Acta Soc. Zool. Bohem. **69**: 89–112, 2005
ISSN 1211-376X

The species of *Zaischnopsis* of America north of Mexico, with a checklist of described world species (Hymenoptera: Eupelmidae)

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Received April 26, 2004; accepted December 15, 2004
Published December 30, 2005

Abstract. The species of *Zaischnopsis* Ashmead, 1904 (Eupelmidae: Eupelminae) from America north of Mexico are revised. Seven new species are described, keyed and illustrated based on females: *Z. bouceki* sp. nov., *Z. brachystylata* sp. nov., *Z. coenotea* sp. nov., *Z. erythrothorax* sp. nov., *Z. melanostylata* sp. nov., *Z. phalaros* sp. nov., and *Z. xanthocola* sp. nov. These and other described world species assigned to *Zaischnopsis* are listed in a checklist, which includes 19 new combinations.

Taxonomy, new species, new combination, key, hosts, species checklist, Chalcidoidea, Eupelmidae, *Zaischnopsis*, Nearctic region

INTRODUCTION

Gibson (1995) resurrected *Zaischnopsis* Ashmead, 1904 from synonymy with *Anastatus* Motschulsky, 1859 within a revision of the world genera of Eupelminae. He stated that about 25 species of *Zaischnopsis* were described, but most of the species were classified incorrectly in either *Anastatus* or *Brasema* Cameron, 1884. He also recorded the genus from the Nearctic region, but without listing any regional species. The purpose of this paper is to describe the fauna of *Zaischnopsis* from America north of Mexico and to provide a checklist of the described world species.

MATERIAL AND METHODS

Species assigned to *Zaischnopsis* in the checklist are based on examination of type material except where stated otherwise. Type series of the newly described species include only specimens from America north of Mexico. Females from south of the USA that appear similar to these are excluded from the type series because a revision of the Neotropical fauna is required to accurately access variation and species limits from this much more speciose region. Terms follow Gibson (1995, 1997) for structure and Gibson (2003) for sculpture. Observations were made using a Nikon SMZ-U microscope fitted with a 10 mm ocular grid having 100 divisions, using an incandescent light source and a translucent acetate diffuser to reduce glare. All measurements except body length are relative and were taken at a magnification of 225×, where 10 units = .067 mm. Line drawings of antennae were traced from scanning electron micrographs and are intended only to illustrate the general shape of the antenna and relative dimensions of segments rather than exact details.

Females of regional species are readily differentiated by qualitative features. For this reason, descriptions of the new species do not include the measurements and ratios often included for chalcid species, but these are summarized in Table 1 for the holotypes.

Label data are listed verbatim for holotypes, but are standardized and condensed for other specimens because of the large number of paratypes for some species. For multiple collections from a single locality in a single year, only the first and last collection dates separated by a "–" are provided, and repetitive label data indicating collection methods and general habitats are not included. Host data that are given in parentheses associated with Hopkins numbers are derived from written records maintained at the USNM. Background information on the Hopkins U. S. System (HUSSI) can be obtained at http://www.fs.fed.us/pnw/bmnri/hussi1.html. Names of collec-

tors with multiple records are abbreviated as follows: BRC – Biosystematics Research Centre Hym. Team, CA – C. R. Arnaud, DS – D. R. Smith, DW – D. B. Wahl, FP – F. D. Parker, GG – G. Gordh, HG – H. N. Greenbaum, HW – H. V. Weems, Jr., JB – J. T. Becker, JDP – J. D. Pinto, JF – J. H. Frank, JH – J. L. Hanula, JL – J. S. LaSalle, JN – J. S. Noyes , JP – J. Pickering, JW – J. Wiley, K&S – J. Kloke & D. R. Smith, KK – K. V. Krombein, LM – L. Masner, LS – L. A. Stange, M&B – L. Masner & B. Bowen, MS – M. Sharkey, NS – N. M. Schiff, PR – P. J. Russell, RD – R. R. Dreisbach, RT – R. C. Thatcher, SF – S. M. Fullerton, SH – S. Heydon, SJP – S. & J. Peck, TS – T. Sims, TSM – T. Smith, VG – V. Gupta, ZP – Z. Prusak.

Paratypes are deposited in the CNCI unless indicated otherwise by one of the following acronyms for the collections on which this study was based: BMNH – The Natural History Museum, London, England; BPBM – Bernice P. Bishop Museum, Honolulu, HI, USA; CASC – California Academy of Sciences, San Francisco, CA, USA; CNCI – Canadian National Collection of Insects and Arachnids, Ottawa, ON, Canada; DEBU – Department of Environmental Biology, University of Guelph, Guelph, ON, Canada; FSCA – Florida State Collection of Arthropods, Gainesville, FL, USA; MCSN – Museo Civico di Storia Naturale "Giacomo Doria", Genova, Italia; MNHN – Muséum national d'Histoire naturelle, Paris, France; QMBA – Queensland Museum, Brisbane, Qld., Australia; ROMT – Royal Ontario Museum, Toronto, ON, Canada; TAMU – Insect Collection, Texas A&M University, College Station, TX, USA; UCDC – Bohart Museum of Entomology, University of California, Davis, CA, USA; UCFC – University of Central Florida Collection of Arthropods, Orlando, FL, USA; UCRC – Entomology Collection, University of California, Riverside, CA, USA; USNM – U. S. National Museum of Natural History, Washington, DC, USA.

TAXONOMY

Zaischnopsis Ashmead, 1904

Ischnopsis Ashmead, 1896: 16; type species: *Ischnopsis opthalmica* Ashmead, by monotypy and original designation; homonym of *Ischnopsis* Walsingham (1881: 236–237), discovered by Ashmead (1904b: 126).

Zaischnopsis Ashmead, 1904b: 126; replacement name for *Ischnopsis* Ashmead (1896); synonymised with *Anastatus* Motschulsky, 1859 by Bouček (1988: 550), reestablished as valid genus by Gibson (1995: 298).

Eupelmoides Masi, 1917: 160; type species: *Eupelmoides obscuratus* Masi, by monotypy; synonymy by Gibson (1995: 298).

Diagnosis (regional females only). Head (Figs 8–13) with torulus below lower orbit; upper face with ∩- to ∧-like scrobal depression, the scrobal margin straight or slightly outcurved but not distinctly sinuate above torulus, and with parascrobal region dorsally tapered and very narrow along upper inner orbit. Mandible tridentate. Propodeum with broadly ∩-shaped foramen and variably strongly transverse but sculptured plical region between low convex callar regions (Figs 24–26). Macropterous; forewing mostly infuscate beyond level of parastigma except for triangular hyaline region with white setae behind marginal vein (Fig. 7) or with hyaline cross-band or symmetrical anterior and posterior hyaline spot at level encompassing apex of marginal vein and base of stigmal vein (Figs 5, 6). Mesotibia apically with oblique groove between base of tibial spur and base of tarsus, and with mesotibial apical pegs over base of tibial spur; mesotarsus ventrally with single row of pegs along both margins. Metatibia not conspicuously compressed, with dorsal margin rounded. Gaster without subbasal white band, elongate-lanceolate with Gt_1–Gt_5 emarginate (Fig. 17), and with apical margin of syntergum reflexed into short flange over base of ovipositor sheath (Figs 17, 27–31).

Remarks. Because of often similar forewing colour patterns (Figs 5, 6), females of *Zaischnopsis* are most likely to be mistaken for those of *Anastatus*; however, both sexes of *Anastatus* have bidentate mandibles. Female *Anastatus* usually also have the scrobal margin sinuate above the torulus so that the scrobal depression is more or less bell-shaped (Gibson 1995, figs 1, 3, 5) and the propodeal plical region small, narrow and concave relative to inclined callar regions (Gibson 1995, fig. 212). A subbasal white band on the gaster usually is the most conspicuous feature to distinguish female *Anastatus* from those of *Zaischnopsis*, but some *Zaischnopsis* females from the Neotropical region have a similar gastral colour pattern. Gibson (1995) provided comprehen-

sive descriptions of both genera on a world basis. Males are not associated with any described *Zaischnopsis* species, but Gibson (1995) gave keys to differentiate females, and males he assigned to the genus, from those of other world genera.

Females that Gibson (1995) included in *Zaischnopsis* intergrade morphologically with both *Anastatus* and *Brasema* females. He provided two alternative hypotheses of character transformation that could explain the observed character-state distribution. In one scenario, *Anastatus* was hypothesized to have diversified from some species-group within *Zaischnopsis*, which itself was hypothesized to have diversified from the *Brasema schizomorpha*-group (Gibson 1995, fig. 517). In the alternate scenario, *Brasema* was hypothesized to represent a clade of species that diversified from the *Zaischnopsis simillimus*-group, and *Anastatus* a clade of species that diversified from another, unnamed species group of *Zaischnopsis* (Gibson 1995, fig. 518). *Zaischnopsis* represents a paraphyletic taxon under either hypothesis, but all three names were retained as valid because synonymy of the three names would result in a morphologically extremely diverse taxon that would be undefinable except by exclusion.

Biology. Host associations are known for three extralimital species. *Zaischnopsis locustae* was reared from the eggs of an "unidentified Locustidae" (= Orthoptera: Acrididae) in Indonesia (Java) (Girault 1919), and *Z. usingeri* was reared from eggs of an "unidentified katydid" (Orthoptera: Tettigoniidae) in Guam (Fullaway 1946). Narendran et al. (2004) also reported *Z. biharensis* was obtained from lac insect encrustations (Homoptera: Kerridae) in India, though they provided no additional information. Label data for species of *Zaischnopsis* from America north of Mexico indicate either meadow katydids (Tettigoniidae: Conocephalinae) or wood-boring Coleoptera (Buprestidae, Scolytidae) as hosts. However, many of the latter records are only associations with beetle-infested trees rather than verified rearings from specific beetle hosts.

Key to females of *Zaischnopsis* in America north of Mexico

1 Forewing broadly infuscate between about parastigma and apex of postmarginal vein except for triangular hyaline region behind length of marginal vein (Fig. 7); legs with femora through tarsi dark except for white spot dorsally within basal half of metatibia. ..... *Z. phalaros* sp. nov.

– Forewing infuscate beyond level of parastigma or gradually lightened distally, but either with symmetrical anterior and posterior hyaline spot or hyaline cross-band encompassing apex of marginal vein and base of stigmal vein (Figs 5, 6); legs or at least tarsi more extensively light coloured than described above. 2

2(1) Forewing with complete hyaline cross-band (Fig. 6), or if with very narrowly separated anterior and posterior hyaline spots then face, including entire scrobal depression, reticulate (Figs 8, 11); interantennal region with setae unmodified and separated (Fig. 8). 3

– Forewing with distinctly separate anterior and posterior hyaline spots (Fig. 5), or if spots narrowly connected then scrobal depression largely (Fig. 9) or entirely (Fig. 10) smooth and lustrous, and interantennal region often with dense lanceolate setae forming silvery-white reflective patch (Figs 9, 10). 5

3(2) Ovipositor sheath exserted for distance only about equal to length of syntergal flange; metatibia with about basal half white and apical half brown; flagellum with apical segments quadrate to slightly transverse (Fig. 1); head with occiput evenly rounded from vertex. ..... *Z. brachystylata* sp. nov.

– Ovipositor sheath exserted for distance at least equal to one-quarter length of gaster; metatibia usually dark, sometimes orange-brown to entirely orange basally but not conspicuously bicoloured; flagellum with all segments longer than wide (Fig. 4); head with occiput comparatively flat and angled relative to vertex from level of posterior ocelli. 4

4(3) Mesosoma and legs excluding tarsi orange; ovipositor sheath uniformly yellowish. ..... *Z. erythrothorax* sp. nov.

– Mesosoma dark with metallic lustre under some angles of light and legs excluding tarsi largely dark; ovipositor sheath usually with broad subapical dark band but at least with distinctly lighter tip. ..... *Z. xanthocola* sp. nov.

5(2) Scutellar-axillar complex yellowish or orange basally and/or exserted portion of ovipositor sheath yellow; scrobal depression extensively reticulate dorsally (Fig. 9); metacoxa laterally setose, at least medially (Fig. 21). ..... *Z. bouceki* sp. nov.

