Zootaxa 918: 1–18 (2005)
www.mapress.com/zootaxa/

ISSN 1175-5326 (print edition)
ZOOTAXA
ISSN 1175-5334 (online edition)

918

The genus *Austrophilopterus* Ewing (Phthiraptera: Philopteridae) from toucans, toucanets, and araçaris (Piciformes: Ramphastidae)

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Abstract

Examination of material representing the 24 previously named species and subspecies of *Austrophilopterus* resulted in recognition of only 6 of these as valid species and 18 as synonymies, including a previously established junior synonym and 17 new synonymies. These 6 species are redescribed and illustrated. One new species, *A. thysi*, is described from the type host *Selenidera gouldii* (Natterer).

Key words: chewing lice, *Austrophilopterus*, Phthiraptera, Philopteridae, Piciformes, Ramphastidae

Accepted by Z.-Q. Zhang: 14 Mar. 2005; published: 24 Mar. 2005

Introduction

It has been over 40 years since any taxonomic work has been done on the chewing lice of the genus *Austrophilopterus* Ewing from toucan, toucanet, and araçari hosts. In fact, of the 24 specific and subspecific names applied to lice of this genus (see Price *et al*. 2003), 22 have come from Carriker (1903, 1950) and Carriker in Carriker and Diaz-Ungria (1961), with the remaining 2 from Piaget (1888) and Eichler (1954). With the propensity of these workers for describing new louse taxa virtually exclusively on the basis of host association in lieu of any meaningful morphological differentiation, we felt it imperative to examine the status of these 24 names to determine those that are morphologically defined.

This study was made possible by the presence at the National Museum of Natural History, Washington, DC, of Carriker type specimens for 20 of these 24 names. We also accumulated a generous number of additional lice from a wide spectrum of ramphastid hosts. Their study has resulted in the recognition of 6 of these 24 names as valid species, the acceptance of a previously established junior synonym, the presentation of 17 new synonymies, and the description of a new species.

In treating these taxa, we have divided the 7 species into 2 groups, with 3 species in the first and 4 in the second. The members of these groups are readily differentiated by a number of features, the principal ones being the shape of the dorsoanterior head plate, the chaetotaxy of the tergal plates on abdominal segment II**,** and the gross morphology of the male genitalia. We will first present characters in common to members of this genus and then provide features pertinent to each species group. Because of the large number of synonymies, we will present each synonymy with its material examined and brief remarks. This is followed by the formal species description for each sex, without repetition of genus or group characters, and then the diagnosis.

All measurements are in millimeters. Abbreviations are TW, temple width; HL, head length; PW, prothorax width; MW, metathorax width; AWV, abdomen width at segment V; TL, total length; GL, male genitalia length; GPL, male penis length. Tergal setal counts include the postspiracular setae and all setae between them. Values in parentheses following the range for a quantitative character are, respectively, the number of specimens involved and the mean value for this character. Subordinal host classification follows that of Dickinson (2003).

Where known, we have used the following abbreviations in the “Material” sections to identify the collectors of the lice or the hosts of the lice: AA (A. Aleixo), DB (D. Bridges), MAC (M. A. Carriker, Jr.), DHC (D. H. Clayton), DLD (D. L. Dittmann), KE (K. Eckhardt), JWE (J. W. Eley), MPEG (Museu Paraense Emílio Goeldi), JJH (J. J. Hebrard), MHH (M. H. Herera), JH (J. Hill), EAH (E. A. Holt), PSH (P. S. Humphrey), JLK (J. L. Koederitz), AWK (A. W. Kratter), DFL (D. F. Lane), MM (M. Marin), KN (K. Naoki), JPO (J. P. O’Neill), TP (T. Pequeño), VGR (V. G. Rohwer), MSS (M. Sanchez S.), TV (T. Valqui), JVT (J. Van Tyne), WRW (W. R. Weber), JDW (J. D. Weckstein), and CCW (C. C. Witt).

Genus *Austrophilopterus* Ewing

Austrophilopterus Ewing 1929: 190. Type species: *Docophorus cancellosus* Carriker by original designation.

Head (Figs. 2, 8, 10, 16) with usually shallow concave anterior hyaline margin; 4 stout spiniform setae associated with posterior margin of dorsoanterior plate; temple margin with 2 medium to long setae on each side; 2 ocular setae. Pronotum with single lateroposterior marginal seta; metanotum usually with 7 marginal setae on each side, less often 6 or 8, with distribution and lengths as in Fig. 1. Abdominal tergites III–VII with very long postspiracular setae; segments II–III lacking lateral marginal seta, IV with short lateral seta, V–VIII with long to very long lateral seta; without anterior setae on tergites III–IX or sternites II–VI. Male with at least tergites II–VI and female with II–VII medially divided; prominent male subgenital plate of fused sternites VII–IX; female subgenital plate and marginal setae as in Figs. 5 or 13, transverse posterior margin bearing 22–45 setae, and 13–30 small setae scattered medioanteriorly from this margin.

cancellosus species group

The 3 species of this group are characterized as follows. Head (Figs. 2, 8) with dorsoanterior plate having rounded posterior margin; temple margin with anterior seta shorter than posterior seta; each plate of tergite II without long seta at medioanterior corner (Figs. 1, 5); tergite II with lateroposterior process intruding into III; abdominal sternites broad; male genitalia with long slender penis and complex of lateral structures, much as in Figs. 4 or 7.

1. *Austrophilopterus cancellosus* (Carriker 1903) (Figs. 1–5)

Docophorus cancellosus Carriker 1903: 132. Type host: "*Ramphastos toucard*" = *R. swainsonii* Gould.

Material. **COLOMBIA**: 2 males, 3 females, Bellavista, Santander N. (MAC-4643; 1943); 1 male, 1 female, San Alberto (33472; 1961). **COSTA RICA**: 1 female, Guapilas (MAC-515; 1903). **PANAMA**: 1 male, 1 female, Prov. de Panama, 49 km NNE Panama City, confluence of Rio Chargres and Rio Chagrecito, 09°21.44'N, 79°19.18'W (VGR-187; 2002); 1 male, 2 females, Colon, Achiote Road at Rio Providencia (DLD-5968; 1997); 1 male, La Laguna (200157; 1963); 1 female, Barro Colo (JVT-379; 1927); 1 male, Cerro Bruja (JHP; 1912).

Remarks. The description of this species was based on 2 males and 2 females, with meaningful details lacking, other than statements regarding dimensions, coloration, thickenings, and general shape. Furthermore, there was no comparison of it to other louse taxa. The single illustration for a dorsal female is consistent, as far as it shows, with our material.

Austrophilopterus cancellosus subsimilis Carriker 1950: 166. Type host: *Ramphastos sulfuratus sulfuratus* Lesson. **New Synonymy**.

Material. **MEXICO**: Holotype male, allotype female, 2 males, 3 females, Chiapas, Rio de las Playas (2 collections; WRW; 1943); 6 males, 5 females, Campeche, 24 km S Silvituc, 18°14'N, 90°12'W (DHC, PI-3 and 4; 1998); 2 males, 4 females, Veracruz, Tres Zapotas (MAC-517; 1940).

Remarks. Described by Carriker from only a male/female pair and said to be "Very close to *cancellosus*", with only trivial insignificant morphological and dimensional differences given.

Austrophilopterus cancellosus similis Carriker 1950: 167. Type host: *Ramphastos ambiguus ambiguus* Swainson. **New Synonymy**.

Material. **PERU**: Holotype male, Chaupe (MAC-7094; 1933); allotype female, 2 female paratypes, Rio Jelashte (MAC-5930; 1932); 1 male, Loreto, nr. Funda Sinchora Cordillera Azul (JDW: JJH-496; 1967); 1 female, Huanuco, Divisoria in Cordillera Azul (JDW: JWE-129; 1967). **COLOMBIA**: 1 male, Cauca, Moscopan (MAC; 1958).

