

South American *Caenis* Stephens (Ephemeroptera, Caenidae), new species and stage descriptions

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Abstract

Eight species of *Caenis* are reported from Argentina, and new records are given for Bolivia, Brazil and Uruguay. The nymphs of five of them are firstly described from reared material: *Caenis burmeisteri*, *C. dominguezi*, *C. gonseri*, *C. tenella* new combination, and *C. ludicra*. Female adult stage of all these species (except *C. tenella*) are also firstly described. The new combination *Caenis tenella* is proposed, and the name *Caenis grimi* is here treated as a junior synonym of it. *Caenis uruzu* new species is described from male imago and nymphs. New distributional records from Argentina and Uruguay are given. Diagnosis and illustrations to distinguish all the treated species from other *Caenis* species are proposed. A key to adults and nymphs from Argentinean species of *Caenis* is provided.

Key words: Argentina, Pannota, Neotropics, *Caenis*, *Brachycercus*

Resumen

Se reportan ocho especies de *Caenis* en Argentina y se dan nuevos registros para Bolivia, Brasil y Uruguay. Se describen por primera vez las ninfas de cinco especies, a partir de material criado: *Caenis burmeisteri*, *C. dominguezi*, *C. gonseri*,

C. tenella nueva combinación, y *C. ludicra*. Las hembras adultas de estas cinco especies (excepto *C. tenella*) son descritas también por primera vez. Se propone la nueva combinación *Caenis tenella*, y *Caenis grimi* es tratada como sinónimo junior de ésta. *Caenis uruzu* nueva especie es descrita de imagos macho y ninfas. Se brindan nuevos registros distribucionales para Argentina y Uruguay. Se proponen diagnosis e ilustraciones para distinguir todas las especies tratadas del género. Se provee una clave para la identificación de las ninfas y adultos de las especies argentinas de *Caenis*.

Introduction

South American Caenidae are known from four genera: *Brasilocaenis* Puthz, *Brachycercus* Curtis, *Caenis* Stephens, and *Cercobrachys* Soldan. From them only *Brasilocaenis* is endemic to the Neotropics. *Brasilocaenis* (represented by 6 species) and *Caenis* (represented by 18 species) are the most diverse genera in the region. *Brachycercus* (1 species) and *Cercobrachys* (2 species) are very rare in South America, hardly encountered with in the field and collections. The single dubious *Brachycercus* species known from South America, *B. tenella* (Navas), is known from male and female imagos, but the study of the recently rediscovered types showed it to be a *Caenis* species. As the types of the species described by Navas are indistinguishable from the type material of the recently described *Caenis grimi* Malzacher (2001), both species are here proposed as subjective synonyms and the new combination *Caenis tenella* (Navas) is created. The presence of the genus *Brachycercus* in South America is supported only by nymphs of an undescribed species from French Guiana (Orth et al. 2000).

Navas (1915, 1920, 1922, 1930) described five *Caenis* species from South America, but they could not be identified by the short and inexact original descriptions. Malzacher (2001) redescribed two of these species (*C. argentina* Navas and *C. ludicra* Navas) on the basis of type specimens from the Museum of Barcelona. Further South American species of the family Caenidae have been described by Froehlich (1969), Puthz (1975), Soldán (1986), Malzacher (1986, 1990, 1998, 2001), Pereira and da-Silva (1990), and Alba-Tercedor and Mosquera (1999). *Caenis* is a relatively common and cosmopolitan genus. Malzacher (2001) distinguished two lineages of the South American Caeninae: a lineage with strong and apically pointed forceps and another one with weaker and apically rounded forceps. The latter was subdivided into five groups: one from Africa (the *elouardi*-group) and four from South and Central America: the *reissi*-group, the *pflugfelderi*-group, the *grimi*-group and the *argentina*-group. The present work deals with one species from the lineage with strong and apically pointed forceps (*C. burmeisteri* Malzacher), and five species of the lineage with weaker and apically rounded forceps, including all the species from the *argentina*-group (*C. argentina*, *C. dominguezi* Malzacher, *C. gonseri* Malzacher, *C. ludicra*, *C. plaumanni* Malzacher and *C. uruzu* new species) and the *grimi*-group (now *tenella*-group, *C. tenella* new combination).

In the present contribution the nymphal stage of five *Caenis* species are described for the first time: *C. burmeisteri*, *C. dominguezi*, *C. gonseri*, *C. tenella* (Navas) new combination, and *C. ludicra*. Female imagos of four species (*C. burmeisteri*, *C. dominguezi*, *C. gonseri* and *C. ludicra*) are also newly described here, as well as male imagos and nymphs of a new species, *Caenis uruzu* from Misiones (Argentina). New distributional records are given for all these species.

Material and methods

Keys in Domínguez et al. (2006) were used for genus and species determination. Identifications were confirmed by the original descriptions and figures in Malzacher (1990, 2001), as well as the study of type material. Male genital structures were firstly mounted in glycerin-jelly and drawn with a camera-lucida under magnification; later these parts were permanently mounted in Canada Balsam. Wings were mounted dry on slides. Nymphs were dissected and their mouthparts, legs and operculate gills, mounted in Canada Balsam.

Terminology follows Malzacher (1991) for male genital sclerites and Kluge (2004) for thoracic structures. The length of the segments of labial palpi was measured along the median line of each segment.

Depositories: IFML, Instituto-Fundacion Miguel Lillo (Tucuman, Argentina); MUNSA, Museo de Ciencias Naturales de la Universidad Nacional de Salta (Argentina); MEUV, Museo de Entomología de la Universidad del Valle (Cali, Colombia); FAMU, Florida A&M University (Tallahassee, USA); MCFU, Museo de la Facultad de Ciencias de Uruguay (Montevideo); and UMSS, Universidad Mayor de San Simon (Cochabamba, Bolivia). Country abbreviations: ARG (Argentina), BO (Bolivia), BRA (Brazil), CHI (Chile), PA (Paraguay), URU (Uruguay).

Results

All diagnostic characters are summarized in Table 1.

Key to *Caenis* species from Argentina

Mature nymphs

1. Dark pigments on head present on mediolongitudinal line of occiput (Fig. 166); coxal processes narrow, with smooth margins (Figs. 21–22); tarsal claws I–II with 5–7 very large denticles (Figs. 28–29); operculate gills heavily maculated (Figs. 27, 159, 173) [PA, ARG (Corrientes, Formosa)]..... *C. burmeisteri*
- 1'. Dark pigments on head variable but never present on medial line of occiput (Figs. 165, 167–171); coxal processes more or less elongated, with serrated margins (e.g., Figs. 1–2, 39–40, 127–128); tarsal claws I–II with small denticles or without (e.g., Figs. 3–4); operculate gills not maculated (Figs. 44, 134, 110) or slightly maculated (Figs. 158, 172) 2
2. Small species (body length of male <3.0 mm, female < 3.8 mm); general coloration very pale, whitish or yellowish almost without grayish shading (Fig. 162); foretibia with a medial row of long setae, as long or longer than width of tibia (Fig. 130); posteromedian projection of abdominal tergum II short and very broad (Figs. 126, 162); IX sternum with a deep V-shaped notch at hind margin and with very short lateral spines (Fig. 135a–b) [URU, ARG (Formosa, Misiones, Buenos Aires)] *C. tenella*
- 2'. Medium to large species (male length >3.5 mm, female > 4.1 mm); general coloration darker, yellowish brown to dark brown with grayish markings (Figs. 158, 160–161, 163–164); foretibia only with short setae (Fig. 83); posteromedian projection of abdominal tergum II longer and narrower (e.g., Fig. 48); hind margin of IX sternum rounded, truncate or with an U-shaped indentation, lateral spines longer and stronger (e.g., Fig. 49) 3
3. Occiput without submedian marks (Fig. 167); operculate gills only with simple setae dorsally (Fig. 44) . 4
- 3'. Occiput at least with a pair of submedian star-like dark markings (Figs. 165, 168–171); operculate gills with simple setae and plumose or scale-shaped microtrichia¹ dorsally (e.g., Figs. 6, 74)..... 5
4. Abdominal sternum IX with a median U-shaped indentation on posterior margin (Fig. 49) [BO, ARG (Córdoba, Catamarca, Santiago, Salta)] *C. dominguezi*
- 4'. Abdominal sternum IX with straight or slightly rounded posterior margin [CHI, ARG (Neuquén, Río Negro)].....*C. gonseri*
5. Dorsal surface of body and operculate gills with large, scale-shaped microtrichia (Figs. 8i–j in Malzacher 2001); lateral margin of segment IX, besides short and apically frayed spines, with small teeth (Fig. 8l in Malzacher 2001) [BRA, ARG (Misiones)]*C. plaumanni*
- 5'. Dorsal surface of body and operculate gills without or with small ramified or bifurcate microtrichia (Figs. 6, 74, 116); lateral margin of segment IX without small teeth 6

1. Microtrichia can only be seen under high magnification (e.g., x100–x400)

TABLE 1. Characters of the treated *Caenis* species.

	<i>argentina</i>	<i>burmeisteri</i>	<i>dominguenzi</i>	<i>gonseri</i>	<i>tenella</i>	<i>ludicra</i>	<i>plaumanni</i>	<i>urazu</i>
general coloration	yellowish-brown	yellowish-brown	dark brown	yellowish-brown	whitish-yellow m: pointed or slightly rounded, f: wider	blackish-brown	yellowish-brown	yellowish-brown
prosternal triangle	m: pointed concave, f: truncated	anteriorly pointed	m and f: pointed or open	m and f: blunt	absent	m and f: truncated	m and f: pointed or rounded	m and f: blunt, concave sides
median filament on abd. tergum II	long	absent	long	short	absent	long	long	long
body length/fore leg	0.8-1.0	0.6	1.0	0.9	0.5-0.6	0.9-1.1	1.1	1.0
fore leg/hindleg	2.06-2.20	1.41-1.51	1.96-2.21	1.90-2.18	1.42-1.62	2.12-2.35	2.09-2.34	1.5-2.0
forceps apically	rounded	pointed	rounded with blurred outlines	rounded, with small projections	rounded	rounded	rounded	rounded
central sclerite	elongated broad, tape shaped, nearly reaching the central sclerite	elongated narrow, of middle length posteriorly	narrow and short	circular	dome-shaped	circular broad, tape shaped, nearly reaching the central sclerite	subcircular long, narrow, nearly reaching the central sclerite	elongated
lateral sclerite	anterior margin concave or straight	elongated, anterior margin concave	anterior margin concave	narrow and short	short, nearly invisible	anterior margin concave	anterior margin straight or concave	anterior margin concave
styliger sclerite, shape	long straight	long narrow	bent inwards	long and broad straight or slightly convex	short, bent inwards	short and rounded	long, thin, rel. far from forceps base	broad and short straight or slightly convex
apophyses of styliger sclerite	straight or slightly convex	strongly convex	slightly convex	convex	nearly straight projected, pointed, triangular	convex	convex	convex
penis, lobes	Rounded	rounded with dark pigments	lat. projected, acute/rounded	rounded, slightly projected	projected, pointed, triangular	rounded, more or less tapering	rounded	rounded, more or less tapering
posterolateral zone of sternum IX	often with dark epidermal pigments similar to rest of mesothorax	strongly dark similar to rest of mesothorax	strongly dark similar to rest of mesothorax	often with dark epidermal pigments similar to rest of mesothorax	pale similar to rest of mesothorax	often with dark epidermal pigments paler than rest of mesothorax	slightly brownish	sometimes with dark epidermal pigments
color: mesothorac. katapisternum	IV-IX, V-VII long	short	medium length, V and VI a little longer	IV-IX, IV-VII longer (medium length, V and VI a little longer)	very short	IV-IX, V-VII medium-long	female unknown	female unknown
abdominal posterolateral filaments	IV-IX, V-VII long	short	medium length, V and VI a little longer	IV-IX, IV-VII longer (medium length, V and VI a little longer)	very short	IV-IX, V-VII medium-long	IV-IX, VII-IX medium-long	IV-IX, VII-IX medium-long
head color pattern	<i>argentina</i> fig. 165	<i>burmeisteri</i> fig. 166	<i>dominguenzi</i> fig. 167	<i>gonseri</i> only exuvia known	<i>tenella</i> fig. 168	<i>ludicra</i> fig. 169	<i>plaumanni</i> fig. 170	<i>urazu</i> fig. 171
head, setae on hind margin	long simple setae laterally directed + frayed microtrichia	weak simple setae	small setules	small setules	short bifid setules only	frayed microtrichia only	short microtrichia + frayed teeth	short microtrichia + frayed teeth
coxal processes	relatively narrow	narrow, smooth margins	rounded with long bristles	narrow	small	pointed	semicircular, with teeth and microtrichia	long, more or less tapering
setae of tarsi	rel. slender, many serrated	rel. slender, many serrated	relatively stout, few serrated	relatively stout, few serrated	relatively stout, few serrated	relatively stout, few serrated	relatively stout, many serrated	relatively stout, few serrated