– Scutellar-axillar complex entirely dark and exserted portion of ovipositor sheath either almost entirely dark or distinctly banded; scrobal depression entirely smooth and lustrous (Fig. 10); metacoxa laterally with distinct mediolongitudinal bare band (Fig. 23). 6

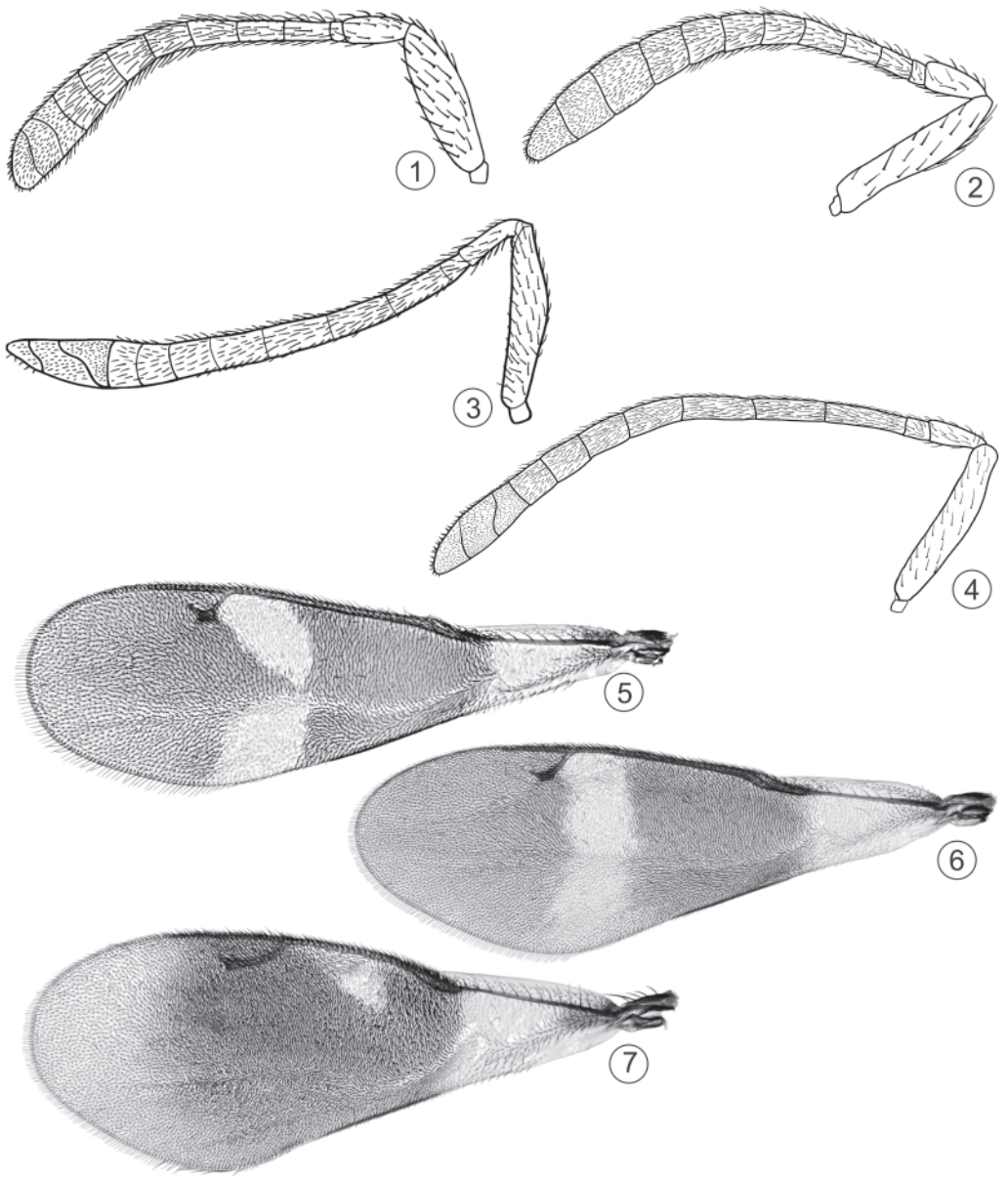
6(5) Ovipositor sheath dark except for tip and exserted beyond apex of syntergal flange by distance about equal to length of metatibia; syntergum in lateral view with dorsal surface comparatively flat (Fig. 27) and in dorsal view with large, extensively setose flange (Fig. 28). ..... *Z. melanostylata* sp. nov.

– Ovipositor sheath usually whitish basally and apically, but if dark except for tip then exserted beyond apex of syntergal flange for distance equal to less than half length of metatibia; syntergum in lateral view with anterodorsal surface distinctly angled relative to flange (Fig. 29) and in dorsal view flange smaller and less conspicuously setose (Fig. 30). ..... *Z. coenotea* sp. nov.

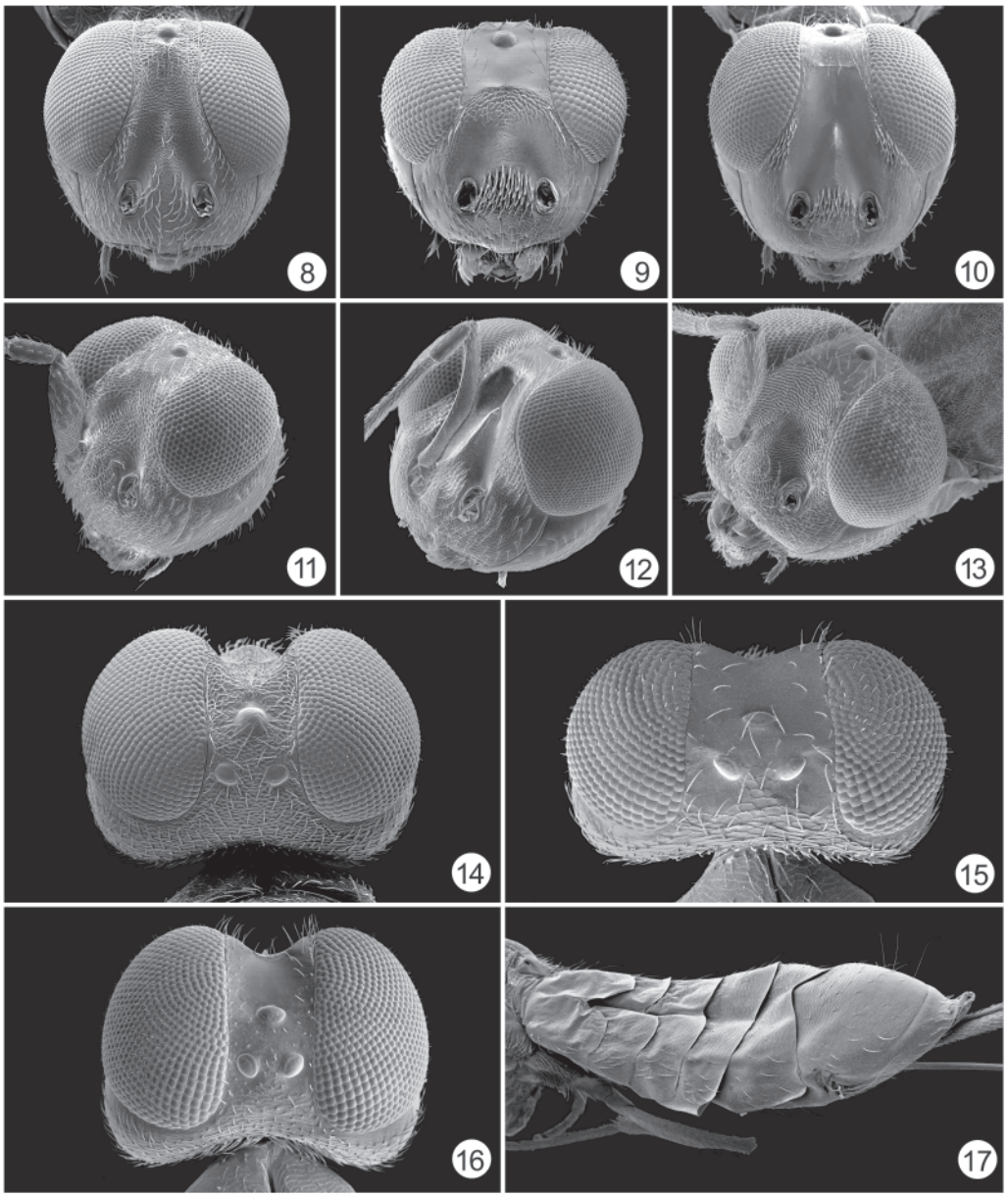
Zaischnopsis bouceki sp. nov.

(Figs 2, 5, 9, 15, 17, 20, 21, 25, 32)

Type material. Holotype female – "[USA] FL, Liberty Co., Torreya St. Pk, 8.X.1980, 8023, Masner & Bowen" (CNCI Type No. 22893) [point-mounted; entire]. Paratypes (381 females) – CANADA: **Ontario**: Ancaster, 43°15'N 80°00' W, bush/prairie, 21–28.VIII.95, B. DeJonge (1). Rondeau Prov. Pk, 1.IX.79, LM & H. Goulet (1). *Essex Co.*, Point Pelee Natl. Pk, Visitor Centre, 27.VIII–5.IX.00 (1 DEBU), 5–26.IX.00 (3 DEBU), O. Lonsdale. Toronto, E. Brule Pk, 3.VIII.98 (2 ROMT), 16.VIII.98 (2 ROMT), S. Libenson. USA: **California**: *San Bernardino Co.*, 1 mi. N. Big Bear City, Road JN09, 16.VI.88, R.H. Velton (2). **Connecticut**: *New Haven Co.*, Branford, 31.VIII.37, D.S. Riggs (1 USNM). **District of Columbia**: Washington, 3.IX.52, R. Boettcher (1 USNM). **Florida**: *Alachua Co.*, San Felasco Hammock St. Preserve, 15.VII–31.VIII.87, BRC (1). Gainesville, 30.X.83 (4), 19–30.X.84 (2), 14–26.XI.84 (3), 25.VI – 20.XI.87 (13), 1.VI–20.VIII.88 (2), DBW; 24.VI – 1–15.IX.87, JW (3); VI–VII – 21.X–18.XI.87, BRC (18); 25.X.76, P.M. Choate & R.E. Woodruff (1 FSCA). Gainesville, Doyle Conner Bldg., 19.X.71, HW & CA (1 FSCA). Gainesville, 610 N.W. 54 Ter., 30.XI.94, LS (1 FSCA). Gainesville, 9 mi. N.W., UF Hort. Unit – 5R 232, 13–22.VII.77, HG (1 FSCA). *Brevard Co.*, Malabar, Malabar Rd, 12.XII.99–2.I.00, PR & ZP (1 UCFC); 24.VII–19.VIII.00 (1 UCFC), 25.XI–10.XII.00 (1 UCFC), PR, ZP & SF. Titusville, SR 405, 14–28.IX – 16–31.X.00 (4 UCFC), 21.III–4.IV – 11–25.VII.01 (5 UCFC), PR, ZP & SF. *Miami-Dade Co.*, Everglades Nat. Pk, Royal Palm Hammock, VII.81 (3), 2.V–2.VIII.85 (1), SJP. S. Miami, Old Cutler Hammock Pk, 10.XII.86, Klimaszewski & SJP (1); S. Miami, 7900 S.W. 176 St., Old Cutler Hammock, 21.II–1.VI.86, SJP (1). *Flagler Co.*, Crescent City, 7.VI.? (1 USNM). *Highlands Co.*, Archbold Biol. Stn, 24.VIII.79, HW (1 FSCA). *Indian River Co.*, Bradenton GCREC, XII.87, VG (1). Vero Beach, 5 mi. S., 26.VII.83 (1 FSCA), 13–23.IX.83 (1 FSCA), JF. *Liberty Co.*, Torreya St. Pk, 7–8.X.80, M&B (14). *Monroe Co.*, Big Pine Key, Watsons Hammock, 3.III–29.IV.85 (1), 23.II–3.VI.86 (1), SJP. Everglades N. Pk, Royal Palm Hammock, 1.XI.84–3.III.85, SJP (3). Fleming Key, 12.VI.90, H.E. Williams & HW (1 FSCA). No Name Key, 4.III–29.IV.85 (1), 19.XI.85–26.II.86 (1), SJP. *Orange Co.*, Lk Tibet-Butler Preserve, 30.VII.96, SF (1 UCFC). Orlando, 5.VII.96 (1 UCFC), 9.V – 17.XI.97 (11 UCFC), SF; 23.III – 5.X.99, PR & SF (30 UCFC); 11.X – 14.XII.99, PR, TSM & SF (8 UCFC); 31.V – 2.VII.02, SF & TS (3 UCFC). Orlando, MacKay Tract, 26.VII.99, PR & SF (1 UCFC). Walt Disney World, 14–21.VII.98 ZP & SF (1 UCFC). *Sarasota Co.*, Myakka River St. Pk, Oak Hammock, 25.VI–3.VIII.81, SJP (1). *Seminole Co.*, 2.5 mi. N. Astor, 18.V – 16.VI.00 SF & TS (5 UCFC). Econ Wild. Area, 4.III.00, TSM (1 UCFC), 29.IV – 22.X.00, TSM, PR & SF (12 UCFC). Longwood, 15–30.IV.75 (1), 1–16.IV.75 (1), W. Mason. Lower Wekiva River St. Preserve, Burn Zone LW-5, S39 T19S R29E, 9.VI – 18.VIII.01, PR & SF (4 UCFC). Wekiwa Springs St. Pk, Burn Zone, 43/31, S22 T20S R28E, 16.IX – 18.XI.01, PR & SF (10 UCFC). *St. Johns Co.*, Fort Caroline, 13.X.80, M&B (1). **Georgia**: *Clarke Co.*, nr Athens, 15.IX.78, JH, ex. *Scolytus multistriatus* (3 USNM). 33°54'N 83°15'W, 8–15.VII.92 (7), 7–14.X.92 (1), JP. *Forsyth Co.*, Forsyth, 3–10.VII.71, F.T. Naumann (1). **Illinois**: *Champaign Co.*, U. of Ill. South Farms, 21.VIII.81, SH (1 UCDC). *Effingham Co.*, 5.5 mi. W. Mason, 7.IX.83, JDP (1). **Indiana**: *Knox Co.*, Vincennes, 16VIII.57, D.W. Hamilton (1 USNM). **Louisiana**: *Allen Parish*: Elizabeth, IV.64, XI.66, L.S. Packard, w. *Dendroctonus frontalis* (2 USNM). Oakdale, 17.VII.25, C.K. Finger (1 USNM). *Grant Parish*, Latt Lake uplands, 48 km. N. Alexandria, 1–16.VI.98, A. Brazeel & NS (1 UCDC). *St. Tammany Parish*, Covington, 6–21.VI.98, NS & M. Devall (1UCDC). **Maryland**: *Calvert Co.*, Chesapeake Beach, 10.VIII.23, J.R. Malloch (1 USNM). Prince Frederick, 20.VIII.86 (1), 25.VIII.86 (1), MS; 7 km. S., 24.IX.87, BRC (1). Port Republic, VIII–IX.86, MS & Monroe (1). *Montgomery Co.*, Cabin John, 7.IX.03, T. Pergande (1 USNM); 7.IX.10, R.M. Fouts (1 USNM). Plummers Is., 9.IX.09, E.A. Schwarz (1 USNM); 22.VIII.14, R.C. Shannon (1 USNM); 14.IX.14, H.S. Barber (1 USNM); 1.IX – 22.X.50, KK (17 USNM). *Prince Georges Co.*, Beltsville, USDA Res. Center, 17.IX–8.X.90, G.S. Stack (2). Patuxent Wildlife Reserve, 11.IX.99, JN (3 BMNH). **Michigan**: *Clinton Co.*, 22.IX.56, RD (1 USNM). *Gladwin Co.*, 23.VIII.58, RD (1 USNM). *Midland Co.*, 17.IX.56 (3 USNM), 20.VIII.58 (1 USNM), RD. *Wayne Co.*, Belleville, 19.VII.04, lab reared from eggs of *A. planipennis* collected from Willow Park, H-P. Liu (1). **Mississippi**: *Bolivar Co.*, Dahomey Natl. Wildlife Refuge, Hwy 446 19 km. W. Boyle, 33°42'N 90°54'–56'W, 7–20.VII – 16.IX–1.XI.97 (4 UCDC), 21.VI–5.VII.98 (3 UCDC), 6–20.VII.98 (1 UCDC), NS. *Issaquena Co.*, 2.X.80, M&B (1). *Washington*