Remarks. This subspecies was described from a type series of 3 females and the holotype male stated to be so poor that no detailed genitalic study was possible. Carriker emphasized the unique shape of the female subgenital plate, but this was a misinterpretation of its shape, which is little different from those of other females.

Austrophilopterus cancellosus cuvieri Carriker 1950: 168. Type host: "*Ramphastos c. cuvieri* Wagler" = *R. tucanus cuvieri* Wagler. **New Synonymy**.

Material. **PERU**: Holotype male, allotype female, 5 male, 3 female paratypes, Huacamayo (MAC-4152; 1931); 1 male, 3 females, Loreto, ca. 54 km NNW mouth Rio Morona on W bank, 04°16'51"S, 77°14'16"W (KE-184; 2001); 1 male, 2 females, Loreto, 7 km SW Jeberos, 05°18'48"S, 76°16'32"W (KE-112 and JLK-278; 2001); 1 male, 2 females, Loreto, 86 km SE Juanjui on E bank upper Rio Pauya, 07°35'10"S, 75°56'01"W (TV-233 and DFL-1252; 2000); 11 males, 7 females, Yessup (MAC-1056; 1930). **BRAZIL**: 2 males, 3 females, Mato Grosso, S bank Rio Cristalino, 0.80 km upriver from confluence with Rio Teles Pires, 33 km NE Alta Floresta, 09°37'51"S, 55°55'26"W (JDW-231 and JDW-244; 1999); 1 male, 2 females, Pará, ca. 139 km SSW Santarém, W of Rio Tapajós, Alto Arapiuns (JDW-458; 2000); 1 female, Est. Amazonas (EAH; 1930); 1 female, Amazonas, Fazenda Toshiba, ca. 8 km NE Careiro, 03°47'S, 60°17'W (JDW-483; 2000);

Remarks. Stated by Carriker as very close to *A. cancellosus*, with most dimensions within the limits of individual variation. The shape of the dorsoanterior head plate and the illustration of the female terminalia do not contribute to its identification. Even though Carriker had available "numerous specimens of both sexes", his observations in typical fashion were apparently limited to the type pair.

Austrophilopterus cancellosus incae Carriker 1950: 169. Type host: "*Ramphastos cuvieri inca* (Gould)" = *R. tucanus inca* Gould. **New Synonymy**.

Material. BOLIVIA: Holotype male, allotype female, 4 male, 5 female paratypes, Chiñiri (MAC-9752; 1934); 3 males, 1 female, Huanay (MAC-9494; 1934); 1 male, Sta. Ana, Rio Corosca (MAC-9388; 1934).

Remarks. With a type series of 3 specimens of each sex, Carriker mentioned that this "...was much smaller in almost all measurements than...the other races." However, this does not hold true when considering material beyond the type pair.

Austrophilopterus cancellosus minor Carriker 1950: 170. Type host: "*Ramphocelus vitellinus* Lichtenstein" = *Ramphastos vitellinus vitellinus* M. H. K. Lichtenstein. **New Synonymy**.

Material. **TRINIDAD**: Holotype male, allotype female, 2 male, 2 female paratypes, Heights of Aripo (MAC-5281; 1909). **BRAZIL**: 3 males, 3 females, Amapá (PSH-100318; 1964); 1 female, Amapá, Rio Cuiciras (JDW: MPEG-48179; 1990); 2 males, 4 females, Roraima, Mucajai, Colônia do Apiau, 20°34'N, 61°18'W (JDW: MPEG-45747 and 45748; 1990); 1 female, Pará, N of Amazon River, lower Rio Curuá, ca. 30 km N of Curuá, Pacoval Village

(JDW-469; 2000).

Remarks. Carriker claimed this subspecies to be "...the smallest of the known races of *cancellosus*", but comparison with other specimens does not support this. Also, he noted that all 3 of his females were so distorted in mounting as to make it impossible to illustrate the abdomen.

Austrophilopterus seminirmus Eichler 1954: 30. Type host: *Ramphastos vitellinus ariel* Vigors. **New Synonymy**.

Material. **BRAZIL**: 1 male, 2 females, Pará, Fazenda Morelândia, 8 km N. of Santa Barbara do Pará, 01°12'40"S, 48°14'47"W (AA-620; 2000); 1 male, 2 females, São Paulo, ca. 40 km SW Sete Barras, 24°14.28'S, 48°04.94'W (JDW-435; 2000); 1 female, Maranhão, Municipio Turiaçu, Bom Jesus da Mata (JDW: MPEG-34942; 1983).

Remarks. Eichler's description, based on 16 lice from the type host, contained no illustrations or dimensions, and consisted only of brief verbiage in tabular form comparing this taxon to *A. c. incae*. The sum total of the value of this is meaningless and reliance must be placed on our material from the type host being representative of this taxon.

Austrophilopterus cancellosus caurensis Carriker in Carriker and Diaz-Ungria 1961: 43. Type host: *Ramphastos tucanus tucanus* L. **New Synonymy.**

Material. **BRAZIL:** 2 males, 2 females, no locality (DB-6; 1965); 2 males, 3 females, Pará, Fazenda Morelandia, 8 km N. of Santa Barbara do Pará, 01°12'40"S, 48°14'47"W (JDW-284; 1999). **GUYANA**: 1 female, Kartago Pt. (JH; 1984).

Remarks. With a type series of 2 males and 3 females, Carriker limited his comparison only to *A. c. incae*, giving no useful features for separation.

Other material examined:

Ex *Ramphastos brevis* Meyer de Schauensee. **ECUADOR**: 1 male, 1 female, Pichincha, 2.5 km SW Mindo, 0°04'N, 78°47'W (KN-794; 1999).

Ex *R. dicolorus* L. **BRAZIL**: 11 males, 11 females, Nova Teutonia (Plaumann; 1938).

Ex *R. sulfuratus brevicarinatus* Gould. **COLOMBIA**: 2 males, 4 females, Magdalena, Coracolicito (MAC-11025; 1941); 1 male, Magdalena, Camp Costa Rica (MAC-9653; 1947); 1 female, Plato, Camp Costa Rica (MAC-9534; 1947). **COSTA RICA**: 1 female, Rio Siesola (MAC-979; 1904). **PANAMA**: 1 female, Barro Colo (JVT-104; 1926); 1 male, 1 female, Barro Colo (JVT-488; 1927).