foretarsus	Ir. Simple or serrated	Ir. simple	Ir. simple (robust)	Ir. simple	Ir. simple (robust)	Ir. simple	Ir. Serrated	Ir. simple (robust)
middle tarsus	Ir. simple, Ir. Serrated (or both serrated)	Ir. serrated	Ir. simple + 3-6 plumose	Ir. simple + 3-6 plumose	Ir. simple + 3-6 plumose	Ir. simple + 3-6 plumose	Ir. simple, Ir. serrated	Ir. simple, Ir. serrated
hind tarsus	Ir. simple, Ir. Serrated (or both serrated)	Ir. simple, Ir. serrated	Ir. simple + 3-6 plumose	Ir. simple, Ir. serrated	Ir. simple, Ir. serrated	Ir. simple, Ir. serrated	Ir. simple, Ir. serrated	Ir. simple, Ir. serrated
tarsal claws	apically curved	not curved, slender	not strongly curved	slender	apically curved	not strongly curved	apically curved	not strongly curved
fore	4-8 denticles	5-7 large denticles	6-10 denticles	4-5 weak denticles	4-5 very weak	4-6 denticles	5-6 denticles	3-6 denticles
middle	4-8 denticles	5-7 large denticles	6-10 denticles	4-5 weak denticles	4-5 very weak	4-6 denticles	5-6 denticles	3-6 denticles
hind	10-20 denticles	ca. 40 small denticles	23-25 denticles	ca. 20 denticles	15-17 d. very weak	27-33 denticles	ca. 20 denticles	23-25 d. ap.denticle enlarged
abdominal color pattern	fig. 172	fig. 173 expanded, broadly rounded	figs. 174	unknown	fig. 176	fig. 175	fig. 177	fig. 178
labrum, lateral margin	slightly rounded	slightly rounded	slightly rounded	slightly rounded	slightly rounded	slightly rounded	slightly rounded	slightly rounded
labrum, anteromedian emargination	shallow and smooth	shallow and smooth	shallow and smooth	shallow and smooth	broad and marked	shallow and smooth	shallow and smooth	shallow and smooth
lingua of hypopharynx	fore margin concave	fore margin entire	fore margin concave	fore margin concave	fore margin concave	fore margin concave	fore margin concave	fore margin concave
labial glossae	oblong, rounded	oblong, rounded	oblong, rounded	oblong, rounded	oblong, rounded	oblong, rounded	oblong, rounded	oblong, rounded
segment II of labial palp	1,36-1,63 length of segment III (n=3)	1,16-1,23 length of segment III (n=2)	1,32-1,77 length of segment III (n=6)	length of 1,44 segment III (n=1)	1,80-2,43 length of segment III (n=3)	1,63-1,82 length of segment III (n=2)	1,55-1,68 length of segment III (n=4)	1,67-1,90 length of segment III (n=4)
abdominal segment II, posteromedian projection	long, rounded tip, long spines	shallow, long setae lacking	rounded, long setae lacking	medium size, rounded, long setae lacking	very small, long setae lacking	pointed, long setae lacking	pointed, long setae lacking	pointed, long setae lacking
gill II, dorsal side	light maculae, microtrichia bifid and relatively slender	strong maculae, only simple long setae	simple setae	simple setae	simple setae	simple setae and frayed microtr.	scale-shaped microtrichia	frayed microtrichia
femora, dorsal side	with few and weak setae	few blunt strong setae	with numerous long spines	with numerous long spines	with few long spines	with few medium microtrichia	with many medium spines and microtrichia	with many medium spines and microtrichia
gills III-VI, colouring	unicolored-grey	unicolored-grey	half white, half grey	unknown	grayish, black basal spot	half white, half grey	unicolored-grayish	unicolored-grayish
sternum IX, hind margin	rounded	rounded	U-shaped notch	rounded	v-shaped notch	rounded	truncate	slightly concave
sternum IX, setae on hind margin	strong, apically bent inwards	weak bifid	relatively strong, simple, not bent	relatively strong, apically bent inwards	weak bifid	strong, apically bent inwards	strong, apically bent inwards	strong, apically bent inwards
microtrichia on body surface	frayed	absent	frayed	frayed	frayed	frayed	scale-shaped	frayed

- 6. Hind margin of the head with relatively long, laterally directed setae; abdominal sterna with blackish sub-lateral spots and other distinct marks (Fig. 179); coxal processes short, semicircular or semielliptical (Figs. 1–2) [ARG (Buenos Aires, Santiago, Catamarca, Tucumán)] *C. argentina*
- 6' Hind margin of the head without long setae, but small microtrichia may be present; abdominal sterna without distinct blackish spots, but large blackish areas may be present (Figs. 184); coxal processes elongated, more or less tapering (Figs. 66, 67, 108, 109) 7
- 7. Head color pattern as in Fig. 169; gills III–VI bicolor, half white and half gray (similar to Fig. 47); tarsal claw III with 30 or more denticles of varied size (Figs. 68, 71); microtrichia on dorsum of operculate gill ramified (Fig. 74) [BOL, ARG (Córdoba, Catamarca, Tucumán, Salta, Jujuy)] *C. ludicra*
- 7'. Head color pattern as in Fig. 171; gills III–VI with a single grayish coloration; tarsal claw III with about 25 denticles, apical denticle much larger than the others (Fig. 114); microtrichia from dorsum of operculate gill bifurcate and frayed (Fig. 116) [BRA, URU, ARG (Misiones)].....*C. uruzu*

Imagos¹

- 1. Distinct black dots on body; male with forceps tips sharp and acute (Figs. 15–18) [PA, ARG (Corrientes, Formosa)]..... *C. burmeisteri*
- 1'. Coloration on body generally not as above; male with rounded forceps tip (Figs. 96–98)..... 2
- 2. A small (male < 3.0 mm female < 4.0 mm) and very pale species, abdomen shaded very slightly with gray, mainly on terga I–II; length of foreleg 0.5–0.6 times length of body; abdominal tergum II without median projections [URU, ARG (Formosa, Misiones, Buenos Aires)]*C. tenella*
- 2. Medium to large species (male >3.5 mm female >5.0 mm), general coloration light to dark brown, abdomen shaded with gray more heavily; length of foreleg 0.8–1.1 times length of body; abdominal tergum II with finger-like median process (Figs. 51, 101) 3
- 3. Apophyses of styliger sclerite long, thin, and relatively far from forceps bases (Fig. 7a in Malzacher 2001); posterolateral projections of abdominal segments short [BRA, ARG (Misiones)].....*C. plaumanni*
- 3'. Apophyses of styliger sclerite short and basally more or less broadened, close to forceps bases (e.g., Fig. 96); posterolateral projections of abdominal segments longer (except *C. uruzu*) 4
- 4. Penes lobes produced laterally and acute, distance between the tips of the lobes 1.5–1.7 times the width of the most narrow part of the penes 5
- 4'. Penes lobes laterally rounded and short (similar to Fig. 96), distance between the tips of the lobes 1.2–1.4 times the width of the most narrow part of the penes..... 6
- 5. Finger-like process on abdominal tergum II very short (Fig. 51); forceps tips with small projections (Figs. 6f–k in Malzacher 2001) [CHI, ARG (Neuquén, Río Negro)].....*C. gonseri*
- 5'. Finger-like process on abdominal tergum II long (similar to Fig. 101); forceps tips not as above [BO, ARG (Córdoba, Catamarca, Santiago, Salta)]..... *C. dominguezi*
- 6. Katepisternum (anteroventral corner of mesothorax) much paler than remaining mesopleural sclerites; male genitalia with large circular central sclerite (Fig. 3a in Malzacher 2001) [BOL, ARG (Córdoba, Catamarca, Tucumán, Salta, Jujuy)] *C. ludicra*
- 6' Katepisternum same color as remaining mesopleural sclerites; central sclerite of male genitalia elongated 7
- 7 Tergum X without distinct black spots, generally with a median blackish line (similar to Fig. 178); abdominal sterna shaded diffusely with gray but without distinct black maculae (similar to Fig. 184); genitalia as in Fig. 96, with short elliptical lateral sclerite [BRA, URU, ARG (Misiones)]*C. uruzu*
- 7'. Tergum X with three black dots (similar to Fig. 172); abdominal sterna with black maculae on some seg-

1. For a complete characterization and illustration of adults see Malzacher (1990, 2001)

ments (similar to Fig. 179); lateral sclerite long tape-shaped, nearly reaching the central sclerite (Fig. 1a in Malzacher 2001) [ARG (Buenos Aires, Santiago, Catamarca, Tucumán)]..... *C. argentina*

Descriptions

Caenis argentina Navas (Figs. 1–14, 139–140, 158, 165, 172, 179)

Caenis argentina Navas, 1915: 12 (male); Hubbard, 1982: 261; Malzacher, 2001: 2 (male, female, nymph, egg).