Figs 1–7. 1–4, antenna: 1, *Zaischnopsis brachystylata* sp. nov.; 2, *Z. bouceki* sp. nov.; 3, *Z. phalaros* sp. nov.; 4, *Z. xanthocola* sp. nov. 5–7, photograph of forewing: 5, *Z. bouceki* sp. nov.; 6, *Z. xanthocola* sp. nov.; 7, *Z. phalaros* sp. nov.



Figs 8–17. 8–10, head (frontal): 8, *Zaischnopsis xanthocola* sp. nov.; 9, *Z. bouceki* sp. nov.; 10, *Z. coenotea* sp. nov. 11–13, head (frontolateral): 11, *Z. brachystylata* sp. nov.; 12, *Z. melanostylata* sp. nov.; 13, *Z. phalaros* sp. nov. 14–16, head (dorsal): 14, *Z. xanthocola* sp. nov.; 15, *Z. bouceki* sp. nov.; 16, *Z. coenotea* sp. nov. 17, gaster: *Z. bouceki* sp. nov.

Co., Delta Exptl. For. nr Stoneville, 33°27'–28'N 90°54'–55'W, 26.IX–1.XI.97 (1 UCDC), 21.VI–5.VII.98 (2 UCDC), 1–15.IX.98 (2 UCDC), NS. Leroy Percy St. Pk, 8 km. W. Hollandale, 33°01'N 90°56'W, 21.VI–5.VII.98, NS (1 UCDC). **Missouri**: *Boone Co.*, Columbia, 24.VII.66, Williams, wood infested with *Scolytus multistriatus* (1 USNM); 7.VIII.66, ex. bark dead elm (1 USNM). *Greene Co.*, Springfield, 19.VII.83, JDP (1 UCRC). *Wayne Co.*, Williamsville, X–XI.68 (1), 1–5.VII.69 (1), 17–29.V.70 (1), VII.87 (1), JB. **North Carolina**: *Jackson Co.*, Whiteside Mt. nr Highlands, 160 m., VII–13.IX.87, BRC (2). *Northampton Co.*, 7 km. S. Jackson, S. Bald Cypress Swamp, 23.IX.87, BRC (2). **Texas**: S.-E. Texas, IV–VI.63, RT, S. Pine Beetle (1 USNM). *Bastrop Co.*, Bastrop St. Pk, 10–22.VIII.90, R. Wharton (1). *Hardin Co.*, VIII.61, RT, Hopkins No. 46935 [associated with *Dendroctonus frontalis* and *Ips avulsus* in loblolly pine bolts] (1 USNM). **Virginia**: *Clarke Co.*, Univ. Va. Blandy Exptl. Farm, 2 mi. S. Boyce, 8–27.VIII – 29.IX–22.X.90 (17), 21.VI–1.VII.91 (1), 14–30.IX.91 (3), 2–15.VII.94 (1), 3–21.IX.94 (2), 9–25.VII – 4–30.X.95 (4), DS. *Essex Co.*, 1 mi. S.E. Dunnsville, 17.IX–10.X.91 (21), 11.X–5.XI.91 (4), 12–26.VII.92 (4), 17.VII–2.VIII.96 (2), DS. *Fairfax Co.*, nr Annandale, 21.IX.81 (1 USNM), 5–7.VIII.83 (1 USNM), 23–29.VIII.87 (1), 6–12.IX.87 (1), 17–23.VII – 18–24.IX.88 (4; 1 USNM), 30.VII–5.VIII.89 (1), 20–26.VIII.89 (1), DS. Annandale Rd. Holmes Run, 23.VII.81, GG (1 UCRC). Falls Church, 21.VII.81, GG (1 UCRC). *Henrico Co.*, Richmond, 16.IX.84, SH (1 UCDC). *Louisa Co.*, 4 mi. S. Cuckoo, 3–24.IX.87 (3), 12–23.VIII – 7.X–4.XI.88 (11; 1 USNM), 23.VIII–11.IX.89 (3), 12.IX–6.X.89 (1 USNM), K&S.

DESCRIPTION OF HOLOTYPE. Length, including ovipositor sheath, 2.8 mm.

Head dark with metallic green lustre. Palpi yellow. Mandible yellowish basally and dark rufous apically. Antenna dark brown except scape yellowish-brown mesally. Scrobal depression with distinct dorsal margin separated from anterior ocellus by distance equal to about 3 ocellar diameters (Fig. 9); channel strongly reticulate; scrobes smooth and lustrous (Fig. 9). Lower face finely coriaceous. Interantennal region ventrally with dense, lanceolate, white setae forming reflective patch (Fig. 9); finely coriaceous above setae. Lower parascrobal region with scattered white setae not differentiated from other setae on face (Fig. 9). Frontovertex smooth and lustrous from scrobal depression to posterior ocelli (Fig. 9) and behind each posterior ocellus for about half length of vertex, but distinctly sculptured over posterior half of vertex and between posterior ocelli, with smooth region almost bare except for line of dark setae along inner orbit and with posterior half of vertex more extensively setose (Fig. 15); vertex evenly rounded into occiput and occiput setose and sculptured similar to posterior of vertex. Gena almost smooth and bare in triangular region formed between malar sulcus and outer orbit, but posteriorly more distinctly coriaceous-aciculate and with scattered white setae. Antenna (Table 1, Fig. 2) with scape spindle-shaped, the outer convex surface finely coriaceous and inner concave surface only extremely obscurely coriaceous, virtually smooth and lustrous; flagellum increasing distinctly in width toward clava and with apical funicular segments subquadrate.

Mesosoma brown with only very slight metallic green lustre on mesoscutum under some angles of light, except axillae and about anterior half of scutellum yellowish-orange. Legs brown with following yellowish to white: trochanters, trochantelli, fore- and middle knees and apices of tibiae, metatibia basally and apically, and all tarsi, with apical tarsal segments more distinctly yellowish. Forewing infuscate beyond base of parastigma except for distinctly separated oblique-oval anterior and posterior hyaline spot (Fig. 5). Mesoscutum (Fig. 20) quite shiny and sparsely setose, with medial and lateral lobes very finely coriaceous and posteromedial concave region smooth and lustrous; with brownish hairlike setae except lateral lobe mediolongitudinally and concave region except near posterior margin bare. Scutellar-axillar complex punctate-reticulate. Acropleuron with dense band of white lanceolate setae obscuring cuticle along anterodorsal margin to level slightly beyond base of tegula (Fig. 21). Metacoxa with dense, lanceolate, white setae dorso- and ventrolaterally, but largely bare medially except subapically. Propodeum (Fig. 25) with callus broadly bare posterior to spiracle, but setose anterior to and mesal to spiracle and with dense, spatulate, white setae posterolaterally; foramen separated from anterior margin medially by distance about equal to maximum diameter of spiracle, hence reticulate plical region transverse-rectangular.

Gaster brownish-cupreous with slight metallic green lustre laterally on terga posterior to Gt_3 and with syntergal flange yellowish. Syntergum in lateral view with flange distinctly reflexed relative to anterodorsal surface; in dorsal view flange slightly transverse, the basal width about 1.4× length and sides convergent to rounded posterior margin, with setae in band of 2 or 3 rows across base. Ovipositor sheath exserted beyond syntergal flange by about 0.2× length of gaster and about 0.5× length of metatibia, the protruding portion yellowish.

Variation. Females vary in length from about 1.6–2.9 mm, the smaller specimens are usually brown without distinct metallic lustre. The exserted portion of the ovipositor sheath is always entirely yellow, but varies in length from about 0.4–0.55× the length of the metatibia. Rarely, females have the scutellar-axillar complex only slightly lighter in colour basally than apically, some have the metatibia entirely white ventrally, and some have the hyaline spots on the forewing virtually touching, but at least the combined apical margin of the hyaline region is strongly angulate (Fig. 5). Some females also have the metacoxa almost entirely setose laterally (Fig. 21) and sometimes yellowish-orange to whitish ventroapically along with the basal 1–3 sterna.

Etymology. Named in honour of Zdeněk Bouček, the world's foremost chalcidologist and father of modern chalcidology.

Distribution. Widely distributed from southern Ontario throughout eastern and midwestern North America south to states bordering the gulf of Mexico (Fig. 32). Two females apparently were also collected from a single site in southern California (Fig. 32, insert).

Biology. Likely a parasitoid of eggs of wood-boring Coleoptera. Females collected in Georgia and Missouri suggest the elm bark beetle, *Scolytus multistriatus* (Marsham, 1802), and other females collected in Louisiana and Texas suggest the southern pine beetle, *Dendroctonus frontalis* Zimmerman, 1868 and the small southern pine engraver, *Ips avulsus* (Eichhoff, 1868) (Scolytidae), as possible hosts. A single female was also obtained from an egg mass of the emerald ash borer, *Agrilus planipennis* Fairmaire, 1888 (Buprestidae) that was removed and reared along with surrounding bark from an ash tree in Michigan. This apparent host record may result from unrecognized contamination by an egg of some insect other than *A. planipennis* because it was the only individual recovered after two years of rearing field-recovered egg masses of *A. planipennis* for parasitoids.

Remarks. The sculpture pattern of the scrobal depression (Fig. 9) is unique for females of *Z. bouceki* sp. nov. among species known from America north of Mexico. Females are usually more readily identified by their distinctly bicoloured scutellar-axillar complex in combination with entirely yellow ovipositor sheaths. Among previously described species, *Z. bouceki* sp. nov. is most similar to *Z. albomaculata*, described from St. Vincent, West Indies. Females of *Z. albomaculata* are differentiated from *Z. bouceki* sp. nov. by colour, including having the procoxa, mesocoxa and metatibia yellow, as well as by having the ovipositor sheath at least as long as the metatibia and with a broad subapical dark band, the scrobal depression much more finely sculptured dorsally, and the frontovertex narrower. In *Z. albomaculata* the distance between the eyes is about 0.25× compared to 0.33× the head width and the posterior ocellus is separated from the inner orbit by only about one-quarter its own minimum diameter compared to about the same distance as its minimum diameter in *Z. bouceki* sp. nov. (Fig. 15).

Zaischnopsis brachystylata sp. nov.

(Figs 1, 11, 35)

Type material. Holotype female – "[USA] LA: Chicot St. Pk., Evangeline Parish, 6–14.VII.1971, G. Heinrich" / "CNC JDR-sem 2003–024" (CNCI Type No. 22894) [point-mounted; left middle leg and antenna separated and glued to point, the antenna missing beyond Fl_5]. Paratype female – USA: **Virginia**: *Essex Co.*, 1 mi. S.E. Dunnsville, 17.VIII–6.IX.94, DS (USNM).