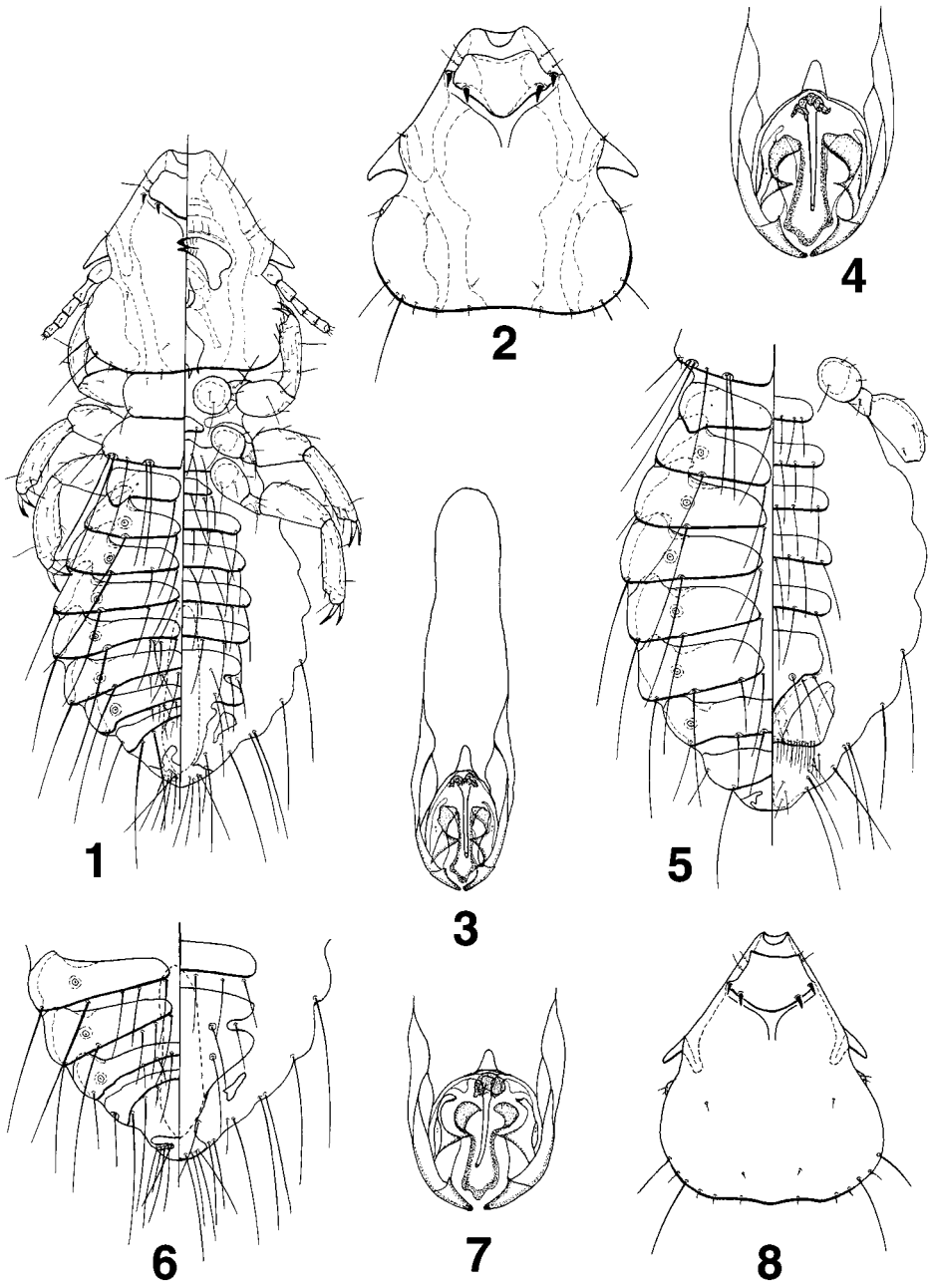
Ex *R. toco* Statius Müller. **BOLIVIA:** 1 female, Dpto. Santa Cruz, Santa Rosa, 8 km WSW San Matias, 16°22'S, 58°28'W (CCW-981; 1999).

Ex *R. vitellinus ariel>culminatus*. **BRAZIL**: 1 male, 2 females, Pará, ca. 139 km SSW Santarém, W of Rio Tapajós, Rio Maró, 02°44.41'S, 55°41.45'W (JDW-450; 2000); 1 male, 1 female, Pará, Municipio Santana do Araguaia, Fazenda Barra das Princesas (JDW: MPEG-48582; 1992).

Ex *R. vitellinus citreolaemus* Gould. **COLOMBIA**: 2 females, La Raya, Bol. (MAC-12248; 1948); 1 female, Santander N., Petrolea (MAC-4866; 1943).

Ex *R. vitellinus culminatus* Gould. **BOLIVIA:** 1 male, 1 female, Calabatea (MAC-10391; 1934); 1 male, 1 female, Chatarona (MAC-10297; 1934). **BRAZIL:** 1 male, 2 females, Amazonas, S bank Rio Solimões, 13.5 km E. São Paulo de Olivença, 03°27'S, 68°49'W (AA-713 and 714; 2000). **PERU**: 1 male, 3 females, Loreto, 7 km SW Jeberos, 05°18'48"S, 76°16'32"W (DFL-1592; 2001); 2 females, Loreto, ca. 54 km NNW mouth Rio Morona on W bank, 04°16'51"S, 77°14'16"W (JLK-306; 2001). **VENEZUELA**: 1 female, T. F. Amaz., Cerro de la Neblina basecamp, 0°50'N, 65°10'W (JPO *et al.*; 1985).

Ex *R. vitellinus culminatus>ariel*. **BRAZIL**: 2 males, 3 females, Mato Grosso, W bank Rio Teles Pires, 33 km NE Alta Floresta, 09°39'36"S, 55°54'58"W (JDW-257; 1998).



FIGURES 1–8. 1–5, *Austrophilopterus cancellosus*. 1, Entire dorsoventral male. 2, Male dorsal head. 3, Male genitalia. 4, Terminal portion of male genitalia. 5, Female metanotum and dorsoventral abdomen. 6–7, *A. flavirostris*. 6, Male dorsoventral posterior abdomen. 7, Terminal portion of male genitalia. 8, *A. megathorax* female dorsal head.

Male. As in Fig. 1, dorsal head as in Fig. 2. Tergal setae: II, 2; III, 4–6 (40: 4.2); IV, 4–6 (41: 4.3); V, 4–8 (43: 5.9); VI, 6–11 (44: 7.8); VII, 7–10 (43: 9.2); VIII, 5–9 (43: 7.3). Ter-

gum VII undivided (49 of 67 specimens) or with median vertical junction line (17 of 67 specimens), with only 1 specimen showing distinct space between plates. Sternal setae: II, 4–8 (36: 5.4); III, 4–7 (37: 5.3); IV, 4–8 (38: 5.8); V, 4–8 (42: 6.1); VI, 4–9 (43: 6.1); VII, 3–6 (47: 4.1), VIII, 2–3 (43: 2.0). Genitalia (Figs. 3–4) with GL, 0.46–0.60 (59: 0.537), GPL, 0.090–0.130 (68: 0.1054). Dimensions: TW, 0.56–0.71 (63: 0.624); HL, 0.63–0.74 (64: 0.682); PW, 0.35–0.45 (63: 0.403); MW, 0.48–0.62 (63: 0.546); AWV, 0.62–1.00 (59: 0.818); TL, 1.82–2.31 (60: 2.051).

Female. Abdomen as in Fig. 5. Tergal setae: II, 2; III–IV, 4; V, 4–5 (55: 4.0); VI, 4–6 (54: 4.2); VII, 4–6 (55: 4.5); VIII, 3–5 (54: 4.0). Sternal setae: II, 3–7 (44: 5.3); III, 4–8 (44: 4.7); IV, 4–6 (50: 4.9); V, 4–7 (52: 5.2); VI, 4–8 (57: 5.5); VII, 4–9 (54: 6.4). Dimensions: TW, 0.58–0.75 (83: 0.665); HL, 0.65–0.77 (85: 0.717); PW, 0.37–0.47 (83: 0.427); MW, 0.52–0.68 (82: 0.591); AWV, 0.74–1.10 (69: 0.920); TL, 2.14–2.75 (79: 2.456).

Diagnosis. This species is separated from *A. flavirostris* Carriker by the male of the former lacking a median separation between the tergal plates on VII and having a penis length 0.090–0.130 (mean = 0.1054). The females are virtually inseparable, with a suggestion of difference in that the mean number of sternal setae for all segments of *A. cancellosus* is smaller than for *A. flavirostris*. While these separations are certainly not profound, the recognition of these 2 as separate species is further supported by *A. cancellosus* being limited to hosts in the genus *Ramphastos* and *A. flavirostris* limited to hosts in the genus *Pteroglossus*.