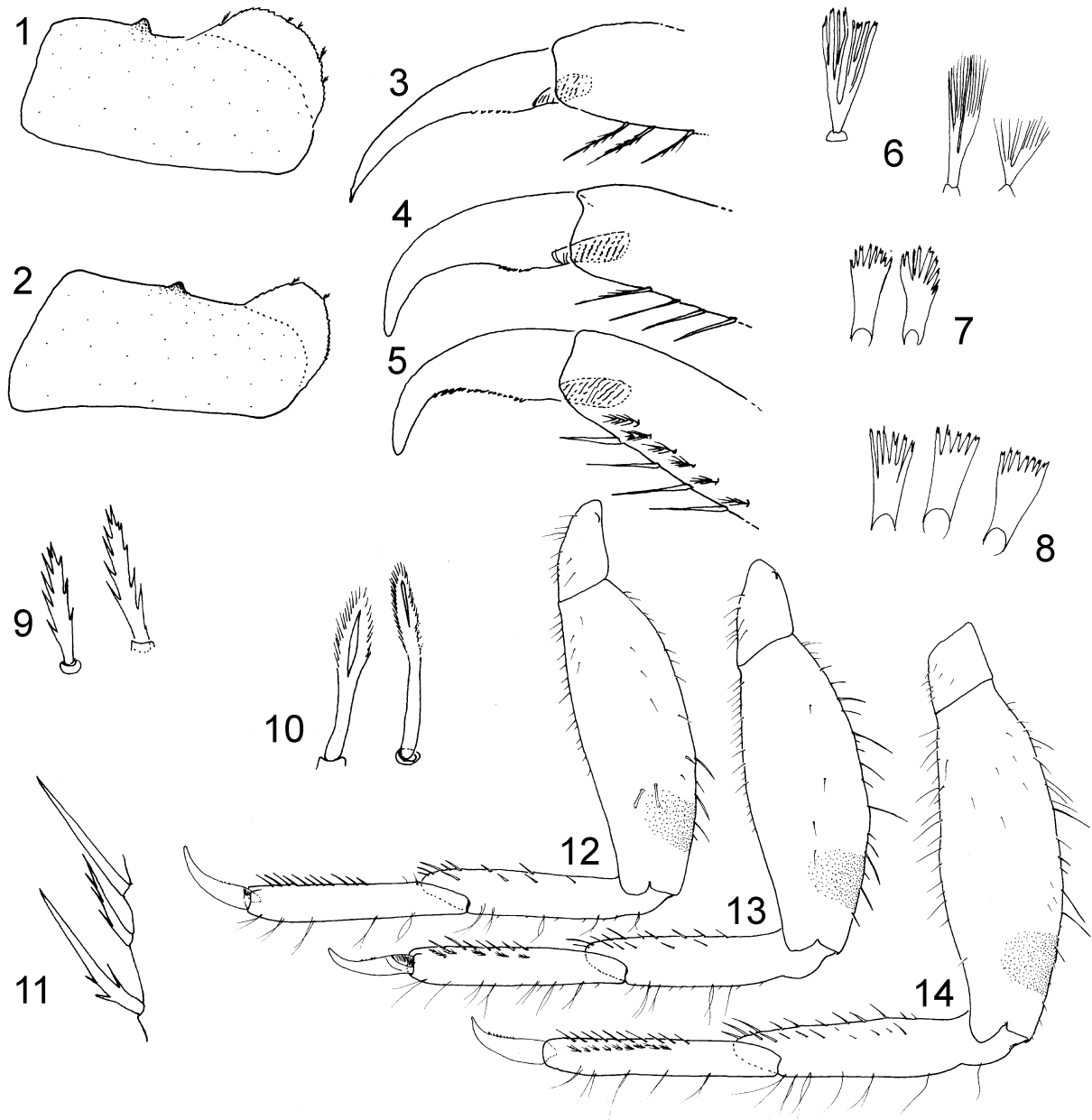
Type material (IFML): Lectotype male imago and seven male imagos paralectotypes from ARGENTINA: Buenos Aires, Tandil, arroyo Quequén Chico, 7-I-1983, E. Domínguez col.

Additional material (IFML): Two nymphs, 1 female subimago and 1 nymphal exuviae, same data as lectotype; 9 nymphs from ARGENTINA: Buenos Aires, Tandil, arroyo Chapaleofú, 9-I-1983, E. Domínguez; 6 nymphs from Buenos Aires, Pueyrredón, Laguna de los Padres, 10-II-2002, M. A. González-Sagrario col.; 3 nymphs and 1 female subimago from Santiago del Estero, Termas de Río Hondo, La Olla, Río Dulce, 15-VIII-2004, C. Molineri col.; 2 male and 3 female adults, reared from nymphs, from Tucumán, Dpto. Burruyacu, Timbó Viejo, Río Salí, 27-IV-2004, C. Molineri & C. Nieto cols.; 12 nymphs from Tucumán, Ranchillos, canal DP2, 6-V-2006, C. Molineri col.; 1 nymph from Tucumán, Acheral, Laguna sobre arroyo Hollinado, cruce RP 38, 28-VII-2006, C. Molineri col.; 1 nymph from Catamarca, Bañado de Ovanta, S 28° 08'–W 65° 19', 24-VIII-2004, M. Peralta col.

Male imagos of *C. argentina* were thoroughly described by Malzacher (2001). Female imagos, as reported by Malzacher (2001) are similar to males, except that prosternal triangle is anteriorly truncated. Malzacher (2001) also described the nymphs of *C. argentina*. A list of characters useful to distinguish female imagos and nymphs follows.

Female imago. Occiput with a pair of paramedian grayish marks forming two concentric semicircles; pronotum with a pair of submedian black spots; all femora with preapical blackish bands; coloration of mesothoracic katepisternum (largest sclerite on the anteroventral corners of mesothorax) similar to rest of mesothorax; thoracic and abdominal sterna with well marked median grayish spots; abdominal sterna also with paramedian spots and with wide whitish zones medially and laterally; posterolateral filaments of abdominal segments long.

Mature nymph (Fig. 158). General coloration yellowish-brown, pale blotches present on head (along median line and in sublateral zone of occiput), pronotum (posteromedian triangular zone), and mesonotum (irregular blotches near anterior margin, and three well marked pairs of lateral to sublateral circular blotches between wing bud bases). Head with paramedian gray marks on occiput (Fig. 165), similar to those of female; hind margin of the head with long laterally directed setae and frayed microtrichia. Mandibles as in Figs. 139–140; segment II of labial palp 1.36–1.63 times the length of segment III. Thorax. Pronotum with a pair of paramedian black dots. Meso and metasternum with a gray elongated median mark. Legs (Figs. 12–14) whitish to yellowish, coxae II and III with broadly rounded projections (Figs. 1–2); all femora with preapical blackish bands (Figs. 12–14), dorsum of femora with few and weak setae, transversal row of setae on dorsum of fore femora reduced, only with 2–5 setae (Figs. 10, 12); tibiae and tarsi of all legs with basal dark-yellow bands; tarsi with longitudinal row of long and slender spine-like setae at medial margin (Fig. 11), tarsi II and III (Figs. 13–14) with an additional submarginal row of serrated setae (Fig. 9); tarsal claws strongly curved apically (Figs. 3–5), tarsal claws I–II with 4–8 denticles, tarsal claw III with 10–20 denticles. Abdomen. Terga with broad pale zones laterally and medially (Fig. 172), abdominal sterna with distinct median and paramedian gray spots (Fig. 179). Operculate gills dorsally with small maculae slightly darker than the rest (Figs. 158, 172); dorsal microtrichia bifid and relatively slender (Fig. 6), microtrichia on ventral submarginal row elongated (Figs. 7–8). Posterolateral spines on abdominal segments very well developed. Caudal filaments whitish with dark joinings. Sternum IX apically rounded, setae on hind margin strong and apically bent inwards.



FIGURES 1–14. *Caenis argentina*, nymph. 1, middle coxa, d.v.; 2, hind coxa, d.v; 3, foreclaw; 4, middle claw; 5, hind claw; 6, microtrichia on dorsum of gill II; 7–8, microtrichia on ventral submarginal row of gill II; 9, setae on longitudinal row of middle and hind tarsi; 10, setae on subapical dorsal row of fore femora; 11, setae on longitudinal row of foretarsi; 12, foreleg; 13, middle leg; 14, hind leg.

Diagnosis. *Caenis argentina* can be distinguished from all other species of *Caenis* by the following combination of characters. In the imago: 1) general coloration yellowish-brown; 2) prosternal triangle anteriorly pointed in males, with concave sides, truncated in females; 3) median filament on abdominal tergum II long; 4) fore legs 0.8–1 times length of body; 5) forceps apically rounded; 6) central sclerite of styliger elongated; 7) apophyses of styliger long and straight; 8) penes with rounded lobes and straight or slightly convex posterior margin; 9) coloration of mesothoracic katapisternum similar to rest of mesothorax. In the nymph: 1) head color pattern as in Fig. 165, hind margin with long laterally directed setae and frayed microtrichia; 2) meso- and metacoxal processes present but relatively small (Figs. 1–2); 3) tarsi with relatively slender setae, many of them serrated; 4) tarsal claws curved apically, tarsal claws I–II with 4–8 denticles, tarsal claw III with 10–20 denticles (Figs. 3–5); 5) abdominal color pattern as in Fig. 172; 6) labrum with slightly rounded lateral mar-

gins (similar to Fig. 31); 7) segment II of labial palp 1.36–1.63 times the length of segment III; 8) lingua of hypopharynx with concave fore margin (similar to Fig. 156); 9) sternum IX apically rounded, setae on hind margin strong and apically bent inwards (similar to Fig. 7b in Malzacher 2001).

Distribution (Fig. 185). Argentina (Buenos Aires, Santiago del Estero, Catamarca, Tucumán).

***Caenis burmeisteri* Malzacher (Figs. 15–30, 159, 166, 173, 180)**

Caenis burmeisteri Malzacher, 1990: 35 (male).

