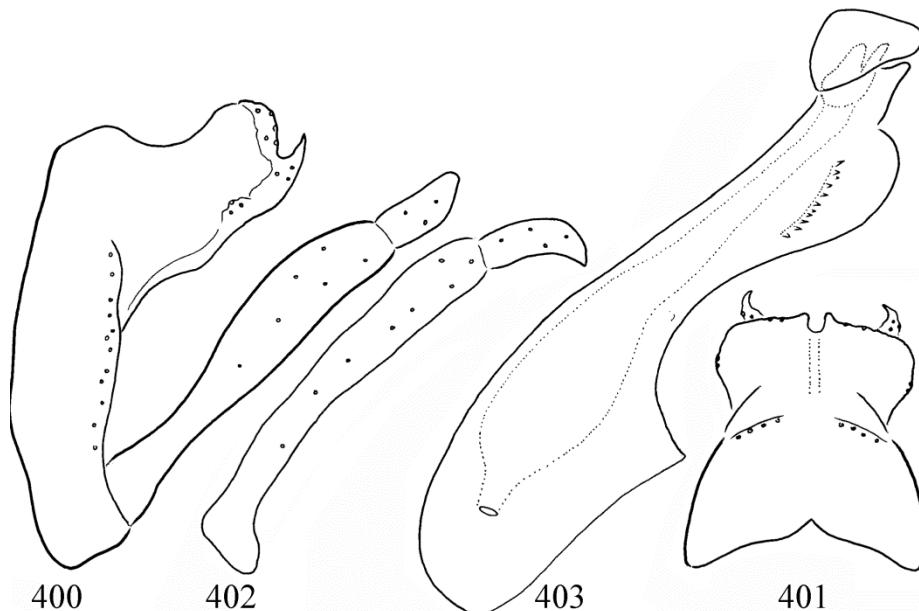
Material examined. Holotype: India, Manipur, Dinamlong, 300 ft., unknown locality, probably near the next collecting site on the Schmid's road: Kambiron, 24°44'46.9"N 93°23'01.7"E, 22.–23.V.1960, leg. F. Schmid (1 male, CNC).

Diagnosis. *Potamyia dinamla* sp. nov. with very small hook formation on segment X belongs to *Potamyia flava* species group (Oláh *et al.* 2006) and close to *P. elektra* Malicky & Chantaramongkol, 2008 described from Thailand, but differs by having completely rounded and not excised ventroapical angle of the ventroapical lobe, by the anterad and not upward turning of the narrowing pointed process of the ventroapical setose lobe. The lateral profile of the phallic organ without waving dorsum and with much less developed phallobase.

Description. Body and wings light yellowish brown with brown pubescence. Forewing without



Map 27. *Potamyia flava* and *trenhona* groups.



Figures 400–403. *Potamyia pallidipennis* (Martynov, 1935). 400 = male genitalia in left lateral view, 401 = male genitalia in dorsal view, 402 = left gonopod in ventral view, 403 = phallic organ in left lateral view.

any maculation. Antennae less than twice length of forewing. Abdominal segment V with very short pointed lobe only. Spur formula 144. Forewing 9 mm. In forewing crossveins *m-cu* and *cu* close; *Cu₂* and *A* joining well before wing margin; In hindwing stem of *M* plus proximal part of *M₃₊₄* almost touching and running parallel with *Cu₁*; fork 1 present.

Male genitalia. Abdominal segment IX fused annular and short, tergum shorter than sternum; anterior margin of segment IX convex with posterad shifted dorsal and ventral sections in lateral view; apical lobe on posterolateral margin lacking above the narrow articulation cavity of the gonopod; spines row on the posterior margin of segment IX almost complete. Intersegmental step be-

tween segment IX and segment X deep partly occupied by a pair of setose protuberances, appearing as the setose latero-caudal lobe. The body of segment X longer than high; rounded ventroapical setose lobes narrowing and pointed into an anterad curving apex visible both in lateral and dorsal views; ventroapical spiny hook lacking. The first segment of the gonopod with broadening apical and thinner ventral half; harpago digitate, mesad curving with blunt apex. Phallotheca with moderately enlarged phallobase, the straight horizontal shaft with regular straight dorsum, the most striking feature is the enlarged elongated ventral subapical keel; endophallus looks a narrow tube at the gonopore near to the bottom of the phallobase; the chitinized endothecal process semicircular, phallosomal sclerites broad vertical in lateral view.

Etymology. *dinamla*, coined from the name of the *locus typicus* of the holotype.

Potamyia trenhona species group

Tenth tergum produced into upward or backward curving hook formation with very broad bases (Oláh *et al.* 2006). This species group is

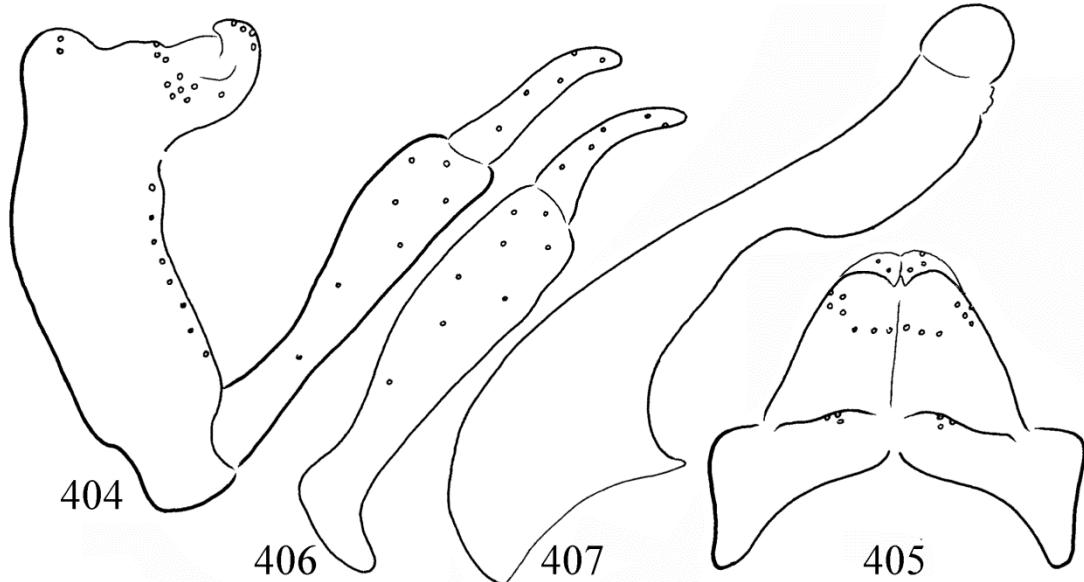
composed of two new species complexes. *Potamyia jinhongensis*, a small species complex with obliquely posterad directed long spine formation on segment X and *Potamyia yunnanica*, a large species complex with upward and variously anterad directed hook formation of various length.

Potamyia barata sp. nov.

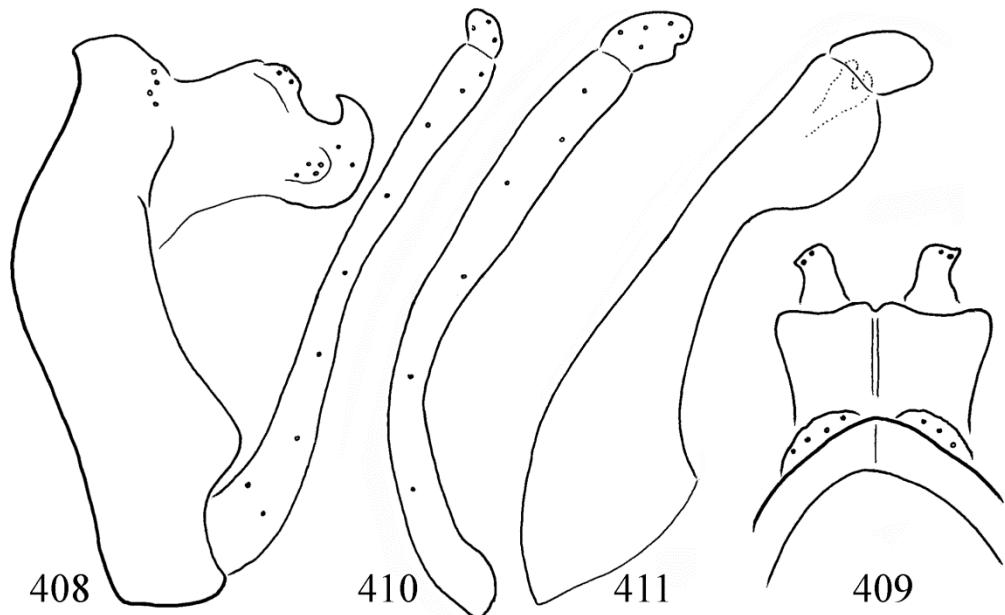
(Figures 408–411, Map 5: n° 72, Map 27)

Material examined. Holotype: **India**, Meghalaya (United Jaintia and Khasi Hills), Barato, 2500 ft., 25°36'24.1"N 92°27'23.1"E, 24.IV.1960, leg. F. Schmid (1 male, 1 associated female; CNC). Paratype: same as holotype (1 male, OPC).

Diagnosis. *Potamyia barata* sp. nov. belongs to *Potamyia trenhona* species group (Oláh *et al.* 2006) and close to *P. umbaso* sp. nov., but differs by having coxopodite slender, not dilating apicad; harpago short, not long; segment X broad-based and high, not narrow, constricted, and low; hook formation is also high, not low; lateral profile of the phallic organ that is the speciation trait has a more rounded, not elongated ventroapical keel.



Figures 404–407. *Potamyia dinamla* sp. nov. Holotype: 404 = male genitalia in left lateral view, 405 = male genitalia in dorsal view, 406 = left gonopod in ventral view, 407 = phallic organ in left lateral view.



Figures 408–411. *Potamyia barata* sp. nov. Holotype: 408 = male genitalia in left lateral view, 409 = male genitalia in dorsal view, 410 = left gonopod in ventral view, 411 = phallic organ in left lateral view.

Description. Body and wings light brown with brown pubescence. Forewing without any maculation. Antennae less than twice length of forewing. Abdominal segment V with very short pointed lobe only. Spur formula 144, single spur on foreleg tibia small. Protarsal claw asymmetrical with laterally flanked setal bundle, claws on the second and third legs also asymmetrical. Forewing 9 mm. In forewing crossveins *m-cu* and *cu* close; *Cu₂* and A joining well before wing margin; In hindwing stem of *M* plus proximal part of *M₃₊₄* almost touching and running parallel with *Cu₁*; fork 1 present.

Male genitalia. Abdominal segment IX fused annular and short, tergum twice shorter than sternum; anterior margin of segment IX convex with posterad shifted dorsal section in lateral view; apical lobe on posterolateral margin very small almost reduced and located at above the narrow articulation cavity of the gonopod; spine row on the posterior margin of segment IX almost complete. Intersegmental step between segment IX and segment X deep partly occupied by a pair of setose protuberances, appearing as the setose late-rocaudal lobe. The body of segment X subquadrangular; rounded ventroapical setose lobe pointed into an anterad curving spine in lateral view;

this ventroapical spiny hook dominating on the distal part of segment X. The first segment of the gonopod, the coxopodite slender without pronounced apical broadening; harpago very short broad with small excision ventrally, subapicad in ventral view. Phallotheca with enlarged phallobase, the straight horizontal shaft with regular straight dorsum, but the most striking feature the very enlarged ventral subapical rounded broadening keel; endophallus looks a narrow tube at the gonopore near to the bottom of the phallobase; the chitinized endothecal process semicircular, phalotremal sclerites broad vertical in lateral view.

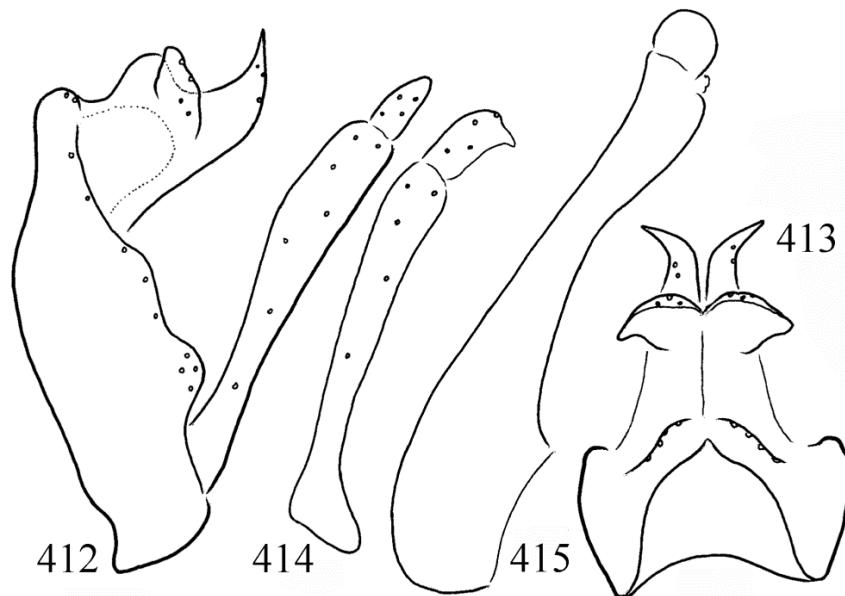
Etymology. *barata*, named after the *locus typicus* of the holotype.

Potamyia jinhongensis new species complex

Potamyia dhauliana sp. nov.

(Figures 412–415, Map 27)

Potamyia arachne Malicky, 1998: Oláh *et al.* 2006: 752. “New Records. India, Odisha, Bhubaneswar, Dhauli, 20°11'14.5"N 85°50'34.5"E, 20–28. February 1987, 2♂♂ 1♀ light (J. Oláh) (Fig. 27). Misidentification.



Figures 412–415. *Potamyia dhauliana* sp. nov. Holotype: 412 = male genitalia in left lateral view, 413 = male genitalia in dorsal view, 414 = left gonopod in ventral view, 415 = phallic organ in left lateral view.

Material examined. Holotype: **India**, Bhubaneswar, Dhauli, 20–28.II.1987, light leg. J. Oláh (1 male, OPC). Paratypes: same as holotype (1 male, 1 female; OPC).

Diagnosis. *Potamyia dhauliana* sp. nov. belongs to *P. trenhona* species group (Oláh *et al.* 2006) and close to *P. arachne* Malicky, 1998 described from Myanmar (Irrawaddy lowland) but differs by the lateral window (weakly sclerotized region) of segment X that is short at *P. dhauliana* sp. nov. and long at *P. arachne*; by the cerci tapering both in lateral and dorsal views, not rounded; by the higher dorsal hump on segment X; by the ventroapical lobe having spiny hook formation with slender and longer basal half, clearly visible in dorsal view; by the apicomosal long tip on the harpago visible in ventral view as well as by the lateral profile of the phallic organ with short and low phallobase.

Description. Body and wings light brown with brown pubescence. Forewing without any maculation. Antennae less than twice length of forewing. Abdominal segment V with very short pointed lobe only. Spur formula 144, single spur on foreleg tibia small. Protarsal claw asymmet-

rical with laterally flanked setal bundle, claws on the second and third legs also asymmetrical. Forewing 7 mm. In forewing crossveins *m-cu* and *cu* close; *Cu2* and *A* joining well before wing margin; In hindwing stem of *M* plus proximal part of *M3+4* almost touching and running parallel with *CuI*; fork 1 present.

Male genitalia. Abdominal segment IX fused annular and short, tergum twice shorter than sternum; anterior margin of segment IX convex with posterad shifted dorsal section in lateral view; apical lobe on posterolateral margin small and located at above the narrow articulation cavity of the gonopod; spines row on the posterior margin of segment IX almost complete. Intersegmental step between segment IX and segment X deep partly occupied by a pair of setose protuberances, appearing as the setose laterocaudal lobe. The body of segment X longer than high, cerci well-differentiated into a tapering lobe; rounded ventroapical setose lobe pointed into an upward curving pointed spine in lateral view; this ventroapical spiny hook dominating on the distal part of segment X. The first segment of the gonopod with broadening apical and very thin ventral half; harpago short broad with small apicomosal pointed process in lateral view. Phallotheca with low

and short phallobase, the straight horizontal shaft with regular straight dorsum, slightly upward bending; endophallus looks a narrow tube at the gonopore near to the bottom of the phallobase; the chitinized endothecal process circular, phallotremal sclerites broad vertical in lateral view.

Etymology. *dhauliana*, named after the *locus typicus* of the holotype.

***Potamyia yunnanica* new species complex**

***Potamyia daphne* Malicky, 1998**

(Map 27)

Potamyia daphne Malicky, 1998:20. "Holotype: India, Kerala, Kallar-Tal, 15 km SW Munnar, 1250m, 10°02'06.9"N 76°59'12.7"E, 1-9.V.1997."

Material examined. **India**, Tamil Nadu (Madras), Kottagudi [=Kottakudi], 2500 ft, 10°04' 43.9"N 77°15'44.4"E, 23.I.1962, leg. F. Schmid (1 male, OPC).

***Potamyia namha* sp. nov.**

(Figures 416–419, Map 27)

Material examined. Holotype: **Laos PDR**, Luang Namtha Prov., Nam Ha NBCA, Lakkhammai Village, Nam Leung stream, 749mao, 47Q 0744602, UTM 2339873, 30.iv.2005, light trap, loc 29, leg. N Jönsson, T. Malm and B Viklund (1 male, SMNH).

Diagnosis. *Potamyia namha* sp. nov. belongs to *Potamyia trenhona* species group (Oláh *et al.* 2006) and to the *Potamyia yunnanica* species complex. However, cerci separated, not fused and the hook formation also not typical. Unique in the complex. Intermediate taxon between species groups of *P. trenhona*, *P. flava* and *P. czeckanovskii*.

Description. Body and wings light brown with brown pubescence. Forewing without any maculation. Antennae less than twice length of forewing. Abdominal segment V with very short pointed lobe only. Spur formula 144, single spur

on foreleg tibia small. Protarsal claw asymmetrical with laterally flanked setal bundle, claws on the second and third legs also asymmetrical. Forewing 10 mm. In forewing crossveins *m-cu* and *cu* close; *Cu2* and *A* joining well before wing margin; In hindwing stem of *M* plus proximal part of *M3+4* almost touching and running parallel with *CuL*; fork 1 present.

Male genitalia. Abdominal segment IX fused annular and short, tergum 4 times shorter than sternum; anterior margin of segment IX convex with slightly posterad shifted dorsal section in lateral view; apical lobe on posterolateral margin small and located at above the narrow articulation cavity of the gonopod; spines row on the posterior margin of segment IX almost complete. Intersegmental step between segment IX and segment X oblique partly occupied by a pair of setose protuberances, appearing as the setose laterocephal lobe. The body of segment X longer than high, cerci separate setose lobes; hook formation thin, elongated; atypical for the complex. The first segment of the gonopod straight, robust; harpago elongated, with slightly mesad turning and tapering apex and mesad broadening basement in ventral view. Phallotheca with produced phallobase, constricted subapicad; endophallus looks a narrow tube at the gonopore near to the bottom of the phallobase; the chitinized endothecal sclerites semicircular, phallotremal sclerites broad vertical in lateral view.

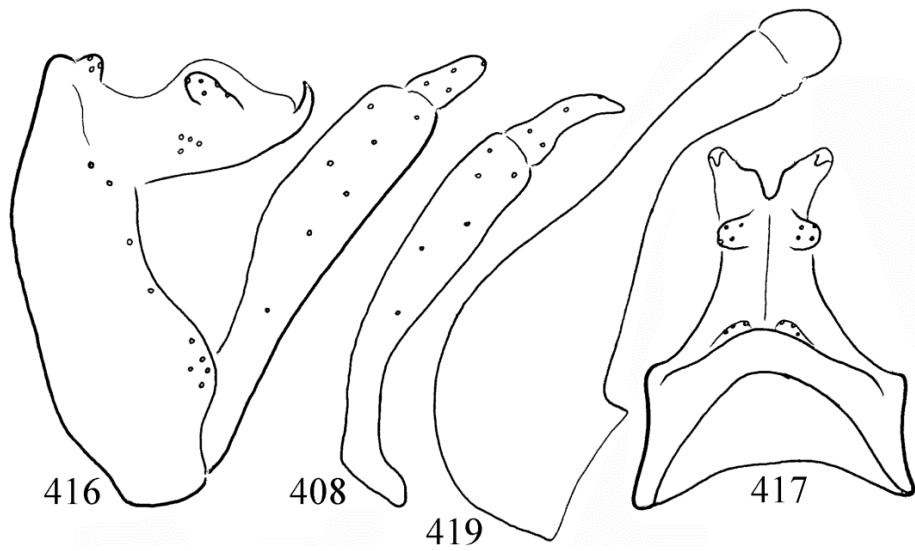
Etymology. *namha*, named after the *locus typicus* of the holotype.

***Potamyia namkhana* sp. nov.**

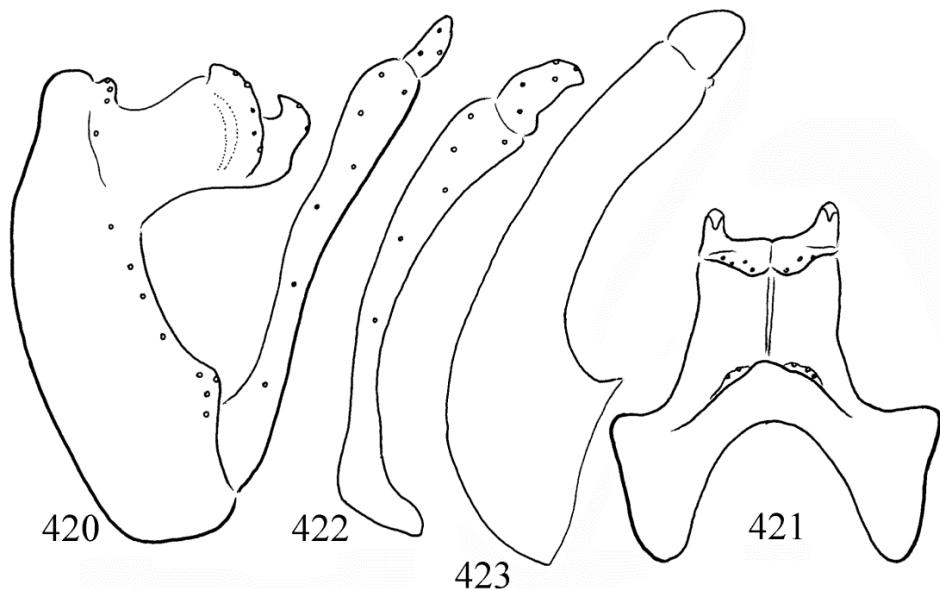
(Figures 420–423, Map 27)

Material examined. Holotype: **Laos PDR**, Luang Phrabang Prov., Nam Khan River, 500m upstr. Mekong River, 293mao, 48Q 0200517, UTM 2202237, 27.IV.2005, light trap, loc 14, leg. N. Jönsson, T. Malm and B. Viklund (1 male, SMNH).