2. *Austrophilopterus flavirostris* Carriker 1950 (Figs. 6–7)

Austrophilopterus cancellosus flavirostris Carriker 1950: 171. Type host: *"Pteroglossus flavirostris mariae* (Gould)" = *P. azara mariae* Gould.

Material. **PERU**: Holotype male, allotype female, La Pampa (MAC-3940; 1931); 1 male, 2 females, Loreto, 86 km SE Juanjui on E bank upper Rio Pauya, 07°33'40"S, 75°54'58"W (MS-3666: 2000).

Remarks. The description of this as a subspecies was based only on a male/female pair. Carriker stated that it, along with several other subspecies, is "...close to *cancellosus*." He proceeded to cite a number of supposedly differentiating features associated with certain dimensions, shapes, and colorations. We do not feel any of these are of value in its recognition. To his credit, Carriker did mention the medial separation of the male abdominal tergal plates on VII, a feature we have found of value in separating most *A. flavirostris* from *A. cancellosus*.

Austrophilopterus cancellosus castanotus Carriker 1950: 173. Type host: *Pteroglossus castanotis castanotis* Gould. **New Synonymy**.

Material. **PERU**: Holotype male, allotype female, 1 male paratype, Sapasoa, Dept. Chachapoyas (MAC-8146; 1933).

Remarks. Carriker claimed this to be "Closest to *A. flavirostris"*, but smaller, with dorsal head spiniforms much smaller and dorsoanterior head plate of different shape. These features fail to hold true after examination of a series of individuals. He did agree that a series of *Austrophilopterus* collected from *P. c. australis* Cassin were the same as those from *P. c. castanotis*.

Austrophilopterus cancellosus torquatus Carriker 1950: 174. Type host: *Pteroglossus torquatus torquatus* (J. F. Gmelin). **New Synonymy**.

Material. **COSTA RICA**: Holotype male, allotype female, 3 male, 2 female paratypes, Guapiles (MAC-516; 1903). **MEXICO**: 2 males, 2 females, Campeche, 24 km S Silvituc, 18°14'N, 90°12'W (DHC PI-1; 1998). **PANAMA**: 1 male, 1 female, Barro Colo (JVT-270; 1927); 1 male, 1 female, Lion Hill (1911).

Remarks. Carriker provided only dimensional differences and nebulous morphological features as a means of recognizing this subspecies. All of these prove meaningless when considering features other than those associated solely with the holotype and allotype.

Other material examined:

Ex *Pteroglossus aracari* (L.). **BRAZIL**: 1 male, 1 female, Pará, Fazenda Morelândia, 8 km N of Santa Barbara do Pará, 01°12'40"S, 48°14'47"W (JDW:MO-004; 1999); 2 females, no locality (DB-7; 1965).

Ex *P. beauharnaesii* Wagler. **BRAZIL**: 1 male, Mato Grosso, S bank Rio Cristalino, 1.3 km upriver from confluence of Rio Teles Pires, 34 km NE Alta Floresta, 09°37'25"S, 55°55'40"W (JDW-283; 1999).

Ex *P. bitorquatus* Vigors. **BRAZIL**: 1 female, Mato Grosso, S bank Rio Cristalino, 1.3 km upriver from confluence of Rio Teles Pires, 34 km NE Alta Floresta, 09°37'25"S, 55°55'40"W (JDW-279; 1999); 1 female, Pará, 126 km NW Alta Floresta, S bank Rio São Benedito, 09°06'44"S, 55°56'32"W (AA-404; 1999).

Ex *P. castanotis australis*. **BOLIVIA**: 1 male, 3 females, Sta. Ana (MAC-9313; 1934); 2 males, 2 females, Santa Cruz, Mina don Mario, 126 km ENE San Jose de Chiquitos, 17°20'S, 59°41'W (MHH-31; 1999). **BRAZIL**: 1 female, Mato Grosso, 32.7 km NW Alta Floresta, along road to Paranaita (MT 208), 09°44'09"S, 56°21'34"W (JDW-165; 1999).

Ex *P. erythropygius* Gould. **ECUADOR**: 5 males, 3 females, Prov. Manabi (MM-246; 1988).

Ex *P. frantzii* Cabanis. **COSTA RICA**: 2 males, 3 females, Puntarenas, Conte (MM-23; 1984).

Ex *P. inscriptus humboldti* Wagler. **BRAZIL**: 2 males, 2 females, Amazonas, N bank Rio Solimões, ca. 4.5 km NE São Paulo de Olivença, 03°25'S, 68°57'W (AA-680; 2000).

Ex *P. inscriptus inscriptus* Swainson. **BRAZIL**: 1 male, 1 female, Mato Grosso, Ilha do Ludovico on Rio Teles Pires, 32 km NE Alta Floresta, 09°38'03"S, 55°56'23"W (JDW-239; 1999).

Ex *P. torquatus nuchalis* Cabanis. **COLOMBIA**: 1 male, 6 females, Dept. Magdalena, Don Diego (MAC-13905; 1914); 5 males, 3 females, Bolivar, Norosil (MAC-10064; 1947).

Male. Posterior abdomen as in Fig. 6. Tergal setae: II, 2; III, 4–6 (14: 4.4); IV, 4–6 (15: 4.9); V, 4–8 (19: 5.8); VI, 5–10 (21: 7.0); VII, 6–10 (21: 7.9); VIII, 6–9 (18: 7.3). Tergum VII with distinct median space between plates (Fig. 6), with only 1 of 30 specimens having plates medially fused to form vertical line. Sternal setae: II, 4–9 (16: 6.8); III, 4–8 (15: 5.9); IV, 5–8 (16: 5.9); V, 5–8 (18: 6.7); VI, 6–9 (20: 6.7); VII, 4–7 (20: 5.2), VIII, 2–3 (21: 2.0). Genitalia (Fig. 7) with GL, 0.49–0.60 (23: 0.535), GPL, 0.070–0.090 (27: 0.0822). Dimensions: TW, 0.55–0.67 (29: 0.625); HL, 0.63–0.70 (26: 0.663); PW, 0.37–0.44 (29: 0.404); MW, 0.48–0.62 (28: 0.576); AWV, 0.63–0.94 (27: 0.854); TL, 1.86–2.28 (26: 2.077).

Female. Abdomen much as in Fig. 5. Tergal setae: II, 2; III, 4–5 (25: 4.0); IV, 4–5 (25: 4.1); V, 4–6 (26: 4.3); VI, 4–6 (26: 4.6); VII, 4–8 (26: 5.8); VIII, 2–6 (26: 4.2). Sternal setae: II, 6–10 (21: 7.2); III, 4–7 (18: 5.8); IV, 5–8 (18: 6.1); V, 4–8 (21: 6.0); VI, 4–8 (25: 6.0); VII, 6–10 (25: 7.0). Dimensions: TW, 0.60–0.73 (34: 0.658); HL, 0.65–0.74 (33:

0.695); PW, 0.38–0.46 (32: 0.423); MW, 0.54–0.69 (33: 0.619); AWV, 0.78–1.15 (29: 0.964); TL, 2.09–2.67 (32: 2.438).

Diagnosis. This species is separated from *A. cancellosus* by 29 of 30 males of the former having a distinct median separation between the tergal plates on VII and males with penis length only 0.070–0.090 (mean = 0.0822). The females are virtually inseparable, with a suggestion of difference in that the mean number of sternal setae for all segments of *A. flavirostris* is larger than for *A. cancellosus*. As stated earlier, these separations are not profound, but the recognition of these 2 as separate species is further supported by *A. flavirostris* being limited to hosts in the genus *Pteroglossus* and *A. cancellosus* limited to hosts in the genus *Ramphastos*.