Description of holotype. Length, including ovipositor sheath, 2.4 mm.

Head dark with metallic green lustre except lower parascrobal region and frontovertex from apex of interantennal region to near posterior ocelli with bronze lustre. Palpi yellow. Mandible yellowish basally and dark rufous apically. Antenna brown except inner surface of scape ventrally and outer surface more extensively yellowish-brown. Scrobal depression without distinct dorsal margin, but dorsally with a few brownish setae separated from anterior ocellus by distance about equal to 2 ocellar diameters (Fig. 11). Face, including scrobal depression, reticulate (Fig. 11). Lower face, interantennal region and lower parascrobal region with scattered white lanceolate setae. Frontovertex coriaceous-reticulate between scrobal depression and posterior ocelli and with scattered dark setae (Fig. 11); vertex evenly rounded into occiput and both vertex and occiput uniformly setose and more distinctly reticulate than frontovertex. Gena finely coriaceous with scattered white setae posterior to malar sulcus (Fig. 11). Antenna (Table 1, Fig. 1) with scape spindle-shaped, the outer and inner surfaces finely coriaceous; flagellum increasing distinctly in width toward clava and with apical funicular segments quadrate to slightly transverse.

Mesosoma brown with slight metallic green lustre dorsally under some angles of light. Legs brown with following yellowish to white: trochanters, trochantelli, middle knee, apex of mesotibia, about basal half of metatibia excluding extreme base, and tarsi except for apical 1 or 2 segments. Forewing infuscate beyond base of parastigma except for large, oblique, anterior and posterior hyaline spot, the spots virtually contiguous, with combined basal margin slightly curved but combined apical margin conspicuously angulate (cf. Fig. 5). Mesoscutum (cf. Fig. 18) distinctly reticulate except for posteromedial concave region, and almost uniformly setose except lateral lobe bare mediolongitudinally, the setae brownish and hair-like except slightly lanceolate and white along notaular furrows. Scutellar-axillar complex punctate-reticulate. Acropleuron with white, slightly lanceolate, separate setae not completely obscuring cuticle in band along anterodorsal margin almost to level of base of fore wing (cf. Fig. 19). Metacoxa uniformly setose laterally. Propodeum with callus setose anterior to and mesal to spiracle but otherwise bare except posterolaterally; foramen incurved virtually to anteromedial notch, hence reticulate plical region strongly transverse (cf. Fig. 24).

Gaster brown except for yellow syntergal flange. Syntergum in lateral view with flange reflexed at almost right angle to convex anterodorsal surface (cf. Fig. 29); in dorsal view flange short and transverse, about twice as wide as long with broadly rounded posterior margin, and with 2 rows of setae across base. Ovipositor sheath exserted beyond syntergal flange by distance only about equal to length of flange, the protruding portion yellowish.

Variation. The body regions described as brown are light brown for the holotype and dark brown for the paratype, which also has a more distinct metallic lustre on the mesonotum and on the posterior gastral terga, and the hyaline cross-band of the forewing more distinct.

Etymology. The species epithet is derived from the Greek words *braches* (short) and *stylos* (pillar), in reference to the only slightly exserted ovipositor sheath.

Distribution. Currently known only from Virginia and Louisiana (Fig. 35).

Biology. Unknown.

Remarks. Females most closely resemble those of *Zaischnopsis bouceki* sp. nov. in antennal structure and colour pattern of the ovipositor sheaths, but are readily differentiated by a uniformly sculptured scrobal depression, finely but distinctly sculptured frontovertex, and uniformly coloured scutellar-axillar complex.

***Zaischnopsis coenotea* sp. nov.**

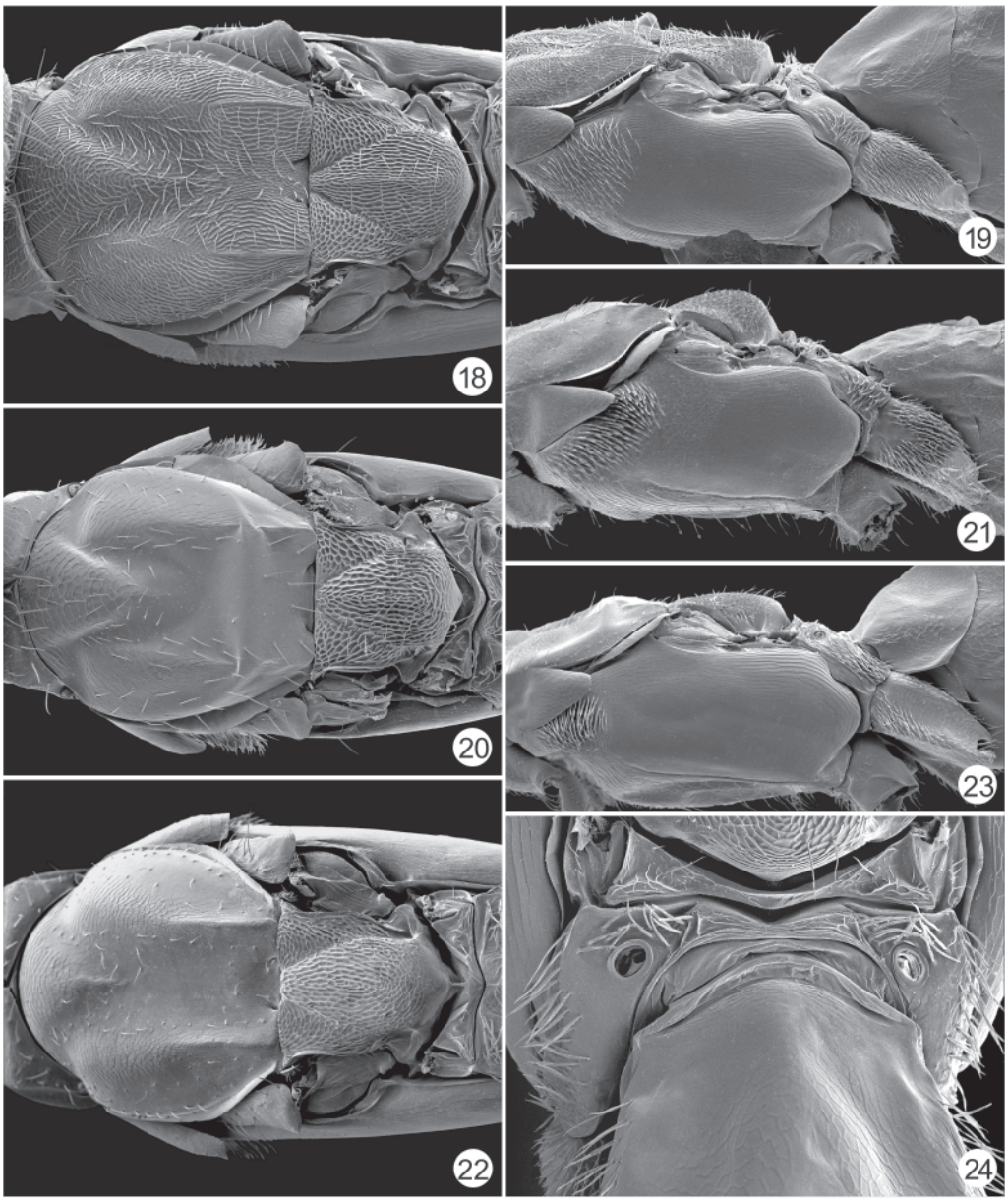
(Figs 10, 16, 22, 23, 26, 29, 30, 33)

Type material. Holotype female – "USA: MO, Williamsville, 8–31.VIII.1988, J.T. Becker, MT" (CNCI Type No. 22895) [point-mounted; entire]. Paratypes (380 females) – USA: **Florida**: *Alachua Co.*, 29°44'N 82°27'W, 21–

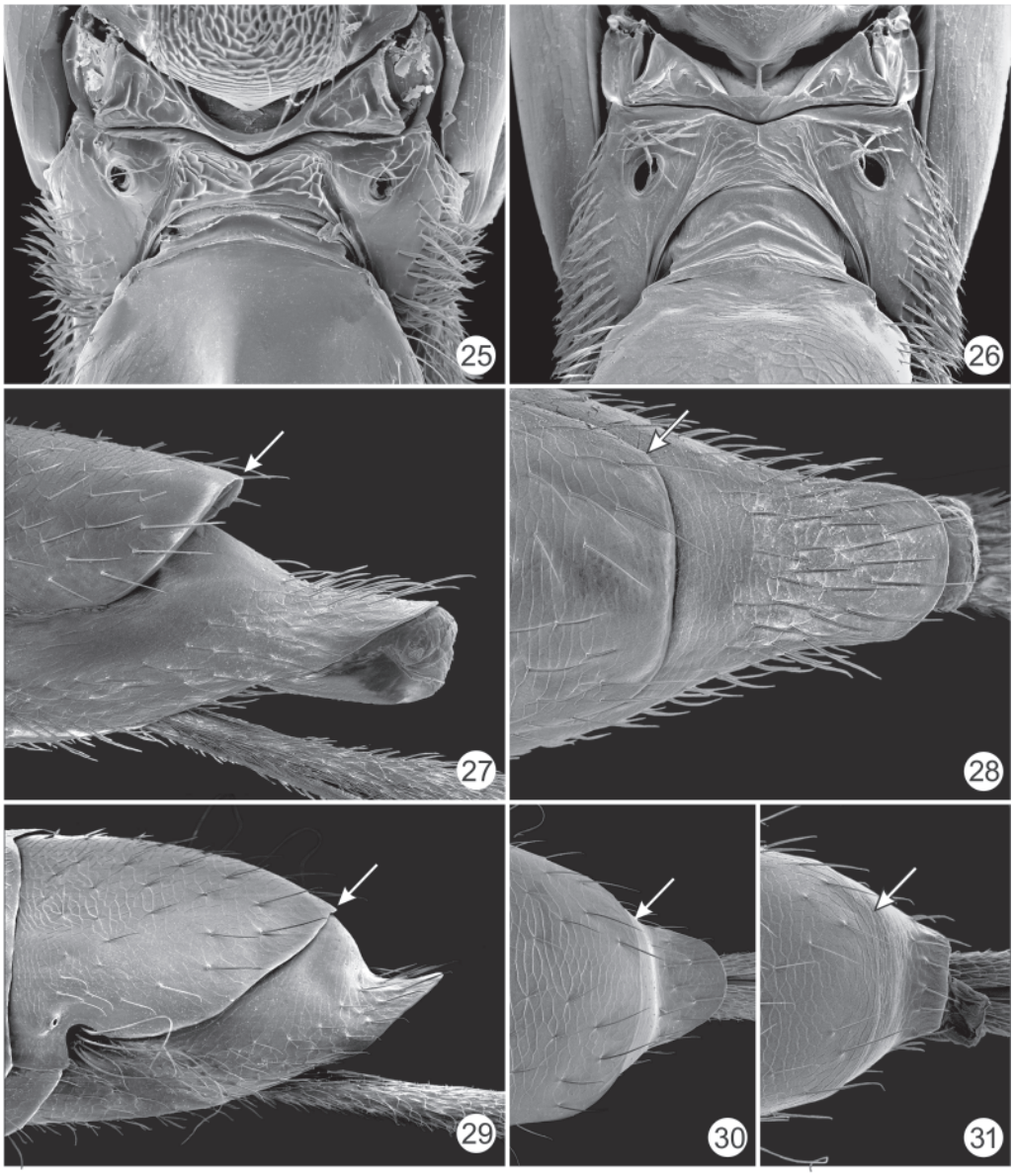
28.VII.93, JP (1). Austin Carey Forest, 16–20.VIII.76, G.B. Fairchild (1 FSCA). Gainesville, 17–24.VII.87, BRC (2); 13–18.V – 15.IX–20.X.87 (4), 14–21.V – 1.VI–20.VIII.88 (4), DBW; 10–17.IV.86, G. Gibson (3); 15–23.IV.86, JL (1); 1–31.V.87 (3), 1–23.VI.87 (1), JW; 4.V.87, LM (2). Gainesville, Beville Heights, 16–31.X.86, LS (1 FSCA). Gainesville, 9 mi. N.W., UF Hort. Unit, 5R 232, 1.IV.77, HG (1 FSCA). Pierce's Homestead, S9-T10S-R18E, 7.X.73 (1 FSCA), 9.V.74 (1 FSCA), W.H. Pierce. *Brevard Co.*, Titusville, SR 405, 15–31.VIII – 31.X–25XI.00 (6 UCFC), 4–18.IV.01 (1 UCFC), 16–30.V.01 (1 UCFC), PR, ZP & SF. *Miami-Dade Co.*, 7900 S.W. 176 St., Old Cutler Hammock, 21.II–1.VI.86, SJP (4). Chekika St. Rec. Area, Grossman Hammock, 1.XI.84–3.III.85, SJP (1). Old Cutler, 1.VII.94, S. Peck (1). *Clay Co.*, Golden Head Branch St. Pk, 30.X.94, LS & C. Porter (1 FSCA). *Jefferson Co.*, Monticello, Univ. Fl. N. Fl. Res. & Educ. Center, 30.XI.01, R. Mizell (1 UCRC). *Highlands Co.*, Lake Placid, Archbold Biol. Stn, 4–10.VIII.87, BRC (1). *Indian River Co.*, 5 mi. S. Vero Beach, 18–29.I.84, JF (1 FSCA). *Leon Co.*, Tall Timber Res. Stn, 18.VI.70, D. Harris (1 FSCA). *Levy Co.*, Manatee Springs St. Pk, 3–5.VI.78, N.F. Johnson (1). *Liberty Co.*, Torreya St. Pk, 8.X.80, M&B (3). *Manatee Co.*, Bradenton, 27.X–6.XII.85, C.M. Yoshimoto & H. Patel (1). *Marion Co.*, Lake Eaton, 10.IX–2.X.75, JW (1 FSCA). Ocala Nat. Forest, Alexander Spring, 18.IX.87, LM (1). *Monroe Co.*, Everglades Nat. Pk, 1.5 km. N.W. Royal Palm, 2.V–2.VIII.85, SJP (2). *Orange Co.*, Orlando, 11.V.99 (1 UCFC), 7.VII.99 (1 UCFC), PR & SF; 14.V.91 (1 UCFC), 27.IX.96 (1 UCFC), 18.VI.97 (1 UCFC), 21.VIII.97 (1 UCFC), SF. Orlando, MacKay Tract, 25.I – 11.X.99, PR & SF (57 UCFC); 9.X I – 28.XII.99 (9 UCFC), 11.I.00 (7 UCFC), 25.I.00 (3 UCFC), TSM, PR & SF. Walt Disney World, 1–7.IV – 18.VIII–1.IX.98, ZP & SF (5 UCFC). Wekiwa Springs St. Pk, Burn Zone, 43/31, S22 T20S R28E, 13.IV.01, PR & SF (1 UCFC); WS-14a, S26 T20S R28E, 5.VIII.01, PR & SF (1 UCFC). *Seminole Co.*, 2.5 mi. N. Astor, 4.IV – 1.VI.00, SF & TS (14 UCFC). Econ Wild. Area, 14.VIII.00 (1 UCFC), 24.IX.00 (1 UCFC), T.Sm, PR & SF. Lower Wekiva River St. Preserve, Burn Zone, LW-5, S39 T19S R29E, 18.II – 30.IX.01, PR & SF (4 UCFC). Sanford, CFREC, VG (1). *Suwannee Co.*, Live Oak, 19.V.92, F.D. Bennett (1 FSCA). **Georgia**: *Charlton Co.*, Okeefinokee Swamp, Swanee Canal Rec. Area, 4.V.85, J.W. Jones (1). *Clarke Co.*, nr Athens, 15.IX.78, JH, ex. tree infested with *Scolytus multistriatus* (4 USNM). 33°54'N 83°16'W, 23–30.IX – 14–21.X.92 (3), JP. *McIntosh Co.*, Sapelo Is., 28.IV–9.V – 15.IX–15.XI.87 (12), CNC. **Illinois**: *Effingham Co.*, 5.5 mi. W. Mason, 7.IX.93, JDP (1). **Maryland**: *Calvert Co.*, 7 km. S. Prince Frederick, 24.IX.87, BRC (1). *Prince Georges Co.*, Patuxent Wildlife Reserve, 11.IX.99, JN (1 BMNH), 8–15.80, M. Schauff (1). **Mississippi**: *Washington Co.*, Stoneville Exptl. For., 33°27'N 90°55'W, 5–26.IX.97, NS (1 UCDC). **Missouri**: *Boone Co.*, 17.IX.68 (1 UCDC), 21.VI.70 (5 UCDC), FP; Columbia, 4–5.IX.68, FP (2 USNM). *Wayne Co.*, Williamsville, X–XI.68 (2), 10.IX–5.X.69 (1), VIII – 21.X–16.XI.87 (5), 8–31.VIII – 21.X–11.XI.88 (4), JB. **North Carolina**: *Northampton Co.*, 7 km. S. Jackson, 23.IX.87, Bald Cypress Swamp, BRC (4). **Virginia**: Alexandria (independent city), 514 N. Pickett St., 8.IX.01, P.&M. Arnaud, Jr. (1 CASC). *Arlington Co.*, Arlington, 7.IX.53, KK (1 USNM). *Clarke Co.*, Univ. Va. Blandy Exptl. Farm, 2 mi. S. Boyce, 28.VIII–11.IX – 29.IX–22.X.90 (9), 14–30.IX.91 (2), 22.IX–17.X.94 (2), 12.IX–3.X.95 (4), DS. *Essex Co.*, 1 mi. S.E. Dunnsville, 17.IX–10.X.91 (39), 11.X–5XI.91 (1), 3–23.IX.93 (3), 7–30.IX – 25.X–15.XI.94 (6), 5.X–5.XI.96 (3 USNM), DS. *Fairfax Co.*, nr Annandale, 16.VIII – 10–16.IX.87 (7; 4 USNM), 27.VIII–2.IX.88 – 18–24.IX.88 (7), 10–16.IX.89 (3), 19–23.IX.89 (1), 23–29.IX.90 (1), DS. *Louisa Co.*, 4 mi. S. Cuckoo, 21.VIII–2.IX – 25.I.X–20.X.87 (26; 4 USNM), 24.VIII–14.IX – 7.X–4.XI.88 (24), 23.VIII–11.IX.89 (3), 12.IX–6.X.89 (14; 1 USNM), K&S.

