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A review of the genus *Pimpla* Fabricius, 1804 (Hymenoptera: Ichneumonidae: Pimplinae) from Vietnam with descriptions of two new species

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Abstract The ichneumonid wasp genus *Pimpla* Fabricius, 1804 is reviewed for the first time from Vietnam. Two new species are described: *Pimpla lexuanhuei* sp. nov. from Phu Tho Province and *Pimpla chuyansinensis* sp. nov. from Dak Lak Province. Five further species are recorded as new for Vietnam: *P. bilineata* (Cameron), *P. cameronii* Dalla Torre, *P. ereba* Cameron, *P. flavipalpis* Cameron, and *P. laothoe* Cameron. *Pimpla instigator* (Fabricius, 1793), a junior synonym of *P. rufipes* (Miller, 1759), previously recorded from Vietnam, was re-identified as *P. laothoe* and therefore is excluded from the ichneumonid fauna of Vietnam. A key to all ten species listed in this paper is also compiled.

Key words Pimplini · Taxonomy · New records

Introduction

Pimpla is a large, cosmopolitan genus of the tribe Pimplini (Hymenoptera: Ichneumonidae) with 203 species currently recognised. Species richness is higher in the Neotropics and the Palaearctic (61 and 57 species, respectively) compared to the Oriental region (40 species), whilst only 10 species occur in the Australian region (Momoi 1973; Gupta and Saxena 1987; Diaz 2000; Khalaim 2008 Yu et al. 2012). For a long time, this genus was referred to by its junior synonym *Coccygomimus* by many workers (e.g. Townes and Townes 1960; Townes 1969; Gupta and Saxena 1987). Morphologically, *Pimpla* is closest to *Apechthis* and *Itoplectis* but is distinguished by the inner margins of the eyes weakly to moderately concave at level of the antennal sockets (as opposed to strongly concave); antenna of male often with tyloids; female tarsal claws without a basal tooth; and ovipositor not apically down-curved (Fitton et al. 1988; Gauld et al. 2002). Gauld et al. (2002) found one unambiguous apomorphy for *Pimpla*: the presence of a longitudinal band of fine hair on the ventral surface of the fourth mid-tarsomere. This character, which is perhaps better expressed as a narrow zone lacking the stronger, bristle-like setae covering much of the ventral surface of the tarsomeres, can be hard to see in small specimens. In Vietnam, four species have been documented so far: *Pimpla aethiops* Curtis, *P. carinifrons* Cameron, *P. nipponica* Uchida and *P. rufipes* (Miller) (Plant Protection Research Institute 1976; Gupta and Saxena 1987; Bui 1990). Based on recently collected material, we review the Vietnamese species of the genus *Pimpla*, describe two new species and report a further five species as new for the country. In addition, we discuss the taxonomic status of *Pimpla rufipes* in Vietnam.

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Materials and methods

Most specimens for this study were collected from 1999 to 2010 by hand net, Malaise trap and, to a lesser extent, pitfall trap. The specimens referred to in this paper are

deposited in the collections of the Natural History Museum, London, United Kingdom (BMNH); the Hokkaido University, Sapporo, Japan (EIHU); the Institute of Ecology and Biological Resources (IEBR), Hanoi, Vietnam; the National Museum of Victoria (NMV), Melbourne, Australia; the University Museum of Natural History, Oxford, United Kingdom (OUMNH); the Netherlands Centre for Biodiversity Naturalis (RMNH), Leiden, Netherlands; and the Zoological Research Museum Alexander Koenig (ZFMK), Bonn, Germany. In addition, some specimens in the collection of the Plant Protection Research Institute (PPRI), Hanoi, Vietnam were also examined. The morphological terminology follows that of Gauld (1991). Photographs were taken with a Nikon Digital Camera DXM 1200 via a stereomicroscope with light-box and a Keyence VHX-500F camera.

Taxonomic accounts

Pimpla Fabricius, 1804

Pimpla Fabricius, 1804: 112. Type-species: *Ichneumon instigator* Fabricius (= *Ichneumon hypochondriaca* Retzius), by subsequent designation (Opinion 159, International Commission on Zoological Nomenclature, 1954: 282).

Coccygomimus Saussure, 1892: plate 14, fig. 12. Type-species: *Coccygomimus madecassus* Saussure, by monotypy.

Habropimpla Cameron, 1900: 96. Type-species: *Habropimpla bilineata* Cameron, by monotypy.

Lissotheronia Cameron, 1905: 139. Type-species: *Lissotheronia flavipes* Cameron, by monotypy.

Phytodiaetoides Morley, 1913: 221. Type-spcies: *Phytodiaetoides megaera* Morley = *Pimpla flavipalpis*, by original designation.

Pimplidea Viereck, 1914: 117. Type-species: *Pimpla pedalis* Cresson, by original designation.

Coelopimpla Brèthes, 1916: 402. Type-species: *Coelopimpla amadei* Brèthes, by original designation.

Liotheronia Enderlein, 1919: 147. Type-species: *Liotheronia kriegeri* Enderlein, by original designation.

Dihyboplax Enderlein, 1919: 148. Type-species: *Dihyboplax flavipennis* Enderlein, by original designation.

Neogabunia Brèthes, 1927: 322. Type-species: *Neogabunia paulistana* Brèthes = *Pimpla tomyris* Schrottky, by monotypy.

Opodactyla Seyrig, 1932: 60. Type-species: *Pimpla* (*Opodactyla*) *waterloti* Seyrig, by original designation.

Oxypimpla Noskiewicz & Chudoba, 1951: 42, 56. Type-species: *Pimpla turionellae* Linnaeus, by monotypy.

Jamaicapimpla Mason, 1975: 225. Type-species: *Ephialtes nigroaeneus* Cushman, by original designation.

Diagnosis

Face moderately convex, wider than long; inner margin of eye weakly to moderately concave above antennal socket; clypeus a little convex basally, concave apically not divided into basal and apical parts by transverse suture; malar space moderate to long; mandible moderately stout, tapered, not twisted, upper tooth usually slightly broader and longer than lower tooth; mesoscutum without distinct crest anteriorly; notaulus weak or absent; mesopleuron with epicnemial carina complete, mesopleural suture straight; propodeum angled at level of lateral longitudinal carina, without carinae except posterior part of lateral carina and basal stub of lateromedian longitudinal carina present (sometimes extending to middle); propodeal spiracle elongate, not touching pleural carina; fore wing with areolet closed; first abscissa of hind wing vein *Cu*1 much shorter than vein *cu-a*; tarsal claws of both sexes large, simple, without basal lobe, without spatulate bristle; metasomal tergites usually densely punctate, but sometimes sparsely punctate or impunctate.

Where known, *Pimpla* species are endoparasitoids of Lepidoptera pupae or prepupae, usually weakly concealed (e.g. in leaf litter, moss, leaf rolls, in the soil) but sometimes exposed pupae are used as hosts (Townes and Townes 1960; Townes et al. 1965; Gupta and Saxena 1987; Fitton et al. 1988; Gauld 1991). In Vietnam, the lepidopteran hosts of a few *Pimpla* species have been recorded (Bui 1990; Pham 1997).