Diagnosis. *Potamyia namkhana* sp. nov. belongs to *P. trenhona* species group (Oláh *et al.* 2006) and to the *P. yunnanica* species complex.



Figures 416–419. *Potamyia namha* sp. nov. Holotype: 416 = male genitalia in left lateral view, 417 = male genitalia in dorsal view, 418 = left gonopod in ventral view, 419 = phallic organ in left lateral view.



Figures 420–423. *Potamyia namkhana* sp. nov. Holotype: 420 = male genitalia in left lateral view, 421 = male genitalia in dorsal view, 422 = left gonopod in ventral view, 423 = phallic organ in left lateral view.

Most close to *P. trenhona* Oláh & Barnard, 2006 described from Vietnam, but differs by having more pronounced hook formation of segment X; apical third of the phallotheca straight, not directed slightly downward, as well as the endothecal sclerites of the phallic organ narrowing apicad, not circular.

Description. Body and wings light brown with brown pubescence. Forewing without any maculation. Antennae less than twice length of forewing. Abdominal segment V with very short pointed lobe only. Spur formula 144, single spur on foreleg tibia small. Protarsal claw asymmetrical with laterally flanked setal bundle, claws on

the second and third legs also asymmetrical. Forewing 7 mm. In forewing crossveins *m-cu* and *cu* close; *Cu₂* and *A* joining well before wing margin; In hindwing stem of *M* plus proximal part of *M₃₊₄* almost touching and running parallel with *Cu₁*; fork 1 present.

Male genitalia. Abdominal segment IX fused annular and short, tergum shorter than sternum; anterior margin of segment IX convex with posterad shifted dorsal section in lateral view; apical lobe on posterolateral margin small and located at above the narrow articulation cavity of the gonopod; spines row on the posterior margin of segment IX almost complete. Intersegmental step between segment IX and segment X deep partly occupied by a pair of setose protuberances, appearing as the setose latero-caudal lobe. The body of segment X longer than high, cerci well-differentiated into a fused lobe; rounded ventroapical setose lobe with apical incision of concavity, pointed into an upward and anterad curving spine in lateral view; this ventroapical spiny hook dominating on the distal part of segment X. The first segment of the gonopod almost straight and slightly broadening apicad; harpago slightly mesad turning apex and mesad broadening basement in ventral view. Phallotheca with low and short phallobase, the straight horizontal shaft with regular straight, slightly convex dorsum; endophallus looks a narrow tube at the gonopore near to the bottom of the phallobase; the chitinized endothecal sclerites narrowing apicad, phallore-

mal sclerites broad vertical in lateral view.

Etymology. *namkhana*, named after the locus typicus of the holotype.

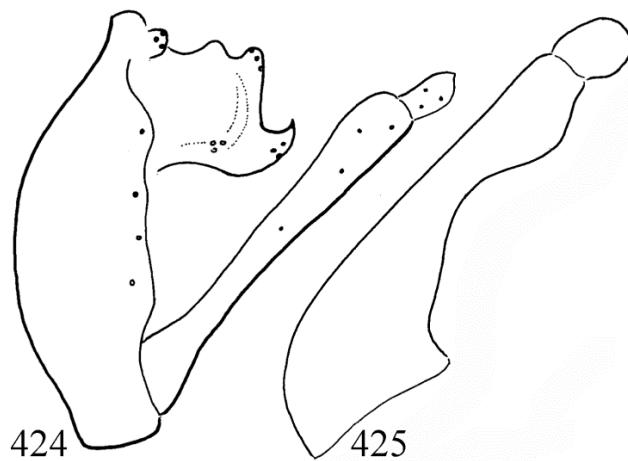
***Potamyia topali* sp. nov.**

(Figures 424–425, Map 27)

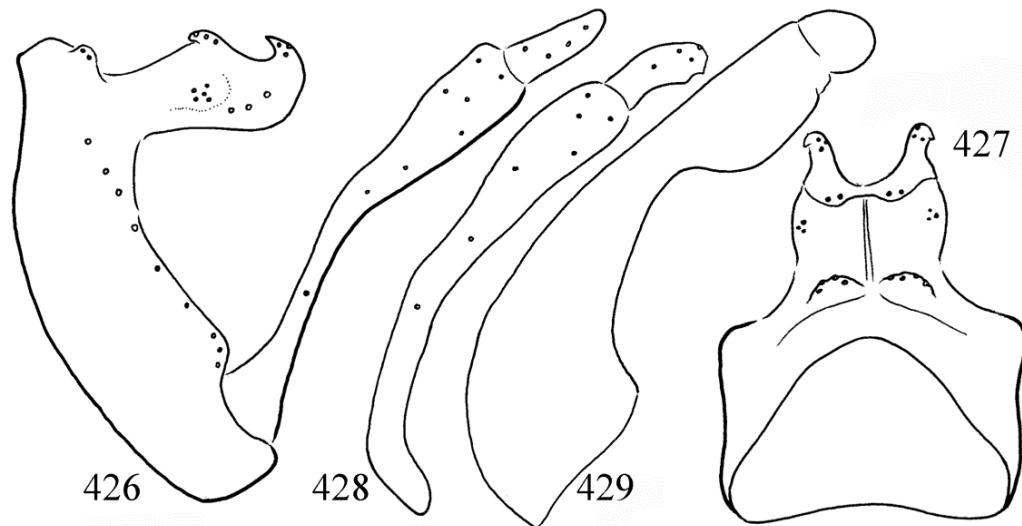
Potamyia daphne Malicky, 1998: 20. Oláh *et al.* 2006: 752. Misidentification.

Material examined. Holotype: **India**, Karnataka, Shimoga district, Jog Falls, 500m, 14°13' 45.4"N 74°48'44.9"E, 2.III.1980, light leg. GY. Topál (1 male, HNHM). Paratypes: same as holotype (6 males, HNHM, 2 males, OPC). India, Tamil Nadu, Mudumalai, 1000m, 11°37'26.2"N 76°30'37.5"E, 19.III.1980, leg. Gy. Topál (1 male, HNHM).

Diagnosis. *Potamyia topali* sp. nov. belongs to *Potamyia trenhona* species group (Oláh *et al.* 2006) and close to *P. assamana* Oláh & Scheffler, 2008 and particularly to *P. daphne* Malicky, 1998 described from Kerala, but differs by having rounded and not straight ventroapical angle of the ventroapical lobe, by the upward and not dorso-apicad turning of the pointed spine-like process of the ventroapical setose lobe. The lateral profile of the phallic organ that is the speciation trait has a straight dorsum, not waving as well as the ventroapical keel is differently shaped.



Figures 424–425. *Potamyia topali* sp. nov. Holotype: 424 = male genitalia in left lateral view, 425 = phallic organ in left lateral view.



Figures 426–429. *Potamyia umbaso* sp. nov. Holotype: 426 = male genitalia in left lateral view, 427 = male genitalia in dorsal view, 428 = left gonopod in ventral view, 429 = phallic organ in left lateral view.

Description. Male (pinned). Body and wings light brown with brown pubescence. Forewing without any maculation. Antennae less than twice length of forewing. Abdominal segment V with very short pointed lobe only. Spur formula 144, single spur on foreleg tibia small. Protarsal claw asymmetrical with laterally flanked setal bundle, claws on the second and third legs also asymmetrical. Forewing 6 mm. In forewing crossveins $m-cu$ and cu close; Cu_2 and A joining well before wing margin; In hindwing stem of M plus proximal part of M_3+4 almost touching and running parallel with Cu_1 ; fork 1 present.

Male genitalia. IX abdominal segment fused annular and short, tergum twice shorter than sternum; anterior margin of segment IX convex with posterad shifted dorsal section in lateral view; apical lobe on posterolateral margin very small almost reduced and located at above the narrow articulation cavity of the inferior appendages; spines row on the posterior margin of segment IX almost complete. Intersegmental step between segment IX and segment X deep partly occupied by a pair of setose protuberances, appearing as the setose latero-caudal lobe. The body of segment X as long as high, subquadrangular; rounded ventroapical setose lobe pointed into an upcurving spine in lateral view; this upturning ventroapical spiny hook dominating its distal part of segment X;

dorsaoapical setose lobe straight vertical. The first segment of inferior appendages significantly longer than the apex of tenth segment, rod-shaped and broadening to apicad; harpago short broad slightly tapering in lateral view. Phallotheca with enlarged phallobase, the straight horizontal shaft with regular straight dorsum, however, the most striking feature is the very enlarged ventral subapical broadening; endophallus looks a narrow tube at the gonopore near to the bottom of the phallobase; the chitinized endothecal process circular, phallopore sclerites broad vertical in lateral view.

Etymology. Name was given in honour of the collector György Topál.

Potamyia umbaso sp. nov.

(Figures 426–429, Map 5: n° 74, Map 27)

Material examined. Holotype: **India**, Assam, United District of Mikir and North Cachar Hills, Umbaso, 2300 ft., 25°43'46.3"N 92°31'33.5"E, 26.IV.1960, leg. F. Schmid (1 male, CNC).

Diagnosis. *Potamyia umbaso* sp. nov. belongs to *P. trenhona* species group (Oláh *et al.* 2006), and is close to *P. assamana* Oláh & Scheffler, 2008 but differs by having completely rounded and not excised ventroapical angle of the ventro-

apical lobe, by the anterad and not upward turning of the pointed spine-like process of the ventroapical setose lobe. The lateral profile of the phallic organ that is the speciation trait has a more elongated ventroapical keel, not subtriangular.

Description. Body and wings light brown with brown pubescence. Forewing without any maculation. Antennae less than twice length of forewing. Abdominal segment V with very short pointed lobe only. Spur formula 144, single spur on foreleg tibia small. Protarsal claw asymmetrical with laterally flanked setal bundle, claws on the second and third legs also asymmetrical. Forewing 9 mm. In forewing crossveins *m-cu* and *cu* close; *Cu2* and *A* joining well before wing margin; In hindwing stem of *M* plus proximal part of *M3+4* almost touching and running parallel with *CuI*; fork 1 present.

Male genitalia. Abdominal segment IX fused annular and short, tergum twice shorter than sternum; anterior margin of segment IX convex with posterad shifted dorsal section in lateral view; apical lobe on posterolateral margin very small almost reduced and located at above the narrow articulation cavity of the gonopod; spines row on the posterior margin of segment IX almost complete. Intersegmental step between segment IX and segment X deep partly occupied by a pair of setose protuberances, appearing as the setose laterocaudal lobe. The body of segment X longer than high, slightly downward directed; rounded ventroapical setose lobe pointed into an anterad curving spine in lateral view; this ventroapical spiny hook dominating on the distal part of segment X. The first segment of the gonopod with broadening apical and very thin ventral half, angled middle; harpago short broad with small excision ventrally, subapicad in ventral view. Phallotheca with enlarged phallobase, the straight horizontal shaft with regular straight dorsum, however, the most striking feature is the very enlarged ventral subapical broadening keel; endophallus looks a narrow tube at the gonopore near to the bottom of the phallobase; the chitinized endothecal process semicircular, phallotremal sclerites broad vertical in lateral view.

Etymology. *umbaso*, named after the *locus typicus* of the holotype.

***Potamyia vietnamica* sp. nov.**

(Figures 430–433, Map 27)

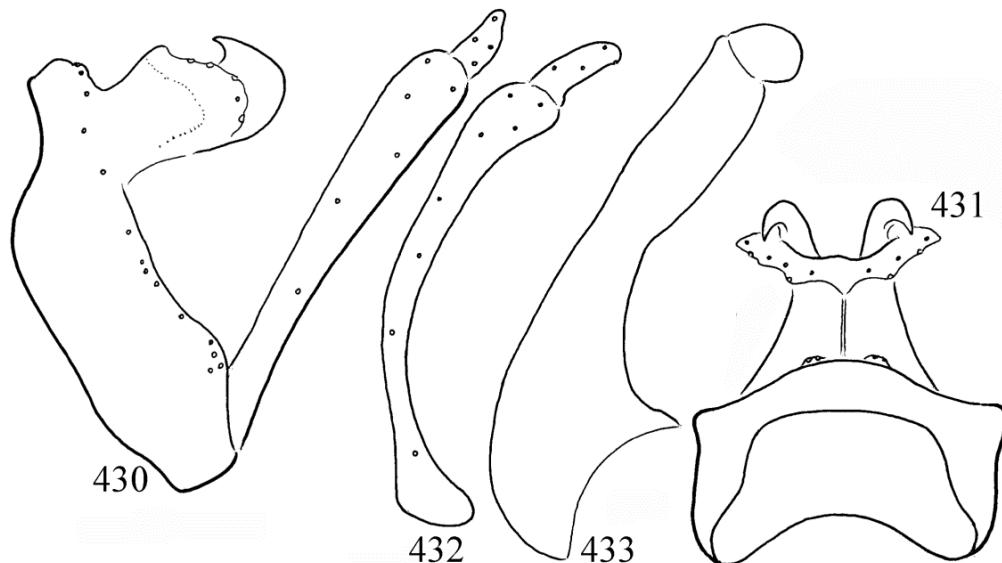
Potamyia phaidra Malicky & Chantaramongkol, in Malicky 1997: Oláh *et al.* 2006:753. “New Records. Vietnam, Lamdong, Baoloc, Loc chau, 24 October 1988, at light (Oláh).” Misidentification.

Material examined. Holotype: **Vietnam**, Lamdong, Baoloc, Loc Chau, 11°30'19.4"N 107°46'48.8"E, 24.X.1988, light leg. J. Oláh (1 male, OPC).

Diagnosis. *Potamyia vietnamica* sp. nov. belongs to *P. trenhona* species group (Oláh *et al.* 2006) and to the *P. yunnanica* species complex. Most close to *P. yunnanica* (Schmid, 1959) described from China, Yunnan Province and to *P. umbaso* sp. nov. described here from India, Assam, but differs by the pattern of the broad-based hook formation of segment X and by the lateral profile of the phallotheca.

Description. Body and wings light brown with brown pubescence. Forewing without any maculation. Antennae less than twice length of forewing. Abdominal segment V with very short pointed lobe only. Spur formula 144, single spur on foreleg tibia small. Protarsal claw asymmetrical with laterally flanked setal bundle, claws on the second and third legs also asymmetrical. Forewing 6 mm. In forewing crossveins *m-cu* and *cu* close; *Cu2* and *A* joining well before wing margin; In hindwing stem of *M* plus proximal part of *M3+4* almost touching and running parallel with *CuI*; fork 1 present.

Male genitalia. Abdominal segment IX fused annular and short, tergum little shorter than sternum; anterior margin of segment IX convex with posterad shifted dorsal section in lateral view; apical lobe on posterolateral margin small and located at above the narrow articulation cavity of the gonopod; spines row on the posterior margin of segment IX almost complete. Intersegmental



Figures 430–433. *Potamyia vietnama* sp. nov. Holotype: 430 = male genitalia in left lateral view, 431 = male genitalia in dorsal view, 432 = left gonopod in ventral view, 433 = phallic organ in left lateral view.

step between segment IX and segment X deep partly occupied by a pair of setose protuberances, appearing as the setose latero-caudal lobe. The body of segment X longer than high, cerci well-differentiated into a fused lobe pronouncedly directed laterad; rounded ventroapical setose lobe pointed into an upward and anterad curving pointed spine in lateral view; this ventroapical spiny hook dominating on the distal part of segment X. The first segment of the gonopod almost straight and slightly broadening apicad; harpago with slightly mesad turning apex in ventral view. Phallotheca with low and short phallobase, the straight horizontal shaft with regular straight dorsum, ventrum broader along apical half; endophallus looks a narrow tube at the gonopore near to the bottom of the phallobase; the chitinized endothecal process circular, phallotremal sclerites broad vertical in lateral view.

Etymology. *vietnama*, named after the *locus typicus* of the holotype.

Hydromanicus

Hydromanicus hermosus species group

Species group with the following character combination. (1) Short, narrow and subtriangular

apical lobe on segment IX. (2) Long or medium-sized segment X. (3) Short, monolobed cerci. (4) Broad ventromesal subapical keel on the phallotheca absent, but ventromesal subapical hook formation developed on the phallotheca of the *H. flavoguttatus* species complex. Large species characterized with variously patterned forewing and rather long antennae (Oláh & Johanson, 2008b).

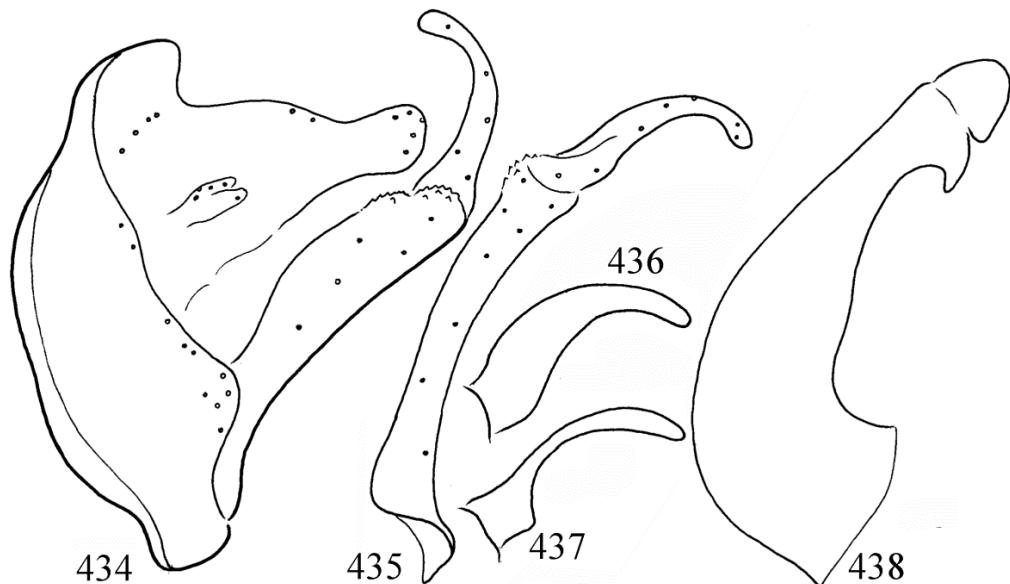
Hydromanicus flavoguttatus new species complex

Having very short, abbreviated cerci this new species complex belongs to the *Hydromanicus hermosus* species group and diverged by the organisation of a peculiar apicoventral hook formation on the phallotheca. This small species complex is still known only from Java and Sumatra islands and represented by three species: *H. bukit* sp. nov., (Sumatra); *H. flavoguttatus* Albarda, 1881, (Java, Sumatra); *H. sempit* Chantaramongkol and Malicky, 1995, (Sumatra).

Hydromanicus bukit sp. nov.

(Figures 434–438, Map 28)

Hydromanicus flavoguttatus Albarda, 1881. Oláh & Malicky, 2011:15: **Indonesia**, Sumatra, Danau Ranau, Bukit Barisan Selatan National Park, 950 m,



Figures 434–438. *Hydromanicus bukit* sp. nov. Holotype: 434 = male genitalia in left lateral view, 435 = left gonopod in ventral view, 436 = harpago of *H. flavoguttatus* in ventral view, 437 = harpago of *H. sempit* in ventral view, 438 = phallic organ in left lateral view.

4°50'31.8"S 103°53'15.7"E, 2.VII.2009, light trap, leg. Z. Ecsedi (1 male, OPC). A single male specimen was originally determined as a new species by the first author, but it was considered as *Hydromanicus flavoguttatus* by the second author and it was published accordingly as *H. flavoguttatus*. Misidentification.

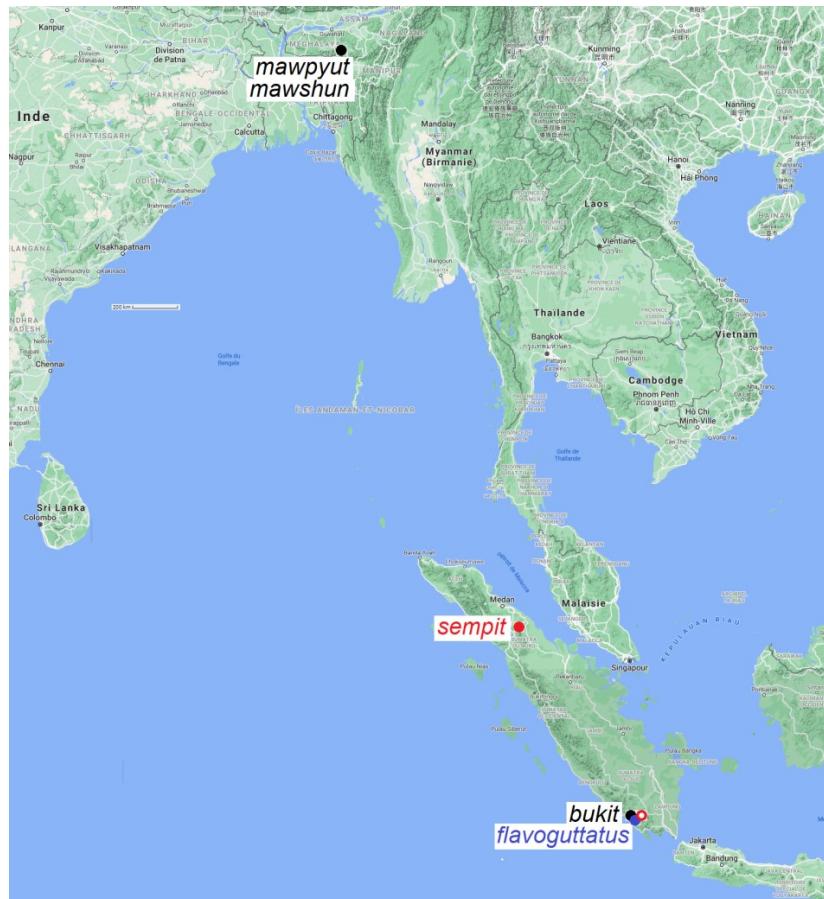
Material examined. Holotype: **Indonesia**, Sumatra, Danau Ranau, Bukit Barisan Selatan National Park, 950 m, 2.VII.2009, light trap, leg. Z. Ecsedi (1 male, OPC).

Diagnosis. This new species having abbreviated cerci belongs to the *H. hermosus* species group as well as having phallotheca supplied with subapical ventral hook it is a member of the small *H. flavoguttatus* species complex. According to the harpago has resemblance to *H. flavoguttatus*, but differs by the fine structure of the harpago that is more slender, clearly S-shaped, not C-shaped; as well as the ventral subapical hook-formation on the phallotheca is half as long as compared to the lectotype. The new species has forewing without any pattern; the other two species of the complex have patterned forewing.

Description. Dark brown coloured animal with forewing having not any pattern; membrane is evenly covered with dense recumbent short setae. Forewing length is 13 mm.

Male genitalia. Abdominal segment IX with small apical lobe of rounded subtriangular shape; its median keel short and narrow; anterior margin arciform, resulted in a little longer dorsum and shorter ventrum; intersegmental depression between the ninth and tenth segments deep in lateral view. Body of segment X broad-based less sclerotized; broad in dorsal view; without anterad curving spiny process; dorsoapical setose lobes form a short bilobed apex; setose cerci short. The basal segment of the gonopods slightly curving with spiny head; terminal segment, the harpago slender, S-shaped in ventral view. Phallic apparatus robust, phallobase only slightly broadening; subapical ventral hook of the phallotheca present, blunt, less developed; endothecal sclerites slightly elongated regular semicircular, half ovoid.

