

A new species of *Xiphozele* Cameron (Hymenoptera: Braconidae) from South Vietnam

C. van Achterberg

Achterberg, C. van. A new species of *Xiphozele* Cameron (Hymenoptera: Braconidae) from South Vietnam. Zool. Med. Leiden 82 (1), 1.i.2008: 1-8, figs 1-15.— ISSN 0024-0672.

C. van Achterberg, Nationaal Natuurhistorisch Museum, Postbus 9517, 2300 RA Leiden, The Netherlands (achterberg@naturalis.nl).

Key words: Braconidae; Xiphozelinae; *Xiphozele*; Oriental; Vietnam; new species; key.

A new species (*Xiphozele linneanus* spec. nov.) from South Vietnam is described and illustrated. A key to species of the genus is added.

Introduction

Only one (out of the 35!) Malaise traps placed in April-May 2007 in the Cát Tiên National Park (South Vietnam; fig. 1) yielded specimens of the genus *Xiphozele* Cameron, 1906 (of the subfamily Xiphozelinae van Achterberg, 1979). It is for the first time the genus was collected during one of the expeditions and the genus was hitherto unknown from Vietnam. Specimens are attracted to light (as shown by part of the material of the



Fig. 1. Type locality of *Xiphozele linneanus* spec. nov.: a partly open spot near the Dong trail in the lowland rainforest of Cát Tiên National Park in South Vietnam.

genus in the University of Zhejiang), but the light trapping in Vietnam at six localities did not yield a specimen. Most species are described from South China by He & Ma (in He, Chen & Ma, 2000) and housed in the University of Zhejiang at Hangzhou.

Little is known about the biology of this rarely collected genus; only once a species (*Xiphozele compressiventris* Cameron, 1906) has been reared from *Dysgonia simillima* (Guenée, 1852) (Noctuidae: Catocalinae; van Achterberg, 1979). According to the analysis of Belshaw & Quicke (2002) the Xiphozelinae belong to the Macrocentroid clade. It is the most basal group and the sister group of the Macrocentrinae + Charmontinae. However, for the analysis only one marker (D2-D3 28S rDNA) has been used. Types of all species have been examined, except of *X. obscuripennis* You & Zhou, 1990.

For recognition of the subfamily Xiphozelinae, see van Achterberg (1993, 1997) and for the genus van Achterberg (1979). The terminology follows van Achterberg (1988). For additional information (original description, distribution, biology, etc.) of the described species, see the Taxapad database (Yu et al., 2005). The colour photographs have been made with an Olympus SZX12 motorized stereomicroscope with AnalySIS Extended Focal Imaging Software. RMNH stands for the Nationaal Natuurhistorisch Museum, Leiden and IEBR for the Institute of Ecology and Biological Resources, Hanoi.

Key to species of the genus *Xiphozele* Cameron

1. Mesoscutal lobes dark brown medially; borders of hyaline patch above sclerome in subbasal cell of fore wing sharply delimited from yellowish surroundings; stemmaticum blackish or dark brown (but more or less yellowish medially in *X. yunnanensis*); humeral plate and tegulum similarly brownish 2
 - Mesoscutal lobes evenly yellowish-brown medially, at most slightly infuscate; borders of hyaline patch above sclerome in subbasal cell of fore wing not sharply delimited, if with yellowish surroundings then border diffuse; stemmaticum nearly always yellowish medially; humeral plate yellowish-brown to dark brown, sometimes contrasting with tegulum 4
2. Subbasal cell of fore wing largely setose (with about 50 setae); length of hind femur 9.5-10.5 times its width; stemmaticum yellowish-brown medially; China *X. yunnanensis* He & Ma, 2000
 - Subbasal cell of fore wing glabrous or nearly so; length of hind femur 7.0-8.5 times its width; stemmaticum black or dark brown medially 3
3. Apex of hind and middle tibial spurs yellowish; vein cu-a of fore wing slightly widened submedially; wing membrane of male distinctly infuscate; China *X. bicoloratus* He & Ma, 2000
 - Apex of hind and middle tibial spurs dark brown; vein cu-a of fore wing narrow, hardly widened submedially; male unknown; China *X. sangangensis* He & Ma, 2000
4. Clypeus distinctly concave medio-ventrally; subbasal cell of fore wing extensively setose; first metasomal tergite with weak median carina; Burma *X. burmensis* Sharma, 1975
 - Clypeus truncate or slightly concave medio-ventrally; subbasal cell of fore wing largely or completely glabrous; first tergite without median carina 5