DESCRIPTION OF HOLOTYPE. Length, including ovipositor sheath, 3.3 mm.

Head dark with metallic green lustre. Palpi yellow. Mandible yellowish basally and dark rufous apically. Antenna dark brown, but scape with metallic green lustre under some angles of light. Scrobal depression with distinct dorsal margin separated from anterior ocellus by distance equal to 3 ocellar diameters; channel and scrobes smooth and lustrous (Fig. 10). Lower face finely coriaceous. Interantennal region ventrally with dense, lanceolate, white setae forming reflective patch; smooth and lustrous above setae (Fig. 10). Lower parascrobal region above level of torulus with dense, lanceolate, white setae in reflective patch (Fig. 10). Frontovertex smooth and lustrous between scrobal depression and posterior ocelli (Fig. 16), with line of dark setae along inner orbit and with a few scattered setae in ocellar triangle; vertex evenly rounded into occiput, and both vertex and occiput uniformly setose and distinctly sculptured. Gena finely coriaceous-aciculate with scattered white setae posterior to malar sulcus. Antenna (Table 1) with scape elongate spindle-shaped, the outer convex surface finely coriaceous and inner concave surface smooth and lustrous except dorsally; flagellum elongate-slender, increasing in width only slightly toward clava and with all funicular segments longer than wide (cf. Fig. 4).



Figs 18–24. 18, 19, *Zaischnopsis xanthocola* sp. nov., mesosoma: 18, dorsal; 19, lateral. 20, 21, *Z. bouceki* sp. nov., mesosoma: 20, dorsal; 21, lateral. 22, 23, *Z. coenotea* sp. nov., mesosoma: 22, dorsal; 23, lateral. 24, propodeum: *Z. xanthocola* sp. nov.



Figs 25–31. 25, 26, propodeum: 25, *Zaischnopsis bouceki* sp. nov.; 26, *Z. coenotea* sp. nov. 27, 28, syntergal flange, *Z. melanostylata* sp. nov.: 27, lateral; 28, dorsal. 29, 30, syntergal flange, *Z. coenotea* sp. nov.: 29, lateral; 30: dorsal. 31, syntergal flange (dorsal): *Z. xanthocola* sp. nov. (arrows point to posterior margin of penultimate tergum).

Mesosoma dark brown with slight metallic green lustre under some angles of light. Legs with coxae similar in colour to mesosoma, but otherwise dark brown except following white: trochantelli, fore- and middle knees, about basal half of metatibia dorsally and laterally except for extreme base, apices of all tibiae and all tarsi except apical 2 or 3 tarsal segments yellowish to brown. Forewing infuscate beyond base of parastigma except for distinctly separated oblique-oval anterior and posterior hyaline spot (cf. Fig. 5). Mesoscutum (Fig. 22) quite shiny and sparsely setose, with medial and lateral lobes very finely coriaceous and posteromedial concave region smooth and lustrous; with line of brownish hair-like setae along lateral margin of lateral lobe, along either side of longitudinal ridge of lateral lobe, and with single seta posteromedially in concave region. Scutellar-axillar complex punctate-reticulate. Acropleuron with oval patch of dense, lanceolate, white setae obscuring cuticle along anterodorsal margin to level about equal with posterior margin of prepectus (Fig. 23). Metacoxa with dense, lanceolate, white setae ventrolaterally and dorsally, but broadly bare mediolongitudinally (Fig. 23). Propodeum with callus broadly bare posterior to spiracle, but setose anterior to and mesal to spiracle and with dense, spatulate, white setae posterolaterally; foramen separated from anterior margin medially by distance about equal to maximum diameter of spiracle, hence reticulate plical region transverse-rectangular (Fig. 26).

Gaster brownish-cupreous except with metallic green reflection basally on Gt_1 and laterally on terga posterior to Gt_3. Syntergum in lateral view with flange reflexed at almost right angle to convex anterodorsal surface (Fig. 29); in dorsal view with flange slightly transverse, the basal width about 1.4× length and sides convergent to rounded posterior margin, with setae in band of 2 or 3 rows across base (Fig. 30). Ovipositor sheath exserted beyond syntergal flange by about 0.25× length of gaster and about 0.66× length of metatibia, the protruding portion banded, with tip and region immediately beyond syntergal flange white, but dark subapically.

Variation. Females vary in length from about 1.6–3.4 mm, with the smallest individuals having the ovipositor sheath exserted only about 0.1× the length of the gaster and about 0.25× the length of the metatibia, and then sometimes entirely or almost entirely dark except for a whitish tip. Some females have an elongate hyaline region behind about the basal half of the marginal vein, with this region sometimes also having white setae. Colour pattern of the metatibia is highly variable, usually with a white stripe or a broad medial white band, but sometimes entirely dark, or almost entirely white, or dark basally and white apically. The latter colour pattern is correlated with an entirely or largely white syntergal flange, but some females with a banded metatibia also have a partly or entirely white syntergal flange.

Etymology. The species epithet is derived from the Greek word *koinotes* (sharing in common), in reference to females of this species being diagnosed by a combination of features rather than by any unique features.

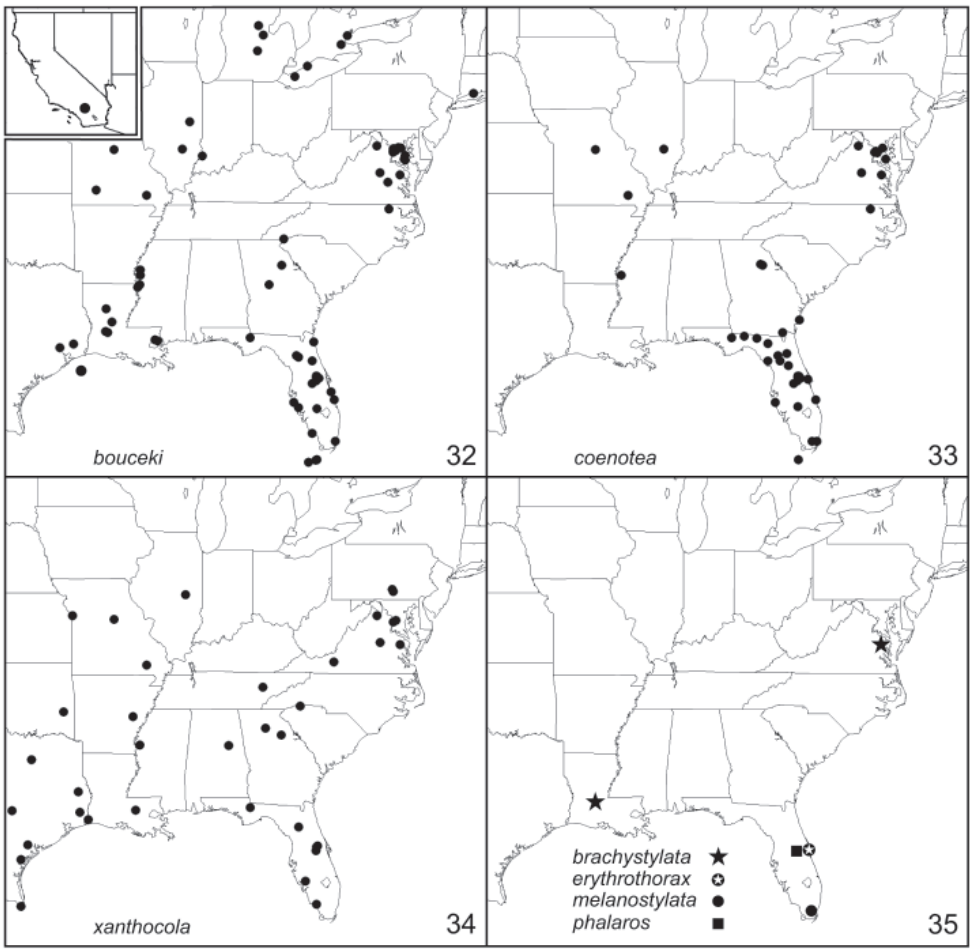
Distribution. Throughout the eastern United States south of about 40° N and east of about 93° W (Fig. 33).