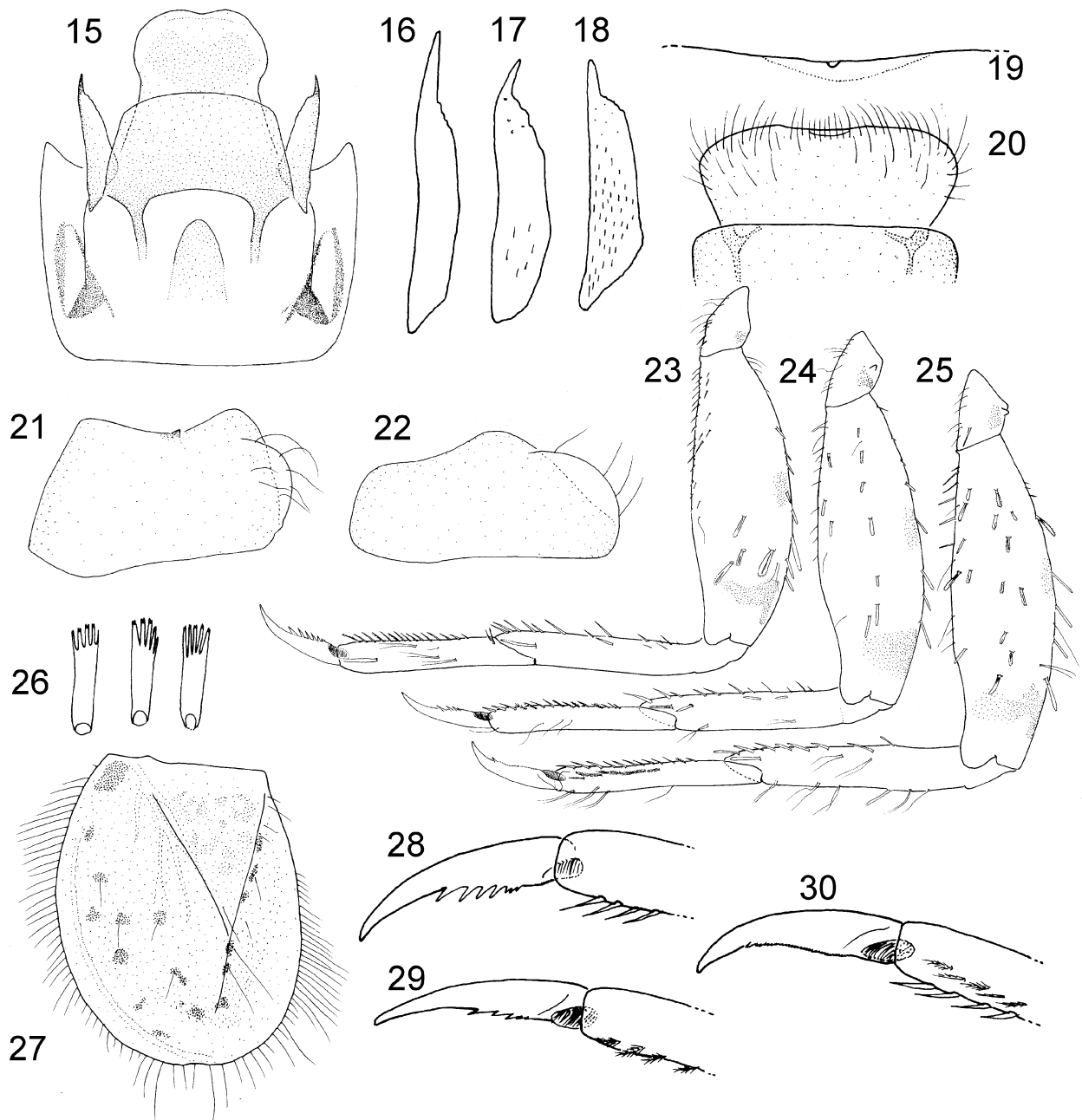
Material (IFML). Fifty male and 7 female imagos, and 8 nymphs from ARGENTINA: Formosa, arroyo Torhue, 10 km S de Formosa, 8-XII-1986, E. Domínguez col.; 3 male and 50 female imagos from ARGENTINA: Corrientes, Parque Nacional Mburucuyá, Casco Central Estancia, S 28° 03' – W 58° 14', 12-14-XII-1999, C. Molineri col.

Male imago. A brief description of the new material studied is included because this species was originally described in German (Malzacher, 1990). Length: body, 2.8–3.2 mm, wings, 2.0–2.3 mm. General coloration yellowish-brown. Head whitish-yellow shaded with gray at base of mouthparts rudiments, around base of antennae, on posterolateral corners (behind eyes), and on occiput (except on a pale transverse band between lateral ocelli). Antennae: scape yellowish shaded with gray, pedicel and flagellum whitish-yellow. Thorax. Pronotum yellowish-translucent shaded broadly with gray, darker on lateral thirds, with a pair of pale elongated paramedian marks; prosternal triangle pointed anteriorly. Meso- and metanotum yellowish-brown with blackish carinae; pleurae and sterna paler, shaded gray anterior to wing base and around coxal cavities. Legs whitish except longitudinal marginal ridge and apex of fore femora yellowish; all femora with a submedian gray mark and subapical blackish spot, all tibiae shaded slightly with gray on median zone. Wings membrane hyaline shaded gray at base and on veins C, Sc, and R₁; remaining veins whitish translucent. Abdomen whitish, terga almost completely shaded with brownish-gray, shaded more markedly toward rear margins of all terga and on median zone of terga I–III and X; pale paramedian subcircular marks present on all terga, black marks present on the otherwise pale pleural folds. Abdominal sterna whitish-translucent. Genitalia (Figs. 15–18): IX sternum whitish with blackish subtriangular marks on anterolateral corners; styliger sclerite, central sclerite and lateral zones of penes yellowish, remaining parts whitish. Styliger plate posteriorly elongated. Apophyses of styliger sclerite long and narrow (Fig. 15); central sclerite elongated. Posterior margin of penes convex, with a shallow median emargination, lobes laterally blunt. Forceps generally with wide base and narrowing toward the thin and pointed apex, but variable (Figs. 15–18). Caudal filaments whitish-translucent.

Female imago. Length: body, 2.7–3.5 mm; wings, 2.6–3.2 mm. Similar to male imago except epidermal pigments more strongly marked and fore legs conspicuously darker than remaining legs.

Mature nymph (Fig. 159). Length: male body, 3.5 mm; female body, 4.0–4.2 mm, caudal filaments, 5.5–8.0 mm. General coloration yellowish-brown. Head (Fig. 166) yellowish, occiput and mouthparts paler, grayish markings forming an irregular net on the occiput, also shaded gray behind eyes. Hind margin of the head with small setae. Antennae: scape and pedicel brownish, flagellum hyaline. Mouthparts: lateral margins of labrum broadly rounded and expanded (Fig. 20), anteromedian emargination shallow and smooth (Fig. 19), mandibles as in Figs. 141–142, lingua of hypopharynx with fore margin entire (Fig. 155); segment II of labial palp 1.16–1.23 times the length of segment III. Thorax. Nota yellowish-brown with black markings. Pronotum with translucent whitish anterolateral corners, shaded with black on anterior margin and lateral zones; with blackish paramedian dots and median elongated marks. Mesonotum with blackish macula anterior to wingbuds bases, and with a blackish median elongate mark near fore margin; with a pair of submedian pale blotches at center. Legs (Figs. 23–25) yellowish-white, blackish marks present on coxae, trochanters, median zones of femora and tibiae, subapical blackish marks present on femora; coxal projections relatively narrow and broadly rounded, with smooth margins (Figs. 21–22); fore tarsi with 1 row of simple setae, middle tarsi

with 1 row of serrated setae, hind tarsi with 2 rows (1 with serrated setae, other with simple setae); tarsal claws I and II with 5–8 large denticles (Figs. 28–29), tarsal claw III with around 40 small denticles, except the apical one, larger (Fig. 30). Thoracic sterna paler, with grayish marks on sterna between middle coxae. Abdomen. Terga (Fig. 173) I–II and VII–X yellowish-brown, terga III–VI yellowish-white, shaded with gray as in male imago. Median projection of tergum II short and wide at base. Operculate gills translucent yellowish-brown maculated with dark brown spots (Fig. 27), setae from the submarginal ventral row elongated (Fig. 26), dorsal surface smooth and with simple long setae. Abdominal sterna much paler with only small grayish sub-lateral marks on rear segments (Fig. 180). Sternum IX apically rounded, hind margin with weak bifid setae. Caudal filaments yellowish-white.



FIGURES 15–30. *Caenis burmeisteri*. Male imago: 15, genitalia, v.v.; 16–18, detail of forceps, v.v. Nymph: 19, detail of anteromedian emargination of labrum; 20, labrum, d.v.; 21, hind coxa; 22, middle coxa; 23, foreleg; 24, middle leg; 25, hind leg; 26, microtrichia on submarginal ventral row of gill II; 27, gill II, d.v.; 28, foreclaw; 29, middle claw; 30, hind claw.

Diagnosis. *Caenis burmeisteri* can be distinguished from the other species of *Caenis* by the following combination of characters. In the imago: 1) general coloration yellowish-brown; 2) prosternal triangle anteriorly pointed in both sexes; 3) median filament on abdominal tergum II absent; 4) fore legs 0.6 times length of body; 5) forceps apically pointed and basally widened (Figs. 15–18); 6) styliger plate posteriorly elongated, with elongated central sclerite (Fig. 15); 7) apophyses of styliger sclerite long and slender (Fig. 15); 8) penes with convex posterior margin and rounded lobes (Fig. 15); 9) coloration of mesothoracic katepisternum similar to rest of mesothorax. In the nymph: 1) head color pattern as in Fig. 166, hind margin with small setae; 2) meso- and metacoxal processes present, narrow, with smooth margins (Figs. 21–22); 3) foretarsi with 1 row of simple setae, middle tarsi with 1 row of serrated setae, hind tarsi with 2 rows (1 with serrated setae, other with simple setae); 4) tarsal claws I–II with 5–7 large denticles (Figs. 28–29), claw III with ca. 40 small denticles (Fig. 30); 5) abdominal terga distinctly maculated, pleural folds with black dots; 6) labrum with broadly rounded and expanded lateral margins (Fig. 20); 7) segment II of labial palp 1.16–1.23 times the length of segment III; 8) lingua of hypopharynx with fore margin entire (Fig. 155); 9) sternum IX apically rounded, hind margin with weak bifid setae.

Discussion. This species previously known from Paraguay is here firstly recorded from Argentina. The penes are somewhat laterally acute in original drawings (Malzacher, 1990), but male imagos from Argentina have penes relatively more rounded (Fig. 15). Also the male imagos here described show longer apophyses in styliger sclerite (Fig. 15). These small differences are here considered as intraspecific variations of *C. burmeisteri*. The nymphs described here as the immature stages of *C. burmeisteri* were associated with the adults by a male nymph ready to molt to subimago. This pharate subimago shows the same color pattern and genitalia of the male imagos attracted to the light trap. Additional nymphs of an undescribed species were found in the same locality, also some of them are ready to molt but no adults attributable to this species were caught. *Caenis burmeisteri* nymphs are similar to *C. cuniana* Froehlich (also from the lineage with apically pointed forceps, Malzacher 2001), because of the presence of large denticles on tarsal claws, a laterally expanded labrum, linguae of hypopharynx without median emargination, a relatively long third segment of labial palpi, and coxal projections narrow and smooth. Nevertheless, the two species can be separated because operculate gills of *C. burmeisteri* are heavily maculated and the hind tarsal claws show only small denticles (*C. cuniana* present also small bifid setules).

Distribution (Fig. 186). Argentina (Formosa, Corrientes), Paraguay.