3. *Austrophilopterus megathorax* Carriker 1950 (Fig. 8)

Austrophilopterus megathorax Carriker 1950: 178. Type host: "*Pteroglossus didymus* Sclater" = *P. viridis* (L.).

Material. **VENEZUELA**: Holotype female, El Cuyuni, Rio Cuyuni (MAC-7001; 1910).

Remarks. Carriker based this new species on what he called "...a single, nearly adult, female" or "slightly immature" female. The specimen lacks the expected pigmentation and suffers from some distortion.

Male. Unknown.

Female. Dorsal head as in Fig. 8. Tergal setae on II, 2; III–VII, 4; VIII, 5. Sternal setae on II–VII, 5–7. Dimensions: TW, 0.55; HL, 0.64; PW, 0.37; MW, 0.47; AWV, 0.59; TL, 1.70.

Diagnosis. The single specimen is admittedly very small in all dimensions, much smaller than any other forms of this genus from *Pteroglossus* or *Ramphastos*. Other differentiating features, except for head shape (Fig. 8), given by Carriker do not hold true. However, in the absence of any male from this locality we believe it prudent to continue recognition of this as a valid species until further material is collected and studied.

This louse species was described by Carriker (1950) from *P. didymus* Sclater. Hopkins and Clay (1952) subsequently modified this to *P.* [*viridis*] *didymus* Sclater. Price *et al.* (2003) dropped the brackets and gave the host as *P. viridis didymus* Sclater. However, Dickinson (2003) does not recognize "*didymus*" as a valid taxon, but states that it is based on subadult specimens of *P. inscriptus*. Since *P. inscriptus* does not occur in Venezuela, and *P. viridis* does, we believe that the latter name represents the correct one for Carriker's type host. This action is further reinforced by the fact that the 6 louse specimens we have studied from *P. inscriptus* from Brazil are quite different from that of *A. megathorax*.

***truncatus* species group**

Three species of this group have the dorsoanterior head plate with a prominent medioposterior point (Figs. 10, 14), whereas the fourth species, described here as a new species, has a posteriorly rounded plate (Fig. 16); each side of temple margin with both setae of equal length; each plate of tergite II with long seta at medioanterior corner (Figs. 9, 13); tergites II–V with lateroposterior process intruding into following segment; abdominal sternites slender; male genitalia with short penis overlying characteristic sclerites (Figs. 11–12).

4. *Austrophilopterus truncatus* (Piaget 1888) (Figs. 9–13)

Docophorus truncatus Piaget 1888: 149. Type host: "*Aulacorhynchus rubrogularis*" = mistranscription for *A. prasinus atrogularis* (Sturm) (see Hopkins and Clay 1952: 50).

Material. **PERU**: Holotype male, allotype female, female paratype of *A. s. subspinosus* Carriker, Eneñas, Pichis Trail (MAC-1375; 1930); 1 female, Mann N.A. (TP-1228; 2001); 1 male, 1 female, San Martin, 24 km ENE Florida, 05°41'09"S, 77°45'16"W (AWK-2470; 2002).

Remarks. The description by Piaget with the illustration of the single entire female type specimen clearly shows the body details and pointed shape of the dorsoanterior head plate. This leaves little doubt that our material represents this species.

Austrophilopterus spinosus spinosus Carriker 1950: 181. Type host: *"Aulocorhynchus caeruleicinctus borealis* Carriker" = *Aulacorhynchus coeruleicinctis* d'Orbigny. **New Synonymy**.

Material. **PERU:** Holotype male, allotype female, 2 female paratypes, Huacapistana (MAC; 1930); 2 males, 7 females, Oconeque (MAC-3137; 1931); 1 female, Perene (MAC; 1929). **BOLIVIA:** 4 males, 5 females, Sandillani (MAC-10740; 1934); 1 male, 2 females, Santa Cruz, Chuchial, ca. 37 km SE Samaipata, 18°22.9'S, 63°37.2'W (JLK-155 and DFL-1198; 1999); 1 female, Santa Cruz, La Pajcha, ca. 28 km S Samaipata, 18°23.8'S, 63°49.7'W (DLD-6966).

Remarks. Little more is given other than dimensions and vague morphological features to differentiate this subspecies from the nominate form. These do not prove useful when compared to additional specimens.

Austrophilopterus spinosus subspinosus Carriker 1950: 182. Type host: *"Aulocorhynchus atrogularis* (Sturm)" = *Aulacorhynchus prasinus atrogularis* (Sturm).

Material. **PERU**: Holotype male, allotype female, 1 female paratype, Eneñas, Pichis Trail (MAC-1375; 1930).

Remarks. Carriker apparently was unaware of the much earlier description of *A. truncatus*, thereby contributing to this falling to junior synonymy as established by Price *et al.* (2003). His mention of only trivial features for recognition of this subspecies does nothing to justify its separation.

Austrophilopterus spinosus microgaster Carriker 1950: 183. Type host: *"Aulocorhynchus derbianus* (Gould)" = *Aulacorhynchus derbianus* Gould. **New Synonymy**.

Material. **PERU**: Holotype male, allotype female, 5 males, 1 female, Eneñas (MAC-1361; 1930); 1 male, 1 female, La Oroya (MAC-3416; 1931); 1 female, Cajamarca, ca. 3 km NNE San José de Lourdes, 05°4.3'S, 78°52.9'W (DFL-1036; 1998). **BOLIVIA**: 1 male, 1 female, Dpto. de Cochabamba, Chapare, Villa Tunari, 43 km W San Onofre, 17°09'S, 65°47'W (VGR-234; 2002).

Remarks. Carriker indicated that this subspecies seems to lie between *A. s. spinosus* and *A. s.*

subspinosus, without giving any substance to support this separation.

Austrophilopterus spinosus calorhynchus Carriker 1950: 185. Type host: *"Aulocorhynchus calorhynchus* (Gould)" = *Aulacorhynchus sulcatus calorhynchus* (Gould). **New Synonymy**.

Material. **COLOMBIA**: Holotype male, allotype female, 3 male, 2 female paratypes, Magdalena, Los Garros (MAC-5893; 1945); 2 females, Sta. Marta, Hcda. Cincinnati (MAC-12340; 1913).

Remarks. Carriker claimed this subspecies to be very close to *A. s. microgaster.* Only vague small differences along with the usual dimensions for the type specimen pair were given to support the recognition of this taxon; however, these fail to afford separation.

Austrophilopterus tenuicapitis Carriker 1950: 185. Type host: *"Aulocorhynchus haematopygius* (Gould)" = *Aulacorhynchus haematopygus* (Gould). **New Synonymy**.

Material. **COLOMBIA**: Holotype male, allotype female, 2 male, 5 female paratypes, Sierra Perijá, Tres Tetas (MAC-2433; 1942); 2 males, Caldas, Rio Samaná, Hcda. Sofia (MAC-20189 and 20311; 1951).

Remarks. Carriker claimed this subspecies to be much smaller than *A. spinosus*, almost as small as *A. minutus*, and with a very narrow head. These differences do not prove to be valid when compared to specimens of the other taxa.

Austrophilopterus minutus minutus Carriker 1950: 186. Type host: *"Aulocorhynchus p. prasinus* (Gould)" = *Aulacorhynchus prasinus prasinus* (Gould). **New Synonymy**.

Material. **MEXICO:** Holotype male, allotype female, 3 male, 6 female paratypes, Vol. San Martin (MAC-782; 1940). **VENEZUELA**: 5 males, 8 females, Merida, Tabay (4465: 1966).