Key to Vietnamese species of *Pimpla* (male of *P. lexuanhuei* sp. nov. and female of *P. chuyangsinensis* sp. nov. are unknown)

1. Male…2

-. Female…10

2. Hind leg black (except a narrow, basal red mark on femur of *P. ereba*)…3

-. Hind leg always marked with red or yellow…4

3. Flagellomeres 5–7 with tyloids, tyloid on flagellomere 5 present apically, on flagellomeres 6–7 tyloids extend over length of flagellomeres (Fig. 2b); propodeum with short section of lateromedian longitudinal carina; metasomal tergites weakly coriaceous (Fig. 5e)…*P. ereba* Cameron

-. Flagellomeres 6–9, 10 or 11 with tyloids, all extend over length of flagellomeres; propodeum with lateromedian longitudinal carina absent; whole body dull and densely punctate…*P. aethiops* Curtis

4. All femora reddish; metapleuron entirely rugose (Fig. 3b); tergites 1–4 densely, coarsely punctate (Fig. 5d)…5

-. Femora patterned differently, not all reddish; metapleuron polished, impunctate ventrally, punctate or rugose dorsally (Fig. 3a, c); tergites 1–4 with dense, fine to moderate sized punctures (Fig. 5a, b, c)…7

5. Flagellomeres 6–9, 10 or 11 with tyloids (Fig. 2e); scutellum with yellow or brown spot apically; fourth laterotergite more elongate, 2.5–2.9 times as long as wide (Fig. 5j)… *P. laothoe* (Cameron)

-. Antenna without tyloids; scutellum entirely black; fourth laterotergite broader, usually less than 2.0 times longer than wide (Fig. 5i)…6

6. Mesopleuron densely punctate; trochanters partly to entirely black…*P. cameroni* Dalla Torre

-. Mesopleuron finely, sparsely punctate; trochanters entirely red… *P. nipponica* Uchida

7. Ground colour yellow, with black marks (Fig. 6a, b); scutellum strongly convex, lateral carina extending to summit (Fig. 4d); metapleuron with small punctures dorsally (Fig. 3c); [flagellomere 8–10 with tyloids (Fig. 2c); fore wing with vein *Rs&M* opposite *cu-a*]…*P. chuyangsinensis* sp. nov.

-. Ground colour black, with yellow or brown marks; scutellum weakly to moderately convex with lateral carina usually not extending to summit; metapleuron with rugose punctures dorsally…8

8. Pronotum finely punctate near ventral margin, usually with distinct wrinkles along posterior margin (Fig. 3a); pronotum and propodeum entirely black; metasomal tergites with narrow yellow apical transverse bands, without apicolateral yellow spots on tergites 1–5 (Fig. 5b); [flagellomeres 6–7 with tyloids (Fig. 2d)]… *P. carinifrons* Cameron

-. Pronotum polished and impunctate near ventral margin, without or with short wrinkles along posterior margin; pronotum and propodeum marked with yellow; metasomal tergites 1–5 with apicolateral yellow spots (Fig. 5a)…9

9. Flagellomeres 6–10 or 7–9 with tyloids (Fig. 2a); face with coarse punctures, usually with two lateral yellow spots (Fig. 1a); propodeum with two lateral yellow stripes, petiolar area largely polished, impunctate (Fig. 4a); fore wing with vein *Rs&M* basad of *cu-a*…*P. bilineata* (Cameron)

-. Antenna usually without tyloids, or sometimes with tyloid on flagellomere 6; face with moderate sized punctures, entirely black (Fig. 1b); propodeum with two apicolateral yellow spots, petiolar area finely punctate (Fig. 4c); fore wing with vein *Rs&M* opposite to distad of *cu-a*…*P. flavipalpis* Cameron

10. Scutellum strongly convex with lateral carina long, extending nearly to apex (Fig. 4e); metapleuron with shallowly rugose punctures dorsally (Fig. 3f); fore wing with infuscate margin; tip of ovipositor depressed, ovipositor straight (Fig. 7a); pale reddish with restricted black marks (Fig. 6c, d); [vein *Rs&M* opposite *cu-a*)]…*P. lexuanhuei* sp. nov.

-. Scutellum moderately to strongly convex with lateral carina present basally or extending to middle, except *P. cameronii*, with lateral carina extending nearly to apex; metapleuron strongly punctate or striate over entire height; fore wing entirely brownish yellow; tip of ovipositor cylindrical or depressed in *P. bilineata*, in which ovipositor down-curved; black, marked with yellow or red…11

11. Legs black; although fore leg may have yellowish marks…12

-. Legs largely red or yellow…13

12. Propodeum densely, strongly striate (Fig. 4g); first tergite with lateromedian carinae strongly humped dorsally; metasomal tergites distinctly coriaceous (Fig. 5f)…*P. ereba* Cameron

-. Propodeum densely, coarsely punctate; first tergite without humps; metasomal tergites densely, coarsely punctate…*P. aethiops* Curtis

13. Metasomal tergites entirely black or with reddish or brownish apical transverse smooth bands; pronotum usually densely, coarsely punctate or striate; all femora reddish …14

-. Metasomal tergites black marked with yellow; pronotum largely smooth and shiny, with shallow punctures, striations, when present, only at hind edge; femora largely black …16

14. Fourth laterotergite more elongate, 2.4–3.0 times as long as wide; scutellum with yellow or brown spot apically…*P. laothoe* Cameron

-. Fourth laterotergite broader, 1.7–1.8 times as long as wide; scutellum entirely black…15

15. Propodeum with lateromedian longitudinal carinae long, posterior transverse carina present medially (Fig. 4f); mesopleuron densely punctate; trochanters largely black… *P. cameronii* Dalla Torre

-. Propodeum without or with short stub of lateromedian longitudinal carina, posterior transverse carina entirely absent; trochanters entirely red…*P. nipponica* Uchida

16. Scutellum flat; ovipositor depressed and downcurved, with distinct transverse ridges on upper and lower valves apically; propodeum with yellow, elongate lateral stripes…*P. bilineata* (Cameron)

-. Scutellum moderately convex; ovipositor straight, subcylindric, upper valve without or with weak ridges apically; propodeum entirely black or with yellow apicolateral spots…17

17. Mesopleuron with dense, small, rugose punctures; fore wing with vein *Rs&M* distad of *cu-a*; propodeum with yellow apicolateral spots; metasomal tergites with apical transverse bands and apicolateral spot yellow (Fig. 5g)…*P. flavipalpis* Cameron

-. Mesopleuron shiny, with well separated, large punctures; fore wing with vein *Rs&M* basad of *cu-a*; propodeum entirely black; tergites with apical transverse bands yellow…*P. carinifrons* Cameron.

Pimpla aethiops Curtis, 1828

Pimpla aethiops Curtis, 1828. British Ent. 5: 214. Lectotype: ♀, Great Britain: reared from *Laelia coenosa* (Lepidoptera: Lymantriidae) (NMV).