Etymology. *bukit*, named after the *locus typicus* of the holotype.



Map 28. *Hydromanicus hermosus* group.

***Hydromanicus flavoguttatus* Albarda, 1881**

(Figure 436, Map 28)

Hydromanicus flavoguttatus Albarda, 1881. Neboiss, 1996:8–9. N°8/Museum Leiden, *Hydromanicus flavoguttatus* Alb./genitalia prep. PT-1623♂, A. Neboiss, 1986". "Described from Palembang and Ajer Boesoek, Sumatra."

Material examined. **Indonesia**, Sumatra, Bukit Barisan Selatan National Park, Way Titias, 5.068°S, 104.026°E, 850 m, 25.VI.2009, light trap, leg. Z. Ecsedi (3 males, 1 female; OPC). Indonesia, Sumatra, Bukit Barisan Selatan National Park, Way Titias, 5.068°S 104.026°E, 950 m, 26.VI.2009, light trap, leg. Z. Ecsedi (2 males, 2 females; OPC).

***Hydromanicus sempit* Chantaramongkol and Malicky, 1995**

(Figure 437, Map 28)

Hydromanicus sempit Chantaramongkol and Malicky, 1995:94–95. "Holotypus ♂: Sumatra, Aek Tarum, 180 m, 21.II.1994. Viele Paratypen von folgenden Orten auf Sumatra: Sipirok, Sodikalang, Dairi, Prapat, Sitahoan, Simarito, Pematang Siantar, Paritohan, Dolok Merangir, Huta Padang."

Material examined. **Indonesia**, Sumatra, Bukit Barisan Selatan National Park, Barisan Mts., Way Titias, 5.068°S 104.026°E, 800m, 17–19.VI.2008, light trap leg. J. Oláh jr. (2 males, SMNH). Indonesia, Sumatra, Kerinci National Park, "W" waterfall, 1500m, 5.VII.2008, light trap leg. J.

Oláh jr., (1 male, OPC). **Indonesia**, Sumatra, Buit Barisan Selatan National Park, Panyungkain, 950m, 24.VI.2009, light trap leg. Z. Ecsedi (2 males, OPC).

***Hydromanicus mawpyut* sp. nov.**

(Figures 439–441, Map 5: n° 64, Map 28)

Material examined. Holotype: **India**, Meghalaya (United Jaintia and Khasi Hills), Mawpyut, 4000 ft., 25°22'20.7"N 92°09'03.7"E, 14.IV.1960, leg. F. Schmid (1 male, CNC). Paratype: same as holotype (OPC).

Diagnosis. This new species belongs to the *H. hermosus* species group. According to the harpago has resemblance to *H. mawshun* described from Meghalaya, but differs by shorter segment IX and X, by the evenly very broad coxopodite; by the different forewing pattern as well as by the abbreviated almost reduced broad basement of harpago.

Description. Dark brown coloured animal with forewing of contrasted light pattern. The pattern is evenly small light spotted. Forewing length 14 mm.

Male genitalia. Abdominal segment IX with pronounced apical lobe of rounded subtriangular shape; its median keel short and narrow; anterior margin arciform moved basad, resulted in a longer dorsum and shorter ventrum; intersegmental de-

pression between the ninth and tenth segments deep in lateral view. Body of segment X broad-based less sclerotized; broad in dorsal view; anterad curving small spiny process present middle; dorsoapical setose lobes form a short bilobed apex; setose cerci short. The basal segment of the gonopods straight, evenly very broad; terminal segment, the harpago with very short broad basement and with capitate apex. Phallic apparatus robust, phallobase only slightly broadening; endothecal sclerites regular semicircular.

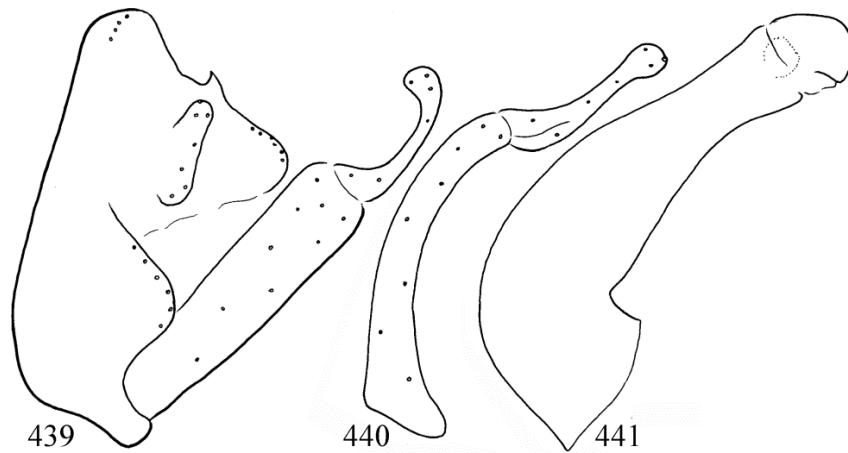
Etymology. *mawpyut*, named after the *locus typicus* of the holotype.

***Hydromanicus mawshun* sp. nov.**

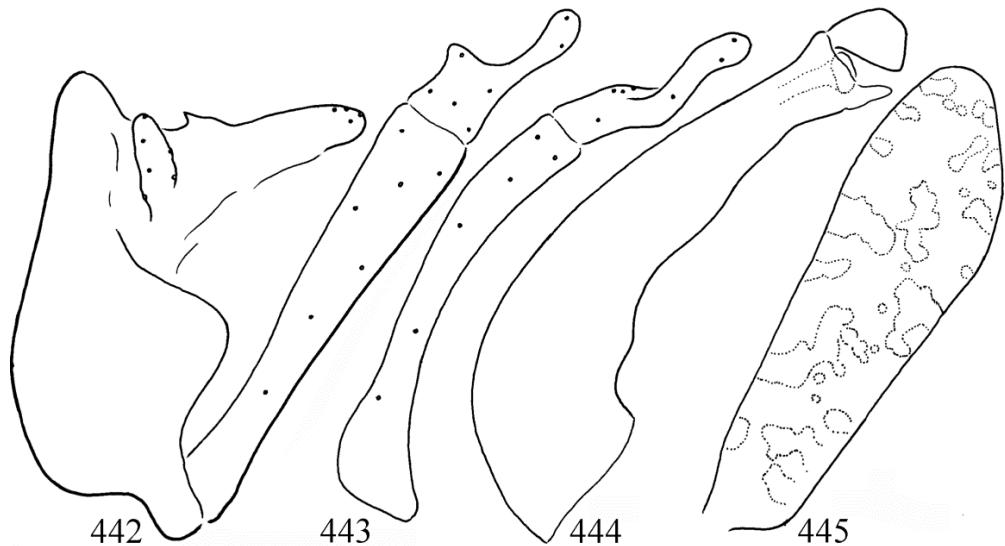
(Figures 442–445, Map 5: n° 4, 84, Map 28)

Material examined. Holotype: **India**, Meghalaya (United Jaintia and Khasi Hills), Mawshun, 1500 ft., 25°14'46.7"N 91°58'21.2"E, 6.IV.1960, leg. F. Schmid (1 male, CNC). Paratype: India, Assam, United District of Mikir and North Cachar Hills, Bandarkhal, 300 ft., 9.V.1960, leg. F. Schmid (1 male, OPC).

Diagnosis. This new species belongs to the *H. luctuosus* species group. According to the harpago most close to *H. abiud* Malicky & Chantaramongkol, 1993 described from Thailand, but differs by longer segment IX and X as well as by the different forewing pattern.



Figures 439–441. *Hydromanicus mawpyut* sp. nov. Holotype: 439 = male genitalia in left lateral view, 440 = left gonopod in ventral view, 441 = phallic organ in left lateral view.



Figures 442–445. *Hydromanicus mawshun* sp. nov. Holotype: 442 = male genitalia in left lateral view, 443 = left gonopod in ventral view, 444 = phallic organ in left lateral view, 445 = forewing pattern.

Description. Dark brown coloured animal with forewing of contrasted light pattern. Forewing length 13 mm.

Male genitalia. Abdominal segment IX with pronounced apical lobe of rounded subtriangular shape; its median keel short and narrow; anterior margin arciform, resulted in a very short dorsum and slightly longer ventrum; intersegmental depression between the ninth and tenth segments deep in lateral view. Body of segment X broad-based less sclerotized; broad in dorsal view; anterad curving small spiny process present middle; dorsoapical setose lobes form a long bilobed apex; setose cerci short. The basal segment of the gonopods straight, slightly and gradually broadening apicad; terminal segment, the harpago inverted L-shaped with long broad basal half. Phallic apparatus robust, phallobase only slightly broadening; endothecal sclerites regular semicircular.

Etymology. *mawshun*, named after the *locus typicus* of the holotype.

Remarks. The paratype from Assam is small, 9 mm; its forewing is less pigmented, pattern indistinct. However, the harpago and phallic organ are similar, there is slight divergence discernible

in the dorsal profile of the dorsoapical setose lobes.

Hydromanicus luctuosus species group

Hydromanicus truncatus species group in Oláh & Johanson 2008: 25, established.

Hydromanicus luctuosus Ulmer, 1905 described from Kurseong, Annandale, West Bengal, India established as senior synonym of *H. truncatus* Betten, 1909 described from nearby Sikkim, India in Malicky 2009:41, 44.

We have established the *H. truncatus* species group by the following character state combination (Oláh & Johanson 2008b): (1) A more or less pronounced longitudinal suture present on dorso-lateral position of the segment IX, dividing it into a smaller dorsal and a larger ventral half as visible in lateral view. (2) Broad and rounded apical lobe on the segment X. (3) Elongated and narrow segment X. (4) Monolobed and long cerci. (5) Broad ventromesal subapical keel on the phallotheca.

Following the synonymy of *H. truncatus* with *H. luctuosus*, the species group name is modified here accordingly: *H. luctuosus* species group. Based on the organisation of the harpago, the terminal segment of the gonopod, the *H. luctuosus*

species group is comprised of four species complexes: *H. asor* new species complex, *H. eleasar* new species complex, *H. inferior* new species complex, *H. luctuosus* new species complex.

***Hydromanicus asor* new species complex**

(Map 29)

Hydromanicus asor species complex in the *H. luctuosus* species group is characterized by the most plesiomorphic harpago having the shape of single parallel-sided pattern with narrowing apex. The following species belong to this complex: *H. almansor* Malicky, 1993 (Myanmar); *H. asor* Malicky, 1993 (Myanmar); *H. eliakim* Malicky, 1993 (Thailand); *H. punctosalis* Mey, 1996 (Vietnam); *H. shilliang* sp. nov. (India, Meghalaya).

***Hydromanicus shilliang* sp. nov.**

(Figures 446–449, Map 5: n° 70, Map 29)

Material examined. Holotype: **India**, Meghalaya (United Jaintia and Khasi Hills), Shilliang Myntang [= Shiliangmyntang], 3500 ft., 25°33' 55.6"N 92°21'32.5"E, 21.IV.1960, leg. F. Schmid (1 male, CNC).

Diagnosis. This new species belongs to the *H. luctuosus* species group and to the *H. asor* species complex. Most close to *H. inferior*, but differs by the short and mesad directed dorsoapical setose lobes and by the lateral profile of the phallic organ; the apicoventral keel on the phallotheca is very long, not short.

Description. A brown coloured animal with light spotted forewing; forewing length is 9 mm.

Male genitalia. Abdominal segment IX divided by suture into a smaller dorsal and a larger ventral part; its median keel short and narrow; anterior margin arciform, resulted in a very short dorsum and slightly longer ventrum; apical lobe on posterolateral margin robust semicircular, comprising the bulk of the segment; intersegmental depression between the ninth and tenth segments low in lateral view. Body of segment X broad-based less sclerotized; setose cerci elongated foliform with less setose digitiform apical part; dorsoapical setose lobes form the short mesad directed bilobed apex of segment X. The basal segment of the gonopods straight broadening apicad; terminal segment, the harpago parallel-sided with digitate apex. Phallic apparatus robust, subapical ventral keel long and shallow, endothecal sclerites quadrangular.

Etymology. *shilliang*, named after the *locus typicus* of the holotype.

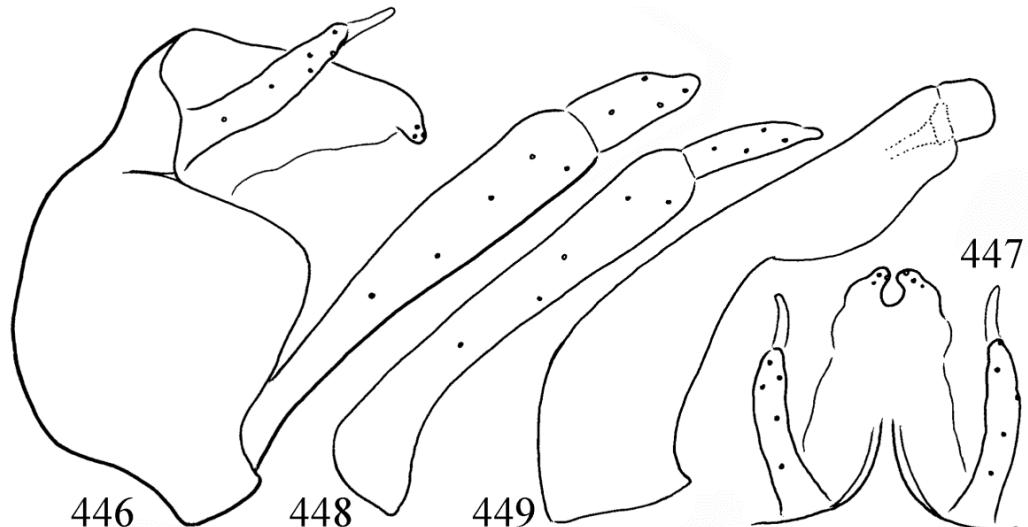
***Hydromanicus eleasar* new species complex**

(Map 29)

This small species complex is a member of *H. luctuosus* species group with broad ventromesal subapical keel on the phallotheca and characterised by a very short, pointed and slightly S-shaped harpago in ventral view.

There are divergences in the usually neutral periphalllic organs that are in the shape of the bilobed head of segment X, in the length and shape of the cerci as well as in the lateral shape of the coxopodite and the ventral shape of the harpago. The terminal harpago, the second segment of the gonopods is particularly divergent with high diversity and with rather significant stability in the entire *H. luctuosus* species group including *H. eleasar* new species complex. Harpago has high diagnostic value to delineate species complexes inside the species group.

The delineation of the incipient sibling species in the *H. eleasar* species complex is based primarily on the lateral shape of the strongly chitinized pair of the endothecal sclerites supported by character combinations of periphalllic organs. However, to draw exactly the comparable lateral shape of endothecal sclerites is not easy and practically impossible in dorsal, ventral or caudal view. Endothecal sclerites are an active movable structure capable to realise functional copulatory movements in almost all directions, downward, upward, laterad and mesad. Most of the published drawings were prepared without proper attention to the possibilities of such functional shape distortions.



Figures 446–449. *Hydromanicus shilliang* sp. nov. Holotype: 446 = male genitalia in left lateral view, 447 = male genitalia in dorsal view, 448 = left gonopod in ventral view, 449 = phallic organ in left lateral view.

The following species belong to the *H. eleasar* species complex in the *H. luctuosus* species group: *H. eleasar* Malicky, 1993 (Nepal, Dhan-kuta), *H. kambaitiensis* sp. nov. (Myanmar), *H. kamengensis* sp. nov. (India, Assam, Kameng), *H. kashong* sp. nov. (India, Manipur), *H. sikkimensis* sp. nov. (India, Sikkim), *H. tibetensis* sp. nov. (China, Tibet).

Hydromanicus eleasar Malicky, 1993

(Map 29)

Hydromanicus eleasar Malicky, 1993:1123: "Holotypus ♂: Ost-Nepal, Dhankuta, Arun-Tal, SE des Makalu, Tashigaon, 2100m, 7.VI.1980."

Hydromanicus kambaitiensis sp. nov.

(Figures 450–452, Map 29)

Material examined. Holotype: **Myanmar**, Kambaiti [=Kan Paik Ti], 7000ft, 25°24'04.0"N 98°06'55.4"E, 13-22.VI.1934, leg. R. Malaise (1 male, Coll. Malaise B.M. 1938-258, BMNH)

Diagnosis. This new species having broad ventromesal subapical keel on the phallotheca belongs to the *H. luctuosus* species group and having short, tapering, and slightly S-shaped har-

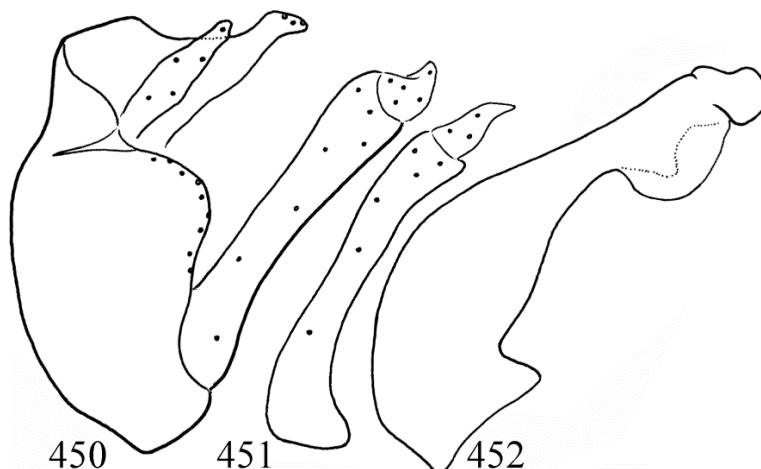
pago belongs to the *H. eleasar* species complex. Most close to *H. kamengensis* sp. nov., but differs by the character combination of the pronounced but obtuse-angled intersegmental depression, upward located and short head of segment X, short cerci, short and very stout coxopodite; The ventromesal subapical keel on the phallotheca is more circular than triangular. The shape of the endothecal sclerites is with pronounced constricted neck.

Description. A brown coloured animal with forewing without discernible light spotted pattern (old specimen!), forewing length is 11 mm.

Male genitalia. Abdominal segment IX divided by suture into a smaller dorsal and a larger ventral part; its median keel medium-long and narrow; anterior margin arciform, resulted in a very short dorsum and slightly longer ventrum; apical lobe on posterolateral margin robust semi-circular, comprising the bulk of the segment with long marginal setae; intersegmental depression between the ninth and tenth segments obtuse-angled in lateral view. Body of segment X broad-based less sclerotized; its bilobed apex is upward positioned and short. Setose cerci short foliform, shorter than segment X. The basal segment of the gonopods straight, short and robust stout; terminal



Map 29. *Hydromanicus asor* and *eleasar* complexes.



Figures 450–452. *Hydromanicus kambaitiensis* sp. nov. Holotype: 450 = male genitalia in left lateral view, 451 = left gonopod in ventral view, 452 = phallic organ in left lateral view.

segment, the harpago with mesad turning narrowing apex. Phallic apparatus robust, subapical ventral keel short semicircular, endothecal sclerites short with constricted neck.

Etymology. *kambaitiensis*, named after the *locus typicus* of the holotype.

Hydromanicus kamengensis sp. nov.

(Figures 453–455, Map 4: n° 23, 69, 70, Map 29)

Material examined. Holotype: India, Arunachal Pradesh (Assam), Kameng District, Chug,

6800–7300 ft., 27°25'07.7"N 92°14'01.0"E, 25–31.VII.1961, leg F. Schmid (1 male, CNC). Paratype: same as holotype (1 male, OPC). India, Arunachal Pradesh (Assam), Kameng, Nyukmadong, 6600–8000 ft., 27°24'32.5"N 92°07'57.3"E, 5–8.VIII.1961, leg F. Schmid (1 male, CNC). India, Arunachal Pradesh (Assam), Kameng, Rahung, 6500–7000 ft., 27°18'46.2"N 92°23' 43.8"E, 16.VII.1961, leg F. Schmid (1 male, SMNH).

Diagnosis. This new species having broad ventromesal subapical keel on the phallotheca belongs to the *H. luctuosus* species group and

having short, tapering, and slightly S-shaped harpago belongs to the *H. eleasar* species complex. Most close to *H. kambaitiensis* sp. nov., but differs by the character combination of the pronounced almost right-angled intersegmental depression, upward located and elongated head of segment X, longer cerci, longer and more slender coxopodite. The ventromesal subapical keel on the phallotheca more triangular, not circular. The shape of the endothecal sclerites lacks constricted neck.

Description. A brown coloured animal with forewing with just discernible light spotted pattern, forewing length 10 mm.

Male genitalia. Abdominal segment IX divided by suture into a smaller dorsal and a larger ventral part; its median keel medium-long and narrow; anterior margin arciform, resulted in a very short dorsum and slightly longer ventrum; apical lobe on posterolateral margin robust semicircular, comprising the bulk of the segment with long marginal setae; intersegmental depression between the ninth and tenth segments right-angled in lateral view. Body of segment X broad-based less sclerotized; its bilobed apex is upward positioned. Setose cerci elongated foliform, as long as segment X. The basal segment of the gonopods only slightly arching with less constricted middle; terminal segment, the harpago with mesad turning

narrowing apex. Phallic apparatus robust, subapical ventral keel short triangular, endothecal sclerites short with small ventral lobe.

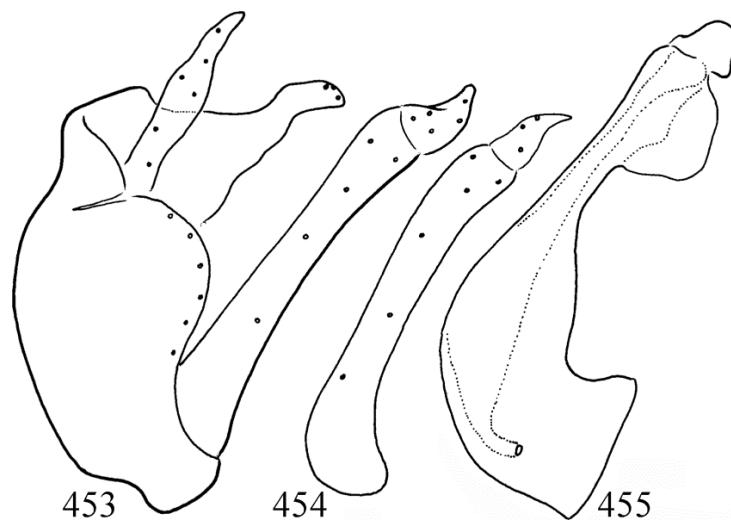
Etymology. *kamengensis*, named after the *locus typicus* of the holotype.