Remarks. Carriker referred to this as the smallest known form of the genus, but dimensions of the series available show sufficient overlap with other taxa as to preclude separation. He also claimed that the male genitalia differ in detail from other *Aulacorhynchus* forms, but we do not find this to be the case.

Austrophilopterus minutus sulcatus Carriker 1950: 187. Type host: *"Aulocorhynchus s. sulcatus* (Swainson)" = *Aulacorhynchus sulcatus sulcatus* (Swainson). **New Synonymy**.

Material. **VENEZUELA**: Holotype male, allotype female, 1 male, 3 female paratypes, San Esteban (MAC-8645; 1910); 4 male, 4 female, Los Minos (Correo; 1944); 1 male, Monagas, Caripe (13968; 1967).

Remarks. Stated by Carriker to be close to *A. m. minutus*, even smaller in some dimensions, but again his flawed application of dimensions does not hold valid for the other material.

Other material examined:

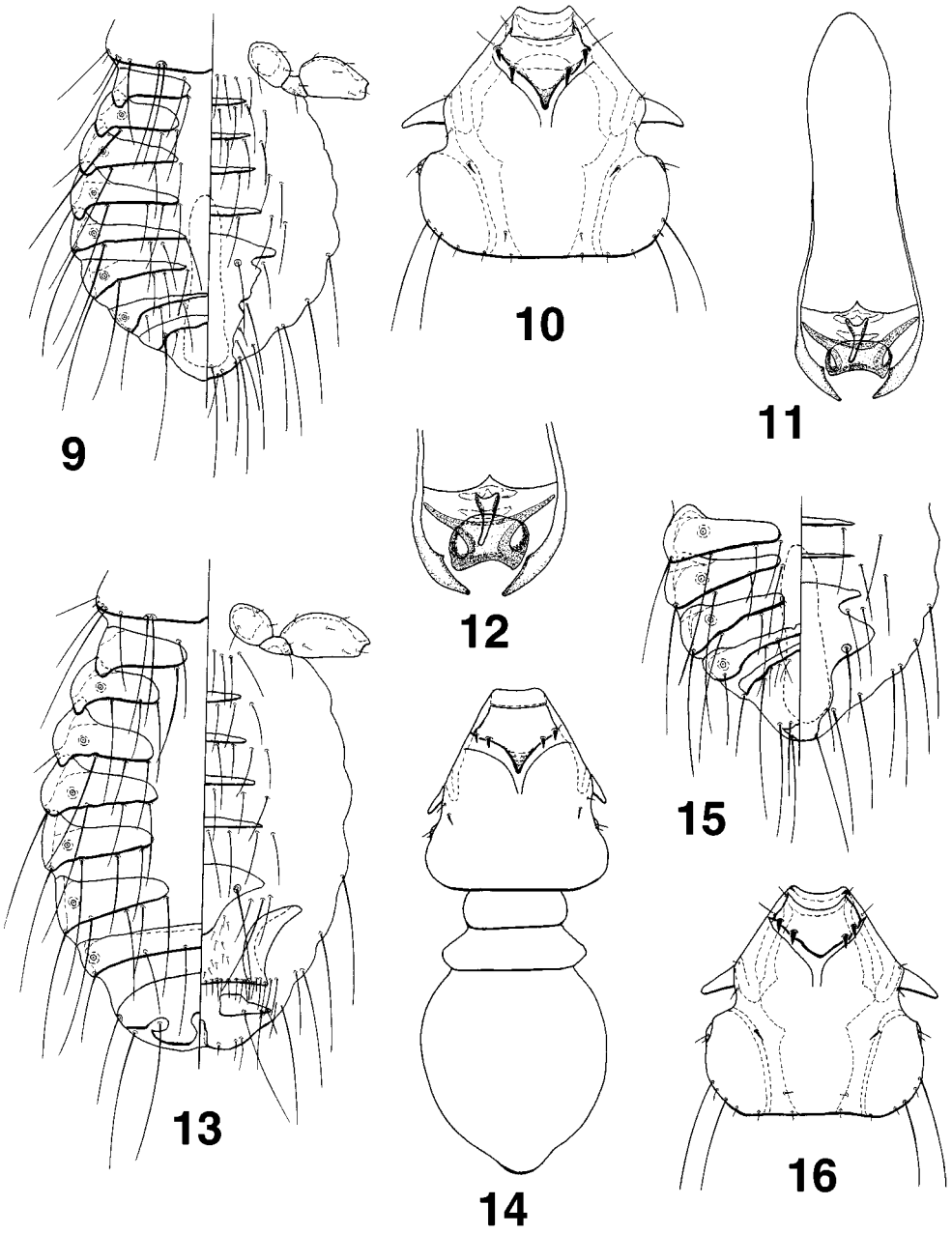
Ex *Aulacorhynchus prasinus caeruleogularis* (Gould). **COSTA RICA**: 4 males, 9 females, Juan Viñas (MAC-3317; 1907).

Ex *A. prasinus lautus* (Bangs). **COLOMBIA**: 4 males, 4 females, Sierra Nevada de Sta. Marta (MAC-14762; 1914); 2 males, 5 females, Sta. Marta, Mt. San Lorenzo (MAC-11134; 1913); 3 females, Sta. Marta, Hcda. Cincinnati (MAC-11183; 1913); 3 females, Sta. Marta Mts., Chinchicuá (MAC-7489; 1946); 3 females, Vista Nieve (MAC-7093; 1945); 2 males, 2 females, Magdalena, San Jose (MAC-6441; 1945).

Ex *A. prasinus phaeolaemus* (Gould). **COLOMBIA**: 1 male, 4 females, Uribe, Cauca (MAC-28513; 1958).

Male. Abdomen as in Fig. 9, dorsal head as in Fig. 10. Tergal setae: II, 2–4 (39: 2.8); III, 6–8 (20: 6.2); IV, 6–9 (20: 6.4); V, 6–8 (20: 6.8); VI, 6–10 (24: 7.2); VII, 6–9 (23: 7.5); VIII, 5–9 (22: 6.9). Sternal setae: II, 6–9 (13: 7.1); III, 6–8 (13: 6.8); IV, 6–8 (14: 6.5); V, 6–8 (17: 6.8); VI, 6–8 (19: 6.9); VII, 4–6 (21: 4.3), VIII, 2–3 (22: 2.1). Genitalia (Figs. 11–12) with GL, 0.32–0.42 (30: 0.374), GPL, 0.035–0.050 (37: 0.0432). Dimensions: TW,

0.46–0.59 (36: 0.506); HL, 0.51–0.60 (36: 0.553); PW, 0.29–0.36 (36: 0.323); MW, 0.37–0.46 (34: 0.410); AWV, 0.47–0.69 (32: 0.583); TL, 1.33–1.76 (33: 1.498).



FIGURES 9–16. 9–13, *Austrophilopterus truncatus*. 9, Male metanotum and dorsoventral abdomen. 10, Male dorsal head. 11, Male genitalia. 12, Terminal portion of male genitalia. 13, Female metanotum and dorsoventral abdomen. 14, *A. dimorphus* dorsal holotype male. 15–16, *A. thysi*. 15, Male dorsoventral posterior abdomen. 16, Male dorsal head.

Female. Abdomen as in Fig. 13. Tergal setae: II, 2–4 (55: 2.9); III, 5–7 (31: 6.1); IV, 6–8 (29: 6.4); V, 6–8 (28: 6.6); VI, 6–8 (32: 6.8); VII, 5–9 (31: 7.3); VIII, 4–8 (32: 5.3). Sternal setae: II, 6–9 (18: 7.4); III, 6–8 (18: 7.0); IV, 5–9 (22: 6.8); V, 5–9 (25: 6.9); VI, 6–9 (27: 7.3); VII, 6–10 (31: 7.0). Dimensions: TW, 0.49–0.64 (49: 0.568); HL, 0.55–0.66 (51: 0.605); PW, 0.31–0.38 (49: 0.354); MW, 0.41–0.54 (49: 0.464); AWV, 0.54–0.85 (45: 0.690); TL, 1.50–2.03 (48: 1.765).