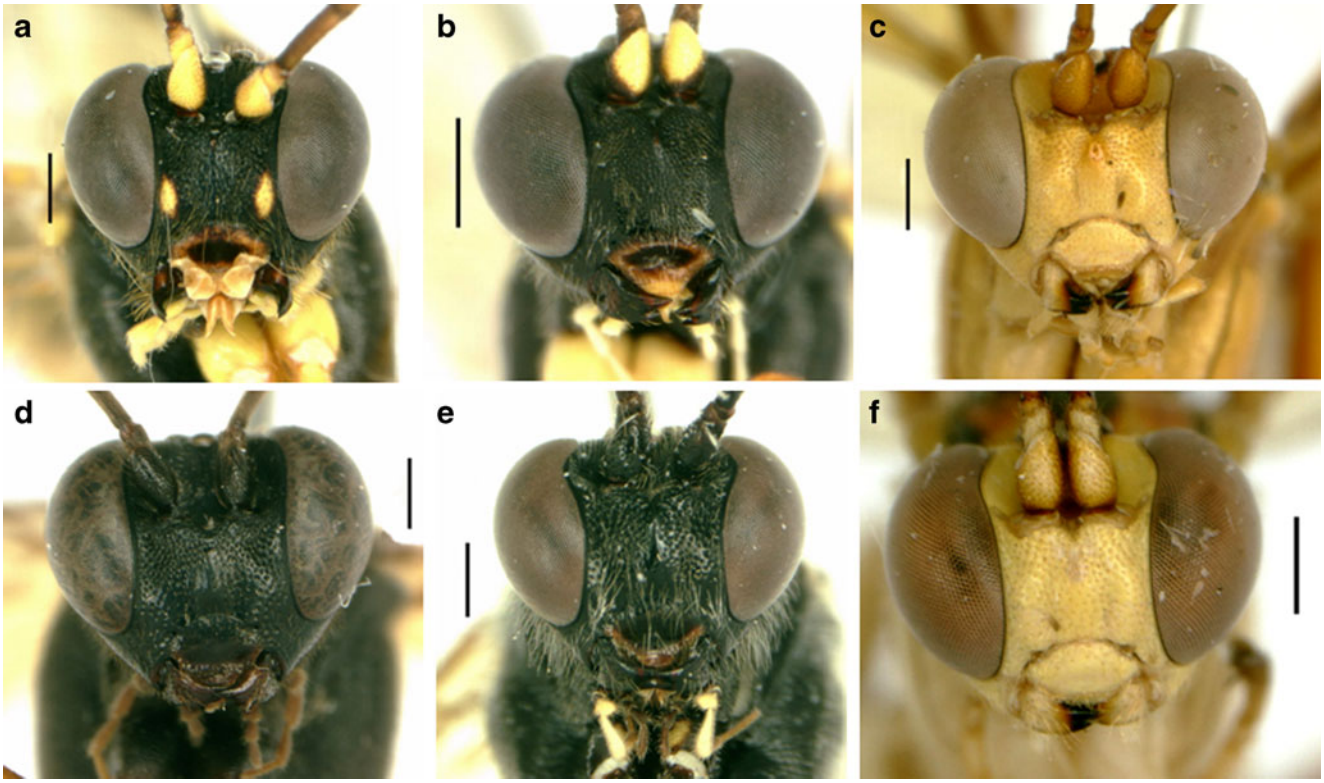

Fig. 1 **a**–**f** Faces of *Pimpla* species (scales 0.5 mm). **a** *P. bilineata* (male), **b** *P. flavipalpis* (male), **c** *P. lexuanhuei* sp. nov. (female), **d** *P. laothoe* (female), **e** *P. ereba* (male), **f** *P. chuyangsinensis* sp. nov. (male)

Material examined. None.

Diagnosis. Black, including legs; flagellomeres 6–10 (or 7–9) of male with tyloids; first tergite without humps; tergites densely, coarsely punctate, without smooth apical bands.

Distribution. Bui (1990) recorded this species from Hanoi as a parasitoid of lepidopteran pests in rice fields: *Parnara guttata* (Bremer and Grey), *Pelopidas mathias* Fabricius (Hesperiidae), *Cnaphalocrocis medialis* (Guenée) (Pyralidae), *Brachmia* sp. (Gelechiidae) and *Naranga aenescens* Moore (Noctuidae). We have not seen any Vietnamese material. Outside Vietnam, this species has been recorded widely in Europe (although now extinct in the United Kingdom) and in Asia (China, Japan, Korea and Taiwan) (Yu et al. 2012).

Pimpla bilineata (Cameron, 1900)

(Figs. 1a, 2a, 4a, 5a)

Habropimpla bilineata Cameron, 1900. Mem. & Proc. Manchester Lit. Phil. Soc., 44 (15): 97. Holotype: ♂, India: Meghalaya: Khasi Hill (BMNH).

Pimpla bilineata: Gauld (1991).

Material examined. Lao Cai, Hoang Lien National Park (NP): 4♂ (RMNH) 2♂ (IEBR), 1,550 metres above sea level (m a.s.l), 22–29.x.1999, Malaise trap, C. v. Achterberg leg.

Diagnosis. Body black with yellow marks; flagellomeres 6–10 (or 7–9) of male with tyloids; scutellum weakly convex, nearly flat dorsally; propodeum black with two laterodorsal yellow stripes; fourth laterotergite elongate, 3.0–4.0× as long as wide; ovipositor depressed and down-curved, with distinct transverse ridges on upper and lower valves.

Distribution. Previously recorded from China, India, Myanmar and Nepal (Yu et al. 2012), this is the first record of *P. bilineata* from Vietnam (Fig. 8).

Pimpla cameronii Dalla Torre, 1901

(Figs. 3b, 4f, 5d, i, 7b)

Pimpla vidua Cameron, 1899. Mem. & Proc. Manchester Lit. Phil. Soc. 43 (3): 180. Name preoccupied by *Pimpla vidua* Walsh, 1873 [= *Tromatobia ovivora* (Boheman, 1821)]. Holotype: ♂, India: Meghalaya: Khasi Hills (OUMNH).

Pimpla cameronii Dalla Torre, 1901. Catalogus Hymenopterorum, 3: 426.

Material examined. Lao Cai, Hoang Lien Son NP: 1♂ (RMNH), 1,550 m a.s.l, 22–29.x.1999, Malaise trap, C. v. Achterberg leg.; Hoa Binh, Mai Chau, Pa Co: 2♀ (IEBR), 1,100 m a.s.l, 22.iv.2002, hand net, H.D. Nguyen leg.; Son La, Thuan Chau, Co Ma: 1♀ (IEBR), 1,400 m a.s.l, 08.vi.2008, hand net, H. X. Le leg.

Diagnosis. Black; flagellomeres of male without tyloids; scutellum moderately convex, propodeum of female with median longitudinal and median part of posterior transverse carinae present; mesoscutum subrounded, nearly as long as wide at level of front of tegulae; metapleuron rugosely

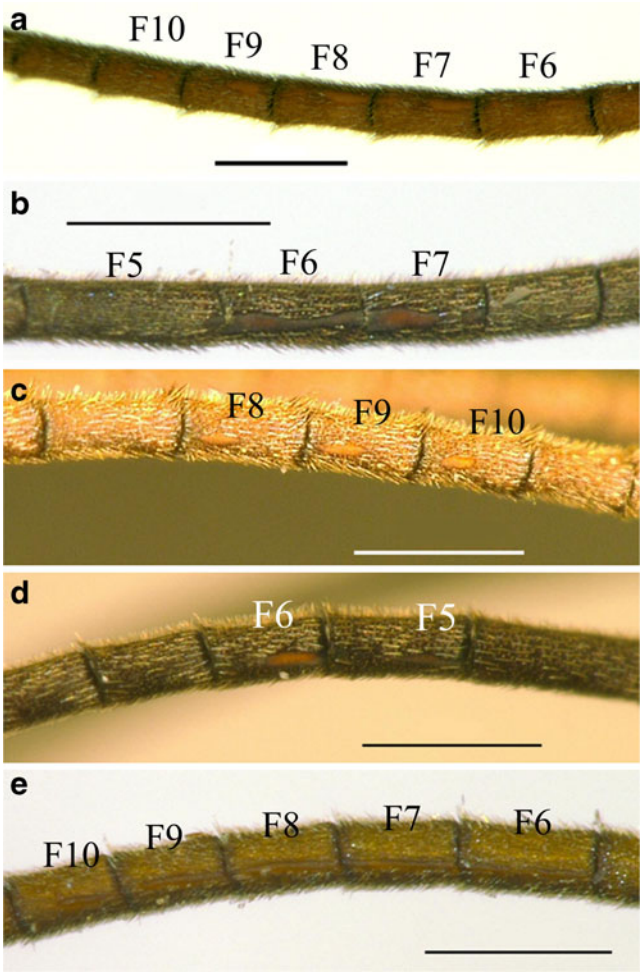

Fig. 2 **a**–**e** Tyloids on male flagellomeres of *Pimpla* species. **a** *P. bilineata*, **b** *P. ereba*, **c** *P. chuyangsinensis* sp. nov., **d** *P. carinifrons*, **e** *P. laothoe*. *Bars* 0.5 mm