***Hydromanicus kashong* sp. nov.**

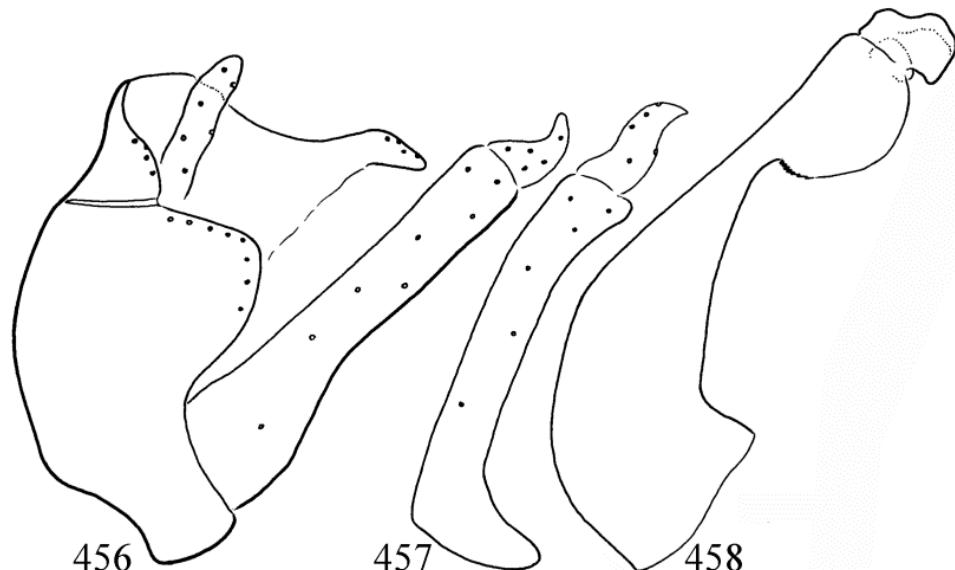
(Figures 456–458, Map 6: n° 14, Map 29)

Material examined. Holotype: **India**, Manipur, Sirohi Kashong [=Siruhi Kashong], 7000–7500 ft, 25°06'44.5"N 94°27'35.4"E, 6–7.VI. 1960, leg. F. Schmid (1 male, CNC).

Diagnosis. This new species having broad ventromesal subapical keel on the phallotheca belongs to the *H. luctuosus* species group and having short, tapering, and slightly S-shaped harpago belongs to the *H. eleasar* species complex. Most close to *H. kambaitiensis* sp. nov., but differs by the character combination of the pronounced apical lobe with flat dorsum on the posterolateral margin of segment IX; of the more developed coxopodite with enlarged basal region; of the distinctly S-shaped harpago, the most pronounced curving in the species complex; of the very low, slender neck on the phallic shaft, behind the subapical ventral keel, of the differently patterned lateral profile of the endothecal sclerites.



Figures 453–455. *Hydromanicus kamengensis* sp. nov. Holotype: 453 = male genitalia in left lateral view, 454 = left gonopod in ventral view, 455 = phallic organ in left lateral view.



Figures 456–458. *Hydromanicus kashong* sp. nov. Holotype: 456 = male genitalia in left lateral view, 457 = left gonopod in ventral view, 458 = phallic organ in left lateral view.

Description. A brown coloured animal with forewing with just discernible light spotted pattern (old specimen!), forewing length 11 mm.

Male genitalia. Abdominal segment IX divided by a suture into a smaller dorsal and a larger ventral part; its median keel medium-long and narrow; anterior margin arciform, resulted in a very short dorsum and longer ventrum; apical lobe on posterolateral margin robust semicircular with flat dorsum, comprising the bulk of the segment with long marginal setae; intersegmental depression between the ninth and tenth segments obtuse-angled in lateral view. Body of segment X broad-based less sclerotized; its bilobed apex upward positioned elongated and tapering. Setose cerci short foliform, shorter than segment X. The basal segment of the gonopods straight, short and robust stout with enlarged basement; terminal segment, the harpago pronounced S-shaped in lateral view. Phallic apparatus robust with very low slender neck, behind the ventral keel; subapical ventral keel short semicircular, endothecal sclerites short with constricted neck.

Etymology. *kashong*, coined from the name of holotype *locus typicus*.

Hydromanicus sikkimensis sp. nov.

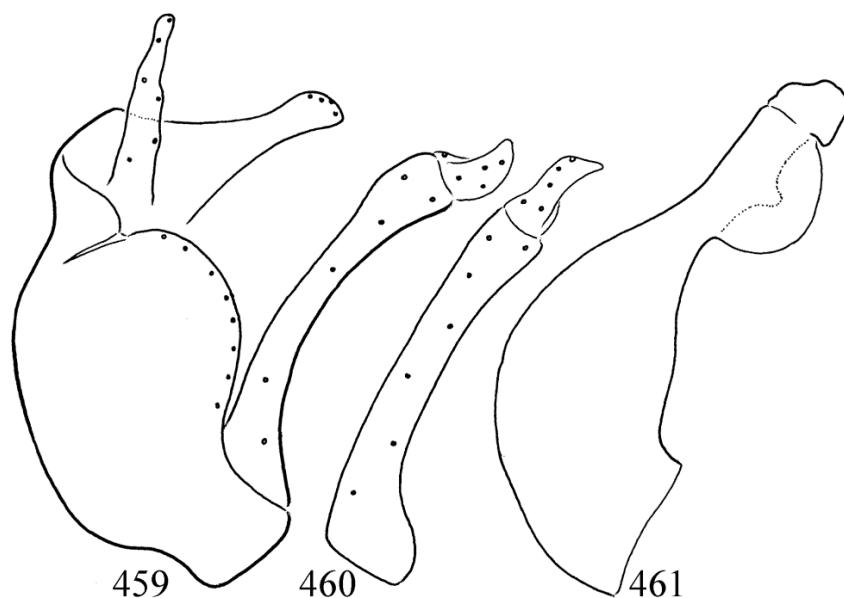
(Figures 459–461, Map 29)

Material examined. Holotype: **India**, Sikkim, Yoongn, could correspond to the Yumthang Valley in Sikkim, 27°49'25.9"N 88°41'44.0"E, 2.VI. 1928, leg. Lt. Col. F. M. Bailey, (1 male, B.M. 1928-409, BMNH).

Diagnosis. This new species having broad ventromesal subapical keel on the phallotheca belongs to the *H. luctuosus* species group and having short, tapering, and slightly S-shaped harpago belongs to the *H. eleasar* species complex. Most close to *H. eleasar*, but differs by the character combination of the low intersegmental depression, capitate head of segment X, long cerci, arching coxopodite, long harpago. The shape of the endothecal sclerites is short, not long.

Description. A brown coloured animal with forewing without discernible pattern (old specimen!), forewing length is 13 mm.

Male genitalia. Abdominal segment IX divided by suture into a smaller dorsal and a larger ventral part; its median keel medium-long and



Figures 459–461. *Hydromanicus sikkimensis* sp. nov. Holotype: 459 = male genitalia in left lateral view, 460 = left gonopod in ventral view, 461 = phallic organ in left lateral view.

narrow; anterior margin arciform, resulted in a very short dorsum and slightly longer ventrum; apical lobe on posterolateral margin robust semicircular, comprising the bulk of the segment with long marginal setae; intersegmental depression between the ninth and tenth segments low in lateral view. Body of segment X broad-based less sclerotized; its bilobed apex capitate, slightly upward directed. Setose cerci elongated foliform, as long as segment X. The basal segment of the gonopods arching with constricted middle; terminal segment, the harpago with mesad turning narrowing apex. Phallic apparatus robust, subapical ventral keel short and high, semicircular, endothecal sclerites short.

Etymology. *sikkimensis*, named after the *locus typicus* of the holotype.

Hydromanicus tibetensis sp. nov.

(Figures 462–464, Map 29)

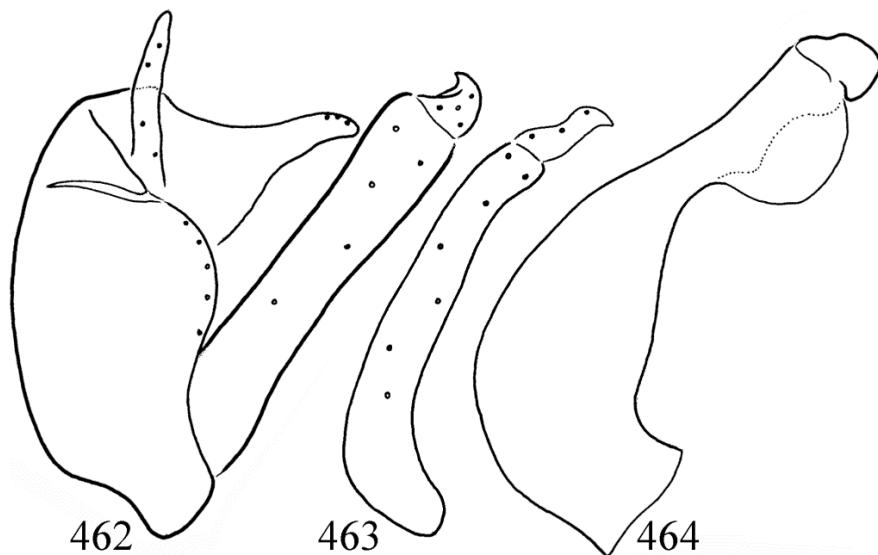
Hydromanicus luctuosus Ulmer, 1905. Oláh *et al.* 2020b: 169. Misidentification!

Material examined. Holotype: **China**, Tibet, Motuo, 80K 1000m, 29°20'05.3"N 95°19'41.3"E,

24.VII.2012, leg. Li Wenliang (1 male, DPP-HIST). Paratypes: same as holotype (3 males, DPP-HIST; 2 males, OPC).

Diagnosis. This new species having broad ventromesal subapical keel on the phallotheca belongs to the *H. luctuosus* species group and having short, tapering, and slightly S-shaped harpago belongs to the *H. eleasar* species complex. Most close to *H. sikkimensis*, but differs by the character combination of the more pronounced intersegmental depression, narrowing, not capitate head of segment X, long cerci, straight and very stout not slender and arching coxopodite, harpago differently shaped. The shape of the endothecal sclerites is short, with more pronounced anterad directed ventrobasal lobe.

Description. A brown coloured animal with forewing with discernible pattern of light spots on dark brown membrane. Forewing length 12 mm.
Male genitalia. Abdominal segment IX divided by suture into a smaller dorsal and a larger ventral part; its median keel short and narrow; anterior margin arciform, resulted in a very short dorsum and slightly longer ventrum; apical lobe on posterolateral margin robust semicircular, com-



Figures 462–464. *Hydromanicus tibetensis* sp. nov. Holotype: 462 = male genitalia in left lateral view, 463 = left gonopod in ventral view, 464 = phallic organ in left lateral view.

prising the bulk of the segment with long marginal setae; intersegmental depression between the ninth and tenth segments pronounced in lateral view. Body of segment X broad-based less sclerotized; its bilobed apex tapering, slightly downward directed. Setose cerci elongated foliform, as long as segment X. The basal segment of the gonopods short, straight and very stout; terminal segment, the harpago with mesad turning narrowing apex of undulating external margin in ventral view. Phallic apparatus robust, subapical ventral keel short and high, semicircular, endothecal sclerites short with anterad turning ventrobasal small lobe.

Etymology. *tibetensis*, named after the *locus typicus* of the holotype.

Hydromanicus inferior new species complex

Hydromanicus inferior new species complex in the *H. luctuosus* species group is characterized with a finger-tipped harpago. It means that the very tip of harpago is suddenly narrowing into a slender finger-like straight or curving ending. Following species belong to this complex: *H. angulatus* Yang & Yang, 2004 (China, Guangyi); *H. fallax* Mey, 1996 (Vietnam); *H. hasad* sp. nov.

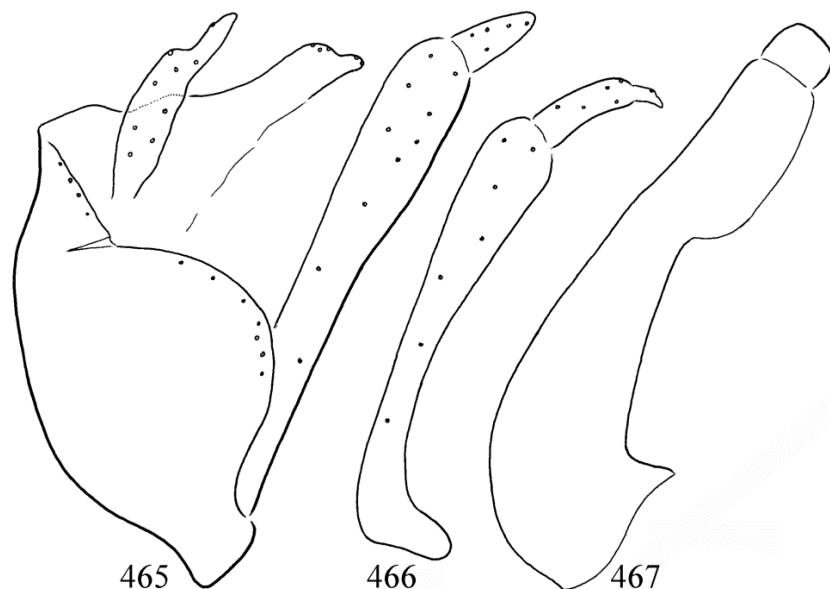
(India, Manipur); *H. heges* Oláh, Oláh & Li, 2020 (China, Tibet); *H. hullamos* Oláh, 2013 (Vietnam); *H. inferior* Chantaramongkol & Malicky, 1995 (Thailand); *H. jakhand* sp. nov. (India, Uttarakhand, Teri Garhwal); *H. mattiyang* sp. nov. (India, Manipur); *H. mynso* sp. nov. (India, Meghaláya); *H. nondeng* sp. nov. (India, Meghaláya); *H. serubel* Malicky & Chantaramongkol, 1993 (Thailand).

Hydromanicus darban sp. nov.

(Figures 465–467, Map 5: n° 84, Map 30)

Material examined. Holotype: **India**, Assam, United District of Mikir and North Cachar Hills, Bandarkhal, 300 ft., 25°03'31.1"N 92°48'02.5"E, 9.V.1960, leg. F. Schmid (1 male, CNC). Paratypes: same as holotype (1 male, OPC; 1 male, SMNH).

Diagnosis. This new species belongs to the *H. luctuosus* species group and to the *H. inferior* species complex. Having small finger-like apicomesal lobe on harpago in ventral view it has resemblance to *H. nondeng* sp. nov., but differs by the head of cerci having apex ventral digitate, not dorsal digitate in lateral view; by the lateral pro-



Figures 465–467. *Hydromanicus darban* sp. nov. Holotype: 465 = male genitalia in left lateral view, 466 = left gonopod in ventral view, 467 = phallic organ in left lateral view.

file of segment X that is its apex concave, not straight in lateral view; by the shape of the finger-like apicomosal lobe on the harpago that is downward directed. The lateral shape of the subapical mesal keel on the ventrum not broadening anterad; endothecal sclerites regular quadrangular.

Description. A brown coloured animal; forewing distinctly light spotted, forewing length 10 mm.

Male genitalia. Abdominal segment IX divided by a tiny suture into a smaller dorsal and a larger ventral part; its median keel medium-long and narrow; anterior margin arciform, resulted in a very short dorsum and longer ventrum; apical lobe on posterolateral margin rounded produced; intersegmental depression between the ninth and tenth segments low in lateral view. Body of segment X elongated, broad-based, less sclerotized ventrally; apex of segment X concave in lateral view; setose cerci elongated foliform with ventral digitate apex. The basal segment of the gonopods straight and constricted basally; terminal segment, the harpago with a broad finger-like apicomosal mesad curving lobe. Phallic apparatus slender with low curving basal half, subapical

ventral keel long, not broadening anterad; endothecal sclerites short and quadrangular.

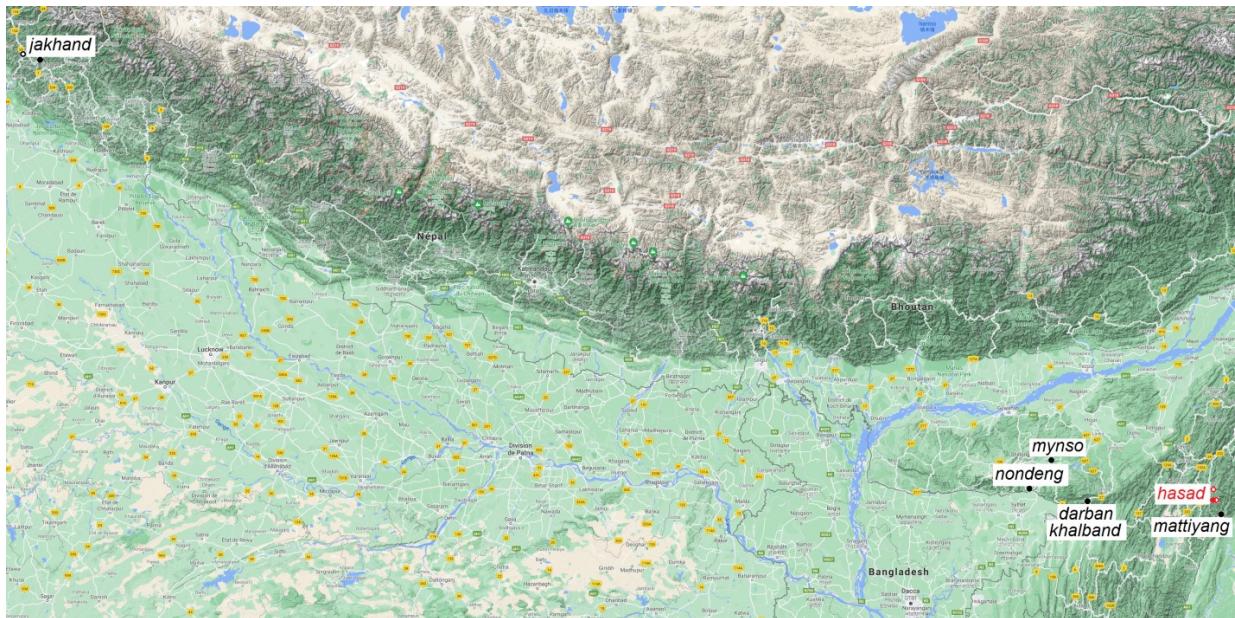
Etymology. *darban*, coined from the name of the holotype *locus typicus*.

Hydromanicus hasad sp. nov.

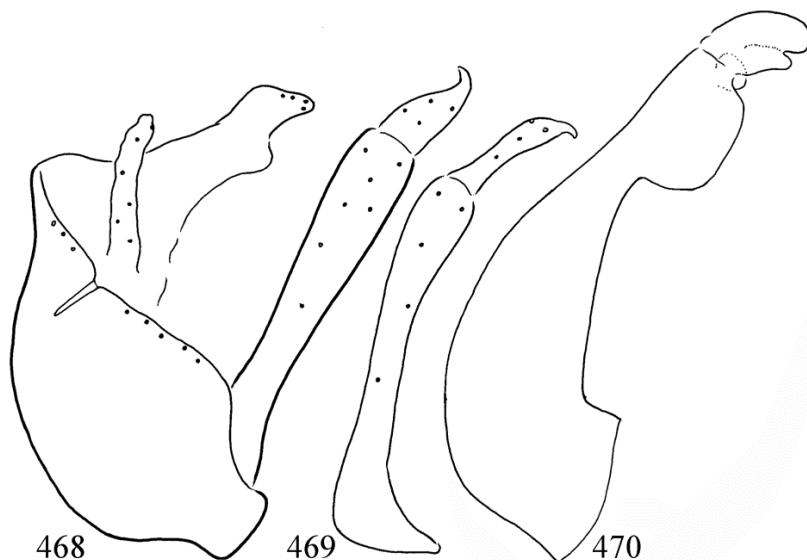
(Figures 468–470, Map 6: n° 18, 23, 28, Map 30)

Material examined. Holotype: **India**, Manipur, Mapum, 5000 ft, 25°04'55.9"N 94°30'16.9"E, 11.VI.1960, leg. F. Schmid (1 male, CNC). Paratypes: same as holotype (1 male, CNC; 1 male, OPC; 1 male SMNH). India, Manipur, Loni [=Roni], 4500–5500 ft, 25°03'41.8"N 94°34'18.8"E, 16.VI.1960, leg. F. Schmid (3 males, CNC). India, Manipur, Sihai Khulen [=Sihai Khullen], 4700 ft, 25.V.1960, 25°11'32.1"N 94°29'31.5"E, leg. F. Schmid (2 males, CNC).

Diagnosis. This new species belongs to the *H. luctuosus* species group and to the *H. inferior* species complex. Having curving finger-tipped harpago in ventral view it has resemblance to *H. mattiyang* sp. nov., but differs by the apical lobe on posterolateral margin less produced; by the



Map 30. *Hydromanicus inferior* complex.



Figures 468–470. *Hydromanicus hasad* sp. nov. Holotype: 468 = male genitalia in left lateral view, 469 = left gonopod in ventral view, 470 = phallic organ in left lateral view.

dorsoapical setose lobe that is bilobed both in dorsal and lateral views, by the shape of the longer finger-tipped harpago; by the shorter and more blunt finger-tip; as well as by the more produced and high ventroapical keel and the split endothecal sclerites of the phallic organ.

Description. A brown coloured animal with slightly light spotted forewing of length 15 mm.

Male genitalia. Abdominal segment IX divided by suture into a smaller dorsal and a larger ventral part; its median keel medium-long and narrow; anterior margin arciform, resulted in a

very short dorsum and slightly longer ventrum; apical lobe on posterolateral margin less produced; intersegmental depression between the ninth and tenth segments low in lateral view. Body of segment X broad-based less sclerotized; setose cerci elongated digitiform; dorsoapical setose lobes bilobed both in lateral and dorsal views. The basal segment of the gonopods robust; terminal segment, the harpago pronounced finger-tipped, visible especially in ventral view; the tip is curving and blunt. Phallic apparatus robust, subapical ventral keel high; endothecal sclerites elongated, downward curving and split apicad.

Etymology. *hasad*, coined from “*hasadt*” split in Hungarian, refers to the pair of endothecal sclerites of the phallic organ, split into a larger more sclerotized upper and a smaller less sclerotized lower region, subdivided apicad.

***Hydromanicus jakhand* sp. nov.**

(Figures 471–473, Map 2: n° 12, 15, Map 30)

Material examined. Holotype: **India**, Uttarakhand, Tehri Garhwal, Jakhaur [= Jakhanr] according to Lonsdale (2020) [=Jahkand], 3500 ft., below the village, small river tributary of Alaknanda River, 30°19'49.4"N 78°39'20.9"E, 24.IV. 1958, leg. F. Schmid (1 male, CNC). Paratype: India, Tehri Garhwal, Jaspur, 3500–4500 ft., 30°23'34.7"N 78°25'21.4"E, 15.IV.1958, leg. F. Schmid (1 male, OPC).