Diagnosis. This species is very close morphologically to *A. andigenae* Carriker. However, both sexes have smaller dimensions, fewer sternal setae, and tergite II with only 2–4 setae (mean = 2.9), compared to *A. andigenae* with tergite II having 4–6 setae (mean = 4.4).

5. *Austrophilopterus andigenae* Carriker 1950

Austrophilopterus andigenae Carriker 1950: 175. Type host: "*Andigena hypoglaucus* (Gould)" = *Andigena hypoglauca lateralis* Chapman.

Material. **PERU**: Holotype female, allotype male, 3 male, 9 female paratypes, Huacapistana (MAC-1494; 1930); 3 males, 4 females, Leymebamba (MAC-5464; 1932).

Remarks. Carriker compared this species with *A. cancellosus* and its allies, discussing several good differentiating features. We agree with these, as these species are quite different. However, he did not make mention of any similarities with *Austrophilopterus* lice from *Aulacorhynchus*, which we have found to be extremely close morphologically.

Austrophilopterus pacificus Carriker 1950: 177. Type host: *Andigena nigrirostris occidentalis* Chapman. **New Synonymy**.

Material. **COLOMBIA**: Holotype female, allotype male, 1 male, 2 female paratypes, Bitaco (MAC-25345; 1918); 2 females, Cauca, Cerro Munchique (MAC-24171; 1965).

Remarks. Carriker admitted that this species is similar to *A. andigenae* in many respects. He cited the sclerites of the male genitalia as affording the most striking difference, but we do find this to be the case.

Austrophilopterus pacificus sanguineus Carriker 1950: 178. Type host: *Pteroglossus sanguineus.* Gould = most likely erroneous host. Probably some member of *Andigena*. **New Synonymy**.

Material. COLOMBIA: Holotype male, allotype female, female paratype, Dept. Chocó, Rio San Juan, Potedó (MAC-24198; 1918).

Remarks. Based only on the male/female type pair, the extremely close agreement in morphological features, including dimensions, with those of *A. andigenae* makes it extremely unlikely that *P. sanguineus* is the true type host. Carriker must have felt this could be true, as he stated that *A. p. sanguineus* agreed "...in every way with those taken on the genus *Andigena*, and is very close to *A. pacificus"*, which he noted is also from western Colombia.

Other material examined:

Ex *Andigena nigrirostris nigrirostris* (Waterhouse). **COLOMBIA**: 6 males, 12 females, Santander, Cachiri (MAC-19842; 1916); 5 males, 16 females, Santander N., Alto del Pozo (MAC-8840; 1946); 1 male, 2 females, Santander, Las Ventanas (MAC-18971; 1916); 1 male, 3 females, Cauca, Moscopan (MAC-21908; 1952). **VENEZUELA**: 1 male, 2 females, Paramode Rosas (MAC-9566; 1911).

Ex *A. laminirostris* Gould. **COLOMBIA**: 5 females, Nariño, Ricaurte (MAC-25980; 1957); 2 females, same except (MAC-30370; 1959).

Male. Tergal setae: II, 4–6 (17: 4.6); III, 6–8 (10: 6.7); IV, 6–10 (11: 7.7); V, 6–10 (11: 7.9); VI, 6–9 (14: 7.6); VII, 6–10 (14: 8.2); VIII, 4–10 (12: 7.1). Sternal setae: II, 7–12 (4: 8.5); III, 6–10 (5: 7.8); IV, 6–10 (6: 8.0); V, 7–10 (9: 8.2); VI, 4–9 (11: 7.2); VII, 5–7 (13: 5.9), VIII, 2. Genitalia close to Figs. 11–12, with GL, 0.40–0.51 (6: 0.427), GPL, 0.035–0.050 (11: 0.0441). Dimensions: TW, 0.51–0.59 (14: 0.551); HL, 0.54–0.63 (15: 0.597); PW, 0.34–0.38 (14: 0.355); MW, 0.43–0.49 (13: 0.458); AWV, 0.63–0.73 (14: 0.679); TL, 1.57–1.79 (13: 1.639).

Female. Tergal setae: II, 4–6 (22: 4.3); III, 6–8 (16: 6.8); IV, 6–9 (18: 7.1); V, 6–9 (20: 7.8); VI, 6–10 (20: 7.7); VII, 6–10 (22: 7.9); VIII, 4–8 (21: 6.0). Sternal setae: II, 8–12 (13: 9.4); III, 7–11 (13: 9.0); IV, 6–10 (14: 8.1); V, 7–12 (15: 8.6); VI, 7–11 (19: 9.2); VII, 7–14 (21: 10.4). Dimensions: TW, 0.57–0.66 (24: 0.620); HL, 0.62–0.69 (24: 0.655); PW, 0.37–0.43 (24: 0.400); MW, 0.51–0.57 (24: 0.536); AWV, 0.66–0.90 (23: 0.820); TL, 1.87–2.24 (24: 2.033).

Diagnosis. The principal feature for separation of *A. andigenae* from *A. truncatus* involves the former having tergite II with 4–6 (mean for N (39) = 4.44) marginal setae and the latter having only 2–4 (mean for N (94) = 2.87) such setae. In addition, both sexes of *A. andigenae* have dimensions larger than those of *A. truncatus* and also tend to have more setae on sternites II–VII. These are not profound separations but ones that are sufficient to make us reluctant to synonymize louse taxa from these 2 different host genera.

6. *Austrophilopterus dimorphus* Carriker 1950 (Fig. 14)

Austrophilopterus dimorphus Carriker 1950: 180. Type host: *Selenidera spectabilis* Cassin.

Material. **PANAMA**: Holotype male, 1 male paratype, Mt. Piri (JHP; 1912).

Remarks. The description of this species was based on a single slide with specimens collected in 1912 by someone other than Carriker. Carriker stated that this slide included the holotype male, allotype female, 1 male paratype, and 1 nymph of this species. The obvious difference between the very small compressed male (see Fig. 14) and the much larger female must have contributed to the species name "*dimorphus*". Unfortunately, the female is clearly a contaminant from either *Ramphastos* or *Pteroglossus*. The “nymph” is a headless body of some male in poor condition but belonging to the chewing louse suborder Amblycera and again a likely contaminant.

Male. Principal head features and body outline as in Fig. 14. Tergal setae: II, 2; III, 4; IV, 6; V, 6–8; VI, 4; VII, 8; VIII, 6. Sternal setae: II–III, 6; IV, 7; V–VI, 8; VII, 6; VIII, 2. Genitalia distally too distorted for detailed observation, with GL, 0.30. Dimensions: TW, 0.47–0.51; HL, 0.54–0.59; PW, 0.30–0.34; MW, 0.37–0.40; AWV, 0.49; TL, 1.31–1.38.

Female. Unavailable.

Diagnosis. We choose to continue recognition of this as a valid species because the male genitalia are too distorted for study and the details of the abdominal chaetotaxy and structure defy confident interpretation. The quantitative data presented here were difficult to obtain, but they all appear to be in the ranges for *A. truncatus*. On this same slide is an

isolated head, with no sign of the associated body, this head being similar, but somewhat larger, to those of the males. Carriker must have exercised his imagination to the utmost to come up with his Fig. 35 for the male genitalia. Carriker even admitted that the specimens were in poor condition, hairs missing, poorly cleared, with many details not visible. Yet he described this new species from them! Given the history of the specimens on this slide, with obvious contamination from most likely 2 other host taxa, the type host itself may actually be in error. Only additional collecting from *S. spectabilis* will help answer this question.