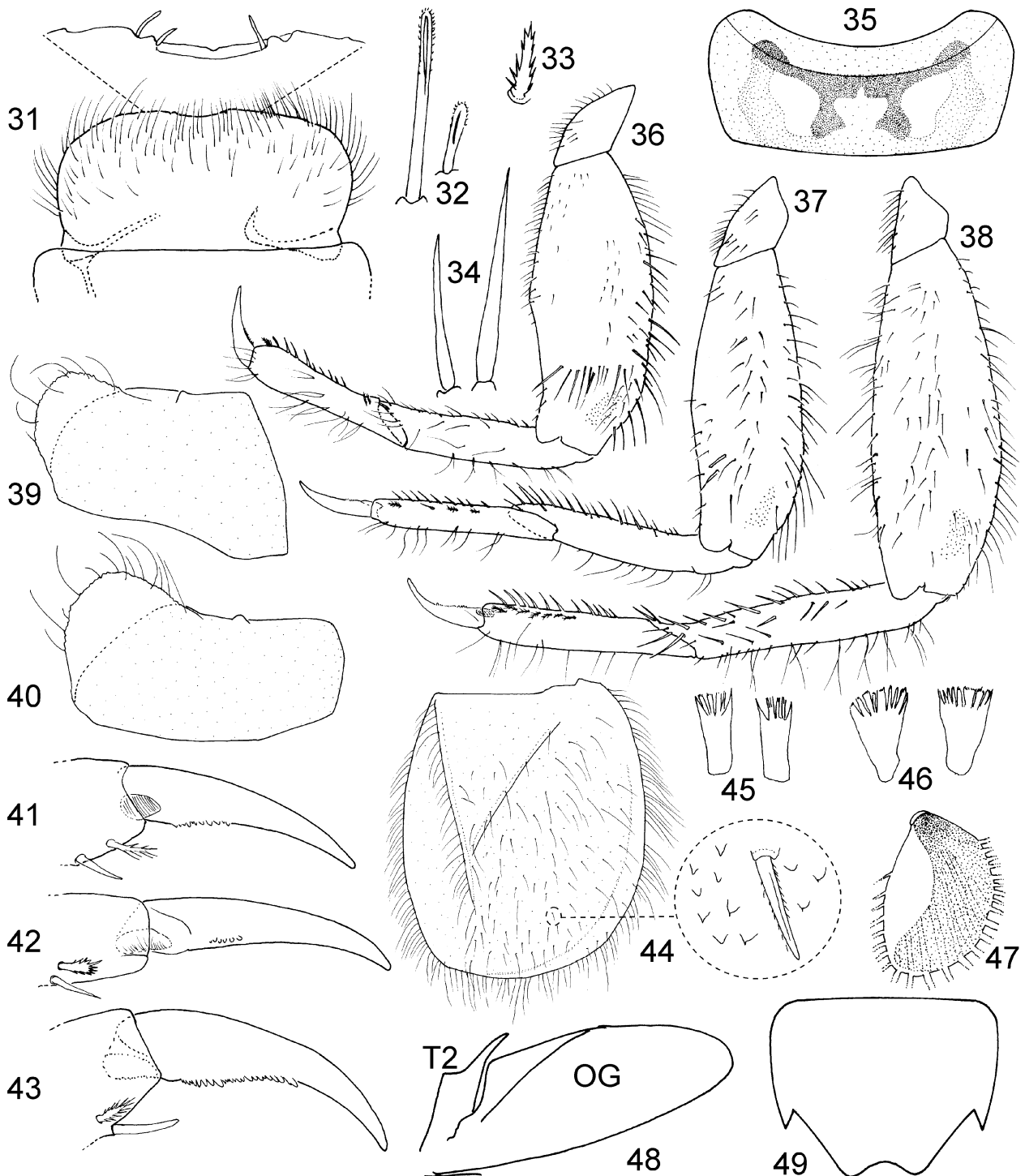
Caenis dominguezi Malzacher (Figs. 31–49, 160, 167, 174, 181)

Caenis dominguezi Malzacher, 2001: 9 (male).

Type material (IFML). Holotype male imago from ARGENTINA: Córdoba, San Esteban, 10-X-1981, E. Domínguez col.; 5 paratypes male imagos, same data.

Additional material (IFML). Four male imagos from ARGENTINA: Catamarca, dpto. Andalgalá, Las Estancias, El Lindero, S 27° 28' 01"–W 66° 00' 37", 1530 m, 19-IV-2003, E. Domínguez & G. Cuezco cols; 22 nymphs from Catamarca, dpto. Andalgalá, Las Estancias, río de El Lindero, S 27° 28' 18"–W 66° 00' 54", 1594 m, 28-III-2006, C. Molineri col; 19 nymphs, 3 female and 1 male imagos (reared) from Catamarca, dpto. Andalgalá, Las Estancias, río Pisavil, S 27° 27' 5"–W 66° 00' 10", 1548 m, 28-III-2006, C. Molineri col; 20 nymphs from Catamarca, río Huacra, S 28° 00'–W 65° 33', 24-VIII-2004, M. Peralta col.; 1 male imago and 12 nymphs from Catamarca, Bañado de Ovanta, S 28° 08'–W 65° 19', 24-VIII-2004, M. Peralta col.; 1 nymph from Córdoba, Cavalanga, Arroyo Las Salinas, S 31°23'–W 64°32', 2-X-1999, V. Manzo & S. Cohen cols.; 3 nymphs and 10 male imagos from Córdoba, Achiras, 9-XII-1995, M. Gualdoni col.; 6 male imagos from Córdoba, Los Espinillos, 13-IX-1997 (nuptial flight 11 h am), C. Molineri & C. Nieto cols., 13 nymphs same data except date, 15-IX-1997; 10 nymphs from Córdoba, Pampa de Achala, El Cóndor, 23-X-1996; 5 nymphs from

Santiago, Guasayán, Maquijata, S 28° 14' 50"–W 64° 48' 32", 415 m, 14-VI-2005, F. Romero col.; 1 nymph from Salta, A° Zanjón Seco, 16-V-2006, S 23° 41' 11", W 64° 34' 18", 430 m, N. von Ellenrieder col.; 20 nymphs from BOLIVIA: Tarija, Gran Chaco, S 21° 55' 46.2"–W 63° 46' 26.1", 810 m, río Caraparí, cerca de Caraparí, 10-X-2004, C. Molineri & V. Manzo cols.



FIGURES 31–49. *Caenis dominguezi*, nymph. 31, labrum and detail of anteromedian emargination, d.v.; 32, setae on dorsum of hind femora; 33, seta on hind tibiae; 34, setae of fore femoral dorso-transversal row; 35, pronotum, d.v.; 36, fore leg; 37, middle leg; 38, hind leg; 39, middle coxa; 40, hind coxa; 41, foreclaw; 42, middle claw; 43, hind claw; 44, operculate gill and detail of dorsal surface; 45–46, microtrichia of submarginal ventral row of operculate gill; 47, abdominal gill III; 48, abdominal segment II and operculate gill, l.v.; 49, sternum IX of a male nymph. Abrevviations: OG=operculate gill; T2= second abdominal tergum.

Male imago. See Malzacher (2001).

Female imago. Similar to male imago. Length: body, 4.5–4.7 mm; fore wing, 4.3–4.5 mm; caudal filaments, 2.5–3.0 mm. Katepisternum not paler than rest of mesopleural sclerites. Abdominal pleurae whitish with small grayish marks. Posteromedian membranous projection on tergum II relatively short. Egg mass whitish to yellowish-white. Ninth sternum broadly rounded apically. Caudal filaments yellowish except basal segment brownish.

Mature nymph (Fig. 160). Length of female: body, 5.7–6.5 mm; caudal filaments, 3.7–4.5 mm. Length of male: body, 4.4–4.8 mm; caudal filaments, 2.5–4.0 mm. General coloration brown to light-brown. Head (Fig. 167): occiput without marks except a small gray area at posterolateral corners; transverse blackish band between ocelli, anteriorly to median ocellus a triangular pale area is present, venter of head much paler than dorsum; hind margin of head with small simple setules. Antennae: pedicel and scape yellowish-brown, flagellum paler. Mouthparts: labrum (Fig. 31) with a pair of small submedian protuberances on anteromedian emargination; mandibles as in Figs. 143–144, left mandible with anterior denticles of molae markedly protruding (Fig. 143); lingua of hypopharynx with slightly concave fore margin (Fig. 156); labium with paraglossae rounded and relatively short, segment II of labial palp 1.32–1.77 times the length of segment III. Thorax yellowish to brownish. Pronotum shaded with black as in Fig. 35, with a pair of submedian large pale areas. Mesonotum with two pairs of submedian pale blotches, and another larger pair on wingpad bases. Metanotum and thoracic sterna paler than dorsum. Legs whitish-yellow with a small subapical gray mark in the dorsal surface of femora (Figs. 36–38). Coxal projections with irregular margin and long setae, coxal projections II–III medium sized and rounded (Figs. 39–40). All femora with numerous scattered spine-like setae on the dorsum (more numerous on femora II–III) (Figs. 36–38). All tarsi with a longitudinal row of simple setae, tarsi II and III with an additional row of plumose setae (1–3 setae on tarsus II, 6 on tarsus III). Tarsal claws I–II with 6–10 denticles of irregular size but increasing toward apex (Fig. 41–42); tarsal claw III with 23–25 denticles becoming larger from base to apex, abruptly decreasing in size medially, and increasing again toward apex (Fig. 43). Abdomen light-brown shaded with gray, posteromedian projection of tergum II well developed, curved posteriorly (Figs. 48). Terga I–II shaded with gray except on lateral areas, terga III–VII shaded more slightly with gray except medially and laterally, terga VIII–X shaded more strongly except suboval pale marks on posterolateral corners of terga VIII–IX (Fig. 174). Abdominal sterna paler (Fig. 181), slightly shaded with gray, sometimes with cuticular yellowish coloration on anterior margins of sterna VII–IX. Gills: operculate gills (Fig. 44) uniform yellowish-brown, with numerous simple setae and microspines dorsally, microtrichia on ventral submarginal row elongated or subtriangular (Figs. 45–46); remaining gills bicolor, half whitish and half grayish (Fig. 47). Caudal filaments yellowish-white. Ninth sternum with a U-shaped median indentation (Fig. 49), rear margin with relatively strong simple setae (not bent apically).

Diagnosis. *C. dominguezi* can be distinguished from the other species of the genus by the following combination of characters. In the adult: 1) general coloration dark brown; 2) prosternal triangle anteriorly pointed or open; 3) median filament on abdominal tergum II long; 4) fore legs as long as body; 5) forceps apically rounded; 6) central sclerite of styliger with blurred outline; 7) apophyses of styliger sclerite bent inwards; 8) lobes of penes laterally projected, apically acute to somewhat rounded; 9) coloration of mesothoracic katepisternum similar to rest of mesothorax; 10) posterolateral zones of sternum IX strongly dark-colored. In the nymph: 1) occiput without marks, head color pattern as in Fig. 167, hind margin with small simple setules; 2) meso- and metacoxal processes present, rounded and with long bristles; 3) tarsi with relatively medium length setae, 3–6 plumose setae on tarsi II and III (Figs. 36–37); 4) tarsal claws not strongly curved apically (Figs. 41–43), denticles on tarsal claw III becoming larger from base, abruptly decreasing in size medially, and increasing size again toward apex; 5) abdominal color pattern as in Figs. 174 and 181; 6) labrum with slightly rounded lateral margins and with two submedian protuberances on anteromedian emargination (Fig. 31); 7) segment II of labial palp 1.32–1.77 times the length of segment III; 8) lingua of hypopharynx with concave fore margin (Fig. 156); 9) IX sternum with a U-shaped apicomedian indentation (Fig. 49), rear margin with

relatively strong simple setae; 10) dorsum of gill II only with simple setae (Fig. 44); 11) dorsum of all femora with numerous long spines (Figs. 36–38); 12) abdominal gills III–VI bicolor half white and half gray (Fig. 47).

Distribution (Fig. 188). Argentina (Córdoba, Catamarca, Santiago, Salta), Bolivia (Tarija). Distributional records include localities from Chaco and transitional (Chaco-Yungas) regions.