Diagnosis. This new species belongs to the *H. luctuosus* species group and to the *Hydromanicus inferior* species complex. Having small finger-like apicomosal lobe on harpago in ventral view it has resemblance to *H. mynso* sp. nov. but differs by the head of cerci having apex slightly capitate, not digitate; by the lateral profile of segment X that is trilobed, not bilobed; by the shape of the finger-like apicomosal lobe on the harpago that is not slender, rather broad. The lateral shape of the phallic organ rather different; subapical mesal keel on the ventrum very low, not high.

Description. A brown coloured animal; forewing slightly and indistinctly light spotted, forewing length 9 mm.

Male genitalia. Abdominal segment IX divided by a tiny suture into a smaller dorsal and a larger ventral part; its median keel medium-long and narrow; anterior margin arciform, resulted in a very short dorsum and longer ventrum; apical lobe on posterolateral margin rounded produced; intersegmental depression between the ninth and tenth segments low in lateral view. Body of segment X elongated, broad-based, less sclerotized; dorsoapical setose lobes form a trilobed apex of segment X with a ventral spine like process discernible in lateral view; setose cerci elongated foliform with slightly capitate apex. The basal segment of the gonopods slightly arching and constricted middle; terminal segment, the harpago with a broad finger-like apicomosal lobe. Phallic apparatus slender, subapical ventral keel low with serrated anterior half, endothecal sclerites short and semicircular.

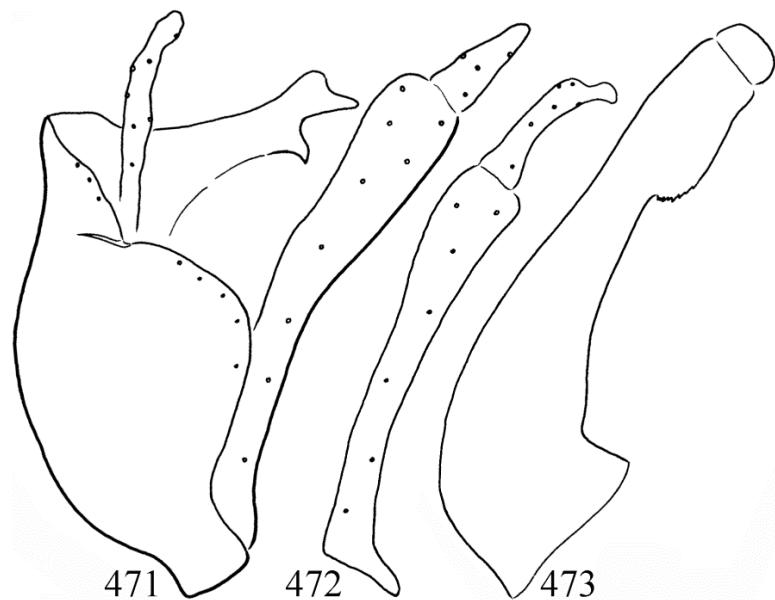
Etymology. *jakhand*, coined from the name of holotype *locus typicus*.

***Hydromanicus khalband* sp. nov.**

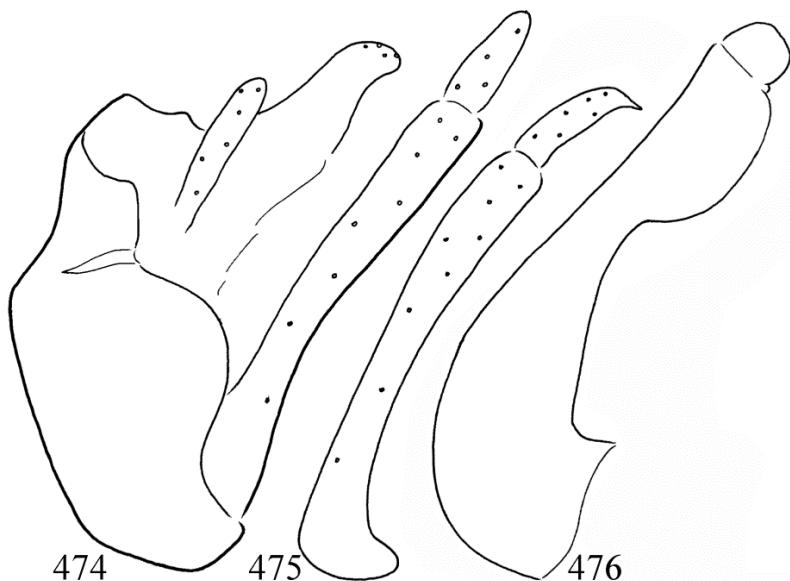
(Figures 474–476, Map 5: n° 84, Map 30)

Material examined. Holotype: **India**, Assam, United District of Mikir and North Cachar Hills, Bandarkhal, 300 ft., 25°03'31.1"N 92°48'02.5"E, 9.V.1960, leg. F. Schmid (1 male, CNC). Paratype: same as holotype (1 male, OPC).

Diagnosis. This new species belongs to the *H. luctuosus* species group and to the *H. inferior* species complex. Having pointed-tipped harpago in ventral view and short endothecal sclerites it has resemblance to *H. mattiyang* sp. nov., but differs by the apical lobe on posterolateral margin produced, rounded, not regularly triangular; by the slender coxopodite; the dorsoapical setose lobe with downward turning apex, not straight; the shorter pointed-tipped harpago; as well as by



Figures 471–473. *Hydromanicus jakhand* sp. nov. Holotype: 471 = male genitalia in left lateral view, 472 = left gonopod in ventral view, 473 = phallic organ in left lateral view.



Figures 474–476. *Hydromanicus khalband* sp. nov. Holotype: 474 = male genitalia in left lateral view, 475 = left gonopod in ventral view, 476 = phallic organ in left lateral view.

the rounded, not flat ventroapical keel of the phallic organ.

Description. A brown coloured animal forewing slightly light spotted, forewing length is 9 mm.

Male genitalia. Abdominal segment IX divided by suture into a smaller dorsal and a larger ventral part; its median keel medium-long and narrow; anterior margin arciform, resulted in a very short dorsum and slightly longer ventrum; apical lobe on posterolateral margin produced,

rounded; intersegmental depression between the ninth and tenth segments low in lateral view. Body of segment X broad-based less sclerotized; setose cerci elongated digitiform; dorsoapical setose lobes form a downward directed apex of segment X. The basal segment of the gonopods slender; terminal segment, the harpago short finger-tipped, visible especially in ventral view. Phallic apparatus robust, subapical ventral keel rounded; endothecal sclerites short and rounded.

Etymology. *khalband*, coined from the name of holotype *locus typicus*.

***Hydromanicus mattiyang* sp. nov.**

(Figures 477–479, Map 6: near n° 24, Map 30)

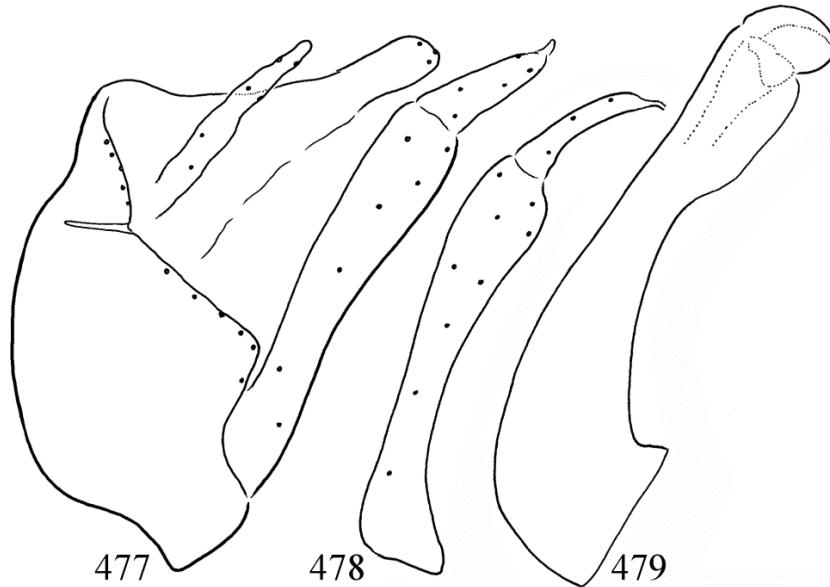
Material examined. Holotype: **India**, Ukhrul, Manipur, Mattiyang, 2800 ft. [the Mattiyang Mount (1531m), probably 24°59'02.1"N 94°36'31.9"E, is the major peak of the range between the Mount Khayang Bung upto Chahang Khunou (Chahong Khunou)]. *Remarks:* The locality Mattiyang was not found but it should be along the road to the Mattiyang Mount near this point according to the altitude, 24°53'16.1"N 94°36'

49.2"E, 17.VI.1960, leg. F. Schmid (1 male, CNC).

Diagnosis. This new species belongs to the *H. luctuosus* species group and to the *Hydromanicus inferior* species complex. Having finger-tipped harpago in ventral view it has resemblance to *H. mynso* sp. nov., but differs by the apical lobe on posterolateral margin produced, rounded triangular, not regularly rounded; by the dorsoapical setose lobe that is not bilobed nor in dorsal and lateral views, by the longer finger-tipped harpago, discernible both in lateral and ventral views; by the mesad turning finger-tip; as well as by the less produced and low ventroapical keel of the phallic organ.

Description. A brown coloured animal forewing slightly light spotted with length of 11 mm.

Male genitalia. Abdominal segment IX divided by suture into a smaller dorsal and a larger ventral part; its median keel medium-long and narrow; anterior margin arciform, resulted in a very short dorsum and slightly longer ventrum; apical lobe on posterolateral margin produced, rounded triangular; intersegmental depression between the ninth and tenth segments low in lateral



Figures 477–479. *Hydromanicus mattiyang* sp. nov. Holotype: 477 = male genitalia in left lateral view, 478 = left gonopod in ventral view, 479 = phallic organ in left lateral view.

view. Body of segment X broad-based less sclerotized; setose cerci elongated digitiform; dorsoapical setose lobes form a rounded apex of segment X both in lateral and dorsal views. The basal segment of the gonopods robust; terminal segment, the harpago pronounced finger-tipped, visible especially in ventral view. Phallic apparatus robust, subapical ventral keel low; endothecal sclerites short and rounded.

Etymology. *mattiyang*, named after the name of *locus typicus* the holotype.

***Hydromanicus mynso* sp. nov.**

(Figures 480–483, Map 5: n° 69, Map 30)

Material examined. Holotype: India, Meghalaya (United Jaintia and Khasi Hills), Mynso [=Mynsoo], 3500 ft, 25°33'43.5"N 92°19'37.5"E, 20.IV.1960, leg. F. Schmid (1 male, CNC).

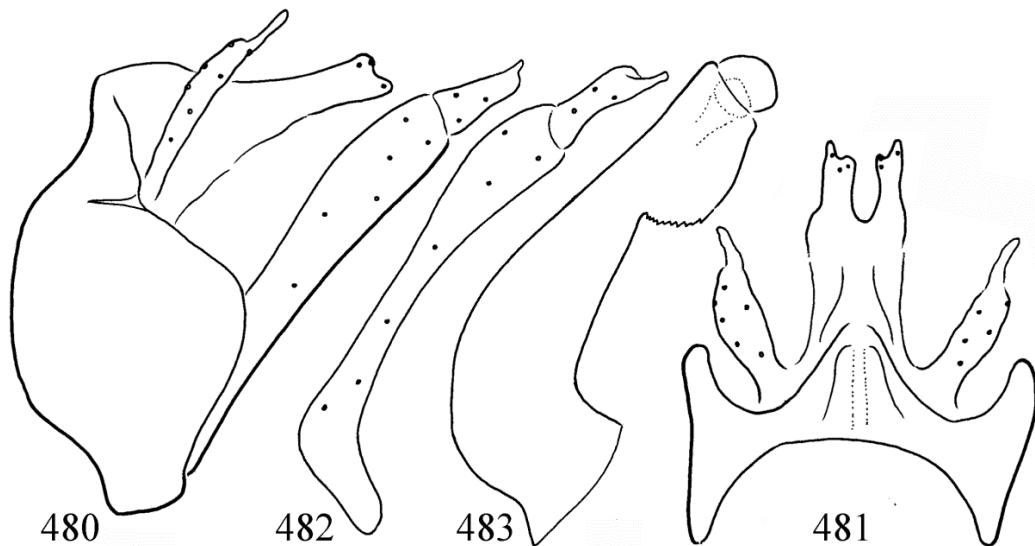
Diagnosis. This new species belongs to the *H. luctuosus* species group and to the *H. inferior* species complex. Having finger-tipped harpago in ventral view it has resemblance to *H. inferior*, but differs by the dorsoapical setose lobe bilobed both in dorsal and lateral views, by the more pro-

nounced finger-tipped harpago, discernible both in lateral and ventral views; as well as by the more produced and serrated ventroapical keel of the phallic organ.

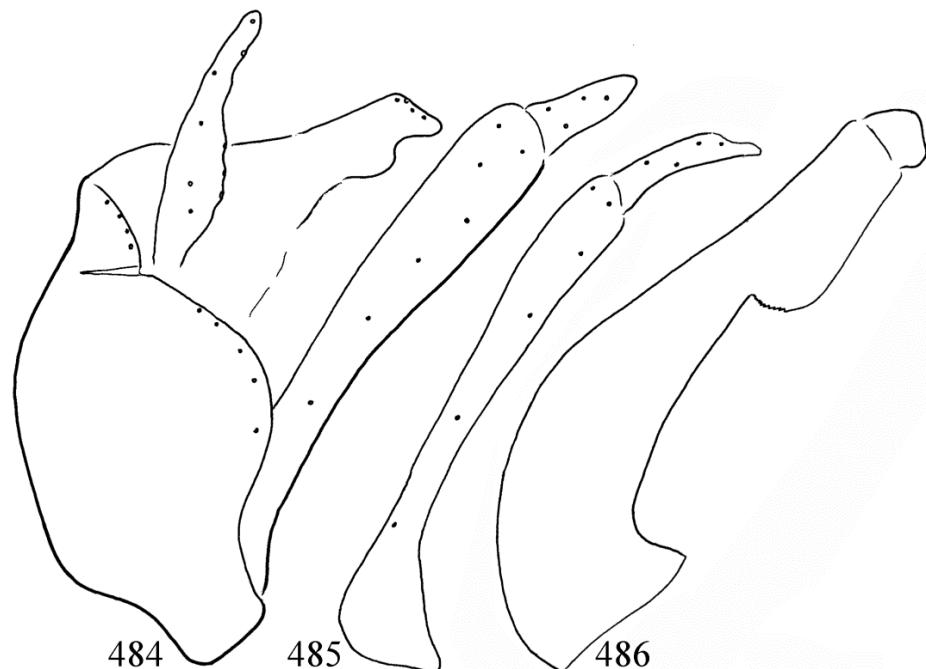
Description. A brown coloured animal forewing slightly light spotted with length of 11 mm.

Male genitalia. Abdominal segment IX divided by suture into a smaller dorsal and a larger ventral part; its median keel medium-long and narrow; anterior margin arciform, resulted in a very short dorsum and ventrum; apical lobe on posterolateral margin produced, rounded; intersegmental depression between the ninth and tenth segments low in lateral view. Body of segment X broad-based less sclerotized; setose cerci elongated foliform with apical digitiform ending; dorsoapical setose lobes form a bilobed apex of segment X both in lateral and dorsal views. The basal segment of the gonopods robust; terminal segment, the harpago pronounced finger-tipped, visible especially in ventral view. Phallic apparatus robust, subapical ventral keel short and high with serrated anterior half, endothecal sclerites short and rounded.

Etymology. *mynso*, named after the *locus typicus* of the holotype.



Figures 480–483. *Hydromanicus mynso* sp. nov. Holotype: 480 = male genitalia in left lateral view, 481 = male genitalia in dorsal view, 482 = left gonopod in ventral view, 483 = phallic organ in left lateral view.



Figures 484–486. *Hydromanicus nondeng* sp. nov. Holotype: 484 = male genitalia in left lateral view, 485 = left gonopod in ventral view, 486 = phallic organ in left lateral view.

Hydromanicus nondeng sp. nov.

(Figures 484–486, Map 5: n° 5, Map 30)

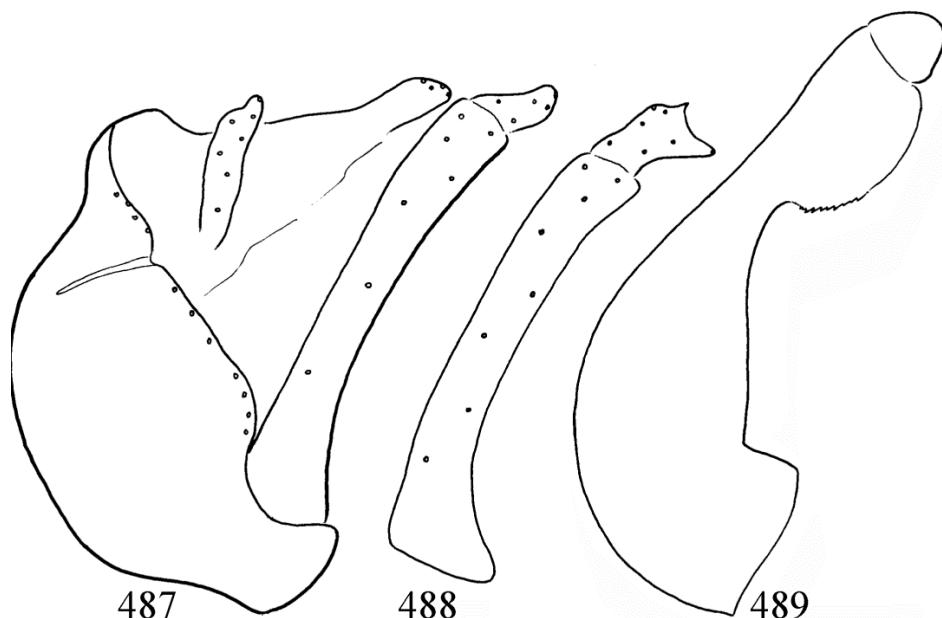
Material examined. Holotype: India, Meghalaya (United Jaintia and Khasi Hills), Shnongpdeng, 1000 ft., 25°12'27.0"N 92°00'28.4"E, 7.IV. 1960, leg. F. Schmid (1 male, CNC). Paratypes: same as holotype (1 male, OPC; 1 male, SMNH).

Diagnosis. This new species belongs to the *H. luctuosus* species group and to the *H. inferior* species complex. Having small finger-like apicomesal lobe on harpago in ventral view it has resemblance to *H. jakhand* sp. nov. but differs by the head of cerci having apex digitate, not slightly capitate and basal half broad in lateral view; by the lateral profile of segment X that is trilobed, but the lobes are blunt, not pointed; by the shape of the finger-like apicomesal lobe on the harpago that is not capitate. The lateral shape of the phallic organ rather different; basal half long curving, not short; subapical mesal keel on the ventrum broadening anterad; endothecal sclerites subtriangular, not semicircular.

Description. A brown coloured animal; forewing distinctly light spotted with length of 10 mm.

Male genitalia. Abdominal segment IX divided by a tiny suture into a smaller dorsal and a larger ventral part; its median keel medium-long and narrow; anterior margin arciform, resulted in a very short dorsum and longer ventrum; apical lobe on posterolateral margin rounded produced; intersegmental depression between the ninth and tenth segments low in lateral view. Body of segment X elongated, broad-based, less sclerotized ventrally; apex of segment X trilobed in lateral view with blunt apices; setose cerci elongated foliform with digitate apex and widened basal half. The basal segment of the gonopods slightly arching and constricted basally; terminal segment, the harpago with a broad finger-like apicomesal lobe. Phallic apparatus slender with long curving basal half, subapical ventral keel low, broadening anterad with serrated anterior, endothecal sclerites short and subtriangular.

Etymology. *nondeng*, coined from the name of the holotype *locus typicus*.



Figures 487–489. *Hydromanicus fureses* sp. nov. Holotype: 487 = male genitalia in left lateral view, 488 = left gonopod in ventral view, 489 = phallic organ in left lateral view.

Hydromanicus luctuosus species complex

Hydromanicus luctuosus new species complex in the *H. luctuosus* species group is characterized with a bicuspid harpago. The apical ending of the harpago is diverging into an upper, apicodorsal and a lower, apicoventral variously produced corner in ventral view.

Hydromanicus fureses sp. nov.

(Figures 487–489, Map 5: n° 69, Map 31)

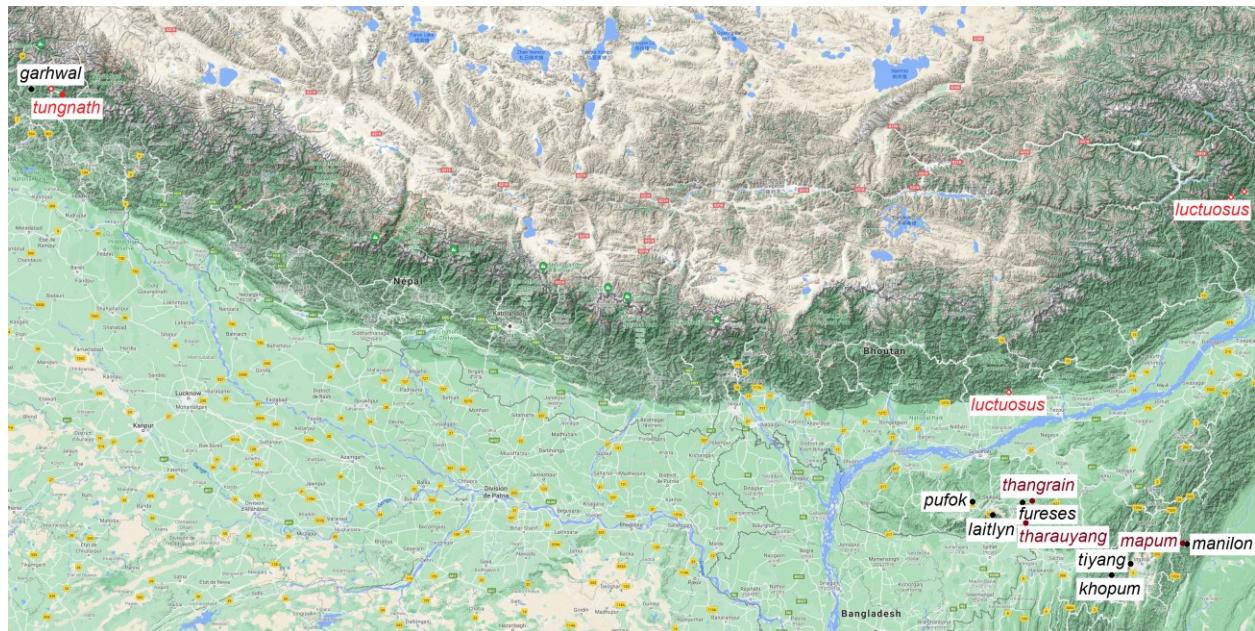
Material examined. Holotype: **India**, Meghalaya (United Jaintia and Khasi Hills), Mynso [= Mynsoo], 3500 ft., 25°33'43.5"N 92°19'37.5"E, 20.IV.1960, leg. F. Schmid (1 male, CNC).