Biology. Females collected along with those of *Zaischnopsis bouckei* sp. nov. from trees infested with *Scolytus multistriatus* near Athens, Georgia, represent the only known host association.

Remarks. Females are very similar to those of *Zaischnopsis melanostylata* sp. nov., as discussed below.

Zaischnopsis erythrothorax sp. nov.
(Fig. 35)

Type material. Holotype female – "[USA] FL. Brevard Co., Titusville, SR 405, 15–31 August 2000, Z. Prusak, P.J. Russell, S.M. Fullerton" / "Enchanted Forest Sanct., White Trail, Xeric Oak Hammock, Malaise Trap" / "UCFC 0 083 295" (deposited in FSCA by permission of UCFC) [point-mounted; entire].



Figs 32–35. Distribution: 32, *Zaischnopsis bouceki* sp. nov.; 33, *Z. coenotea* sp. nov.; 34, *Z. xanthocola* sp. nov; 35, *Z. brachystylata* sp. nov., *Z. erythrothorax* sp. nov., *Z. melanostylata* sp. nov., *Z. phalaros* sp. nov.

Description of holotype. Length, including ovipositor sheath, about 5 mm.

Head with rufous lustre except lower face and gena around oral cavity lighter in colour, more distinctly orange. Palpi yellowish-orange except apical segment of maxillary palpus brown. Mandible yellowish-orange basally and dark rufous apically. Antenna dark brown except scape dark orange or similar in colour to face under some angles of light. Scrobal depression with upper margin apparently extending to anterior ocellus (see Remarks). Face (cf. Fig. 8) more or less uniformly sculptured, with lower face coriaceous-reticulate, scrobal depression more reticulate-rugulose, and vertex and occiput micro-reticulate. Interantennal region and lower parascrobal region with scattered white lanceolate setae (cf. Fig. 8). Frontovertex and occiput with inconspicuous whitish to orange hair-like setae, the frontovertex flat and abruptly angled relative to comparatively flat and extensive occiput at level of anterior margin of posterior ocelli. Gena finely coriaceous-

aciculate with scattered white setae posterior to malar sulcus. Antenna (Table 1) with scape elongate spindle-shaped, the outer surface coriaceous and inner surface coriaceous-strigose; flagellum elongate-slender, increasing in width only slightly toward clava and with all funicular segments longer than wide (cf. Fig. 4).

Mesosoma orange except for black spot on pronotum anterior to mesothoracic spiracle. Legs similar in colour to mesosoma except mesotarsus and basal 2 segments of metatarsus white. Forewing infuscate beyond base of parastigma except for almost straight hyaline cross-band extending almost to posterior margin (cf. Fig. 6). Mesoscutum entirely reticulate and setose except lateral lobe bare mediolongitudinally (cf. Fig. 18), the setae slightly lanceolate and white along notaular furrows and posteromedial concave region, but hair-like and white to orange depending on angle of light on medial lobe and outer surface of lateral lobe. Scutellar-axillar complex punctate-reticulate. Acropleuron anteriorly with white lanceolate setae in triangular region extending to level about equal with middle of tegula, the separate setae not completely obscuring surface of cuticle (cf. Fig. 19). Metacoxa uniformly setose laterally. Propodeum with callus broadly bare posterior to spiracle, but setose anterior to and mesal to spiracle and with dense, spatulate, white setae posterolaterally; foramen incurved virtually to anteromedial notch, hence reticulate plical region strongly transverse (cf. Fig. 24).

Gaster dark brown except with rufous lustre basally on Gt_1 and syntergal flange yellowish-hyaline. Syntergal structure partly concealed by preceding tergum, but flange apparently transverse with at least 2 rows of setae across base. Ovipositor sheath exserted beyond syntergal flange by distance similar to length of gaster and about 1.4× length of metatibia, the protruding portion uniformly yellow.

Etymology. The species epithet is derived from the Greek words *erythros* (red) and *thorax*, in reference to the distinctive mesosomal colour pattern.

Distribution. Known only from central Florida (Fig. 35).

Biology. Unknown.

Remarks. Although the holotype is entire it was air-dried. Consequently, the gaster and mesoscutum are somewhat shrivelled and collapsed dorsally. Because of this the description of the gaster and relative length of the ovipositor sheath is not as exact as for other descriptions. It is also possible that the head is slightly collapsed dorsally between the eyes so that the described flat vertex, scrobal depression extending to the anterior ocellus, and abrupt angle between the vertex and occiput are artifacts of preservation. The single known female is very similar to females of *Zaischnopsis xanthocola* sp. nov. in structure, setation and sculpture, but differs conspicuously in colour.

Zaischnopsis melanostylata sp. nov.

(Figs 12, 27, 28, 35)

Type material. Holotype female – "[USA] FLA: Dade Co.: Chekika St. Rec. Area, 50 km SW Miami, 28.VII–15.XI.85, S&J Peck, Grossman Hammock For., malaise-FIT" / "CNCI JDR-sem 2003-025" (CNCI Type No. 22896) [point-mounted; entire but left antenna separated and glued to point]. Paratype female – same data as holotype except collected 1.XI.84–3.III.85.

Description of holotype. Length, including ovipositor sheath, about 4 mm.

Head dark with metallic green lustre. Palpi yellow. Mandible yellowish basally and dark rufous apically. Antenna dark brown, but scape with limited metallic green lustre under some angles of light. Scrobal depression with distinct dorsal margin separated from anterior ocellus by distance equal to 2 ocellar diameters; channel and scrobes smooth and lustrous (Fig. 12). Lower face strongly coriaceous to granular-coriaceous. Interantennal region with patch of dense, lanceolate, white setae ventrally; smooth and lustrous dorsal to setae (Fig. 12). Lower parascrobal region

above level of torulus with small patch of dense, lanceolate, white setae (Fig. 12). Frontovertex smooth and lustrous between scrobal depression and posterior ocelli, but with dark setae in line along inner orbit and in ocellar triangle; vertex evenly rounded into occiput, and both vertex and occiput uniformly setose and distinctly sculptured. Gena finely coriaceous-aciculate with scattered white setae posterior to malar sulcus. Antenna (Table 1) with scape elongate spindle-shaped, the outer convex surface finely coriaceous and inner concave surface smooth and lustrous except dorsally; flagellum elongate-slender, increasing in width only slightly toward clava and with all funicular segments longer than wide (*cf*. Fig. 4).

Mesosoma dark brown with metallic green lustre under some angles of light. Legs with coxae similar in colour and lustre to mesosoma, but otherwise brown except protarsus yellowish-brown and the following white: trochantelli, fore- and middle knees, large medial band on metatibia, extreme apices of all tibiae, and meso- and metatarsi except apical tarsal segments yellowish-brown. Forewing infuscate beyond base of parastigma except for distinctly separated, almost circular anterior and posterior hyaline spot. Mesoscutum quite shiny with medial and lateral lobes finely coriaceous and posteromedial concave region very finely coriaceous to smooth; with brownish hair-like setae except lateral lobe mediolongitudinally and concave region except along posterior margin bare. Scutellar-axillar complex punctate-reticulate. Acropleuron with dense, lanceolate, white setae obscuring cuticle in oval patch along anterodorsal margin to level about equal with posterior margin of prepectus (cf. Fig. 23). Metacoxa with dense, lanceolate, white setae ventrolaterally and less conspicuous hair-like setae dorsally, but broadly bare mediolongitudinally (cf. Fig. 23). Propodeum with callus broadly bare posterior to spiracle, but setose anterior to and mesal to spiracle and with dense, spatulate, white setae posterolaterally; foramen incurved virtually to anteromedial notch, hence reticulate plical region strongly transverse (cf. Fig. 24).

Gaster brownish-cupreous except with metallic green reflection basally on Gt_1 and laterally on terga posterior to Gt_3. Syntergum in lateral view with flange obtusely angled relative to and on only slightly lower plane than anterodorsal surface of syntergum (Fig. 27); in dorsal view flange large, about 1.5× as long as wide with subparallel sides and broadly rounded posterior margin, and covered by several rows of setae (Fig. 28). Ovipositor sheath exserted beyond syntergal flange by about 0.4× length of gaster and about 0.9× length of metatibia, the protruding portion black except for yellowish tip.

Variation. The single paratype is shrivelled but does not otherwise differ substantially from the holotype.

Etymology. The species epithet is derived from the Greek words *melanos* (dark) and *stylos* (pillar), in reference to the almost entirely black ovipositor sheath.

Distribution. Known only from southernmost Florida (Fig. 35).

Biology. Unknown.

Remarks. Females of *Zaischnopsis melanostylata* sp. nov. are most similar to those of *Z. coenotea* sp. nov., differing primarily in having a conspicuously larger and more setose syntergal flange (cf. Figs 28, 30) that is not abruptly reflexed relative to the pre-flange surface (cf. Figs 27, 29), and in having dark ovipositor sheaths. The mesoscutum is also more extensively setose and the face slightly more coarsely sculptured, but insufficient specimens are available to accurately assess intraspecific variation.

Zaischnopsis phalaros **sp. nov.**

(Figs 3, 7, 13, 35)

Type material. Holotype female – "[USA] UCF, MacKay Tract, FL, Orange Co., Orlando, VII-7-1999, P. Russell, S. Fullerton" / "Sawgrass Marsh, Red Maple, Malaise Trap" / "UCFC 0 041 804" / "CNCI JDR-sem

2004-047" (deposited in FSCA by permission of UCFC) [point-mounted; entire except left mesotarsus missing beyond basal segment and left flagellum detached and glued to point]. Paratype female – USA: **Florida**: *Orange Co.*, Orlando, 5.VII.96, LLP-Sand Pine, Turkey Oak, SF (deposited in CNCI by permission of UCFC).

DESCRIPTION OF HOLOTYPE. Length, including ovipositor sheath, about 2.7 mm.

Head dark with metallic green or, particularly on lower face and frontovertex, violaceous lustre under some angles of light. Palpi dark brown. Mandible yellowish-orange basally and dark rufous apically. Antenna dark brown except scape with metallic green lustre under some angles of light. Scrobal depression with distinct dorsal margin separated from anterior ocellus by about 2 ocellar diameters; channel and scrobes reticulate to transversely reticulate-strigose (Fig. 13). Lower face and interantennal region coriaceous-granular. Interantennal region and lower parascrobal region with scattered white lanceolate setae not differentiated from other setae on face (Fig. 13). Frontovertex smooth and lustrous from scrobal channel to posterior ocelli (Fig. 13), but with conspicuous dark setae; vertex angled relative to comparatively flat and extensive occiput at level of anterior margin of posterior ocelli, and both vertex and occiput coriaceous-reticulate with dark setae. Gena posterior to malar sulcus finely coriaceous-aciculate with conspicuous, white, lanceolate setae aligned at right angle to outer orbit near orbit. Antenna (Table 1, Fig. 3) with scape elongate-spindle shaped, the outer surface coriaceous and inner surface coriaceous-strigose; flagellum elongate-slender, increasing in width toward clava and with apical 2 funicular segments slightly transverse.

Mesosoma dark with violaceous lustre on pronotum and with bluish-green lustre elsewhere under some angles of light, most conspicuously so on convex part of mesoscutal lateral lobes, scutellar-axillar complex and propodeum, but with scutellar-axillar complex anteriorly and mesoscutum medially with dark band or slight cupreous lustre under some angles of light. Legs dark, similar to mesosoma, except trochantelli white and metatibia with elongate white spot dorsally within basal half. Forewing (Fig. 7) broadly infuscate between base of parastigma to slightly beyond apex of postmarginal vein except for triangular hyaline region with white setae behind almost entire length of marginal vein; hyaline region with basal margin at almost right angle to marginal vein and extending about one-third width of wing, and with oblique posteroapical margin angled to near apex of marginal vein. Mesoscutum entirely reticulate (cf. Fig. 18) and setose, the setae dark and hair-like dorsally on convex parts of medial and lateral lobes but elsewhere white and lanceolate, including band of quite dense setae on outer surface of lateral lobe along mesoscutal margin, these setae similar to those on acropleuron. Scutellar-axillar complex punctate-reticulate. Acropleuron anteriorly with white lanceolate setae in triangular region extending to level about equal with middle of tegula, the separate setae not completely obscuring surface of cuticle (cf. Fig. 19). Metacoxa with dense, lanceolate, white setae ventrolaterally and dorsally, but broadly bare mediolongitudinally (cf. Fig. 23). Propodeum with callus broadly bare posterior to spiracle, but setose anterior to and mesal to spiracle and with dense, spatulate, white setae posterolaterally; foramen incurved virtually to anteromedial notch, hence reticulate plical region strongly transverse (cf. Fig. 24).

Gaster dark brown except syntergal flange yellowish-hyaline. Syntergal structure partly concealed by preceding tergum, but apparently with setae in 1 or 2 rows along base. Ovipositor sheath exserted only very slightly beyond syntergal flange, the protruding portion yellow.