7. *Austrophilopterus thysi* Price and Weckstein, new species (Figs. 15–16)

Type host. *Selenidera gouldii* (Natterer), Gould's Toucanet.

Type material. Holotype male, 1 male, 2 female paratypes, **BRAZIL**: Mato Grosso, W bank Rio Teles Pires, across from mouth of Rio Cristalino, 32 km NE Alta Floresta, 09°38'01"S, 55°56'21"W, 8 July 1999 (JDW-222). All specimens deposited in the National Museum of Natural History, Washington, DC.

Male. Terminal abdominal segments as in Fig. 15, dorsal head as in Fig. 16. Tergal setae: II, 3; III–VII, 6; VIII, 4. Sternal setae: II, 6; III, 4–6; IV–VI, 4; VII, 3–4; VIII, 2. Genitalia essentially as in Figs. 11–12, with GL, 0.39–0.41, GPL, 0.035–0.040. Dimensions: TW, 0.51–0.56; HL, 0.54; PW, 0.32–0.33; MW, 0.44–0.47; AWV, 0.58–0.68; TL, 1.54–1.58.

Female. Tergal setae: II, 2; III–IV, 5–6; V, 5; VI, 5–6; VII, 6–7; VIII, 4–5. Sternal setae: II, 6; III, 4–6; IV, 4; V, 4–6; VI, 4–5; VII, 6–7. Dimensions: TW, 0.57–0.60; HL, 0.57–0.59; PW, 0.35–0.36; MW, 0.50–0.51; AWV, 0.69–0.73; TL, 1.83–1.84.

Diagnosis. This species is unique in that it combines the posteriorly rounded dorsoanterior head plate (Fig. 16) of the *cancellosus* species group with the distinctive genitalic type and other features of the *truncatus* species group. In spite of this discrepancy of head plate type, *A. thysi* is placed in this species group because of the similarity of all other features to its members.

Etymology. This species is named for Mathys ("Thys") J. Meyer, Illinois Natural History Survey, Champaign, in recognition of his deep interest in the intricacies of taxonomic research on both frogs and chewing lice.

Discussion

In producing their World Checklist of the chewing lice, Price *et al*. (2003) attempted to dispose of as many inappropriately applied louse subspecific names as possible, either by elevating them to full species status or by making them a junior synonym of the nominate subspecies. They were fully cognizant that either action might eventually prove erroneous. Of the 22 *Austrophilopterus* names established by Carriker, 8 were described as spe-

cies and 14 were described as subspecies. With the allowance for the single subspecies previously accepted as a junior synonym, this left 13 subspecific names to be decided upon. After reviewing the statements of Carriker associated with the descriptions and in consideration of the spectrum of different host taxa involved, Price *et al*. (2003) recognized all 13 *Austrophilopterus* subspecific names as full species without any further synonymies. However, our current study of *Austrophilopterus* specimens has convinced us of the seriously flawed Carriker descriptions and that many of these subspecific names thereby fall into junior synonymy.

Someone perusing the current listings for *Austrophilopterus* in Price *et al*. (2003) would conclude that there is an extremely high degree of louse/host specificity. However, our assessment of morphological characters has shown quite the opposite pattern. We have established that 16 of the Carriker names are new junior synonyms. These, in addition to the single earlier accepted synonymy, result in only 5 of the 22 Carriker names surviving as valid species and 2 of these are of a dubious nature. Both the molecular (Johnson *et al*. 2002; Weckstein 2003; 2004) and morphological data confirm the placement of *Austrophilopterus* species into the 2 species groups (*cancellosus* and *truncatus*) proposed here.

The *cancellosus* species group contains 2 widespread species: *A. cancellosus* restricted to a wide range of hosts in the genus *Ramphastos* and *A. flavirostris* to numerous hosts in the genus *Pteroglossus*. The former includes 7 new synonyms, including the single Eichler name. The latter includes 2 new synonyms. The morphological separation of these 2 species, while not as clear cut as one might wish, is of sufficient magnitude to endorse their recognition as distinct species. The third species of this group, *A. megathorax*, is based on a suspicious Carriker record of a single unusual female louse off *Pteroglossus viridis* in Venezuela, and needs to be confirmed through the collection of additional material.

The *truncatus* species group contains 4 species: *A. truncatus* limited to a number of *Aulacorhynchus* taxa and including 6 new synonyms and a single previous synonym, *A. andigenae* from *Andigena* host taxa and including 2 new synonyms, and *A. dimorphus* and *A. thysi*, each from a different *Selenidera* species. The first 2 of these species are morphologically quite close, separated by several marginal features in conjunction with their host associations. Carriker's 2 males of *A. dimorphus* supposedly from *S. spectabilis* have a questionable history and should be viewed with caution until confirmed or refuted by further collecting. The new species described in this study, *A. thysi* from *S. gouldii*, is based on specimens from a recent collection and is clearly recognizable from the other 3 species of this group.

Our taxonomic revision, based on morphological characters, is consistent with the results of several recent molecular phylogenetic studies of *Austrophilopterus* chewing lice. For example, our finding that each of the host genera carries its own group of lice is confirmed by the analyses of mitochondrial and nuclear DNA sequences (Johnson *et al*. 2002;

Weckstein 2003; 2004) in which *Austrophilopterus* lice from each host group form reciprocally monophyletic clades (Weckstein 2003). Molecular phylogenetic analysis reconstructs a split between *A. cancellosus* from *Ramphastos* and *A. flavirostris* from *Pteroglossus* (Weckstein 2003; 2004), which is also supported by our morphological data. Weckstein (2004) also shows that sympatric congeneric *Ramphastos* toucans share the same lineages of *Austrophilopterus* lice, which suggests a lack of host specificity within *Austrophilopterus* parasitizing the same host genus. However, the molecular divergences within *A. cancellosus* and *A. flavirostris* (Weckstein 2003; 2004) are not evident in the morphological data. The molecular phylogenetic data (Johnson *et al*. 2002; Weckstein 2003; 2004) also confirm a number of other conclusions based on several unique morphological features. For example, the molecular data indicate that *A. andigenae* from *Andigena* and *A. truncatus* from *Aulacorhynchus* are sister species and are most closely related to *A. thysi* from *Selenidera*. The sister relationship of *A. andigenae* and *A. truncatus* is supported by a number of morphological characters including a prominent medioposterior point on the dorsoanterior head plate (Figs. 10, 14) and tergites II-V with a lateroposterior process intruding into the following segment (Figs. 9, 13). *Austrophilopterus thysi* differs from *A. andigenae* and *A. truncatus* in the morphology of the dorsoanterior head plate. However, several morphological features support a clade composed of *A. thysi*, *A. andigenae*, and *A. truncatus* (e.g. tergites II–V with lateroposterior process intruding into the following segment and slender abdominal sternites).

Acknowledgments

We thank Nancy E. Adams, National Museum of Natural History, Smithsonian Institution, Washington, DC, and Paul Brown, The Natural History Museum, London, for the loan of many louse specimens critical to the success of this study. We also thank J. V. Remsen for allowing us to brush lice from bird skins in the LSU collection and the many generous bird collectors who helped to collect lice for this project: A. Aleixo, J. K. Armenta, R. C. Faucett, D. F. Lane, J. P. O'Neill, T. Valqui, and C. C. Witt. This work was supported in part by NSF DEB-0104919 to JDW, NSF PEET DEB-0118794 to Kevin P. Johnson, the American Museum of Natural History, the LSU Bird-a-thon, the T. Vinton Holmes endowment, the LSU Museum of Natural Science, and the LSU Department of Biological Sciences.

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