Diagnosis. This new species belongs to the *H. luctuosus* species complex of the *H. luctuosus* species group. Having bi-pointed harpago in ventral view it resembles to *H. luctuosus*, but differs by the needle pointed dorsoapical and mesoapical bifid apical ending of the harpago as well as by the serrated ventroapical keel and by the subtriangular endothecal sclerites of the phallic organ.

Description. A brown coloured animal forewing slightly light spotted with length of 12 mm.

Male genitalia. Abdominal segment IX divided by suture into a smaller dorsal and a larger ventral part; its median keel medium-long and narrow; anterior margin arciform, resulted in a very short dorsum and slightly longer ventrum; apical lobe on posterolateral margin less produced; intersegmental depression between the ninth and tenth segments low in lateral view. Body of segment X broad-based less sclerotized; setose cerci elongated foliform; dorsoapical setose lobes form a bilobed apex of segment X. The basal segment of the gonopods slightly arching and constricted middle; terminal segment, the harpago bicuspidate in ventral view. Phallic apparatus robust, subapical ventral keel short with serrated anterior half, endothecal sclerites short and subtriangular.

Etymology. *fureses*, coined from “fürészes” serrated in Hungarian, refers to the serrated anterior half of the ventroapical keel of the phallic organ.



Map 31. *Hydromanicus luctuosus* complex.

***Hydromanicus garhwal* sp. nov.**

(Figures 490–492, Map 2: n° 34, Map 31)

Material examined. Holotype: **India**, Uttarakhand, Tehri Garhwal, Gawan Jaunpur [= Gawan Malla], 6000 ft, small river tributary of Bhichangana, 30°32'18.9"N 78°48'35.9"E, 22–24.V. 1958, leg. F. Schmid (1 male, CNC).

Diagnosis. This new species belongs to the *H. luctuosus* species group and to the *H. luctuosus* species complex. Having bi-pointed harpago in ventral view it has resemblance to *H. luctuosus*, but differs by the flat without-corner dorsoapical and straight, not-turning-mesad mesoapical ending of the harpago as well as by the lateral profile of the phallic organ. *H. luctuosus* is a small species with 9–10 mm forewing; the new species *H. garhwal* is a large species having forewing of 15 mm.

Description. A brown coloured animal; forewing slightly and indistinctly light spotted of 15 mm length.

Male genitalia. Abdominal segment IX divided by a suture into a smaller dorsal and a larger

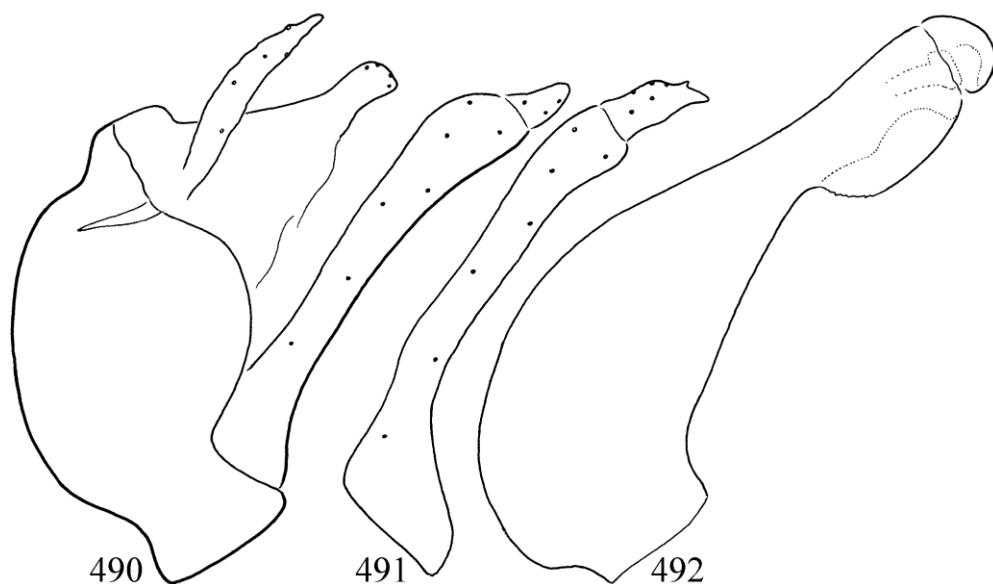
ventral part; its median keel medium-long and narrow; anterior margin arciform, resulted in a very short dorsum and longer ventrum; apical lobe on posterolateral margin rounded produced; intersegmental depression between the ninth and tenth segments low in lateral view. Body of segment X broad-based less sclerotized; setose cerci elongated foliform; dorsoapical setose lobes form a bilobed apex of segment X. The basal segment of the gonopods slightly arching and constricted middle; terminal segment, the harpago bi-pointed in ventral view, the dorsoapical point moved mesad. Phallic apparatus robust, subapical ventral keel short with serrated anterior half, endothecal sclerites short and semicircular.

Etymology. *garhwal*, named after the *locus typicus* of the holotype.

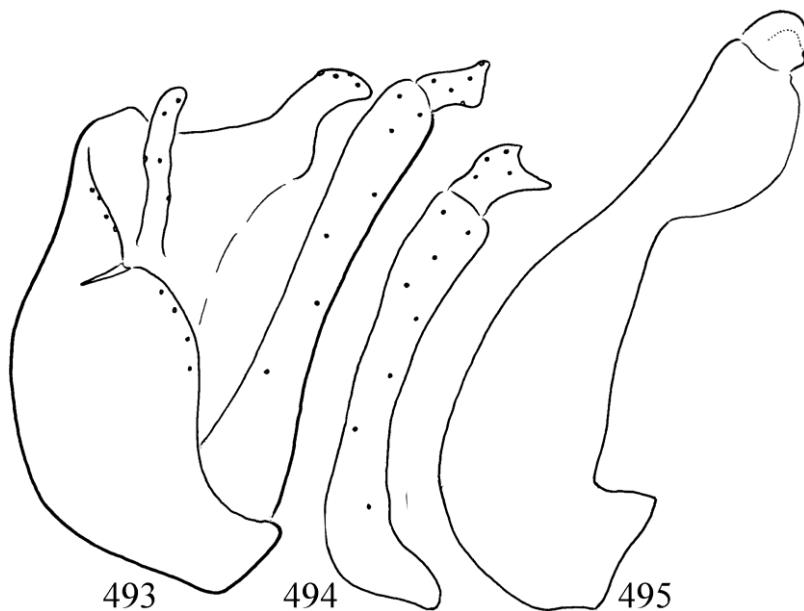
***Hydromanicus khopum* sp. nov.**

(Figures 493–495, Map 6: n° 7, Map 31)

Material examined. Holotype: **India**: Manipur, Khopum [= Khoupum Valley], 2500 ft., 24° 40'31.8"N 93°31'07.3"E, 27.V.1960, leg. F. Schmid (1 male, CNC).



Figures 490–492. *Hydromanicus garhwal* sp. nov. Holotype: 490 = male genitalia in left lateral view, 491 = left gonopod in ventral view, 492 = phallic organ in left lateral view.



Figures 493–495. *Hydromanicus khopum* sp. nov. Holotype: 493 = male genitalia in left lateral view, 494 = left gonopod in ventral view, 495 = phallic organ in left lateral view.

Diagnosis. This new species belongs to the *H. luctuosus* species group and to the *H. luctuosus* species complex. According to the ventral profile of the harpago most close to *H. pufok* sp. nov. described from India, Meghalaya, but differs by the shorter harpago, aviform head of segment X in

lateral view, and by the slender, not fat phallic organ.

Description. A brown coloured animal forewing with distinct light spotted pattern, forewing length is 10 mm.

Male genitalia. Abdominal segment IX divided by a suture into a smaller dorsal and a larger ventral part; its median keel short and narrow; anterior margin arciform, resulted in a very short dorsum and longer ventrum; apical lobe on posterolateral margin less produced; intersegmental depression between the ninth and tenth segments high and almost right angled in lateral view. Body of segment X broad-based less sclerotized ventrally; setose cerci elongated digitiform; dorsoapical setose lobes form a bilobed apex of segment X visible in dorsal view and aviform in lateral view. The basal segment of the gonopods slightly arching little constricted middle; terminal segment, the harpago bi-pointed in ventral view. Phallic apparatus slender, subapical ventral keel elongated, endothecal sclerites short and rounded with small bilobed ventrum.

Etymology. *khopum*, named after the holotype *locus typicus*.

***Hydromanicus laitlyn* sp. nov.**

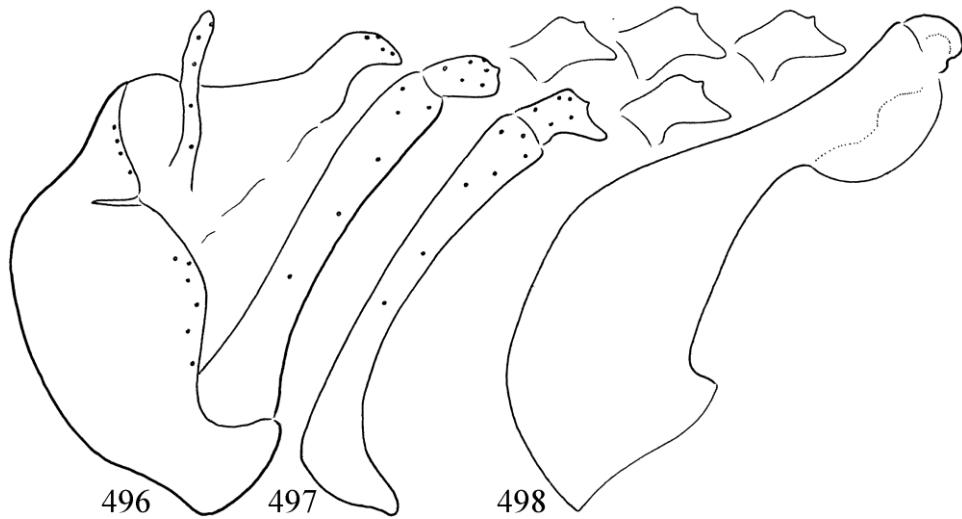
(Figures 496–498, Map 5: n° 38, Map 31)

Material examined. Holotype: **India:** Meghalaya (United Jaintia and Khasi Hills), Laitlyngkot, 2000–2300 ft., 25°24'42.9"N 91°54'35.4"E, 17.III. 1960, leg. F. Schmid (1 male, CNC). Paratypes: same as holotype (1 male, OPC; 1 male, SMNH).

Diagnosis. This new species belongs to the *H. luctuosus* species group and to the *H. luctuosus* species complex. According to the ventral profile of the harpago most close to *H. khopum* sp. nov. described from India, Manipur, but differs by the tri-pointed harpago, one small pointed process has been shift to middle position on the apical margin of harpago, and by the more broad and more curving basal two thirds of the phallic organ as well as endothecal process shorter.

Description. A brown coloured animal forewing with distinct light spotted pattern of 10 mm length.

Male genitalia. Abdominal segment IX divided by suture into a smaller dorsal and a larger ventral part; its median keel short and narrow; anterior margin arciform, resulted in a very short dorsum and longer ventrum; apical lobe on posterolateral margin less produced; intersegmental depression between the ninth and tenth segments low and obtuse angled in lateral view. Body of segment X broad-based less sclerotized ventrally; setose cerci elongated digitiform; dorsoapical setose lobes form a bilobed apex of segment X visible in dorsal view and aviform in lateral view. The basal segment of the gonopods slightly arching little constricted middle; terminal segment, the harpago tri-pointed in ventral view, a small pointed process appears in middle position



Figures 496–498. *Hydromanicus laitlyn* sp. nov. Holotype: 496 = male genitalia in left lateral view, 497 = left gonopod in ventral view with redrawn variations of the harpago in ventral view, 498 = phallic organ in left lateral view.

on the apical margin of harpago. Phallic apparatus with robust basal two thirds, subapical ventral keel elongated, endothecal sclerites short and rounded with small bilobed ventrum.

Etymology. *laitlyn*, coined from the name of the holotype *locus typicus*.

***Hydromanicus luctuosus* Ulmer, 1905**

(Figures 499–502, Map 31)

Hydromanicus luctuosus Ulmer, 1905:92–93. Described from “Sikkim, (Himalaya)”, India, deposited in Stettiner Musem.

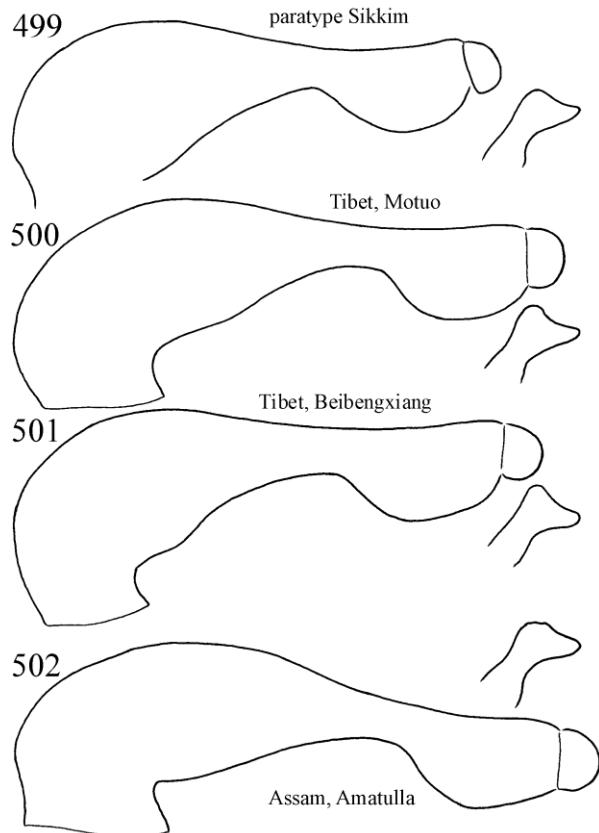
Hydromanicus truncatus Betten, 1909:235–236. ”corresponds closely to the description of *H. luctuosus*, Ulmer. Several specimens from Kurseong (Annandale, May, 1906).”

Hydromanicus truncatus Betten, 1909: Martynov 1935: 184–185. Kurseong, Darjeeling, Bengal, India.

Hydromanicus luctuosus Ulmer, 1905: Malicky 2009: 41, 44. *Hydromanicus truncatus* described from Kurseong, West Bengal, synonymised with *H. luctuosus* Ulmer, 1905 described from India (Sikkim).

Material examined. **China**, Tibet, Beibengxiang, 700 m, 29°14'44.6"N 95°10'06.5"E, 30.VII.2012, leg. W. Li (1 male, DPP-HIST). China, Tibet, Motuo, 1100 m, 29°19'40.8"N 95°20' 27.7"E, 26.VII.1912, leg. Li Wenliang (1 male, DPP-HIST). China, Tibet, Motuo, 80K 1000m, 29°20'05.3"N 95°19'41.3"E, 24.VII.2012, leg. Li Wenliang (1 male, OPC). **India**, Arunachal Pradesh (Assam), Kameng, Amartala PWD Camp, 26°55'47"N 92°7'18"E, 1250–2000 ft. 11.III.1961, leg. F. Schmid (1 male, pinned with cleared abdomen in plastic genital vial, ROM).

Remarks. Examination of paratype from Sikkim, and specimens from nearby territories in Tibet and Assam has indicated stable lateral profile of the adaptive speciation trait, that is the phallic organ in the different populations. Even the non-adaptive, neutral structure of the ventral profile of the harpago seems rather stable in the examined populations.



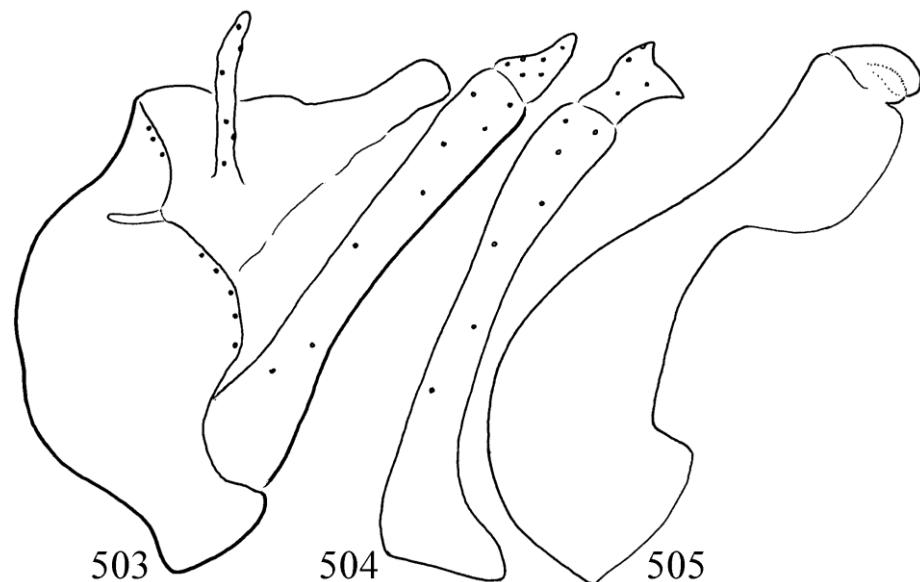
Figures 499–502. *Hydromanicus luctuosus* Ulmer, 1905. 499–502 = phallic organ in left lateral view and the apex of harpago in ventral view of the paratype and specimens from Tibet and Assam.

***Hydromanicus manilon* sp. nov.**

(Figures 503–505, Map 6: n° 23, Map 31)

Material examined. Holotype: **India**, Manipur, Loni [=Roni], 4500–5500 ft, 25°03'41.8"N 94°34'18.8"E, 16.VI.1960, leg. F. Schmid (1 male, CNC). Paratype: same data as for the holotype (1 male, OPC).

Diagnosis. This new species belongs to the *H. luctuosus* species group and to the *H. luctuosus* species complex. Having bicuspidate harpago in ventral view it has resemblance to *H. fureses* sp. nov., but differs by the blunt, not needle-pointed dorsoapical and mesoapical bifid apical ending of



Figures 503–505. *Hydromanicus manilon* sp. nov. Holotype: 503 = male genitalia in left lateral view, 504 = left gonopod in ventral view, 505 = phallic organ in left lateral view.

the harpago as well as by the less serrated ventro-apical keel and by the downward sloping, not subtriangular endothecal sclerites of the phallic organ.

Description. A brown coloured animal fore-wing slightly light spotted of 10 mm length.

Male genitalia. Abdominal segment IX divided by suture into a smaller dorsal and a larger ventral part; its median keel medium-long and narrow; anterior margin arciform, resulted in a very short dorsum and slightly longer ventrum; apical lobe on posterolateral margin less produced rounded; intersegmental depression between the ninth and tenth segments low in lateral view. Body of segment X broad-based less sclerotized ventrally; setose cerci elongated foliform; dorso-apical setose lobes form a bilobed apex of segment X. The basal segment of the gonopods slightly arching and constricted middle; terminal segment, the harpago blunt bi-pointed in ventral view. Phallic apparatus robust, subapical ventral keel short with less serrated anterior half, endothecal sclerites short and downward directed.

Etymology. *manilon*, coined from the name of the *locus typicus* of holotype.

Hydromanicus mapum sp. nov.

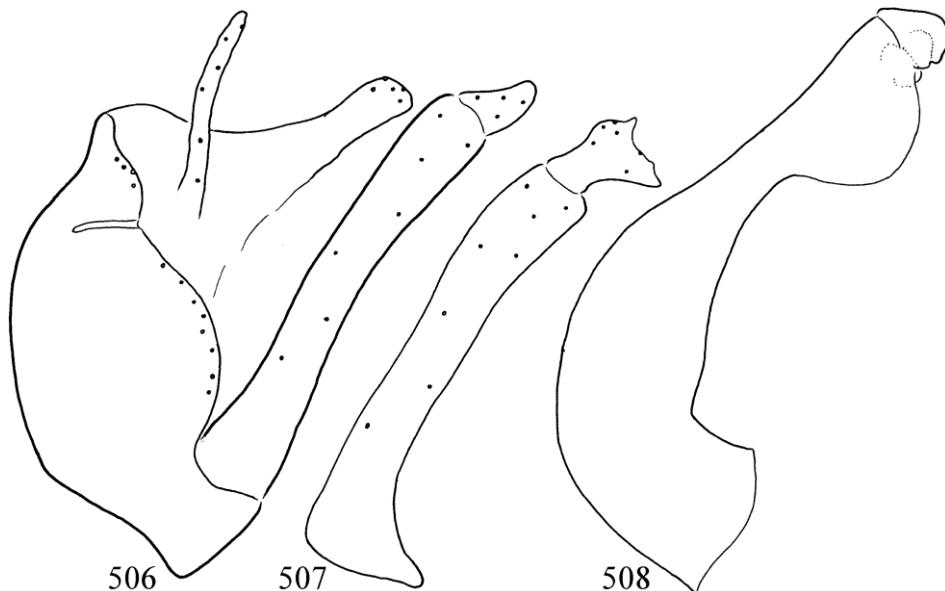
(Figures 506–508, Map 6: n° 18, Map 31)

Material examined. Holotype: **India**, Manipur, Mapum, 5000 ft., 25°04'55.9"N 94°30'16.9"E, 11.VI.1960, leg. F. Schmid (1 male, CNC). Paratype: same as holotype (1 male, OPC).

Diagnosis. This new species with its subapical ventral keel on the phallic organ belongs to the *Hydromanicus luctuosus* species group. Having double pointed harpago it is a member of the *Hydromanicus luctuosus* species complex. Most close to the nominate species of the group *H. luctuosus*, but differs by the apical region of segment X: its apex upward directed or produced, not downward; the harpago broader apicad and with two small apical outgrowths as visible in ventral view; phallic organ with high basal region and the subapical ventral keel high and subtriangular.

Description. A brown coloured animal fore-wing slightly light spotted of 10 mm length.

Male genitalia. Abdominal segment IX divided by suture into a smaller dorsal and a larger ventral part; the median keel of segment IX medium-long and narrow; anterior margin arciform,



Figures 506–508. *Hydromanicus mapum* sp. nov. Holotype: 506 = male genitalia in left lateral view, 507 = left gonopod in ventral view, 508 = phallic organ in left lateral view.

resulted in a very short dorsum and longer ventrum; apical lobe on posterolateral margin less produced, rounded; intersegmental depression between the ninth and tenth segments low in lateral view. Body of segment X broad-based less sclerotized ventrally; setose cerci elongated digitiform; dorsoapical setose lobes bilobed as visible in dorsal views and upward produced in lateral view. The basal segment of the gonopods robust; terminal segment, the harpago subtriangular in ventral view with two small apical outgrowths. Phallic apparatus slender, subapical ventral keel high, subtriangular; endothecal sclerites with flat dorsoapical region.

Etymology. *mapum*, named after the name of holotype *locus typicus*.

Hydromanicus pufok sp. nov.