punctate, tergites with dense, coarse punctures; fourth laterotergite broad, about 1.7–1.9× as long as wide; ovipositor straight, as long as hind tibia.

Distribution. Previously recorded from India, Indonesia, Myanmar, Nepal and Taiwan (Yu et al. 2012), this is the first record of *P. cameronii* from Vietnam (Fig. 8).

Pimpla carinifrons Cameron, 1899

(Figs. 2d, 3a, 4b, 5b)

Pimpla carinifrons Cameron, 1899. Mem. Proc. Manchester Lit. Phil. Soc. 43 (3): 172. Lectotype: ♀, India: Meghalaya, Khasi Hills (BMNH).

Material examined. Lao Cai, Hoang Lien NP: 22♂ (RMNH) 2♂ (IEBR), 1,500 m a.s.l, 22–29.x.1999, Malaise trap, C. v. Achterberg leg.

Diagnosis. Black with narrow, apical yellow bands on tergites 1–5; flagellomeres 6–7 of male with tyloids; inner margins of eyes moderately concave above antennal sockets, parallel ventrally; scutellum moderately convex, yellow dorsally; hind femur black, sometimes with reddish band basally; fourth laterotergite elongate, about 2.7–3.2× as long as wide .

Distribution. Gupta and Saxena (1987) have previously recorded *P. carinifrons* from South Vietnam (imprecise locality). Outside Vietnam, this species is known from China, India, Laos, Myanmar, Nepal and Taiwan (Yu et al. 2012).

Pimpla chuyangsinensis sp. nov.

(Figs. 1f, 2c, 3c, 4d, 5c, 6a, b)

Material examined. Holotype: ♂ (RMNH), Dak Lak, Chu Yang Sin NP, Krong K'Mar, 840–940 m a.s.l, 02–10.vi.2007, Malaise trap, C. v. Achterberg & R. de Vries leg.

Diagnosis. Pale yellow with black markings on mesosoma and metasoma; flagellomeres 8–10 with tyloids; scutellum strongly convex, lateral carina extending to summit; propodeum with transverse ridges dorsally; wings dull yellow.

Description. (Holotype). Head. Antenna with 30 flagellomeres, first flagellomere 1.35× length of second, second flagellomere 4.0× as long as wide, flagellomeres 8–10 with tyloids; diameter of lateral ocellus 1.1× ocellar-ocular distance; frons subpolished, with fine punctures; inner margins of eyes moderately concave above antennal sockets, parallel ventrally; face 0.85× as high as wide, with rugose punctures, pubescent, upper margin concave between antennal sockets; clypeus about 0.5× as high as wide, basally punctate, pubescent, apical margin thin, emarginate; malar space 0.5× basal width of mandible; occipital carina meeting hypostomal carina about 0.6× basal mandible width from base of mandible.

Mesosoma. Epomia 0.6× mandible basal width; pronotum subpolished with fine punctures dorsally; mesoscutum with dense, fine punctures, pubescent, 1.2× as long as wide at anterior level of tegulae, notaulus absent; scutellum strongly convex, pubescent, lateral carina extending to summit; mesopleuron with small punctures, pubescent; metapleuron polished, impunctate ventrally, dorsally with small punctures, pubescent, submetapleural carina complete, forming large, anterior lobe; propodeum moderately convex, without carinae except posterior stub of lateral longitudinal carina, laterally with fine punctures, pubescent, dorsally with transverse ridges, petiolar area polished, impunctate. Fore femur 4.0× as long as wide; hind femur 3.3× as long as wide, length 0.8 tibia, basitarsus length 0.45× tibia, 0.37× tarsus, 1.7× second tarsomere, fifth tarsomere longer than third. Fore wing length 10.0 mm, vein *Rs&M* opposite *cu-a*, vein 2*rs-m* about 0.65× length of 3*rs-m*, hind wing with vein *M+Cu* straight posteriorly, first abscissa of vein *Cu*1 0.35× as long as vein *cu-a*.

Metasoma. Tergites with fine to moderate-sized punctures, pubescent; first tergite 1.35× as long as apical width, median longitudinal carina indistinct; second tergite 0.75× as long as apical width, 1.2× as long as third tergite, tergites