VARIATION. The paratype has the ovipositor sheath exserted for a length about equal to that of the syntergal flange, but does not otherwise differ substantially from the holotype.

ETYMOLOGY. The species epithet is formed from the Greek word *phalaros* (having a white patch), in reference to the single hyaline region behind the marginal vein.

DISTRIBUTION. Known only from central Florida (Fig. 35).

BIOLOGY. Unknown.

Tab. 1. Measurements for holotypes of Nearctic *Zaischnopsis* Ashmead species (bo = *Z. bouceki* sp. nov., br = *Z. brachystylata* sp. nov., co = Z. *coenotea* sp. nov., er = *Z. erythrothorax* sp. nov., me = *Z. melanostylata* sp. nov., ph = *Z. phalaros* sp. nov., xa = *Z. xanthocola* sp. nov.)

measurement/species	bo	br	co	er	me	ph	**xa**
head height	63	65	67	126	96	90	80
head length	46	50	51	82	65	63	56
head width	73	71	73	128	96	115	89
distance between eyes	25	21	18	30	18	27	22
malar space	25	28	27	42	33	32	30
eye height	47	47	50	88	67	66	55
eye width	36	33	38	65	53	52	46
OOL	4	2	2	3	1	2	2
POL	6	7	5	7	6	7	8
LOL	7	8	8	12	10	9	8
scrobes to anterior ocellus	16	11	14	0	15	15	6
scape: length(width)	37(10)	35(11)	43(9)	76(13)	61(11)	60(13)	51(11)
pedicel: length(width)	12(5)	15(6)	15(6)	25(9)	20(12)	20(9)	18(6)
Fl1: length(width)	4(4)	4(4)	5(4)	9(6)	6(5)	7(7)	8(5)
Fl2: length(width)	8(5)	11(4)	13(4)	34(6)	19(5)	20(7)	20(5)
Fl3: length(width)	8(5)	11(4)	13(4)	31(7)	19(5)	22(8)	20(6)
Fl4: length(width)	9(5)	10(6)	13(5)	30(7)	19(6)	22(8)	20(7)
Fl5: length(width)	8(6)	10(8)	13(6)	24(9)	18(7)	17(10)	17(7)
Fl6: length(width)	8(7)	9(10)	11(6)	18(10)	16(8)	14(11)	14(8)
Fl7: length(width)	8(8)	8(10)	10(7)	16(10)	14(8)	11(12)	13(9)
Fl8: length(width)	8(9)	8(10)	10(7)	14(11)	13(8)	10(14)	11(9)
clava: length(width)	28(12)	25(12)	29(8)	37(15)	32(11)	39(17)	32(12)
costal cell	75	68	85	140	100	95	95
marginal vein	71	71	85	110	95	60	95
stigmal vein	16	13	13	25	20	29	19
postmarginal vein	23	26	20	40	25	45	34

Remarks. Females of *Zaischnopsis phalaros* sp. nov. are readily distinguished from all other species in America North of Mexico by several colour, structural, sculptural and setal features as described above and given in Table 1.

Zaischnopsis xanthocola sp. nov.

(Figs 4, 6, 8, 14, 18, 19, 24, 31, 34)

Type material. *Holotype* female – "USA: MO, Wayne Co., Williamsville, VI.1987, J. Becker, MT" (CNCI Type No. 22897) [point-mounted; entire but left antenna separated and glued to point]. *Paratypes* (194 females) – USA: **Alabama**: *Talladega Co.*, Talladega, 4.VII.64, L.S. Pickord, *Dendroctonus frontalis* (1 USNM). **Arkansas**: iss[?] V.1896, 6327[01], egg parasite of *Orchelimum glaberrimum* (1 USNM). **District of Columbia**: Suitland, 3.VI.54, J.G. Clarke, ex. *Conocephalus* eggs (6 USNM). **Florida**: *Alachua Co.*, Gainesville, 15–23.IV.86 (1), 24–30.IV.86 (3), JL. Gainesville, Payne Prairie, 5–10.IV.86, M. Sanborne (1). *Collier Co.*, Copeland, Fakahatchee Strand St. Preserve, VIII – X.87 (3), VG. *DeSoto Co.*, Ft. Ogden, 8–IV.52, J.R. Vockeroth (1). *Liberty Co.*, Torreya St. Pk, 15.VI.74, HW & CA (1 FSCA). *Orange Co.*, Orlando, 7.IX.99, PR & SF (1 UCFC). *Seminole Co.*, 2.5 mi. N. Astor Farms, 29.III – 19.VII.00 (75 UCFC), SF & TS. Sanford, CFREC, 4.VIII.87 (1), 18.VIII.87 (2), VG. **Georgia**: *Clarke Co.*, 33°54'N 83°16'W, 8–15.VII.92 (1), 7–14.X.92 (2), JP. *Forsyth Co.*, Forsyth, 8–22.IX.70, F.T. Naumann (1). **Illinois**: *Champaign Co.*, 21.VIII.81, SH (1 UCDC). **Louisiana**: *East Baton Parish*, Baton Rouge, 21.VIII.00, L.S.U. Expt 229, Sub. No. 26 (1 USNM). **Mississippi**: *Washington Co.*, Stoneville Exptl. For., 33°27'N 90°55'W, 25.V–7.VI – 1.XI.97 (3 UCDC), 20.VI–3.VIII.98 (1 UCDC), 1–14.VIII.98 (1 UCDC), NS. **Missouri**: *Boone Co.*, Columbia, 8.IX.67 (1 USNM), 1–15.IV.68 (1 USNM), 21.VI.70

(2 UCDC), FP. *Jackson Co.*, Kansas City, Willow Crk, I–4 43 & Wornall Rd, 11.VI.77, HG (1 FSCA). *Wayne Co.*, Williamsville, VI.70 (1), VIII.87 (6), 10–26.IX.87 (5), 20.IX–20.X.88 (1), JB. **North Carolina**: *Polk Co.*, Tyron, Hopkins U.S. 3606d [from Ash infested with *Hylesinus aculeatus*, tree cut 5.VIII.04, two parasites emerged 20.VII after all *Hylesinus* emerged] (1 USNM). **Oklahoma**: *Latimer Co.*, VII.87 (1 FSCA), IX.88 (1 FSCA), VII.89 (2 FSCA), K. Stephan; Red Oak env., IX.94, K. Stephan (2). **Pennsylvania**: *Cumberland Co.*, Carlise, 2.VI.31, E.J. Udine, reared from *Orchelimum* eggs in *Dacus carota* (7 USNM). Mount Holly Springs, 28.X.30–21.I.31, E.J. Udine, reared from *Orchelimum* eggs in *Dacus carota* (3 USNM). **Tennessee**: *Roane Co.*, AEC area, Oak Ridge, 27.VI.57, H.F. Howden (1). **Texas**: *Cameron Co.*, Southpoint Nursery, 1 mi. S. Southmost Ranch, 5–6.VII.82, G. Gibson (1). *Dallas Co.*, Dallas, 9–16, W120, Hunter No. 1447 (2 USNM, unidentified egg glued to each point). *Hardin Co.*, 26.VI.1963, RT, loblolly pine, reared with *Dendroctonus frontalis* Zimm. (1 USNM). *Orange Co.*, Orange, 10 mi. W., 8.X.51, A. B. Gurney (1 USNM). *San Augustine Co.*, Broaddus, 14.VII.65, Hopkins 50648 [pine infested with southern pine beetle] (1 USNM). *San Patricio Co.*, Welder Wildlife Refuge, Pollito Lk, 29.VI.84, J.C. Schaffner (1). *Travis Co.*, vic. Cypress Creek, 30°25'58" 97°52'01", 28–29.VII.94, M. Quinn, E. Riley & R. Wharton (1 TAMU). *Victoria Co.*, Victoria, VI.21, J.D. Mitchell (1 USNM). **Virginia**: *Clarke Co.*, Univ. Va. Blandy Exptl. Farm, 2 mi. S. Boyce, 28.VIII–IX.90 (1), 12–28.IX.90 (2), 9–25.VIII.95 (1), DS. *Essex Co.*, 3–23.IX.93 (1), 7–30.IX.94 (1), DS. *Fairfax Co.*, nr Annandale, 19–23.IX.89 (1), 22–29.IX.90 (1), 7–13.X.90 (1), DS. *Louisa Co.*, 4 mi. S. Cuckoo, 7, 14.VII.85 (2 USNM), 23.VI – 30.VIII–20.IX.86 (4), 3–24.IX.87 (6; 1 USNM), 21.IX–13.X.87 (3), 24.VIII–14.IX – 7.X–4.XI.88 (7), 23.VIII–11.IX.89 (6), 12.IX–6.X.89 (2), K&S. *Montgomery Co.*, 18.IX.62, Pienkowski (1 USNM).

DESCRIPTION OF HOLOTYPE. Length, including ovipositor sheath, about 3.75 mm.

Head bright metallic green with slight cupreous lustre dorsally. Palpi yellow. Mandible yellowish basally and dark rufous apically. Antenna dark brown. Scrobal depression without distinct dorsal margin, but dorsally with a few brownish setae separated from anterior ocellus by distance equal to about 1 ocellar diameter. Face (Fig. 8) more or less uniformly sculptured, with lower face coriaceous-reticulate, scrobal depression more reticulate-rugulose, and frontovertex and occiput micro-reticulate. Interantennal region and lower parascrobal region with scattered white lanceolate setae (Fig. 8). Frontovertex and occiput with comparatively inconspicuous brownish hair-like setae, the vertex angled relative to comparatively flat and extensive occiput at level of anterior margin of posterior ocelli. Gena finely coriaceous-aciculate with scattered white setae posterior to malar sulcus. Antenna (Table 1, Fig. 4) with scape elongate spindle-shaped, the outer and inner surfaces finely coriaceous; flagellum elongate-slender, increasing in width only slightly toward clava and with all funicular segments longer than wide.

Mesosoma largely dark brown but with metallic green lustre under some angles of light on pronotum, mesoscutum and setose region of acropleuron. Foreleg dark brown except trochantellus, knee and often 1 or more tarsal segments whitish; middle leg primarily yellowish beyond coxa but with femur posteroapically and tibia posterobasally brown, and basal 3 tarsal segments white; hind leg dark brown except trochantellus and basal 2 tarsal segments yellowish to white. Forewing infuscate beyond base of parastigma except for almost straight hyaline cross-band extending almost to posterior margin (Fig. 6). Mesoscutum entirely reticulate to more longitudinally strigose posteriorly, with lateral lobe bare mediolongitudinally but with slightly lanceolate white setae along notaular furrows and medially through posterior concave region, and with brownish hair-like setae elsewhere (Fig. 18). Scutellar-axillar complex punctate-reticulate. Acropleuron anteriorly with white, slightly lanceolate, setae in triangular region extending to level about equal with middle of tegula, the separate setae not completely obscuring surface of cuticle (Fig. 19). Metacoxa uniformly setose laterally. Propodeum with callus broadly bare posterior to spiracle, but setose anterior to and mesal to spiracle and with dense, spatulate, white setae posterolaterally; foramen incurved almost to anteromedial notch, hence reticulate plical region strongly transverse (Fig. 24).

Gaster dark brown with cupreous lustre except syntergal flange yellow and with metallic green reflection basally on Gt_1 and laterally on terga posterior to Gt_3. Syntergum in lateral view with

flange abruptly reflexed relative to anterodorsal surface (cf. Fig. 29); in dorsal view flange short and transverse, about 3× as wide as long with subtruncate posterior margin and with single row of sparse setae across base (Fig. 31). Ovipositor sheath exserted beyond syntergal flange by about 0.35× length of the gaster and about 0.9× length of metatibia, the protruding portion banded by broad subapical dark region basal to yellowish tip.

Variation. Females vary in length from about 3.0–6.5 mm, with the exserted portion of the ovipositor sheath about 0.25–0.7× the gaster length and about 0.5–1.6× the length of the metatibia. Some individuals also have the posterior ocellus contiguous with the inner orbit and then also have a somewhat narrower interoccular distance. The ovipositor sheaths are not always conspicuously banded, sometimes being yellowish basally and gradually darkened apically, but the tip is always yellow. Furthermore, some females lack bright metallic green lustre, having the head and mesosoma brown with a cupreous or bronze lustre. Some females have up to about the basal half of the metatibia orange-brown or very rarely extensively yellowish-orange, but not distinctly white basally. The middle legs are conspicuously lighter in colour than the front and hind legs except for a few specimens from Virginia. These females have the mesofemur and mesotibia dark (knee and tibia apically lighter coloured), similar in appearance to the other legs, as well as having the apical 4 tarsomeres of the metatarsus brown in distinct contrast to a white basitarsomere. These same females have a comparatively short ovipositor sheath, only about half the length of the metatibia.

Etymology. The species epithet is derived from the Greek words *xanthos* (yellow) and *kolon* (leg), in reference to the primarily light coloured middle leg.

Distribution. Widely distributed throughout eastern North America south of about 40° N and east of about 98° W (Fig. 34).