5. Face with longitudinal carina and with radiating carination; eye about 3.6 times as long as temple in dorsal view; subbasal cell of fore wing glabrous; fore wing infusate; China *X. obscuripennis* You & Zhou, 1990
 Note.—Originally spelled as *Xiphozele obscuripennum* You & Zhou, 1990, but this is a misspelling. If the genus was considered to have the neutral gender then it should be *X. obscuripenne*. The genus *Xiphozele* is based on the genus *Zeke* Curtis, 1832, which has as type species *Zeke albiditarsus* Curtis, 1832. Curtis considered the genus to have the masculine gender and, consequently, it is justified to use it as such. The original stem (“*zelus*” in Latin or “*zelos*” in Greek) is also masculine. Therefore, the name is corrected to *X. obscuripennis* (its masculine form).
- Face without longitudinal carina, finely and densely punctate and at most with some aciculae or rugulae below medio-dorsal elevation; eye 2.0-3.4 times as long as temple in dorsal view; setosity of subbasal cell of fore wing and colour of fore wing variable 6
6. Hind femur (9-)10-12 times as long as wide, if 9-10 times then length of body 18-20 mm; apical 0.3-0.5 of metasoma often largely dark brown or blackish, especially of males; pterostigma of males completely dark brown; length of body 17-20 mm; pigmentation of wing membrane variable 7
- Hind femur 7-9 times as long as wide; apical half of metasoma (also of males) yellowish-brown, similar to colour of its basal half (except of *X. wuyiensis*); pterostigma of males medially yellowish and anteriorly infusate; length of body 14-16 mm; wing membrane subhyaline 10
7. Sclerome of subbasal cell of fore wing comparatively wide, evenly oval, hardly narrowed near base of its distal part and no setae near it; length of eye about twice length of temple in dorsal view; humeral plate of ♂ similarly coloured as tegulum (♀ unknown); China *X. hunanensis* He & Ma, 2000
- Sclerome of subbasal cell of fore wing more or less narrowed distally (fig. 6) and sometimes with setae near it; length of eye 2.0-3.6 times length of temple in dorsal view; humeral plate of ♀ at least partly darker than tegulum, of ♂ variable and sometimes similarly coloured 8
8. Hind trochanter, trochantellus and femur conspicuously erect setose, setae nearly as long as half length of trochanter; eye of ♀ about twice as long as temple in dorsal view; pterostigma of female yellowish-brown anteriorly; membrane of fore wing hardly infusate; China (Zhejiang) *X. achterbergi* He & Ma, 2000
- Hind trochanter, trochantellus and femur normally setose, setae distinctly shorter than half length of trochanter; eye of ♀ 2.5-3.6 times as long as temple in dorsal view; pterostigma of female more or less dark brown anteriorly; pigmentation of wing membrane variable 9
9. Membrane of fore wing rather infusate; hind femur of ♂ reddish-brown; length of eye of ♀ about 2.5 times as long as temple (of ♂ 1.9-2.2 times); subbasal cell of fore wing with about 12 setae; apical half of metasoma of ♀ blackish; first tergite behind spiracle distinctly punctate-rugulose; propodeum coarsely and regularly transversely rugose; (fig. 1738 in He, Chen & Ma, 2000); China (Yunnan, Zhejiang) *X. fumipennis* He & Ma, 2000
- Membrane of fore wing subhyaline, of ♂ slightly infusate (fig. 3); hind femur of ♂ dark brown (fig. 3); length of eye of ♀ 3.4-3.9 times as long as temple (fig. 4; of ♂ about 2.8 times: fig. 5); subbasal cell of fore wing with 8-9 setae (♀; fig. 6) or completely glabrous (♂); apical third of metasoma of ♀ dark brown (fig. 2; of ♂