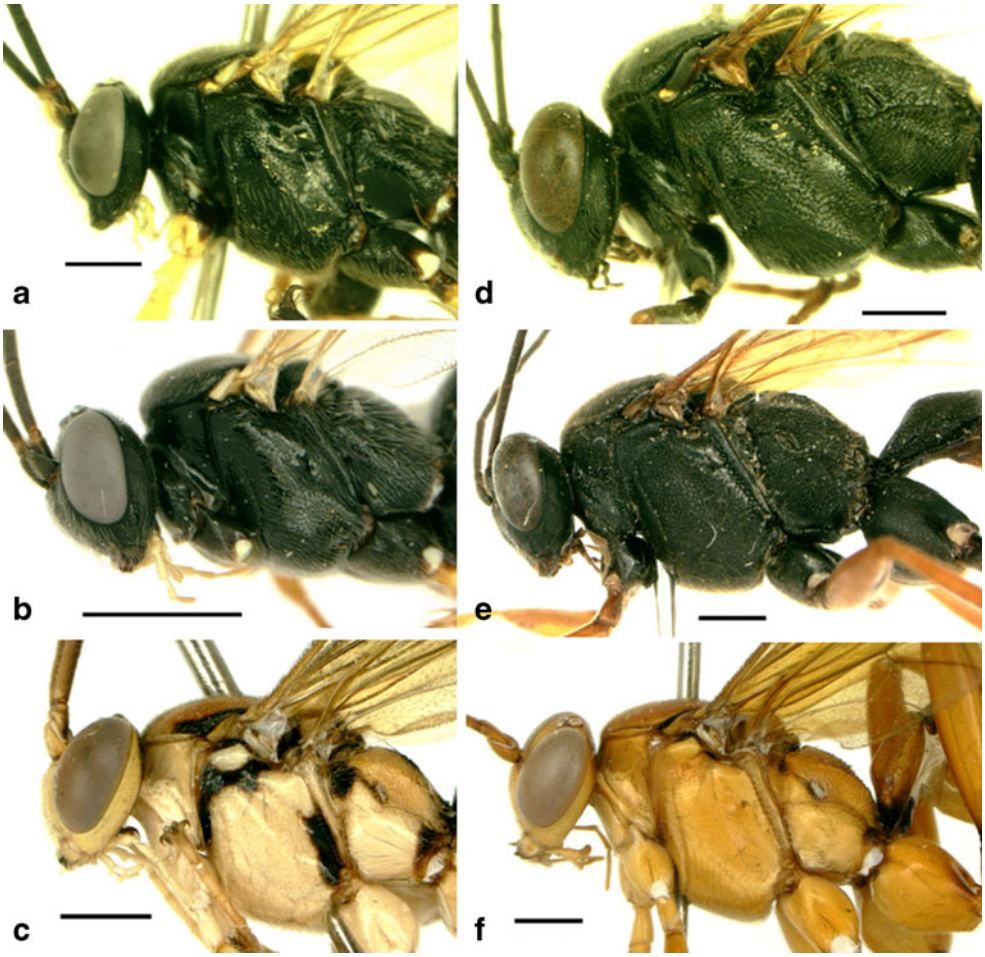

Fig. 3 **a**–**f** Lateral views of head and mesosoma of *Pimpla* species. **a**–**c** Males (**a** *P. carinifrons*, **b** *P. cameronii*, **c** *P. chuyangsinensis* sp. nov.); **d**–**f** females (**d** *P. ereba*, **e** *P. laothoe*, **f** *P. lexuanhuei* sp. nov.). *Bars* 1.0 mm

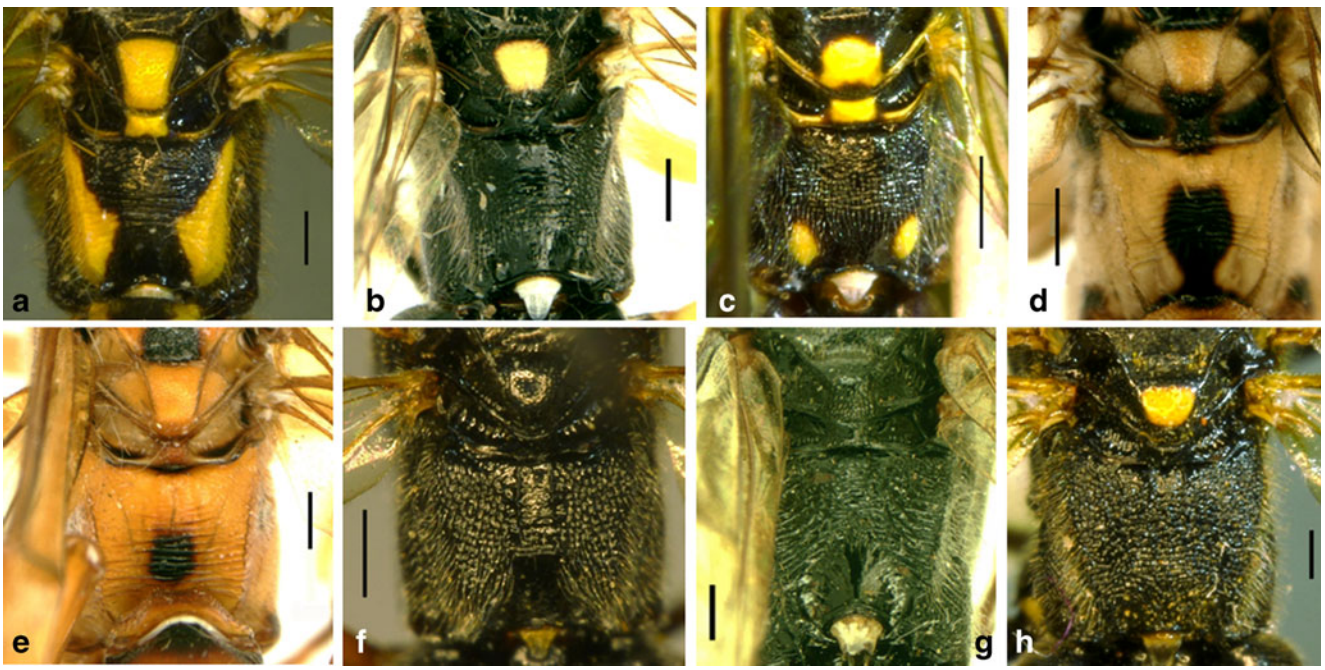

Fig. 4 **a**–**h** Dorsal views of scutellum and propodeum of *Pimpla* species.: **a**–**d** Males (**a** *P. bilineata*, **b** *P. carinifrons*, **c** *P. flavipalpis*, **d** *P. chuyangsinensis* sp. nov.); **e**–**h** females (**e** *P. lexuanhuei* sp. nov., **f** *P. cameronii*, **g** *P. ereba*, **h** *P. laothoe*). *Bars* 0.5 mm