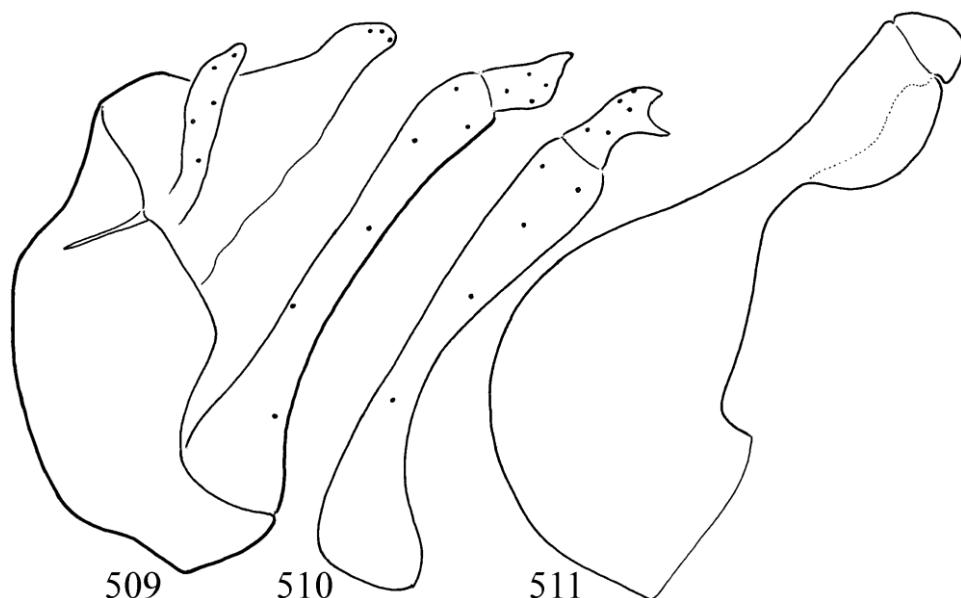
(Figures 509–511, Map 31)

Material examined. Holotype: **India:** Meghalaya, Khasi Hills, 25°34'56.9"N 91°37'57.6"E (1 male, Nat. Coll. McLachlan, Coll.B.M. 1938-674, BMNH). Paratype: same as holotype (1 male, OPC).

Diagnosis. This new species belongs to the *H. luctuosus* species group and to the *H. luctuosus* species complex. This large sized new species differs from all the known species by the less developed apical lobe on the posterolateral margin of segment IX, by the bi-pointed harpago in ventral profile, by the enlarged phallobase of the phallic organ.

Description. A brown coloured animal forewing without any pattern (old specimen), forewing length 15 mm.

Male genitalia. Abdominal segment IX divided by suture into a smaller dorsal and a larger ventral part; its median keel medium-long and narrow; anterior margin arciform, resulted in a very short dorsum and slightly longer ventrum; apical lobe on posterolateral margin less produced; intersegmental depression between the ninth and tenth segments low in lateral view. Body of segment X broad-based less sclerotized; setose cerci elongated foliform; dorsoapical setose lobes form a bilobed apex of segment X. The basal segment of the gonopods slightly arching and constricted middle; terminal segment, the harpago bi-pointed in ventral view. Phallic apparatus



Figures 509–511. *Hydromanicus pufok* sp. nov. Holotype: 509 = male genitalia in left lateral view, 510 = left gonopod in ventral view, 511 = phallic organ in left lateral view.

robust, subapical ventral keel short, endothecal sclerites short and rounded.

Etymology. *pufok*, coined from “pufók” chubby in Hungarian, refers to the extremely enlarged phallobase of the phallic organ.

Hydromanicus thangrain sp. nov.

(Figures 512–514, Map 5: n° 71, Map 31)

Material examined. Holotype: **India**, Meghalaya (United Jaintia and Khasi Hills), Thangrain, 3000 ft., 25°34'45.1"N 92°26'26.7"E, 22.IV.1960, leg. F. Schmid (1 male, CNC).

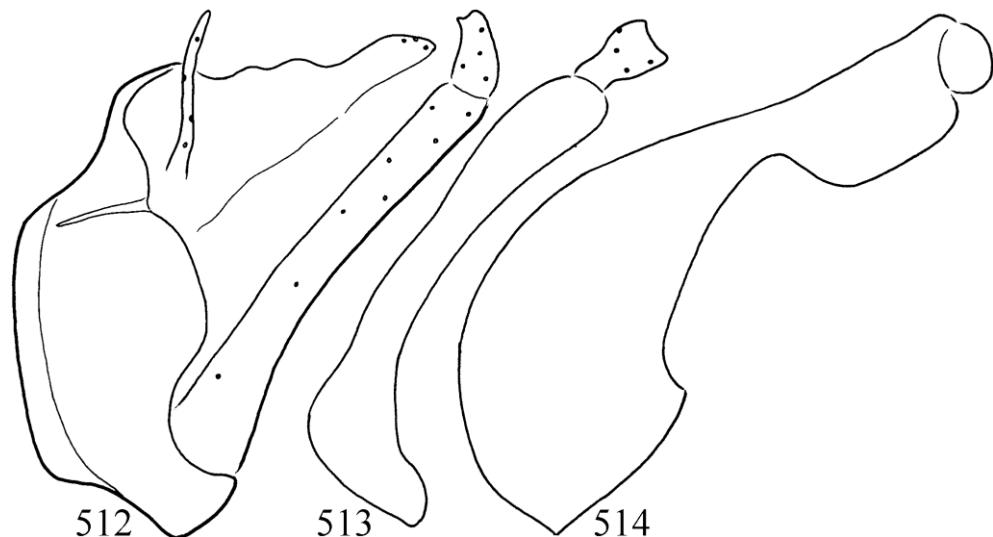
Diagnosis. This new species belongs to the *H. luctuosus* species group and to the *H. luctuosus* species complex. Most close to *H. luctuosus*, but differs by the shape of harpago being fan-shaped with equal apicolateral and apicomesal corner, not with pronounced apicomesal lobe. The lateral profile of the phallotheca of the phallic organ is different. *H. thangrain* sp. nov. has the terminal ending tube of the phallobase low and long (wide), not high and short; its dorsoapical margin protruded posterad, not as long as the apical end-

ing of the ventroapical keel; its ventroapical keel is flat ventrad, not rounded.

Description. In alcohol a brown coloured animal without discernible pattern on the forewing, forewing densely covered with thin recumbent setae; forewing length 10 mm.

Male genitalia. Abdominal segment IX divided by suture into a smaller dorsal and a larger ventral part; its median keel short and narrow; anterior margin arciform, resulted in a very short dorsum and slightly longer ventrum; apical lobe on posterolateral margin robust flat rounded, comprising the bulk of the segment; intersegmental depression between the ninth and tenth segments low oblique in lateral view. Body of segment X broad-based less sclerotized, narrowing apicad; setose cerci elongated very thin filiform; dorsoapical setose lobes apicad directed bilobed apex of segment X. The basal segment of the gonopods straight almost parallel-sided; terminal segment, the harpago regular fan-shaped. Phallic apparatus robust, subapical ventral keel long and flat, endothecal sclerites semicircular.

Etymology. *thangrain*, named after the *locus typicus* of the holotype.



Figures 512–514. *Hydromanicus thangrain* sp. nov. Holotype: 512 = male genitalia in left lateral view, 513 = left gonopod in ventral view, 514 = phallic organ in left lateral view.

***Hydromanicus tharauyang* sp. nov.**

(Figures 515–517, Map 5: n° 30, 39, Map 31)

Material examined. Holotype: **India:** Meghalaya (United Jaintia and Khasi Hills), Tharauyang, 2900 ft., this unknown locality is probably not far from the next locality on the Schmid's road: Byndihati, 3000 ft, 25°19'09.4"N 92°22'12.7"E, 10.I. 1960, leg. F. Schmid (1 male, CNC). Paratype: India: Meghalaya (United Jaintia and Khasi Hills), Mawkhap, 1500 ft., 18.III.1960, leg. F. Schmid (1 male, OPC).

Diagnosis. This new species belongs to the *H. luctuosus* species group and to the *H. luctuosus* species complex. According to the lateral profile of segment X, the ventral profile of the harpago as well as the lateral shape of the endothecal sclerites most close to *H. khopum* sp. nov. described from India, Manipur, but differs by the less aviform head of segment X in lateral view, longer harpago with straight dorsal margin in ventral view, and by the shorter than high endothecal sclerites.

Description. A brown coloured animal forewing with indistinct light spotted pattern; forewing length 10 mm.

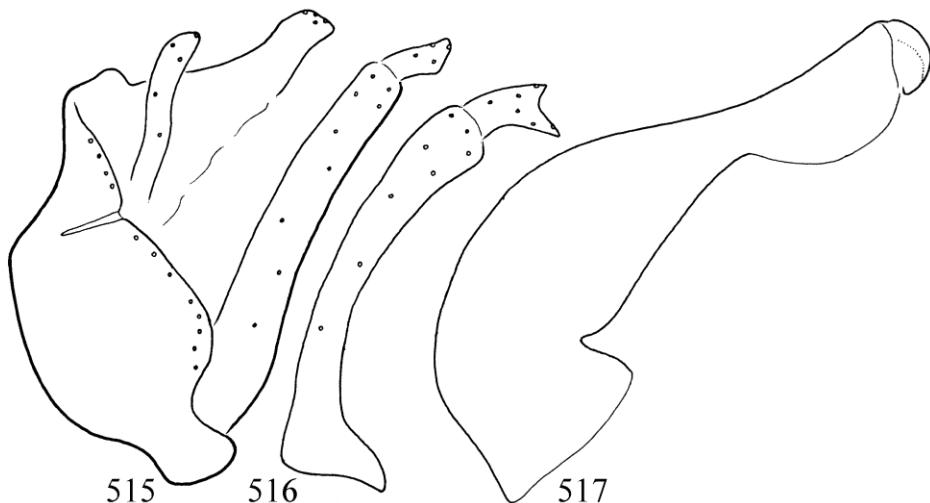
Male genitalia. Abdominal segment IX divided by suture into a smaller dorsal and a larger ventral part; its median keel short and narrow; anterior margin arciform with dorsal excision in lateral view, resulted in a very short dorsum and longer ventrum; apical lobe on posterolateral margin less produced; intersegmental depression between the ninth and tenth segments high and right angled in lateral view. Body of segment X broad-based less sclerotized ventrally, its apex truncated; setose cerci elongated digitiform; dorsoapical setose lobes form a bilobed apex of segment X visible in dorsal view and less aviform in lateral view. The basal segment of the gonopods slightly arching not constricted middle; terminal segment, the harpago bi-pointed in ventral view. Phallic apparatus slender, subapical ventral keel elongated, endothecal sclerites short.

Etymology. *tharauyang*, named after the holotype *locus typicus*.

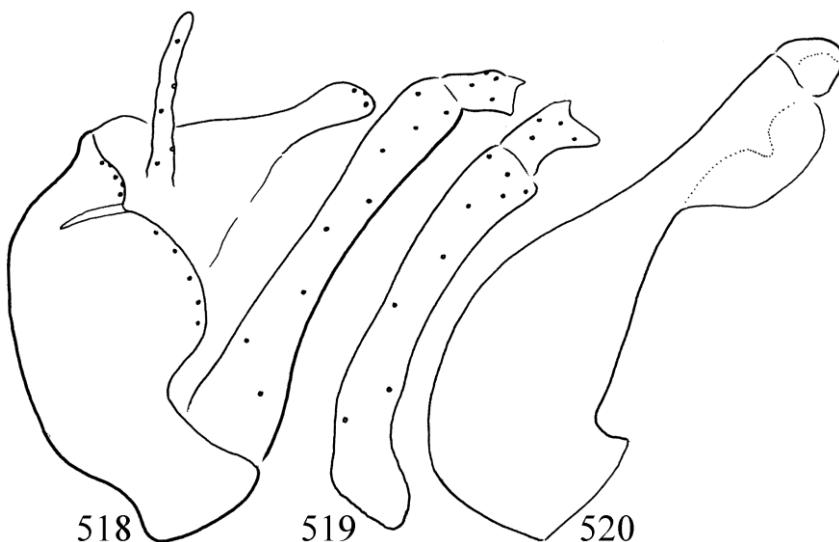
***Hydromanicus tiyang* sp. nov.**

(Figures 518–520, Map 6: n° 10, 24, Map 31)

Material examined. Holotype: **India**, Manipur, Mattiyang, 2800 ft., as explained for *Hydro-*



Figures 515–517. *Hydromanicus tharauyang* sp. nov. Holotype: 515 = male genitalia in left lateral view, 516 = left gonopod in ventral view, 517 = phallic organ in left lateral view.



Figures 518–520. *Hydromanicus tiyang* sp. nov. Holotype: 518 = male genitalia in left lateral view, 519 = left gonopod in ventral view, 520 = phallic organ in left lateral view.

manicus mattiyang sp. nov., it should be located near this point: 24°53'16.1"N 94°36'49.2"E, 17.VI.1960, leg. F. Schmid (1 male, CNC). Paratype: India, Manipur, Tairenpokpi, 4000 ft., 24°49'36.7"N 93°48'14.6"E, 31.V.1960, leg F. Schmid (1 male, OPC).

Diagnosis. This new species belongs to the *H. luctuosus* species group and to the *H. luctuosus* species complex. Having bi-pointed harpago in

ventral view it has resemblance to *H. luctuosus*, but differs by the needle pointed dorsoapical and mesoapical bifid apical ending of the harpago as well as by the serrated ventroapical keel and by the subtriangular endothecal sclerites of the phallic organ.

Description. A brown coloured animal forewing slightly light spotted, forewing length 12 mm.

Male genitalia. Abdominal segment IX divided by suture into a smaller dorsal and a larger ventral part; its median keel medium-long and narrow; anterior margin arciform, resulted in a very short dorsum and slightly longer ventrum; apical lobe on posterolateral margin less produced; intersegmental depression between the ninth and tenth segments low in lateral view. Body of segment X broad-based less sclerotized; setose cerci elongated foliform; dorsoapical setose lobes form a bilobed apex of segment X. The basal segment of the gonopods slightly arching and constricted middle; terminal segment, the harpago bi-pointed in ventral view. Phallic apparatus robust, subapical ventral keel short with serrated anterior half, endothecal sclerites short and subtriangular.

Etymology. *tiyang*, coined from the name of the holotype *locus typicus*.

***Hydromanicus tungnath* sp. nov.**

(Figures 521–523, Map 2: n° 22, 41, Map 31)

Material examined. Holotype: **India**, Uttarakhand, Pauri Garhwal, Tungnath, 9000 ft, brook with mosses in forest, 30°28'41.9"N 79°12'43.9"E, 1.VI.1958, leg. F. Schmid (1 male, CNC). Paratype: **India**, Pauri Garhwal, Khumyara [=Khumera according to Lonsdale (2020)], 30°33'15.4"N 79°03'44.3"E, 4300-5000 ft, 27–28.V.1958, leg. F. Schmid (1 male, OPC).

Diagnosis. This new species belongs to the *H. luctuosus* species group and to the *H. luctuosus* species complex. Having bicuspidate harpago in ventral view it has resemblance to *H. garhwal* sp. nov. but differs by the ventral profile of the harpago with dorsoapical lobe very produced dominating on the harpago head and well visible both in lateral and ventral views; the lateral profile of the phallic organ also differs, that is the neck, the before-keel-region is very narrow and the keel is rounded-shaped.

Description. A brown coloured animal; forewing slightly but distinctly light spotted, forewing length 15 mm.

Male genitalia. Abdominal segment IX divided by suture into a smaller dorsal and a larger ventral part; its median keel medium-long and narrow; anterior margin arciform, resulted in a very short dorsum and longer ventrum; apical lobe on posterolateral margin flatly rounded produced; intersegmental depression between the ninth and tenth segments low in lateral view. Body of segment X broad-based less sclerotized; setose cerci elongated foliform with blunt apex; dorsoapical setose lobes form a bilobed apex of segment X. The basal segment of the gonopods slightly arching and constricted middle; terminal segment, the harpago bi-pointed in ventral view, the dorsoapical lobe is well-developed. Phallic apparatus robust, subapical ventral keel short with serrated anterior half, endothecal sclerites short and semicircular.

Etymology. *tungnath*, named after the *locus typicus* of the holotype.

***Hydromanicus umbonatus* new species complex**

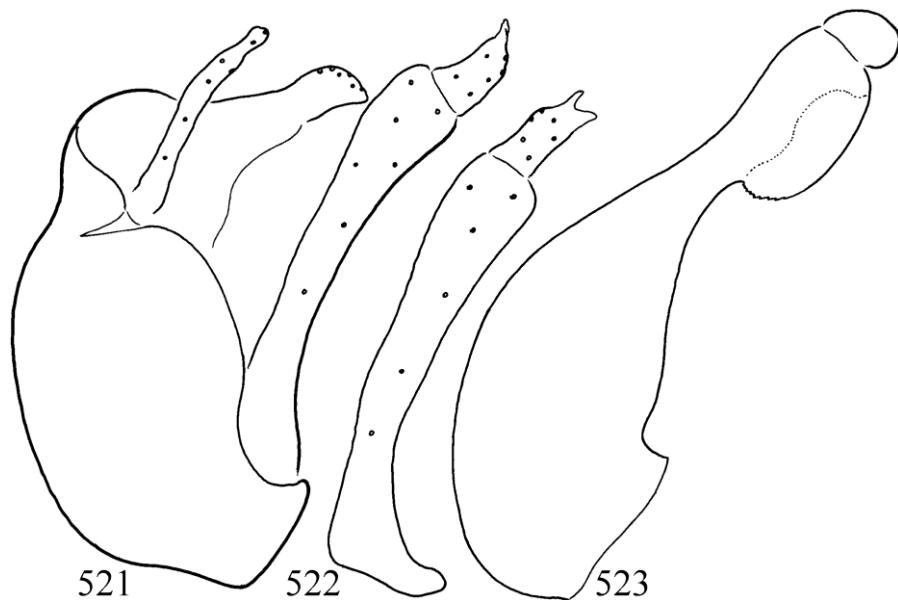
Hydromanicus umbonatus new species complex in the *H. luctuosus* species group is characterized by a somehow and somewhat flat harpago in ventral view.

***Hydromanicus kover* sp. nov.**

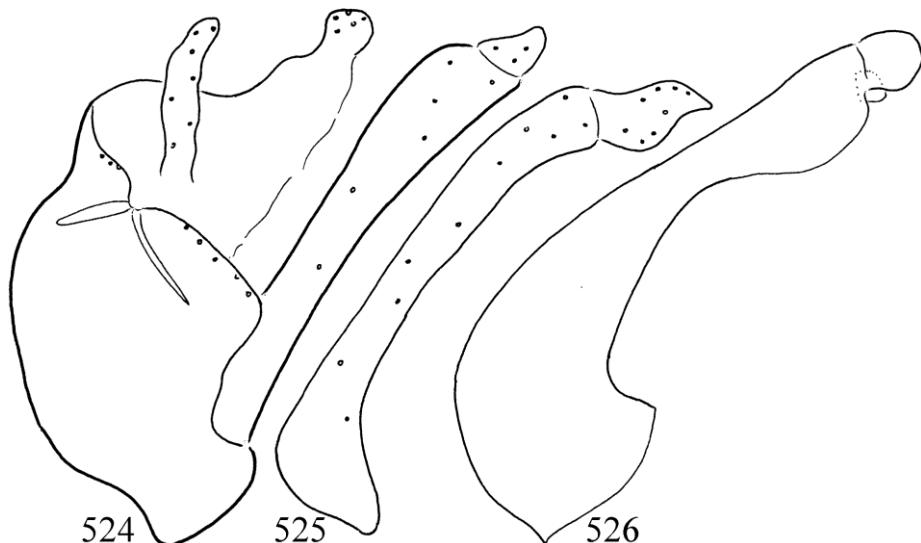
(Figures 524–526, Map 6: n° 18, Map 32)

Material examined. Holotype: **India**, Manipur, Mapum, 5000 ft., 25°04'55.9"N 94°30'16.9"E, 11.VI.1960, leg. F. Schmid (1 male, CNC).

Diagnosis. This new species belongs to the *H. luctuosus* species group. Having somehow flat harpago most close to the *H. umbonatus* species complex and the uniquely broad harpago and the very low subapical ventral keel on the phallic organ have resemblance to *H. umbonatus* Li, 1993 described from China (Yunnan), but differs by the lateral shape of segment IX, the double suture development dividing segment IX into dorsal and ventral regions; by the dorsoapical setose lobe that is capitate and upward directed, not elongated and downward directed; by the short and more



Figures 521–523. *Hydromanicus tungnath* sp. nov. Holotype: 521 = male genitalia in left lateral view, 522 = left gonopod in ventral view, 523 = phallic organ in left lateral view.



Figures 524–526. *Hydromanicus kover* sp. nov. Holotype: 524 = male genitalia in left lateral view, 525 = left gonopod in ventral view, 526 = phallic organ in left lateral view.

broad S-form harpago; as well as by the more slender phallobase and the less produced, low ventroapical keel.

Description. A brown coloured animal forewing slightly light spotted, forewing length is 10 mm.

Male genitalia. Abdominal segment IX divided by suture into a smaller dorsal and a larger ventral part, a unique additional suture originates from this suture and directed ventrad; the median keel of segment IX medium-long and narrow; anterior margin arciform, resulted in a very short dorsum and slightly longer ventrum; apical lobe

on posterolateral margin less produced, flat triangular; intersegmental depression between the ninth and tenth segments low in lateral view. Body of segment X broad-based less sclerotized; setose cerci elongated digitiform; dorsoapical setose lobes bilobed as visible in dorsal views and capitate in lateral view. The basal segment of the gonopods robust; terminal segment, the harpago very unique in the genus with its broad fat S-forming shape. Phallic apparatus slender, subapical ventral keel low; endothecal sclerites circular.

Etymology. *kover*, coined from “kövér” fat in Hungarian, refers to the unique shape of the harpago, the short, broadly fat S-form shaped, especially visible in ventral view

Hydromanicus manisir sp. nov.