- blackish; fig. 3); first tergite behind spiracle superficially rugulose; propodeum coarsely reticulate-rugose anteriorly and coarsely transversely rugose posteriorly (fig. 14); S. Vietnam *X. linneanus* spec. nov.
10. Stemmaticum blackish; apical half of metasoma largely dark brown; pterostigma more or less infuscate; subbasal cell of fore wing with about 10 setae; China
..... *X. wuyiensis* He & Ma, 2000
- Stemmaticum yellowish, at least medially; apical half of metasoma yellowish-brown; pterostigma yellowish; number of setae of subbasal cell of fore wing variable 11
11. Subbasal cell of fore wing with about 10 setae submedially; propodeum more finely rugose anteriorly than posteriorly 12
- Subbasal cell of fore wing with 2-3 setae submedially; propodeum similarly rugose anteriorly (also laterally!) as posteriorly; China *X. guangxiensis* He & Ma, 2000
Note.— The male paratype of *X. quizhouensis* keys out here.
12. Setosity of hind leg normal, length of setae of hind trochanter about 0.25 times apical width of trochanter; propodeum distinctly rugose antero-laterally; Oriental
..... *X. compressiventris* Cameron, 1906
- Setosity of hind leg conspicuous, length of setae of hind trochanter about 0.35 times apical width of trochanter; propodeum weakly rugose to nearly smooth antero-laterally; China *X. quizhouensis* He & Ma, 2000

Description

Xiphozele linneanus spec. nov. (figs 2-15)

Material.— Holotype, ♀ (RMNH), "S. Vietnam: Đông Nai, Cát Tiên N. P., Dong trail, Mal. trap, c. 100 m, 9.iv-19.v.2007, Mai Phu Quy, Nguyen Thanh Manh, C. v. Achterberg & R. de Vries, RMNH'07". Paratypes: 1 ♀ (IEBR) + 1 ♂ (RMNH), same data.

Holotype, ♀, length of fore wing 13.8 mm, of body 19.0 mm.