Biology. Females from Arkansas, District of Columbia and Pennsylvania were reared from meadow katydid (Orthoptera: Tettigoniidae) eggs, including those of the red-headed meadow katydid, *Orchelimum erythrocephalum* Davis, 1905 (= *O. glaberrimum* Burmeister, 1838), *Orchelimum* sp. in wild carrot, *Dacus carota* L. (Umbelliferae), and *Conocephalus* sp. Females from North Carolina were reared from the eastern ash bark beetle, *Hylesinus aculeatus* (Say, 1824), whereas females from Alabama and Texas were reared from trees infested with the southern pine beetle, *Dendroctonus frontalis* (Coleoptera: Scolytidae).

Remarks. Females of this species are very similar to *Zaischnopsis unifasciata*, described from Brazil. The unique, air-dried holotype of *Z. unifasciata* has the wings folded one above the other on top of the gaster and because the specimen is strongly contorted, with the gaster and head reflexed dorsally, these obscure a direct dorsal view of the mesosoma. The syntergal flange is also covered by the preceding tergum, the right antenna is missing beyond the second flagellomere, some flagellomeres of the left antenna are collapsed, and the setae anteriorly on the acropleuron appear to be largely abraded on the right side compared with the left side. Consequently, not all features needed to confidently place the name are visible. I have, however, seen better preserved females from Mexico, Ecuador and Peru (CNCI) that are similar to the holotype of *Z. unifasciata* and that are more directly comparable to specimens from America north of Mexico. All the females from south of the United States have the femora and tibiae of all legs similarly dark. This colour pattern differs from females of *Z. xanthocola* sp. nov. throughout its range, including from subtropical Florida, except for the few females from Virginia (CNCI) discussed above. Because of their comparatively short ovipositor sheaths, these aberrant females with dark middle legs differ from those from the Neotropical region with a similar colour pattern. These females have the ovipositor sheath at least as long as the metatibia, similar to many *Z. xanthocola* sp. nov. females with the more typical light coloured middle legs. Females of *Z. xanthocola* sp. nov. and *Z. unifasciata*, and possibly *Z. erythrothorax* sp. nov., share a distinctive structure and setal pattern of the syntergal

flange. The flange is transverse with a subtruncate posterior margin and has only a single transverse row of comparatively sparse setae (Fig. 31). I have seen females from Costa Rica (CNCI) that are very similar in all respects to *Z. unifasciata* except that the forewings have an anterior and posterior hyaline spot rather than a cross band, and the syntergal flange has a broadly rounded posterior margin and is quite densely setose. Another female from Costa Rica (CNCI) is even more similar because of a hyaline cross band on the forewing, but it has a broadly rounded syntergal flange and unusually long ovipositor sheaths. The species status of this specimen is uncertain. It is possible that a comprehensive revision of Neotropical *Zaischnopsis* that includes specimens more representative of the entire region will eventually show *Z. xanthocola* sp. nov. to be a synonym of *Z. unifasciata*. However, I prefer to describe the females from America north of Mexico as a new species because of the host information attached to the Nearctic specimens and because accurate assessment of species limits and their distribution in the Neotropical region is not presently possible.

Checklist of world *Zaischnopsis*

INCLUDED SPECIES

***Zaischnopsis aenea* (Yoshimoto et Ishii, 1965) comb. nov.**

Eupelmus aeneus Yoshimoto et Ishii, 1965: 146–147; holotype female, by original designation (BPBM; type no. 3576); type locality: S. Mariana Is.: Guam, Pt. Taguan.

***Zaischnopsis albispina* (Cameron, 1884) comb. nov.**

Eupelmus albispina Cameron, 1884: 120; holotype female, by original designation (BMNH; type no. 5.993); type locality: Panama: Bugaba.

***Zaischnopsis albomaculata* (Ashmead, 1900) comb. nov.**

Eupelmus albomaculatus Ashmead, 1900: 259; syntypes, female (BMNH); type locality: St. Vincent [West Indies].

***Zaischnopsis biharensis* (Narendran, 2004) comb. nov.**

Anastatus biharensis Narendran, 2004: 16–18; holotype female, by original designation (Department of Zoology, University of Calicut; not examined, transfer made based on original description and illustrations); type locality: India: Bihar, Ranchi.

***Zaischnopsis bouceki* sp. nov.**

***Zaischnopsis brachystylata* sp. nov.**

***Zaischnopsis coenotea* sp. nov.**

***Zaischnopsis cooki* (Girault, 1919) comb. nov.**

Anastatus cooki Girault, 1919: 59; syntypes, female [one female labelled as lectotype of *Anastatus cooki* Girault by Z. Bouček in BMNH with label "Singapore, coll. Baker"; another female lacking head in QMBA with labels "Anastatus cooki Gir. female type" and "Singapore, coll. Baker"]; type locality: Malaysia: Singapore.

Eupelmus cooki: Girault 1928: 449; change of combination.

***Zaischnopsis erythrothorax* sp. nov.**

***Zaischnopsis fascipennis* (Walker, 1862) comb. nov.**

Calosoter bifasciatus Walker, 1862: 391; holotype female [label on holotype "female *Anastatus walkeri* nom. nov. (*bifasciatus* W. nec Geof.) det. Z. Bouček, 1978"], by monotypy (BMNH; type no. 5.1030); type locality: Malaysia: Sarawak.

Eupelmus fascipennis: Walker 1872: 84; change of combination and replacement name [through inference, *Calosoter bifasciatus* was transferred to *Eupelmus* by Walker, who provided the new name *E. fascipennis* for *E. bifasciatus* (Walker), then preoccupied by *Eupelmus bifasciatus* Geoffroy, 1785].

***Zaischnopsis geniculata* (Cameron, 1884) comb. nov.**

Eupelmus geniculatus Cameron, 1884: 119–120; holotype female, by monotypy (BMNH; type no. 5.992); type locality: Panama: Bugaba.

***Zaischnopsis hookeri* (Girault, 1915) comb. nov.**

Eupelmus hookeri Girault, 1915: 11–12; holotype female [head and hind legs on slide], by monotypy (QMBA; type no. Hy.2852); type locality: Australia: Queensland, Babinda.

Anastatus hookeri: Bouček 1988: 552; change of combination.

***Zaischnopsis intonsiocula* (Girault, 1934) comb. nov.**

Eupelmus intonsioculus Girault, 1934: 1; holotype female, by monotypy (QMBA; type no. T.4288); type locality: Australia: [Queensland], Kuranda.

Anastatus intonsioculus: Bouček 1988: 552. Change of combination.

***Zaischnopsis ivondroi* (Risbec, 1952) comb. nov.**

Macreupelmus ivondroi Risbec, 1952: 127–128; holotype female, by monotypy (MNHN); type locality: Madagascar: Ivondro.

***Zaischnopsis ivondroi* (Risbec, 1952)**

Metacalosoter ivondroi Risbec, 1952: 146–147; holotype female, by monotypy (MNHN); type locality: Madagascar: Ivondro.

Anastatus ivondroi: Bouček 1976: 350; change of combination.

Zaischnopsis ivondroi: Gibson 1989: 64; change of combination [homonym of *Z. ivondroi* Risbec, 1952: 127; a new name is not provided at this time pending revision of the Afrotropical species].

***Zaischnopsis kraussi* (Yoshimoto et Ishii, 1965) comb. nov.**

Anastatus kraussi Yoshimoto et Ishii, 1965: 155–156; holotype female, by original designation (USNM; type no. 67526); type locality: S. Mariana Is.: Guam, Talofofo.

***Zaischnopsis locustae* (Girault, 1919) comb. nov.**

Anastatus locustae Girault, 1919: 58–59; syntypes, female (QMBA) [this species was not treated by Dahms (1984) but there are 5 variably complete females glued to one card triangle; the pin bears a label in Girault's writing with "*Anastatus locustae* Gir. female type"]; type locality: Indonesia: Eastern Java, Ngredjo-Malang; reared from locustid eggs in twigs of *Coffea robusta*.

***Zaischnopsis longiventris* (Cameron, 1884)**

Lutnes longiventris Cameron, 1884: 127; holotype female, by monotypy (BMNH; type no. 5.960); type locality: Panama: Bugaba.

Zaischnopsis longiventris: Gibson 1995: 219; change of combination.

***Zaischnopsis magniscapa* (Girault, 1919) comb. nov.**

Anastatus magniscapus Girault, 1919: 59; syntypes, female (QMBA) [this species was not treated by Dahms (1984) but there are 5 variably complete females glued to one card triangle; the pin bears a label in Girault's writing with "*Anastatus magniscapus* Gir. female type"]; type locality: Indonesia: Java.

***Zaischnopsis malgacina* (Risbec, 1952) comb. nov.**

Macreupelmus malgacinus Risbec, 1952: 125; holotype female, by monotypy (MNHN); type locality: Madagascar: Bekily.

***Zaischnopsis melanoptera* (Risbec, 1952)**

Calosoter melanoptera Risbec, 1952: 135–137; holotype female, by monotypy (MNHN); type locality: Madagascar: Ivondro.

Polymoria melanoptera: Hedqvist 1970: 441; change of combination.

Zaischnopsis melanoptera: Gibson, 1989: 64; change of combination.

***Zaischnopsis melanostylata* sp. nov.**

***Zaischnopsis motschulskini* (Girault, 1915) comb. nov.**

Eupelmus motschulskini Girault, 1915: 9; holotype female [head and hind leg on slide], by monotypy (QMBA; type no. Hy.2846); type locality: Australia: [Queensland], Torres Strait, Thursday Island.

Anastatus motschulskini: Bouček 1988: 552; change of combination.

***Zaischnopsis obscurata* (Masi, 1917)**

Eupelmoides obscuratus Masi, 1917: 160–162; syntypes, female [described from 6 females: 2 females (5.1009a, 5.1009b) in BMNH and 3 females (no. 17, 40, 47) in MCSN examined]; type locality: Seychelles Islands: Silhouette I.; Mahé.

Anastatus obscuratus: Bouček 1988: 550; change of combination [by inference through synonymy of type species of *Eupelmoides* with *Anastatus*].

Zaischnopsis obscuratus: Gibson 1995: 298, 319; change of combination [by inference through synonymy of type species of *Eupelmoides* with *Zaischnopsis*].

***Zaischnopsis octavia* (Girault, 1939) comb. nov.**

Eupelmus octavia Girault, 1939: 148–149; holotype female, by monotypy (QMBA; type no. T.4344); type locality: Australia: [Queensland], Dunk Is.

Anastatus octavia: Bouček 1988: 552; change of combination.

***Zaischnopsis opthalmica* (Ashmead, 1896)**

Ischnopsis opthalmica Ashmead, 1896: 16; holotype female, by monotypy (BMNH; type no. 5.967); type locality: St. Vincent [West Indies].

Zaischnopsis opthalmica: Ashmead 1904b: 126; change of combination.

***Zaischnopsis phalaros* sp. nov.**

***Zaischnopsis simillima* (Ashmead, 1904)**

Eupelmus simillimus Ashmead, 1904a: 490; holotype female, by monotypy (USNM; type no. 60536); type locality: Brazil: Chapada.

Zaischnopsis simillimus: Gibson 1995: 301; change of combination.

***Zaischnopsis thoracica* (Ashmead, 1904)**

Ischnopsis thoracica Ashmead, 1904a: 487; holotype female, by monotypy (USNM; type no. 60525); type locality: Brazil: Santarem.

Zaischnopsis thoracica: De Santis 1980: 205; change of combination.

***Zaischnopsis tubatia* (Walker, 1852) comb. nov.**

Eupelmus tubatius Walker, 1852: 41; holotype female, by monotypy (BMNH; type no. 5.975); type locality: China: Hong Kong.

***Zaischnopsis unifasciata* (Ashmead, 1904) comb. nov.**

Eupelmus unifasciatus Ashmead, 1904a: 490; holotype female, by monotypy (USNM; type no. 60535); type locality: Brazil: Chapada.

***Zaischnopsis usingeri* Fullaway, 1946**

Zaischnopsis usingeri Fullaway, 1946: 202–203; holotype female, by original designation (USNM; type no. 58391) [holotype female missing from pin but USNM and BPBM each with single paratype]; type locality: Guam: Piti; reared from eggs of an unidentified katydid.

***Zaischnopsis viridiceps* (Yoshimoto et Ishii, 1965) comb. nov.**

Eupelmus viridiceps Yoshimoto et Ishii, 1965: 152–153; holotype female, by original designation (USNM; type no. 67524); type locality: Caroline Is.: Ponape I., Nahpali I.

***Zaischnopsis xanthocola* sp. nov.**

Acknowledgements

I thank the curators of the institutions listed under material and methods for allowing me to study the collections under their care or for the loan of specimens on which this study was based. I would particularly like to acknowledge Stuart Fullerton (UCFC), whose collection development efforts resulted in two otherwise uncollected species. Mr Klaus Bolte (Canadian Forest Service, Ottawa, Canada) photographed the forewings, and Mr David Moorhouse drew the antennal figures and Ms. Jennifer Read prepared the other figures illustrating the species (both Agriculture and Agri-Food Canada, Ottawa, Canada). Dr J. Huber (Canadian Forest Service, Ottawa) and Dr M. Gates (Systematic Entomology Laboratory, Washington, USA) reviewed an initial draft of this manuscript.

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