***Caenis gonseri* Malzacher (Figs. 50–65, 145–146)**

Caenis gonseri Malzacher, 2001: 11 (male).

Type material. Paratypes 10 male imagos from CHILE, río Choapa, 13-VI-1986, T. Gonser col. (IFML).

Additional material (IFML). Four male and 1 female imagos, 2 female subimagos, and 2 nymphal exuviae from ARGENTINA: Neuquén, Bajada del Agrio, RN 40, 70 km N de Zapala, Río Agrio, 12-XII-1997, C. Molineri col.

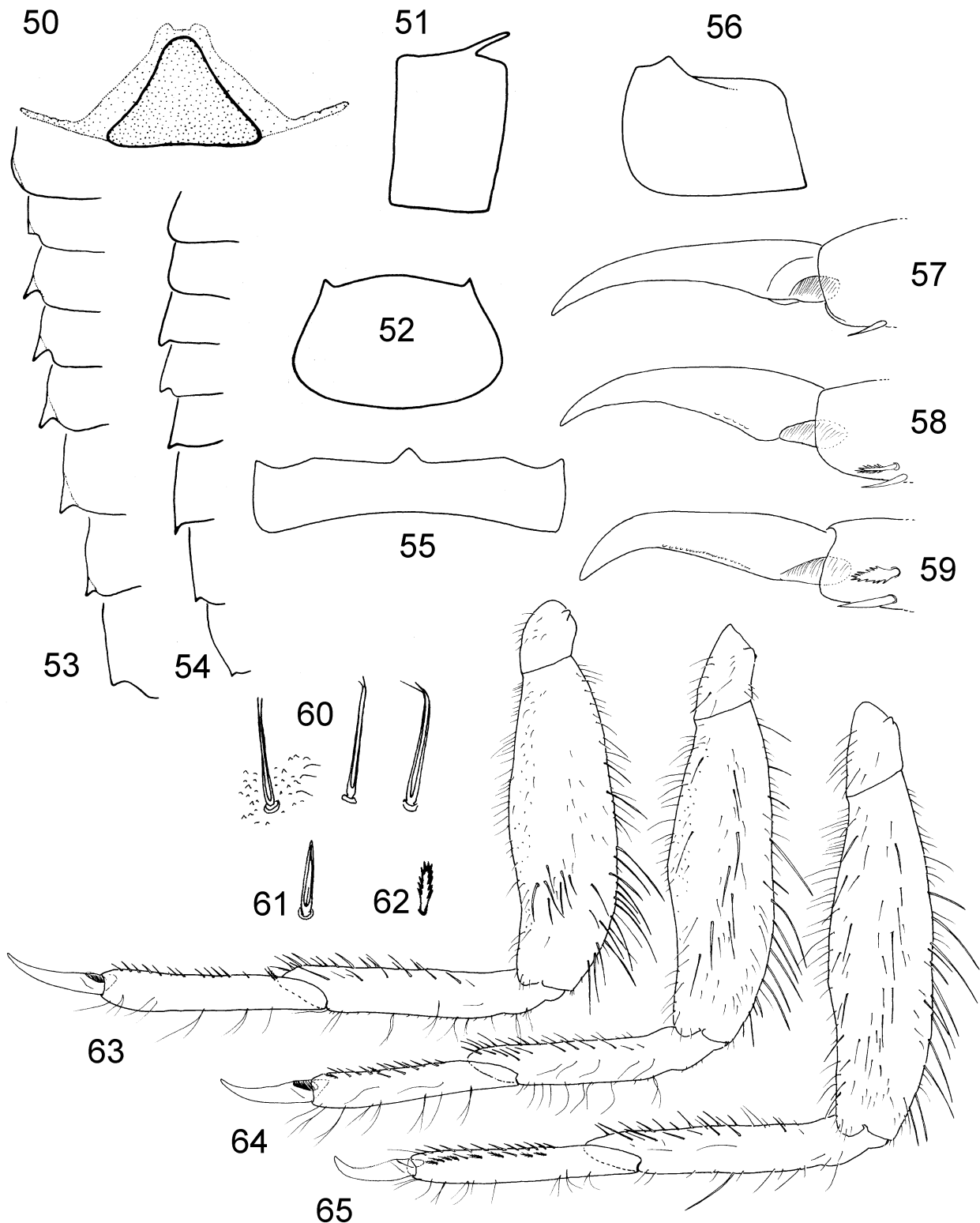
Male imago. Length: body, 3.6–3.8 mm; foreleg, 3.2–3.5 mm; fore wing, 3.7–4.0 mm. As Malzacher (2001: 11) had thoroughly described the male imago, a redescription will not be included here. Only one difference was found when checking the four males from Neuquén with Malzacher's description: the finger-like process on abdominal tergum II is not visible, probably because it is pressed against the abdomen. This feature is assumed to be present in males, since it is well visible in the females collected with them.

Female (imago and subimago). Length: body, 5.7–6.0 mm; fore wing, 4.2–4.6 mm. Antennae yellowish; occiput with a transverse blackish line connecting lateral ocelli. Thorax. Pronotum with relatively acute anterolateral projections, gray shading forming a quadrangular empty mark medially; prosternal triangle (Fig. 50) anteriorly blunt, as in males. Katepisternum as dark as the remaining thoracic sclerites. Abdomen shaded with gray on broad transverse bands, mediolongitudinal line paler, bordered by a pair of submedian darker lines; abdomen ventrally paler, very lightly shaded gray, somewhat stronger laterally. Posterolateral filaments of abdomen present on segments IV–IX (Figs. 53–54), longer than in male, those of segments IV–VII are longer than the rest. Finger-like process of abdominal tergum II present, short (Fig. 55). Ninth sternum broadly rounded posteriorly (Fig. 52). Egg mass yellowish.

Nymphal exuviae. Length of male: body, 5.0 mm; caudal filaments, 3.5 mm. Length of female: body, 6.0 mm; caudal filaments, 4.0 mm. Head: with a pair of pale blotches on sublateral zones of occiput; hind margin of head with small simple setules. Mouthparts: labrum with broad and smooth anteromedian emargination, mandibles as in Figs. 145–146; segment II of labial palp 1.44 times the length of segment III. Thorax. Pronotum anteriorly projected as in Fig. 56. Pale blotches present on mesonotum: 1 small circular blotch in the median zone of anteronotal projection, and 4 paired blotches on anterior half of mesonotum (the larger pair near the base of wingpads, the other three much smaller and located between the others). Legs as in Figs. 63–65. Coxal processes very short and rounded. All tarsi with one row of simple setae, hind tarsi with an additional row of serrated setae. Tarsal claws (Figs. 57–59) relatively straight, fore and middle claws with 4–5 weakly marked denticles, hind claws with about 20 denticles. Abdomen. Dorsal projection of tergum II short (Fig. 55). Operculate gills with simple setae dorsally, microtrichia on ventral submarginal row elongated to subtriangular. Ninth sternum apically rounded, hind margin with simple setae, few setae apically bent inwards.

Diagnosis. *Caenis gonseri* can be distinguished from the other species of the genus by the following combination of characters. In the imago: 1) general coloration yellowish-brown; 2) prosternal triangle anteriorly blunt (Fig. 50); 3) median filament on abdominal tergum II short (Fig. 51); 4) fore legs 0.9 times length of body; 5) forceps apically rounded, with small projections apically; 6) central sclerite of styliger circular; 7) apophyses of styliger sclerite, long and broad; 8) lobes of penes generally with straight hind margin, lateral

lobes rounded and slightly projected; 9) color of katepisternum similar to the rest of thoracic sclerites; 10) posterolateral filaments present on abdominal segments IV–IX, longer on IV–VII (Figs. 53–54).



FIGURES 50–65. *Caenis gonseri*. Female imago: 50, prosternal triangle; 51, abdominal segment II, l.v.; 52, IX sternum; 53, lateral filaments of abdomen (female subimago); 54, idem (female imago). Nymph: 55, abdominal tergum II; 56, left half of nymphal pronotum, d.v.; 57, foreclaw; 58, middle claw; 59, hind claw; 60, setae on dorsal transverse row of fore femora; 61, seta on middle tarsi; 62, seta on hind tarsi; 63, foreleg; 64, middle leg; 65, hind leg.

In the nymph: 1) as only the nymphal exuvia is known, the epidermic coloration of the head was not avail-

able, a pair of pale blotches is present on sublateral zones of occiput, hind margin of head with small simple setules; 2) meso- and metacoxal processes present but narrow; 3) serrated setae only in hind tarsi (Fig. 62); 4) tarsal claws relatively slender (denticles apparently worn out) (Figs. 57–59); 5) abdominal color pattern unknown, posteromedian projection of abdominal tergum II relatively short (Fig. 55); 6) labrum with shallow and smooth anteromedian emargination; 7) segment II of labial palp 1.44 times the length of segment III; 8) lingua of hypopharynx with concave fore margin (similar to Fig. 156); 9) IX sternum apically rounded, hind margin with simple setae, few setae apically bent inwards; 10) dorsum of gill II only with simple setae; 11) dorsum of all femora with numerous long spines (Figs. 63–65).

Distribution (Fig. 188). Argentina (Neuquén, Río Negro), Chile.

***Caenis ludicra* Navas (Figs. 66–85, 149–150, 161, 169, 177)**

Caenis ludiera [sic] Navas, 1920: 54 (male); Alba-Tercedor & Peters, 1985: 219.

Caenis ludicra; Navas, 1922: 199; Navas, 1924: 359; Navas, 1930a: 130; Navas, 1930b: 360; Navas, 1931: 322; Hubbard, 1982: 261; Domínguez, 1989: 272; Malzacher, 2001: 6 (male, nymph).