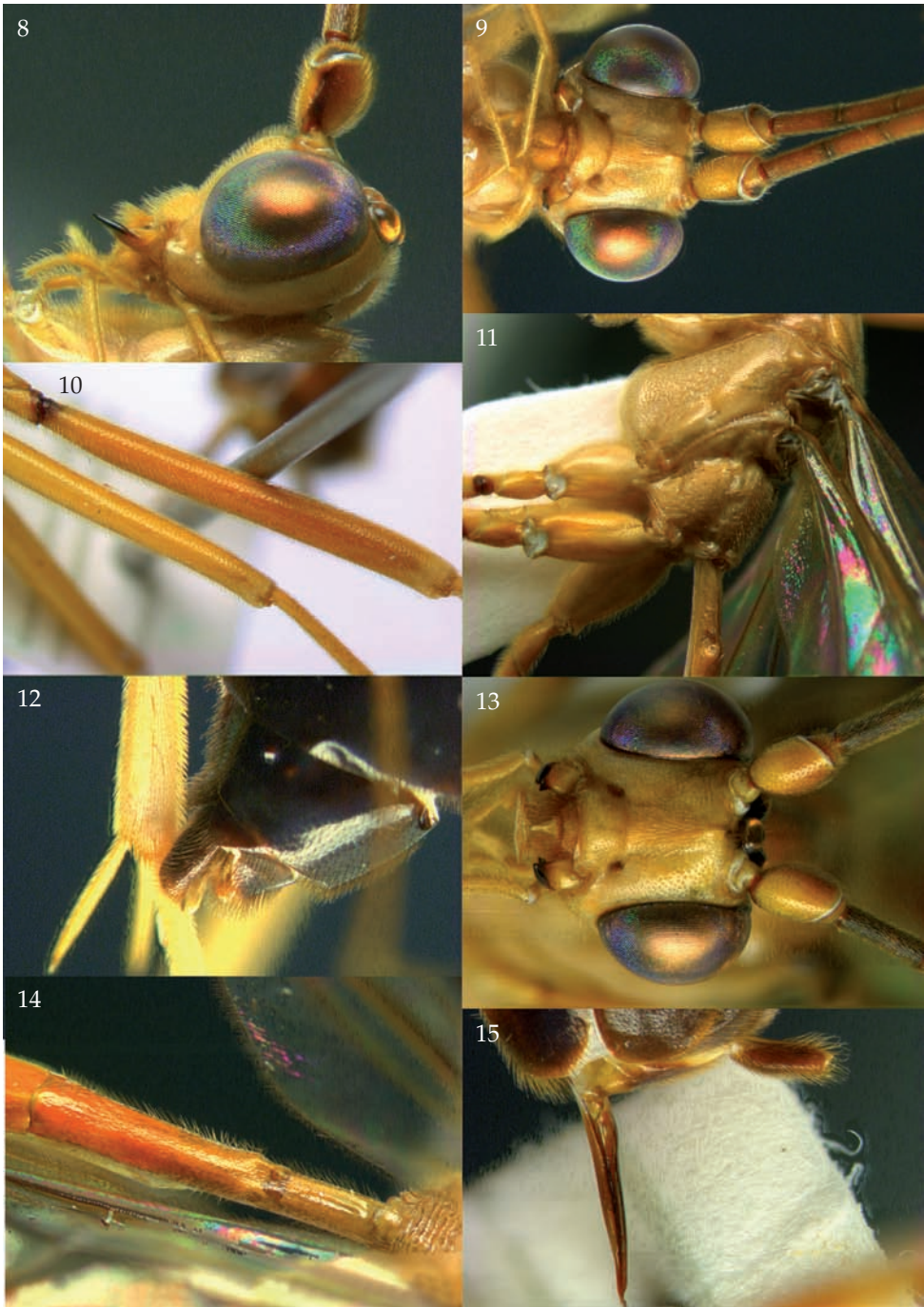
Head.— Antenna with 56 segments, 1.6 times as long as fore wing (fig. 2), length of third segment 1.1 times as long as fourth segment, third, fourth and penultimate segments 3.9, 3.6 and 2.3 times as long as wide, respectively; apical segment of antenna with a long spine and its setae longer than width of segment; length of maxillary palp 2.4 times height of head; frons concave and smooth medially, laterally narrowly punctate with interspaces slightly larger than diameter of punctures; anterior ocellus distinctly smaller than posterior ocelli (fig. 4); OOL:diameter of posterior ocellus:POL = 9:10:6; area between posterior ocelli with a median carina and longitudinal rugulae mixed with punctures (fig. 4); vertex finely punctate, interspaces distinctly wider than diameter of punctures; face distinctly convex medio-dorsally (fig. 8) and remotely finely punctate, but dorsally punctate-rugose and submedially below convexity rugulose; clypeus strongly convex and finely punctate and with long setae (fig. 8); ventral margin of clypeus slightly concave (fig. 9); length of eye 3.9 times temple in dorsal view; temple gradually narrowed behind eye (fig. 4); length of malar space 0.8 times basal width of mandible; malar suture slightly impressed (fig. 8).