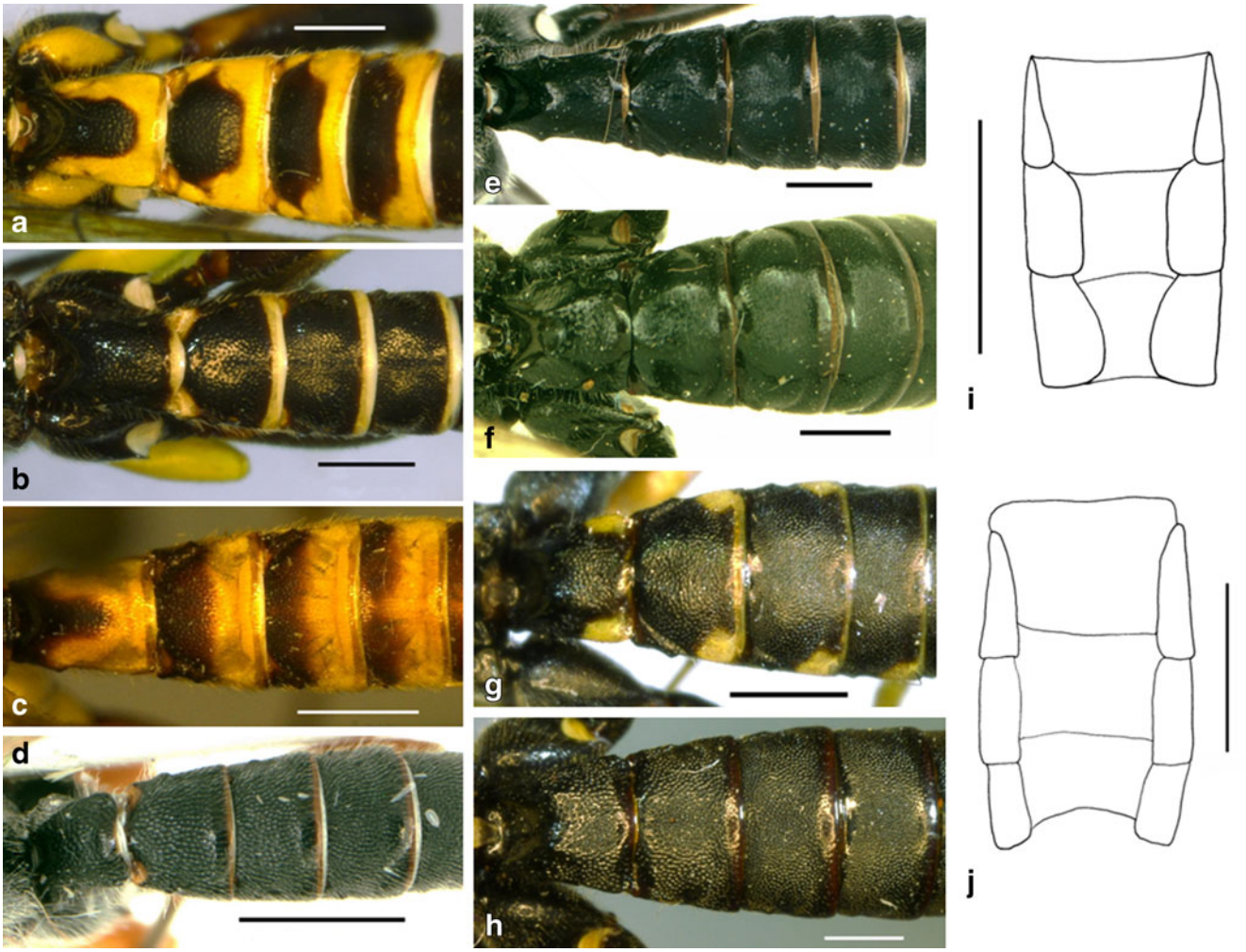

Fig. 5 **a**–**j** *Pimpla* species. **a**–**e** Dorsal views of metasomal tergites, 1–4 males (**a** *P. bilineata*, **b** *P. carinifrons*, **c** *P. chuyangsinensis* sp. nov., **d** *P. cameronii*, **e** *P. ereba*); **f**–**h** dorsal views of metasomal tergites 1–4 of females (**f** *P. ereba*, **g** *P. flavipalpis*, **h** *P. laothoe*); **i**, **j** metasomal sternites 3–5 of males (**i** *P. cameronii*, **j** *P. laothoe*). *Bars* 1.0 mm

2–4 with basal oblique grooves moderately deep; first sternite roundly convex subapically; fourth laterotergite 3.1× as long as wide.

Colour. Pale yellow. Antenna brown ventrally, blackish dorsally; hind slope of vertex black; mesoscutum reddish brown with broad median, black stripe joined posteriorly to black spot in front of scutellum, two lateral narrow stripes touching lateral ridges of mesoscutum; scutellum apically and postscutellum black; mesopleuron with black stripe along anterior margin extending from level of fore coxa to groove below subalar prominence and black stripe along posterior margin ventrally; metapleuron black posteriorly; propodeum dorsally with black, glass-shaped stripe extending from submedian part to apex; hind coxa with apical black marks on lateral and dorsal faces, hind trochantellus, dorsal and ventral stripes of hind femur and apical half of tibia reddish brown, tarsus black; metasomal tergites each with basal half blackish; wings brownish yellow.

Female. Unknown.

Distribution. Currently known only from Chu Yang Sin NP, Dak Lak Province; Central Highland of Vietnam (Fig. 8).

Ecological notes. The single specimen was collected in evergreen forest at an elevation of 840–940 m a.s.l.

Etymology. This species is named after the Chu Yang Sin NP, the type locality of the new species, which is a valuable part of the network of protected areas in Vietnam.

Comparison. *Pimpla chuyangsinensis* sp. nov. differs from *P. lexuanhuei* sp. nov. (see description below) by its colour pattern with more extensive black marks on the hind slope of the vertex, mesopleuron, scutellum, and postscutellum, the distinctly banded hind tibia, and the brownish yellow wings, without an infuscate margin.

Pimpla ereba Cameron, 1899

(Figs. 1e, 2b, 3d, 4g, 5e, f, 7c)

Pimpla ereba Cameron, 1899. Mem. Proc. Manchester Lit. Phil. Soc. 43 (3): 172. Holotype: ♀, India: Meghalaya, Khasi Hills (OUMNH).

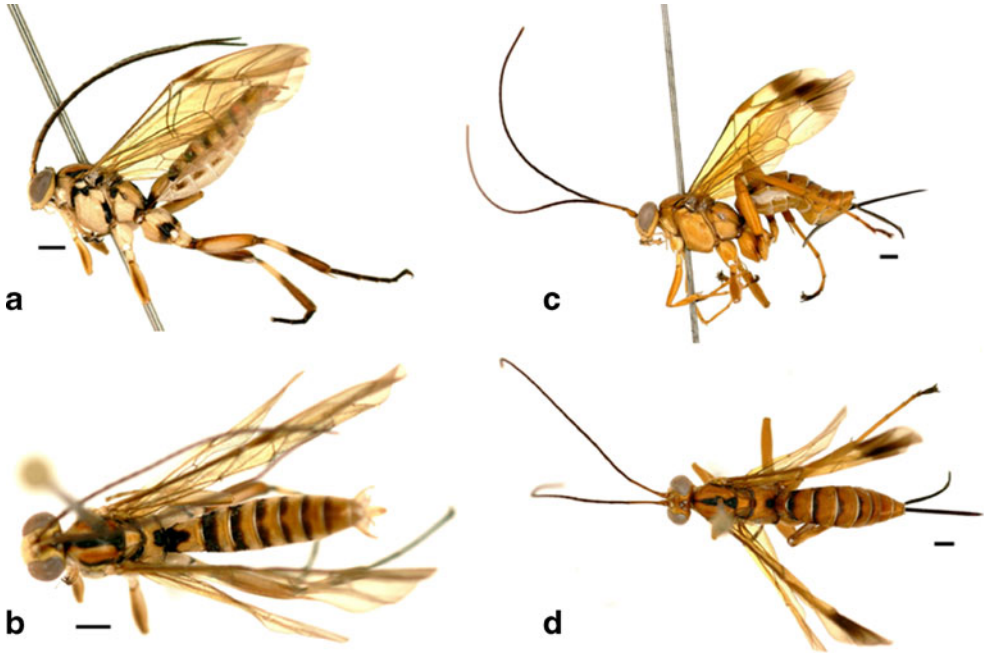

Fig. 6 **a**–**d** Lateral and dorsal views of *Pimpla* species. **a**, **b** *P. chuyangsinensis* sp. nov.; **c**, **d** *P. lexuanhuei* sp. nov. *Bars* 1.0 mm

Material examined. Lao Cai, Sapa: 1♀ (IEBR), 1,800 m a.s.l, 18.v.2003, hand net, L. D. Khuat leg.; Lao Cai, Hoang Lien NP: 8♂ (RMNH) 2♂ (IEBR), 1,900 m a.s.l, 15–21.x.1999, Malaise trap, C. v. Achterberg leg.

Diagnosis. Black; flagellomeres 5–7 of male with tyloids; mesosoma coarsely punctate, strongly winkled in female, propodeum with short stub of lateromedian longitudinal carina; legs black except fore leg (mid leg in male also) with anterior face of femur, tibia and tarsus yellow; metasomal tergites coriaceous; fourth laterotergite about 2.4× as long as wide; ovipositor straight, ovipositor sheath slightly longer than hind tibia.

Distribution. Previously recorded from China, India and Myanmar (Yu et al. 2012), this is the first record of *P. ereba* from Vietnam (Fig. 8).

Remarks. In comparison with the description of Gupta and Saxena (1987), Vietnamese specimens have a narrower malar space (0.65× basal mandible width versus 0.9–1.0×); metasoma leathery from apex of first tergite; and slightly longer ovipositor sheath (1.05× hind tibia versus 0.84×).