(Figures 527–529, Map 6: n° 14, Map 32)

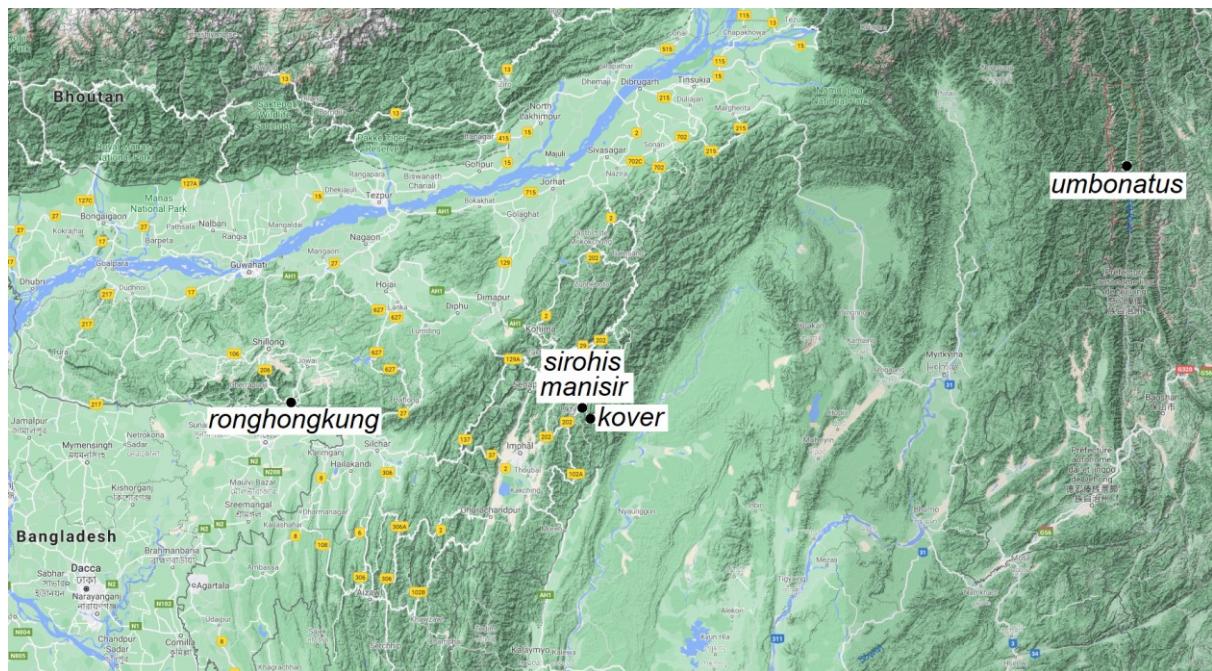
Material examined. Holotype: **India**, Manipur, Sirohi Kashong [=Siruhi Kashong, =Shirui Kashong (peak)], 7000–7500 ft, 25°07'16.8"N 94°27'29.5"E, 6–7.VI. 1960, leg. F. Schmid (1 male,

CNC). Paratypes: same as holotype (1 male, CNC; 1 male, OPC, 1 male SMNH). India, Manipur, Sirohi Kashong, 7000–7500 ft, 25°07'16.8"N 94°27'29.5"E, 9.VI. 1960, leg. F. Schmid (1 male, CNC).

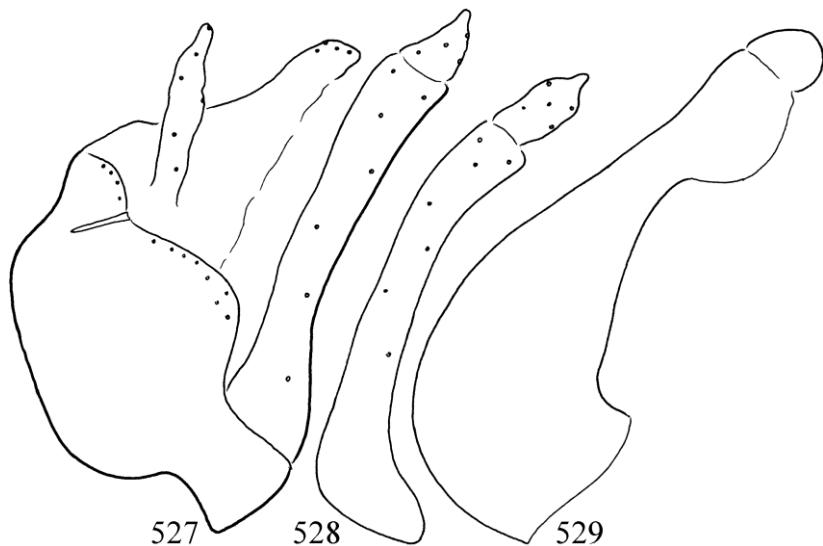
Diagnosis. This new species belongs to the *H. luctuosus* species group. Having sagitally somehow flat harpago most close to the *H. umbonatus* species complex and the uniquely broad shaped harpago has resemblance to *H. sironis* sp. nov. described from the same habitat, but differs by the rounded triangular apical lobe on the posterolateral margin of segment IX; by the longer harpago with middle located blunt pointed apical process in ventral view as well as by the lateral shape of the phallic organ and its endothecal sclerites.

Description. A brown coloured animal with forewing with just discernible light spotted pattern (old specimen!), forewing length is 11 mm.

Male genitalia. Abdominal segment IX divided by suture into a smaller dorsal and a larger ventral part; its median keel medium-long and



Map 32. *Hydromanicus umbonatus* complex.



Figures 527–529. *Hydromanicus manisir* sp. nov. Holotype: 527 = male genitalia in left lateral view, 528 = left gonopod in ventral view, 529 = phallic organ in left lateral view.

narrow; anterior margin arciform, resulted in a very short dorsum and longer ventrum; apical lobe on posterolateral margin rounded triangular, comprising the bulk of the segment with long marginal setae; intersegmental depression between the ninth and tenth segments obtuse-angled in lateral view. Body of segment X broad-based less sclerotized; its bilobed apex upward positioned elongated and tapering. Setose cerci short foliform, shorter than segment X. The basal segment of the gonopods straight, short and robust stout; terminal segment, the harpago sagitally flat with blunt middle located apical process in ventral view. Phallic apparatus robust with very low narrow neck, behind the ventral keel; subapical ventral keel short semicircular, endothecal sclerites short semicircular.

Etymology. *manisir*, coined from the name of holotype *locus typicus*.

Hydromanicus ronghongkung sp. nov.

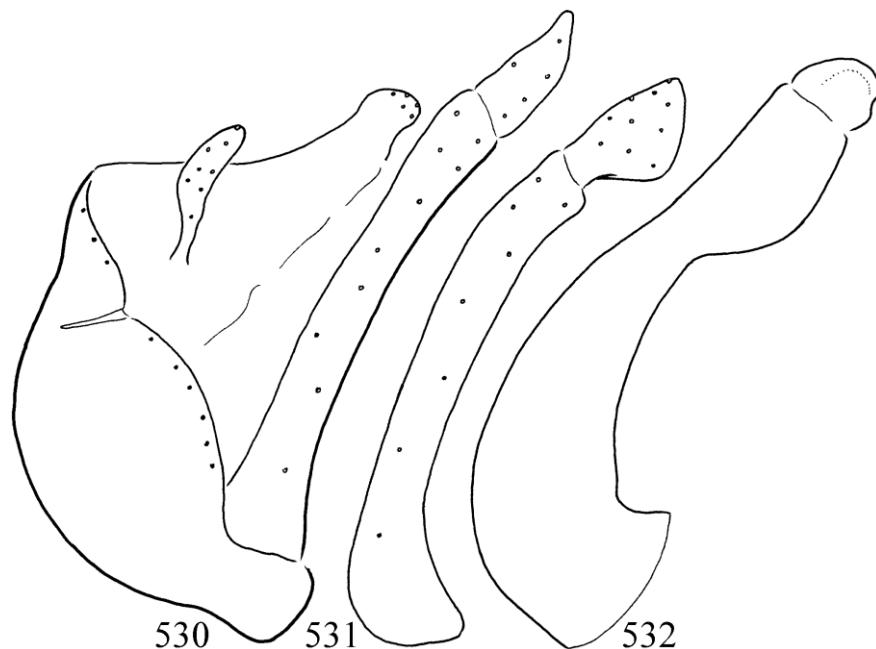
(Figures 530–532, Map 5: n° 9, Map 32)

Material examined. Holotype: **India**, Meghalaya (United Jaintia and Khasi Hills), Ronghongkung, [=Rhongkum], 200 ft, 25°10'49.4"N 92°05'01.5"E, 9.XII.1959, leg. F. Schmid (1 male, CNC).

Diagnosis. This new species belongs to the *H. luctuosus* species group. Having sagitally somehow flat harpago most close to the *H. umbonatus* species complex and the uniquely broad shaped harpago have resemblance to *H. sirohis* sp. nov. described from Manipur, but differs by the shorter segment IX; the harpago without any dorsal spine-like process in ventral view; and by the low ventroapical keel on the phallic organ.

Description. A brown coloured animal with forewing with discernible light spotted pattern (old specimen!), forewing length 9 mm.

Male genitalia. Abdominal segment IX short, divided by suture into a smaller dorsal and a larger ventral part; its median keel medium-long and narrow; anterior margin arciform, resulted in a very short dorsum and longer ventrum; apical lobe on posterolateral margin rounded flat, comprising the bulk of the segment with long marginal setae; intersegmental depression between the ninth and tenth segments sloping in lateral view. Body of segment X broad-based less sclerotized; its bilobate apex is upward positioned rounded. Setose cerci short foliform with constricted basal region, much shorter than segment X. The basal segment of the gonopods slightly arching and robust stout with enlarged basement; terminal segment, the harpago sagitally flat and fan-like.



Figures 530–532. *Hydromanicus ronghongkung* sp. nov. Holotype: 530 = male genitalia in left lateral view, 531 = left gonopod in ventral view, 532 = phallic organ in left lateral view.

Phallic apparatus robust with low slender neck, behind the ventral keel; subapical ventral keel flat semicircular, endothecal sclerites short with bilobate ventrum.

Etymology. *ronghongkung*, named after the *locus typicus* of holotype.

Hydromanicus sirohis sp. nov.

(Figures 533–535, Map 6: n° 14, Map 32)

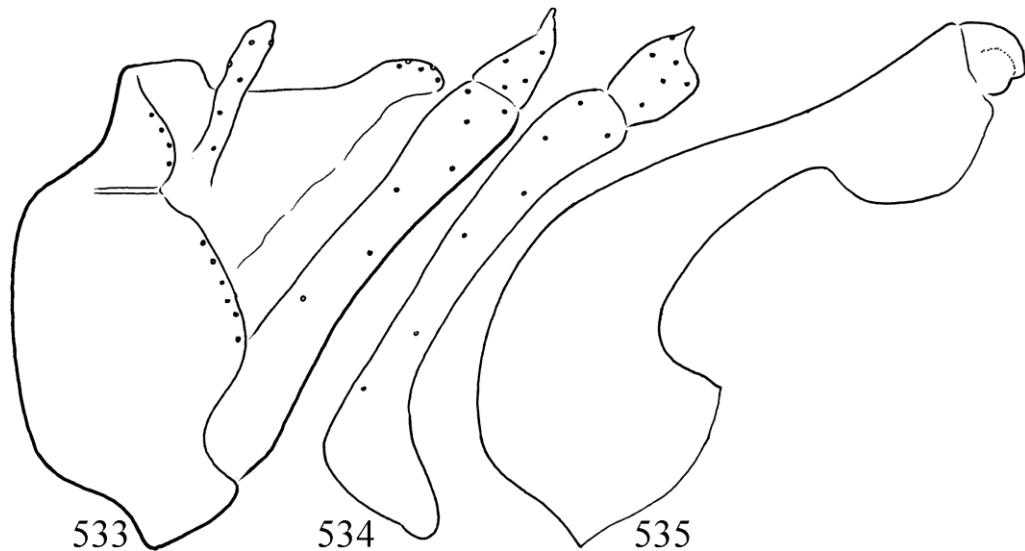
Material examined. Holotype: **India**, Manipur, Sirohi Kashong [=Siruhi Kashong, =Shirui Kashong (peak)], 7000–7500 ft, 25°07'16.8"N 94°27'29.5"E, 6.–7.VI. 1960, leg. F. Schmid (1 male, CNC).

Diagnosis. This new species belongs to the *H. luctuosus* species group. Having sagitally somehow flat harpago most close to the *H. umbonatus* species complex and the uniquely broad shaped harpago have resemblance to *H. manisir* sp. nov. described from the same habitat, but differs by the rounded flat apical lobe on the posterolateral margin of segment IX; by the shorter harpago

with left located pointed apical process in ventral view as well as by the lateral shape of the phallic organ and its endothecal sclerites.

Description. A brown coloured animal with forewing with just discernible light spotted pattern (old specimen!), forewing length 11 mm.

Male genitalia. Abdominal segment IX divided by suture into a smaller dorsal and a larger ventral part; its median keel medium-long and narrow; anterior margin arciform, resulted in a very short dorsum and longer ventrum; apical lobe on posterolateral margin rounded flat, comprising the bulk of the segment with long marginal setae; intersegmental depression between the ninth and tenth segments obtuse-angled in lateral view. Body of segment X broad-based less sclerotized; its bilobed apex is upward positioned elongated and tapering. Setose cerci short foliform, shorter than segment X. The basal segment of the gonopods straight, short and robust stout with enlarged basement; terminal segment, the harpago sagitally flat and short with left located pointed apical process. Phallic apparatus robust with very low slender neck, behind the ventral



Figures 533–535. *Hydromanicus sirohis* sp. nov. Holotype: 533 = male genitalia in left lateral view, 534 = left gonopod in ventral view, 535 = phallic organ in left lateral view.

keel; subapical ventral keel long semicircular, endothecal sclerites short with bilobed ventrum.

Etymology. *sirohis*, coined from the name of holotype *locus typicus*.

Hydromanicus umbonatus Li, 1992

(Map 32)

Hydromanicus umbonatus Li, 1992 in Tian *et al.* 1992: 877, 890. “Holotype ♂: China, Yunnan Province, Hengduan Mountains, Fugong, Maji, 1196m.”

Hydromanicus spatulatus species group

Species group with the following character combination. (1) Very narrow almost lacking or triangular apical lobe on segment IX. (2) Long or medium-sized segment X frequently with elongated processes. (3) Bilobed and long cerci. (4) Broad ventromesal subapical keel on the phallotheca is lacking, however uniquely developed sclerous endothecal lobes and phallotremal sclerites present or variously formed endothecal sclerous spines, plates or hooks accompanying the phallothecal apex (Oláh & Johanson, 2008).

Hydromanicus rahung sp. nov.

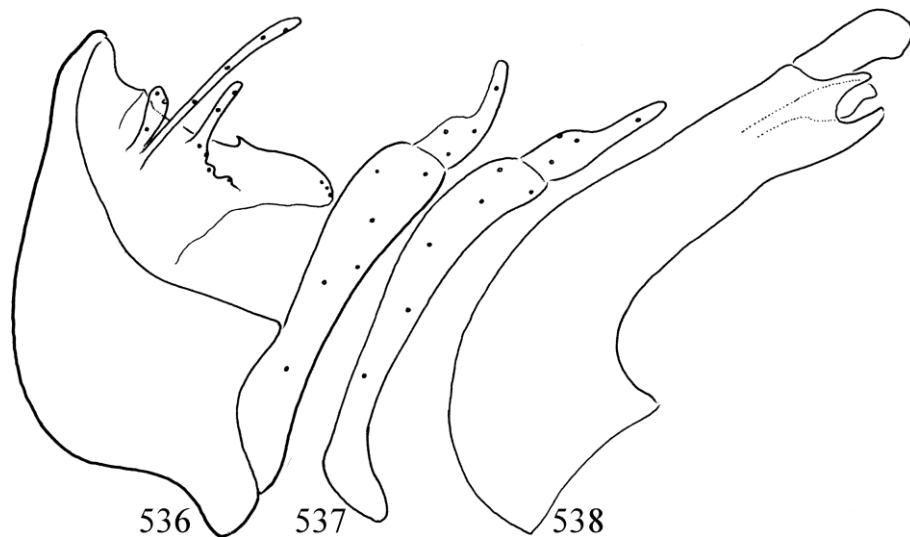
(Figures 536–538, Map 4: n° 23, Map 33)

Material examined. Holotype: **India**, Arunachal Pradesh (Assam), Kameng, Rahung, 6500–7000 ft., 27°18'46.2"N 92°23'43.8"E, 16.VII. 1961, leg F. Schmid (1 male, CNC).

Diagnosis. This new species without produced rounded apical lobe on segment X, with bilobed cerci and with terminal phallothecal processes belongs to the *H. spatulatus* species group. Most close to *H. diomedes* Malicky described from Nepal and to *H. makareus* Malicky described from Bhutan, but differs by the subdivided formation of the cercal complex, the lateral profile of segment X, by the broad based harpago as well as by the fine structure of the phallic head, that is the shape of endothecal and phallotremal sclerites as well as the subdivided terminal of the phallotheca.

Description. A brown coloured animal; forewing slightly but distinctly light spotted of 12 mm length.

Male genitalia. Abdominal segment IX convex anterad, its dorsal region the tergite very short,



Figures 536–538. *Hydromanicus rahung* sp. nov. Holotype: 536 = male genitalia in left lateral view, 537 = left gonopod in ventral view, 538 = phallic organ in left lateral view.

apical lobe triangular; its median keel short and narrow; anterior margin arciform, resulted in a very short dorsum and longer ventrum; intersegmental depression between the ninth and tenth segments high in lateral view. Body of segment X broad-based less sclerotized; dorsoapical setose lobes form a bilobed apex of segment X. Setose cerci subdivided and even separated; it is represented by a cercal complex characterized by the usual short, but broad and long and slim bilobed structure and the presence of a separated, posterad shifted setose digitiform process continuing into small setose humps. The basal segment of the gonopods broad robust; terminal segment, that is the harpago with broad basal half. Phallic apparatus robust, phallothecal terminal with a pair of ventral and a pair of lateral small digitiform processes; the pair of phallotremal sclerites rather produced as well as the endothecal sclerites elongated with rounded head.

Etymology. *rahung*, named after the *locus typicus* of the holotype.

Hydromanicus spatulatus species cluster

There is a small species cluster separated here in the *H. spatulatus* new species group with four closely related species distributed in South India. Their phallotremal sclerites and sclerous endothecal lobes are so peculiarly developed that we group them together in this cluster. Their phallotremal sclerites beaked and their sclerous endothecal processes cornuted (Oláh & Johanson, 2008).

cal lobes are so peculiarly developed that we group them together in this cluster. Their phallotremal sclerites beaked and their sclerous endothecal processes cornuted (Oláh & Johanson, 2008).

Hydromanicus palnis Oláh & Johanson, 2008

(Map 7a: n° 27, 30, Map 33)

Hydromanicus palnis Oláh & Barnard, 2008: in Oláh & Johanson 2008:46–48. “Holotype male: India, Tamil Nadu, Palnis, 7000 ft, Kodaikanal, 10°14'21"N 77°29'23"E, IX.1921 (T.B.Fletcher) (Brit. Mus. 1936-643, NHML).”

Material examined. India, Tamil Nadu (Madras), Swamp Hill, South Mannavanur, 7300 ft., 10°10'01.2"N 77°22'36.1"E, 2.II.1962, leg. F. Schmid (3 males, CNC; 1 male, OPC; 1 male, SMNH).

Hydropsyche

Hydropsyche nevae species group

Species of this group has phallotheca with membranous subapical dorsum, the modified endotheca, surmounted by a pair of more or less fused heavily pigmented dark ball-like phallotremal sclerites. Just behind the dominating structure of phallotremal sclerites arises a pair of long



Map 33. *Hydromanicus spatulatus* group: only 2 species are shown.

membranous endothecal processes tipped by sclerous point, spicule or spine, sometimes replaced by rounded membranous spine-window in various position with sclerous point, spicule or spine. The lower ventral and apical portion of endotheca fused with the apex of the phallotheca (enlarged phallobase). Three apicoventral lobules of endotheca surrounded at the base by sclerous integument, each lobule membranous and eversible to some extent and tipped with a cluster of pale but sclerous spicules; sometimes these lobules fused into one or two larger lobules inverted deep into the sclerous apical portion of the endotheca (Oláh & Johanson 2008b).

Hydropsyche columnata lineage

The basic hydropsychine profile of the phallic apparatus is modified into an inverse V-shaped meeting of the basal and terminal sections of the phallotheca, forming a triangularly sinuate bend or modified at least into a significant dorsal elevation of this meeting point, resulted in deep

sloping to the shortened terminal section of the phallotheca (Oláh & Johanson 2008b).

Hydropsyche yathetima Oláh & Scheftner, 2008

(Map 4: n° 21, 69)

Hydropsyche yathetima Oláh & Scheftner, 2008: in Oláh & Johanson 2008:134–136. “Holotype male: **India**, Assam, Kameng, Rupa, 5200–6000 ft., 27° 12'10.6"N 92°23'55.1"E, 26.VIII.1961 (F. Schmid).”

Material examined. **India**, Arunachal Pradesh (Assam), Kameng District, Chug, 6800–7300 ft., 27°25'07.7"N 92°14'01"E, 25–31.VII.1961, leg F. Schmid (1 male, CNC).

Hydropsyche simulata lineage

The basic hydropsychine profile of the phallic apparatus is modified into an inverse U-shaped meeting of the basal and terminal sections of the phallotheca, forming a rounded or rectangular sinuate bends. The dorsal side of the bend never

acute, rather obtuse angled, forming a wide and flat dorsum of elevation. The basal section of the bend longer than the terminal section (Oláh & Johanson 2008b).

***Hydropsyche keralana* Oláh & Barnard, 2008**

(Map 7a: n° 12, 23)

Hydropsyche keralana Oláh & Barnard, 2008; in Oláh & Johanson 2008:138–139. “Holotype male: **India**, Kerala, Road to Lamb’s Rock, beyond Coonoor, 6000 ft, 11°21'12.9"N 76°49'55.5"E, 20.X. 1921 (T. B. Fletcher).”

Material examined. **India**, Tamil Nadu (Madras), Sothuparai dam, 1200 ft, 10°07'48.8"N 77°28'03.2"E, 22.I.1962, leg. F. Schmid (1 male, CNC). India, Tamil Nadu (Madras), Sothuparai dam, 1200 ft, 10°07'48.8"N 77°28'03.2"E, 22.I.1962, leg. F. Schmid (1 male, SMNH; 1 male, OPC). India, Tamil Nadu (Madras), Old Kuttalam Falls [= Courtallam Falls], 200m, 8°54'04.3"N 77°17'47.9"E, 15.I.1962 (2 males, CNC).

***Hydropsyche serpentina* lineage**

The basic hydropsychine profile of the phallic apparatus modified into a ring-shaped meeting of the basal and terminal sections of the phallotheca, forming double sinuate bends. The ring-shaped bend continues into the horizontal terminal section with a right angle, at least on the dorsum. The length of the bend almost double of the horizontal terminal segment (Oláh & Johanson 2008b).

***Hydropsyche shillonga* Oláh & Barnard, 2008**

(Map 5: n° 5, 7, 10, 72)

Hydropsyche shillonga Oláh & Barnard, 2008; in Oláh & Johanson 2008:150–152. “Holotype male: India, Assam, Shillong, 25°34'43.8"N 91°53'10.7"E, IX–X.1918 (T. B. Fletcher).”

Material examined. **India**, Meghaláya (United Jaintia and Khasi Hills), Barato, 2500 ft., 25°36'24.1"N 92°27'23.1"E, 24.IV.1960, leg. F. Schmid (1 male, CNC). Meghaláya (United Jaintia and Khasi Hills), Shnongpdeng, 500 ft., 6.XII.

1959, leg. F. Schmid (2 males, OPC). Meghaláya (United Jaintia and Khasi Hills), Sohkhá, 200–300 ft., 7.XII.1959, leg. F. Schmid (1 male, SMNH). Meghaláya (United Jaintia and Khasi Hills), Sohkhárim, 200 ft., 10.XII.1959, leg. F. Schmid (1 male, CNC).

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