Mesosoma.— Length of mesosoma 1.5 times its height; side of pronotum smooth



Figs 2-7, *Xiphozele linneanus* spec. nov., ♀, holotype, but 3, 5 of ♂, paratype. 2, 3, habitus, lateral aspect; 4, 5, head, dorsal aspect; 6, apical third of subbasal cell of fore wing and vein cu-a with sclerome, 7, metasoma, lateral aspect.

dorsally, with some coarse crenulae medially and extensively punctate-rugose ventrally; epicnemial area densely punctate dorsally; precoxal sulcus wide, coarsely reticulate-rugose (fig. 11), ventrally becoming mainly coarsely punctate and remainder of mesopleuron mainly punctulate; pleural sulcus finely crenulate; metapleuron



Figs 8-15, *Xiphozele linneanus* spec. nov., ♀, holotype, but 12, 13 of ♂, paratype. 8, head, lateral aspect; 9, 13, head, anterior aspect; 10, hind femur; 11, meso- and metapleuron, lateral aspect; 12, male genitalia, lateral aspect; 14, propodeum and first metasomal tergite, dorsal aspect; 15, female genitalia, lateral aspect.

coarsely reticulate-rugose; notauli shallow, complete and smooth, except for some crenulae near the long medio-longitudinal carina; mesoscutal lobes setose, punctulate and only middle lobe superficially coriaceous posteriorly; scutellar sulcus with one rather weak crenula; scutellum narrow, slightly convex and punctulate medially; side of scutellum crenulate posteriorly and largely smooth anteriorly; propodeum coarsely reticulate-rugose anteriorly and coarsely transversely rugose posteriorly (fig. 14) and with a short median carina.

Wings.— Fore wing: r 2.5 times as long as width of pterostigma; r:3-SR:SR1 = 18:30:57; 3-SR distinctly curved (fig. 2); SR1 curved to anterior margin of wing; 2-SR:3-SR:r-m = 25:40:18; cu-a narrow, angled, with slender elliptical sclerome (fig. 6); subbasal cell glabrous except for 9 setae (fig. 6); 2-SR+M as long as 2-SR. Hind wing: r at basal 0.55 of marginal cell.

Legs.— Hind coxa coarsely punctate, with interspaces usually wider than diameter of punctures; length of femur, tibia and basitarsus of hind leg 10.2, 13.2 and 11.4 times their width, respectively (fig. 10); length of outer hind tibial spur 0.7 times hind basitarsus (inner spur missing); hind trochanter normally setose, setae distinctly shorter than half length of trochanter (fig. 11).

Metasoma.— Length of first tergite 5.7 times its apical width, convex behind its spiracles, its surface mainly superficially rugulose (fig. 14), but smooth basally and apically; base of first tergite without ventral carinae; second tergite with a medio-longitudinal fold; setose part of ovipositor sheath 0.05 times as long as fore wing and sheath about thrice as wide as long, with long setae (fig. 15).

Colour.— Pale yellowish; tip of mandible, stripe on outer side of scapus and pedicellus, surroundings of ocelli (fig. 4), most of veins, pterostigma, part of humeral plate, third tergite partly submedially, fourth tergite narrowly dorsally, fifth-eighth tergites, fifth-sixth sternites and ovipositor sheath more or less dark brown (fig. 2); area near ocelli (fig. 4). first tergite (behind spiracles; fig. 14), second tergite, remainder of third tergite and hind femur rather brown (fig. 10); wing membrane subhyaline (figs 2, 6).