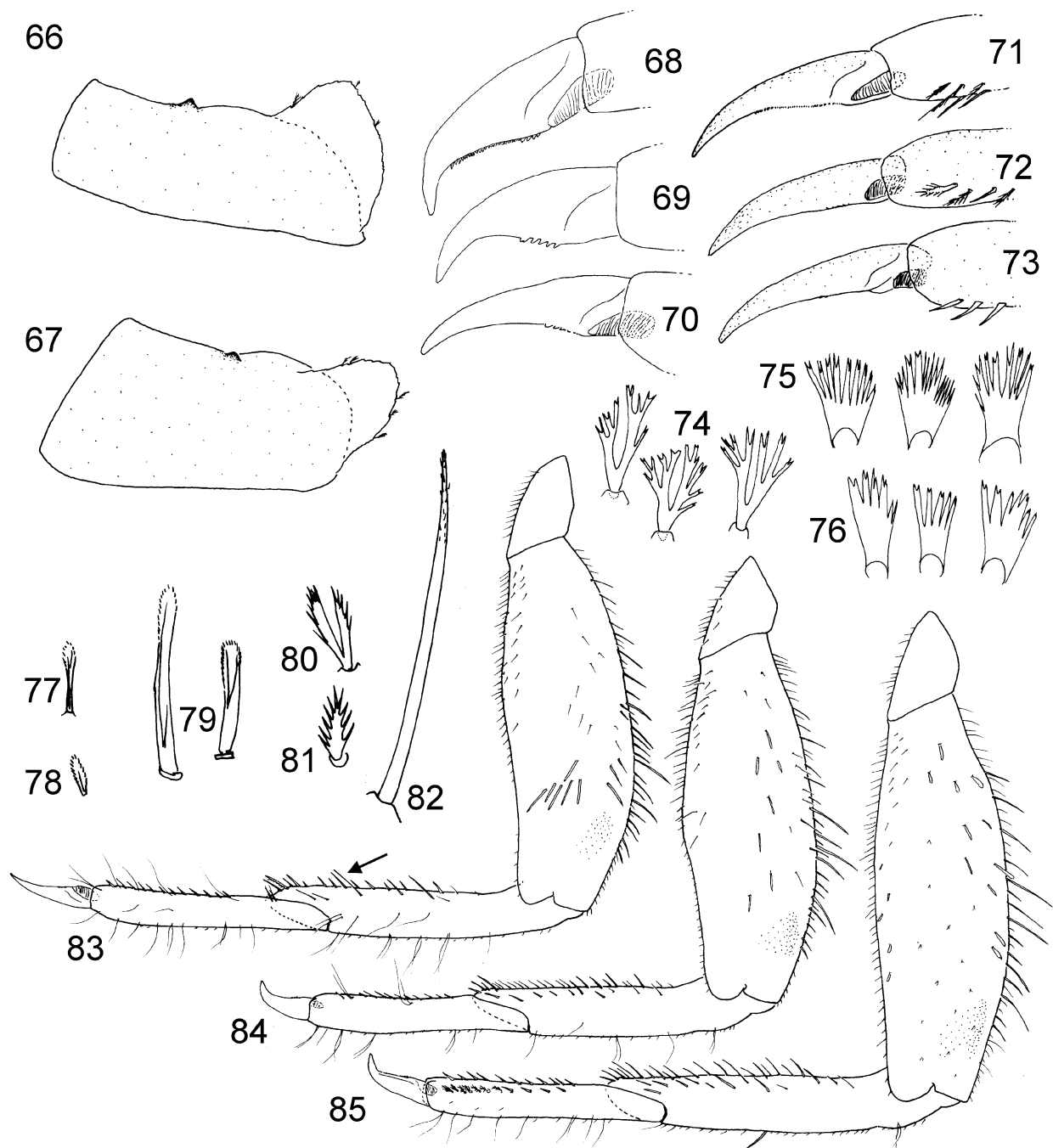
Ordella ludicra; Lestage, 1931: 59.

Type material. Not revised, but the material listed below was determined by comparison with the lectotype (Malzacher, 2001). Four male imagos from ARGENTINA: Córdoba, San Esteban, 10-X-1981, E. Domínguez col.; 14 male and 1 female (female not listed in Malzacher, 2001) imagos from Tucumán, Lules, arroyo Las Vertientes, 28-VIII-1981, E. Domínguez col. (IFML).

Additional material (IFML). ARGENTINA: Córdoba, Río Cuarto, Paso del Cuco, Rodeo Viejo, 8-X-1993, M. Gualdoni col.; Córdoba, San Esteban, río San Esteban, S 27° 15' – W 65° 32', 1-X-1999, V. Manzo & S. Cohen cols.; Córdoba, Cavalanga, Arroyo Las Salinas, S 31° 23' – W 64° 32', 2-X-1999, V. Manzo & S. Cohen cols.; Catamarca, Guayamba, río El Durazno, S 28° 21' 06" – W 65° 25' 53", 670 m, 8-II-2000, C. Molineri col.; Catamarca, dpto. Andalgalá, Las Estancias, El Lindero, S 27° 28' 01" – W 66° 00' 37", 1530 m, 19-IV-2003, E. Domínguez & G. Cuezco cols.; Catamarca, Bañado de Ovanta, S 28° 08' – W 65° 19', 24-VIII-2004, M. Peralta col.; Tucumán, Las Salas, río San Javier, 7-X-1998, E. Domínguez; Tucumán, Escaba, río Singuil, 12-XI-1999, C. Molineri col.; Tucumán, El Siambón, arroyo de la Gomería, 22-VIII-2004, C. Molineri col.; Tucumán, Raco, arroyo Palangana, VII-2004, CM; Tucumán, Dique El Cadillal, Ticucho, 12-X-1998, C. Molineri col.; Tucumán, Tafí del Valle, La Angostura, río Los Sosa, 2000 m, 5-XI-1995, C. Molineri col.; Salta, Finca Jakúlica, S 22° 41' 01" – W 64° 30' 40", 630 m, 14-XII-1999, E. Domínguez; Salta, Los Toldos, 27-X-1983, E. Domínguez; Salta, P. N. Baritú, río Baritú, 16-IX-1981, E. Domínguez; Salta, Vaqueros, río Calderas, S 24° 39' 45" – W 65° 23' 02", 1260 m, 2-III-2000, C. Molineri col.; Salta, Guachipas, río Grande del Sauce, 15-IX-1998, C. Molineri col.; Jujuy, San Salvador de Jujuy, río Lozano, 26-VI-1997, CM; Jujuy, Tiraxi, río de las Capillas, 27-XII-1998, W. Caires & C. Rueda cols.; Jujuy, Palpalá, río Zapla, 26-VI-1997, C. Molineri col.; Jujuy, El Carmen, arroyo Las Lanzas, S 24° 27' 17" – W 65° 17' 48", 1250 m, 3-III-2000, E. Domínguez & C. Molineri col. BOLIVIA: Tarija, O'Connor, ca. Entre Ríos, río Salinas, 1160 m, S 21° 38' 45" – W 64° 09' 08", 6-X-2004, C. Molineri col.; same except río Saicán, 1000 m, S 21° 46' 28" – W 64° 05' 24", 7-X-2004, C. Molineri col.; Tarija, Arce, ca. La Mamora, río Orosa, 1100 m, S 22° 12' 09" – W 64° 37' 37", 5-X-2004, C. Molineri col.; Tarija, Quebrada el Molino, río Molino, S 21° 35' 35.7" – W 64° 46' 4.7", 1907 m, 25-II-2006, C. Nieto & P. Rueda cols.; Tarija, río Villa, S 21° 22' 57.8" – W 64° 16' 55.1", 1816 m, 5-III-2006, E. Domínguez & C. Nieto cols.; Tarija, Sidras, río Itaú, S 22° 05' 37.1" – W 63° 59' 12.7", 593 m, 8-III-2006, E. Domínguez & C. Nieto cols.

Male imago. As Malzacher (2001) reported, male imagos of *C. ludicra* show an almost circular central sclerite of the styliger plate, and the general coloration is generally very dark. Nevertheless, some populations in NW Argentina may show a lighter general coloration. Here the description of the female imago and

nymphs of *C. ludicra* based upon reared material from both sexes is presented. Description and figures of male imago should be consulted from Malzacher (2001).



FIGURES 66–85. *Caenis ludicra*, nymph. 66, middle coxa; 67, hind coxa; 68, hind claw; 69, middle claw; 70, foreclaw; 71, hind claw; 72, middle claw; 73, foreclaw; 74, microtrichia on dorsum of operculate gill; 75–76, microtrichia on submarginal ventral row of operculate gill; 77, seta on posterior margin of hind tibia; 78, seta on posterior margin of hind tarsi; 79, setae on dorsal transverse row of fore femora; 80, microtrichia on dorsum of hind femora; 81, seta on hind tarsi; 82, seta of posterior margin of hind femora; 83, foreleg; 84, middle leg; 85, hind leg.

Female imago. Length: fore wings, 4.0–5.3 mm; body, 4.7–5.7 mm; caudal filaments, 3.3–3.5 mm. General coloration orangish-brown to dark grayish-brown. Head: occiput with grayish reticulated marks. Femora without marks but sometimes femora II and III with small grayish subapical spots. Pronotum with a pair of submedian whitish circular marks. Mesothoracic katapisternum much lighter than the rest of mesothorax.

Abdominal terga uniformly shaded brownish-gray on paramedian marks; gill sockets paler; terga VII–IX with oval pale marks on lateral margins, similar contiguous marks present on sterna. Thoracic and abdominal sterna without well marked spots, specially on lateral margins; lateral filaments of abdomen medium length. IX sternum apically rounded. Caudal filaments whitish except basal and subbasal segments yellowish-brown.

Mature nymph (Fig. 161). Length of male: body, 4.0–5.0 mm; caudal filaments, 3.2–3.5 mm. Length of female: body, 6.0–6.3 mm; caudal filaments, 3.5–4.7 mm. Head paler on occiput, with submedian grayish marks (Fig. 169); hind margin of head with small frayed microtrichia. Mouthparts: segment II of labial palp 1.63–1.82 times the length of segment III. Thorax. Thorax yellowish to brownish, gray to black shading (variable). Pronotum with a pair of submedian large pale areas (Fig. 161). Mesonotum with one pair of submedian pale blotches, and another pair on wingpad bases (Fig. 161). Metanotum and thoracic sterna paler than dorsum. Legs: meso- and metacoxal processes well developed (Figs. 66–67); femora only with slightly gray spots on subapex (Figs. 83–85), femora with numerous weak setae at dorsum, dorsum of femora I with a transverse row of 6–8 setae at apical 1/3 (Figs. 79, 83); tibiae and tarsi with basal band very slightly darker than the rest; all tarsi with a marginal row of spine-like setae, tarsi III with an additional submarginal row of serrated setae (Fig. 81); tarsal claws relatively straight (Figs. 71–73) to very slightly curved apically (Figs. 68–70), tarsal claws I–II with 4–6 denticles (Figs. 69–70, 72–73), tarsal claw III with 27–33 denticles (Figs. 68, 71). Abdomen. Paler areas on abdominal terga generally forming a pair of submedian pale bands on segments VII–IX (Fig. 175). Abdominal sterna shaded with gray but generally without distinct dark spots (similar to Fig. 184). Operculate gills generally without darker spots, uniformly brown; dorsal microtrichia bifid, widely subdivided (Fig. 74), stout microtrichia on ventral submarginal row (Fig. 75–76). Gills III–VI bicolor, half white and half gray. Sternum IX rounded apically, setae on hind margin strong and apically bent inwards. Caudal filaments whitish, darker only at basal segment.

Diagnosis. *Caenis ludicra* can be distinguished from the other species of *Caenis* by the following combination of characters. In the imago: 1) general coloration blackish-brown; 2) prosternal triangle anteriorly truncated in both sexes; 3) median filament on abdominal tergum II long; 4) fore legs 0.9–1.1 times length of body; 5) forceps apically rounded; 6) central sclerite of styliger circular; 7) apophyses of styliger sclerite short and rounded; 8) penis lobes rounded, more or less tapering, hind margin convex; 9) coloration of mesothoracic katepisternum paler than rest of mesothorax. In the nymph: 1) head color pattern as in Fig. 169, hind margin with small frayed microtrichia; 2) meso- and metacoxal processes present and pointed (Figs. 66–67); 3) tarsi with relatively stout setae, only few of them serrated; 4) tarsal claws generally not strongly curved apically (Figs. 68–73); 5) abdominal color pattern as in Fig. 175; 6) labrum with slightly rounded lateral margins; 7) segment II of labial palp 1.63–1.82 times the length of segment III; 8) lingua of hypopharynx with concave fore margin (similar to Fig. 156); 9) IX sternum rounded apically, setae on hind margin strong and apically bent inwards; 10) microtrichia from dorsum of body and operculate gills ramified (Fig. 74); 11) gills III–VI bicolor, half white and half gray.