Pimpla flavipalpis Cameron, 1899

(Figs. 1b, 4c, 5g, 7d)

Pimpla flavipalpis Cameron, 1899. Mem. & Proc. Manchester Lit. Phil. Soc., 43 (3): 174. Lectotype: ♀, India: Meghalaya: Khasi Hill (BMNH).

Material examined. Lao Cai, Hoang Lien NP: 6♂ (RMNH) 1♂ (IEBR), 1,900 m a.s.l, 15–21.x.1999; 1♂ (RMNH) 1♂ (IEBR), 1,550 m a.s.l, 22–29.x.1999, Malaise trap, C. v. Achterberg leg.; Kontum, Ngoc Linh: 2♀ (IEBR), 1,900 m a.s.l, 29.iii–03.iv.2006, Pitfall-trap, A. D. Nguyen leg.

Diagnosis. Black with yellow apicolateral spots on propodeum and metasomal tergites 1–5; flagellomeres of male with or without tyloid on flagellomere 7; propodeum wrinkled, without or with very short stub of lateromedian longitudinal carnina, petiolar area punctate; fore wing with vein *Rs&M* opposite to distad of *cu-a*; metasomal tergites with fine to moderate-sized punctures; fourth laterotergite of female broad, about 1.8× as long as wide; ovipositor straight, sheath slightly shorter than hind tibia.

Distribution. Previously recorded from China, India, Myanmar, Nepal and Taiwan (Yu et al. 2012), this is the first record of *P. flavipalpis* from Vietnam (Fig. 8).

Pimpla laothoe Cameron, 1897

(Figs. 1d, 2e, 3e, 4h, 5h, j, 7e)

Pimpla laothoe Cameron, 1897. Mem. & Proc. Manchester Lit. Phil. Soc., 41 (4): 22. Holotype: ♀, India: Uttar Predesh: Mussoorie (OUMNH).

Material examined. Lao Cai, Lao Chai: 1♀ (PPRI), 01.x.1967 (on peach-tree), unknown collector; Lao Cai, Nam Cuong: 1♀ (PPRI), 20.x.1967, (in rice field), unknown collector; Lao Cai, Hoang Lien NP: 1♂ (RMNH), 1,550 m a.s.l, 22–29.x.1999, Malaise trap, C. v. Achterberg leg.; Vinh Phuc, Vinh Yen, Ngoc Thanh: 2♀1♂ (IEBR), 200 m a.s.l, 07–26.vii.2001, Malaise trap, L. D. Khuat leg.; Ha Noi, Ba Vi NP: 1♀ (IEBR), 400–600 m a.s.l, 02.vi.2001, hand net, N. T. Pham leg.; Ha Noi, Tu Liem, Co Nhue: 1♀ (IEBR), 16.v.2006, hand net, H. T. Dang leg.; Ha Noi, Tu Liem, Phu Dien: 2♀ (IEBR) 1♂ (ZFMK), 17.iv.2008, hand net, N. T. Pham leg.; Hoa Binh, Mai Chau, Pa Co: 1♂ (IEBR), 1,200 m a.s.l, 21.iv.2002, T. V. Hoang leg.; Hoa Binh, Mai Chau, Tan Son: 1♂ (IEBR), 01–05.v.2010; 1♂ (IEBR), 10–15.vii.2010; 1♂ (IEBR), 10–15.viii.2010, 850–900 m, a.s.l, Malaise trap, L. D. Khuat leg.

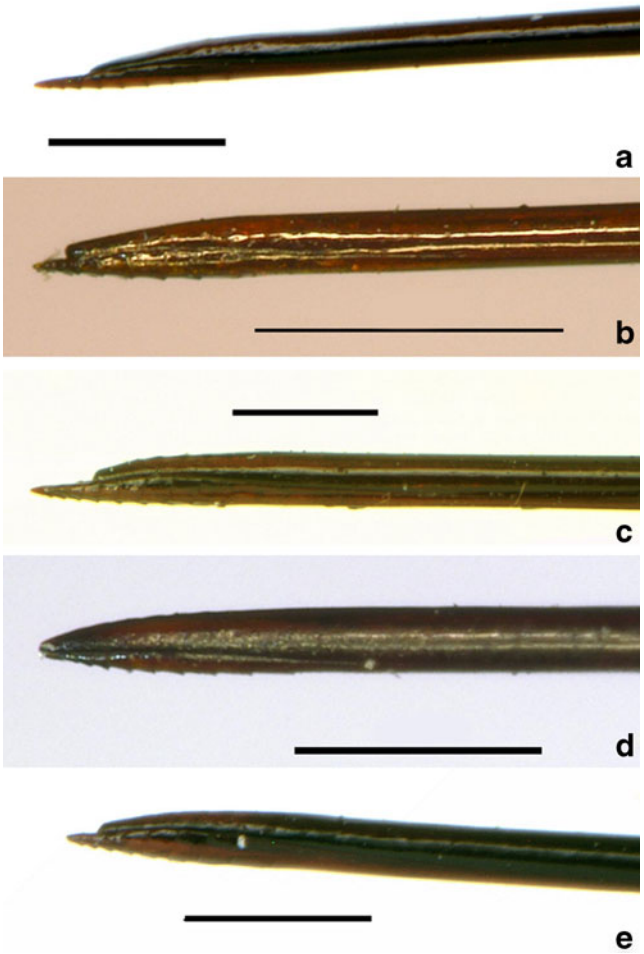

Fig. 7 **a**–**e** *Pimpla* ovipositors. **a** *P. lexuanhuei* sp. nov., **b** *P. cameronii*, **c** *P. ereba*, **d** *P. flavipalpis*, **e** *P. laothoe*. *Bars* 0.5 mm

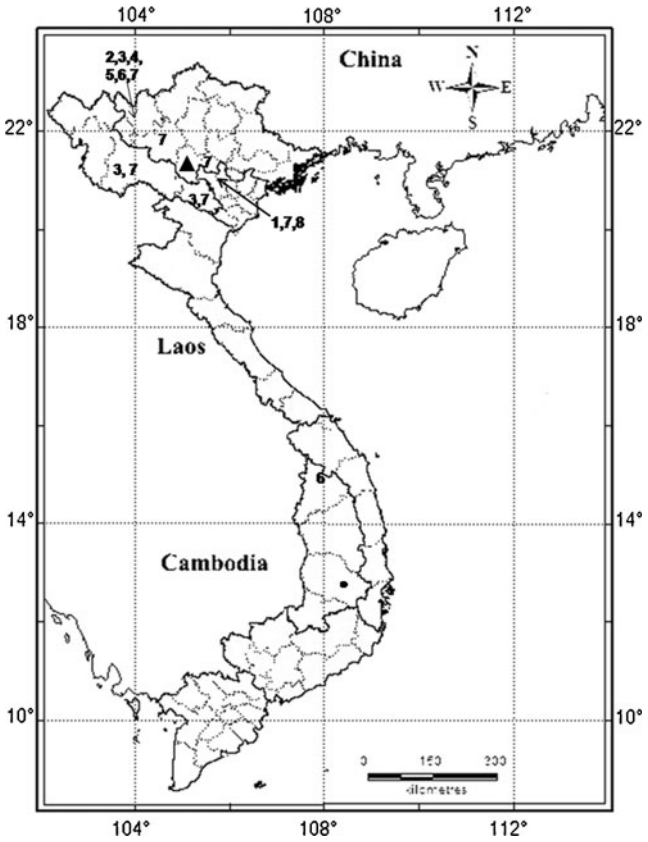

Fig. 8 Distribution map of *Pimpla species: 1 P. aethiops*, *2 P. bilineata*, *3 P. cameronii*, *4 P. carinifrons*, *5 P. ereba*, *6 P. flavipalpis*, *7 P. laothoe*, *8 P. nipponica*; ▲ *P. lexuanhuei* sp. nov., • *P. chuyangsinensis* sp. nov.