Variation.— Length of fore wing of ♀ 13.8-14.4 mm and of ♂ 12.8 mm; length of body of ♀ 19.0-19.5 mm, of ♂ 18.5 mm; antenna of ♀ with 55 (1) or 56 (1) segments, of ♂ 54 (1); length of eye of ♀ 3.4-3.9 times temple in dorsal view, of ♂ about 2.8 times; posterior ocelli of ♂ smaller than of ♀ (fig. 5); subbasal cell completely glabrous (♂) or with 8-9 setae (♀); length of first tergite of ♀ 5.5-5.7 times its apical width, of ♂ 6.3 times; length of hind femur 10.2-10.9 times its width; third tergite of both sexes strongly compressed; ♀ paratype has POL nearly completely dark brown and mesoscutal lobes faintly infusate medially. Male has third antennal segment (with following segments becoming more brownish), stemmaticum, part of vertex (fig. 5), tegulum and humeral plate largely, pterostigma, veins, base of fore and middle tibiae, inner side of hind tibia basally, apex of fore and middle femora dorsally, middle trochantellus apically, hind trochantellus largely, hind femur (except apically), apical half of first tergite, remainder of metasoma (but medio-longitudinal fold and epipleura of second and third tergites, and anterior half of epipleura of fourth tergite yellowish) dark brown; hind tarsus ivory; wing membrane slightly infusate; remainder of vertex rather dark brown (fig. 5); mesoscutum, scutellum medially, middle and hind coxae dorsally and propodeum slightly infusate.

Biology.— Unknown.

Distribution.— Vietnam (tropical lowland rainforest).

Notes.— The new species is very similar to *X. fumipennis* He & Ma, 2000, from South China (Yunnan, Zhejiang), but *X. fumipennis* has the wing membrane rather infuscate, the hind femur of ♂ reddish-brown, the first metasomal tergite behind its spiracles distinctly punctate-rugulose, the length of the eye of ♀ about 2.5 times as long as the temple in dorsal view (of ♂ 1.9-2.2 times), the subbasal cell of the fore wing with about 12 setae and the apical half of the metasoma of ♀ black.

Eymology.— One of the largest species of Braconidae (from tip of antenna to apex of metasoma about 40 mm) in Vietnam is named in honour of Carl Linnaeus because of the 250th anniversary of Linnean taxonomy.

Acknowledgements

I wish to thank Prof. Dr Mai Phu Quy and Mr Nguyen Thanh Manh (Hanoi) for their excellent help during the 2007 expedition to Vietnam and to the authorities of the Cát Tiên National Park for the excellent cooperation. I am grateful to Prof. Dr Xue-Xin Chen, Prof. Dr Jun-Hua He and Mrs Yun Ma (Hangzhou) for their hospitality and the possibility to study the types of the genus *Xiphozele*, during my visit to Hangzhou.

References

- Belshaw, R. & D.L.J. Quicke, 2002. Robustness of ancestral state estimates: evolution of life history strategy in Ichneumonoid parasitoids.— *Systematic Biology* 51: 450-477, figs 1-9.
- He, J.-H., X.-X. Chen & Y. Ma, 2000. Hymenoptera Braconidae.— *Fauna Sinica Insecta* 18: i-xiv + 1-757.
- van Achterberg, C., 1979. A revision of the new subfamily Xiphozelinae (Hymenoptera, Braconidae).— *Tijdschrift voor Entomologie* 122: 29-46, figs. 1-45.
- van Achterberg, C., 1988. Revision of the subfamily Blacinae Foerster (Hymenoptera, Braconidae).— *Zoölogische Verhandelingen Leiden* 249: 1-324, figs 1-1250.
- van Achterberg, C., 1993. Illustrated key to the subfamilies of the Braconidae (Hymenoptera: Ichneumonoidea).— *Zoölogische Verhandelingen Leiden* 283: 1-189, 1-66, photos 1-140, plates 1-102.
- Achterberg, C. van, 1997. Braconidae. An illustrated key to all subfamilies.— *ETI World Biodiversity Database CD-ROM Series*.
- Yu, D.S., Achterberg, K. van & Horstmann, K., 2005. Biological and taxonomical information: Ichneumonoidea 2004.— *Taxapad Interactive Catalogue*, Vancouver.

Received: 29.x.2007

Accepted: 22.xi.2007

Edited: J. van Tol