Diagnosis. Black, with dense striations and coarse punctures; flagellomeres 6–11 or 6–10 (rarely 6–9) of male with tyloids; coarse punctures on mesopleuron almost confluent; propodeum strongly rugose; first tergite without or with low humps.

Distribution. Previously recorded from China, India, Indonesia, Myanmar, Nepal, Pakistan, Sri Lanka and Taiwan (Yu et al. 2012), this is the first record of *P. laothoe* from Vietnam (Fig. 8).

Remarks. The Plant Protection Research Institute (1976) recorded this species from Lao Cai, Son La and Yen Bai provinces (northwestern Vietnam) as *P. instigator* (Fabricius, 1793), a junior synonym of *P. rufipes* (Miller, 1759). We have examined these specimens, which are all *P. laothoe*.

Pimpla lexuanhuei sp. nov.

(Figs. 1c, 3f, 4e, 6c, d, 7a)

Material examined. Holotype: ♀ (RMNH), Phu Tho, Thanh Son, Thuong Cuu, 350–400 m a.s.l, 20°59′N–105° 08′E, 11–16.x.1999, Malaise trap, R. de Vries leg.

Diagnosis. Ferruginous with restricted black markings; scutellum strongly convex, lateral carina extending nearly to apex; propodeum with transverse ridges dorsally; ovipositor depressed at tip, with ridges on lower valve; ovipositor sheath as long as hind tibia; wings pale reddish brown with infuscate margin.

Description. (Holotype). Head. Antenna with 31 flagellomeres, first flagellomere 1.6× length of second, second flagellomere 6.0× as long as wide, apical flagellomeres short; diameter of lateral ocellus equal to ocellar-ocular distance; frons concave, subpolished, with fine punctures; inner margins of eyes moderately concave above antennal sockets, divergent ventrally; face 0.75× as high as wide, moderately convex, with moderate-sized punctures, pubescent, upper margin concave between antennal sockets; clypeus about 0.5× as high as wide, finely punctate, pubescent, apical margin thin, emarginate; malar space 0.6× basal width of mandible; occipital carina meeting hypostomal carina about 0.6× basal mandible width from base of mandible.

Mesosoma. Epomia 0.7× mandible basal width; pronotum subpolished with fine punctures dorsally and short striations at hind margin; mesoscutum with dense, small punctures, pubescent, 1.3× as long as wide at anterior

level of tegulae, notaulus weakly impressed anteriorly; scutellum strongly convex, pubescent, lateral carina extending nearly to apex; mesopleuron with shallow punctures, pubescent; metapleuron polished and impunctate ventrally, with shallow wrinkles and pubescent dorsally, submetapleural carina complete, forming elevated lobe anteriorly; propodeum moderately convex, with transverse ridges dorsally, without carinae except short basal stub of lateromedian and posterior part of lateral longitudinal carinae, petiolar area polished, impunctate. Fore femur 5.3× as long as wide; hind femur 4.5× as long as wide, length 0.8× tibia, basitarsus length 0.5× tibia, 0.45× tarsus, 2.0× second tarsomere, fifth tarsomere longer than third. Fore wing length 12.5 mm, vein *Rs&M* opposite *cu-a*, vein 2*rs-m* about 0.9× length of 3*rs-m*, hind wing with vein *M+Cu* straight posteriorly, first abscissa of vein *Cu*1 0.25× as long as vein *cu-a*.

Metasoma. Tergites with dense, medium-sized punctures, pubescent; first tergite 1.2× as long as apical width, with low humps, median longitudinal carina indistinct; second tergite 0.7× as long as apical width, 1.1× as long as third tergite, tergites 2–4 with basal oblique grooves moderately deep; first sternite weakly convex centrally; fourth laterotergite 2.8× as long as wide; ovipositor depressed at tip, lower valve with apical ridges, ovipositor sheath equal to hind tibia length.

Colour. Ferruginous. Mesoscutum with a median longitudinal black stripe, narrower anteriorly, wider posteriorly, lateral ridges of mesoscutum at level of tegula black; propodeum with median black spot; metasomal tergites with narrow black stripes basally; ovipositor reddish, ovipositor sheath black; wings pale reddish brown with infuscate margin.

Male. Unknown.

Distribution. Currently known only from Thuong Cuu, Thanh Son, Phu Tho Province, North Vietnam (Fig. 8).

Ecological notes. The single specimen was collected in secondary forest at an elevation of 350–400 m a.s.l.

Etymology. This species is named in honor of Assoc. Prof. Dr Le Xuan Hue, a senior researcher and curator of Hymenoptera at IEBR, who collected many ichneumonid specimens.

Comparison. *Pimpla lexuanhuei* sp. nov. is generally similar to *P. brunnea* (Gupta & Saxena, 1987) in its colour pattern. The new species has denser punctures on its face and mesosoma than *P. brunnea*. Moreover, its ovipositor tip is depressed (versus compressed in *P. brunnea*).

Pimpla nipponica Uchida, 1928

Pimpla nipponica Uchida, 1928. Jour. Faculty Agr. Hokkaido Imp. Univ. 25 : 45. Lectype: ♀, Japan: Hokkaido: Sapporo (EIHU).

Material examined. None.

Diagnosis. Black, with legs largely reddish; mesopleuron finely, sparsely punctate; trochanters and trochantelli reddish; fourth laterotergite broad; antenna of male without tyloids.

Distribution. Bui (1990) recorded this species from Hanoi as a parasitoid of lepidopteran pests in rice fields: *Parnara guttata* (Bremer and Grey), *Pelopidas mathias* Fabricius (Hesperiidae), *Cnaphalocrocis medialis* (Guenée) (Pyralidae), *Brachmia* sp. (Gelechiidae) and *Naranga aenescens* Moore (Noctuidae). We have not seen any Vietnamese specimens of this species. Outside Vietnam, this species has been recorded widely from Finland in the west to Japan in the east and south to India and Yunnan Province in China (Yu et al. 2012).

Discussion

Bui (1990) recorded *Pimpla aethiops* and *P. nipponica* from Hanoi as pupal parasitoids of lepidopteran pests in rice fields. However, we could not find these specimens in the collection of IEBR in Hanoi, nor have we collected these during recent surveys in Vietnam. Although we could not verify the identifications of Bui (1990), we tentatively include the two aforementioned species as part of the Ichneumonid fauna of Vietnam; further studies are required to confirm the occurrence of these species in the country.

Pimpla species have been divided into several species groups (Townes and Townes 1960; Momoi 1973; Gupta and Saxena 1987; Gauld 1991). The Indo-Australian *Pimpla* species were divided into four groups, which are, however, only really useful for females: the *instigator*, '*Hapropimpla'*, *latistigma* and *turionellae* groups (Gupta and Saxena 1987). The new species, *P. lexuanhuei*, presents a problem in the practical application of these groups since its depressed ovipositor fits the diagnosis of the '*Hapropimpla'* group, but its straight ovipositor, the upper valve without distinct parallel transverse ridges, and the strongly convex scutellum do not fit this species-group.

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