Two species are sympatric with *C. ludicra*, *C. argentina* and *C. dominguezi*. In *C. ludicra* pale blotches are less extended than in *C. argentina* (the most distinct are a submedian pair on mesonotum); and the occiput show dark pigments (Fig. 169), not present in *C. dominguezi* (Fig. 167).

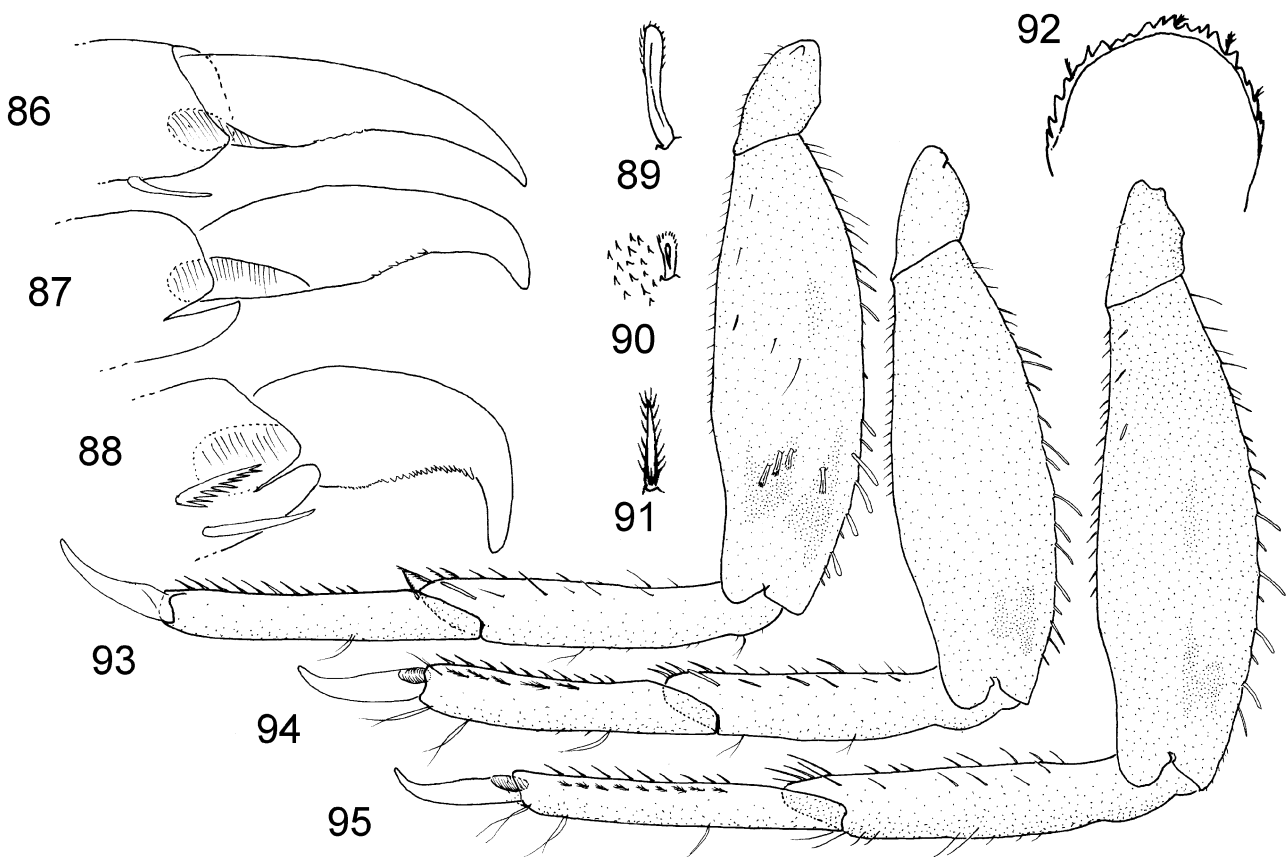
Discussion. Malzacher (2001) described nymphs of "*C. ludicra* group" from Brazil, as probably pertaining to *C. ludicra*, but this species appears to be restricted to Southern Bolivia and Northwestern Argentina. The nymphs described by Malzacher are very similar to *C. ludicra* nymphs but represents another species (see *C. uruzu* new species, below).

Distribution (Fig. 187). Argentina (Córdoba, Catamarca, Tucumán, Salta, Jujuy), Bolivia (Tarija). This species, quite common in NW Argentina, was also collected in Southern Bolivia. The distributional records include localities from mountain rain forest (Yungas), and drier habitats as Chaco, Monte and transitional regions.

***Caenis plaumanni* Malzacher (86–95, 151–152, 163, 170, 177, 183)**

Caenis plaumanni Malzacher, 2001: 13 (male, nymph).

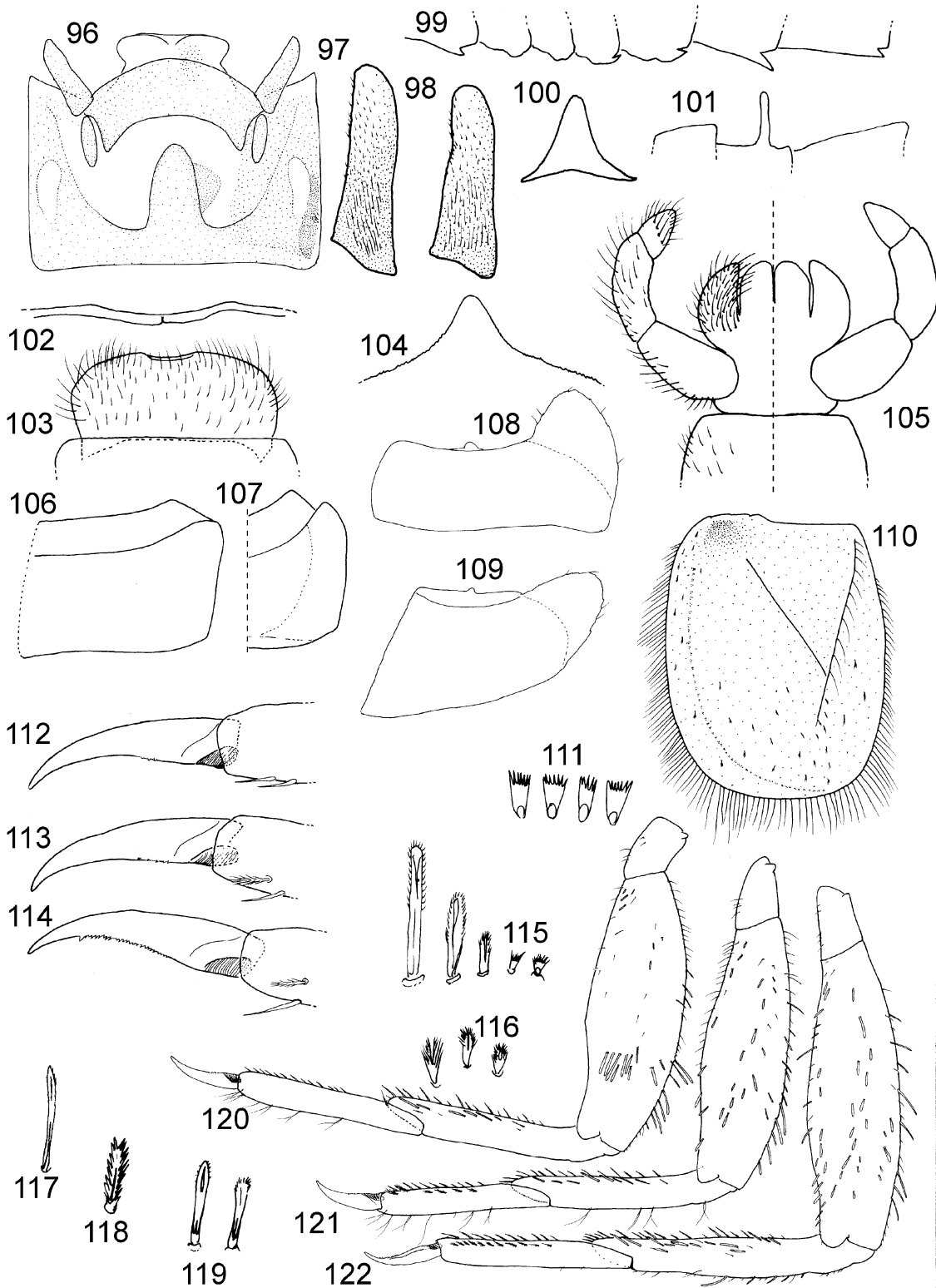
Material (IFML). One male imago and 5 nymphs from ARGENTINA: Misiones, 10 km NE de San Vicente, INTA Cuartel Victoria, 30-XI-1986, E. Domínguez col.; 1 male imago Misiones, P.P. Urugua-í, arroyo Uruzú, S 25° 51' – W 54° 10', 322 m, 23-24-XI-1998, E. Domínguez et al. cols.; 4 nymphs Misiones, 25 km S El Soberbio, 21-XI-1998, E. Domínguez et al. cols.; 1 nymph Misiones, Candelaria, 2 km E Bonpland, río del Camping, 15-II-1985, E. Domínguez col.; 1 nymph idem before except date 18-XI-1998; 7 nymphs Misiones, 15 km E San José, RP 203, arroyo San Juan, 17-XI-1998, E. Domínguez et al. cols.; 2 nymphs Misiones, San Pedro, confluencia ríos Alegría y Pirai-Guazu, 22-23-XI-1998, E. Domínguez et al. cols.; and 2 nymphs Misiones, INTA Cerro Azul, arroyo Tacuará, 17-XI-1998, E. Domínguez et al. cols.



FIGURES 86–95. *Caenis plaumanni*, nymph. 86, foreclaw; 87, middle claw; 88, hind claw; 89, seta on transverse dorsal row of fore femora; 90, seta on dorsum of hind femora; 91, seta on hind tarsi; 92, hind coxa, detail 93, fore leg; 94, middle leg; 95, hind leg.

Descriptions of male imagos and nymphs of *C. plaumanni* can be found in Malzacher (2001).

Diagnosis. Malzacher (2001) had thoroughly described the male imago. *Caenis plaumanni*, known from male imagos and nymphs, can be distinguished from the other species of *Caenis* by the following combination of characters. In the imago: 1) general coloration yellowish brown; 2) prosternal triangle anteriorly pointed or rounded; 3) median filament on abdominal tergum II long; 4) fore legs 1.1 times length of body; 5) forceps apically rounded (Figs. 7c–e in Malzacher 2001); 6) central sclerite of styliger subcircular (Fig. 7a in Malzacher 2001); 7) apophyses of styliger sclerite long, thin, and relatively far from forceps bases; 8) penes lobes rounded, hind margin convex. In the nymph (Fig. 163): 1) head color pattern as in Fig. 170, hind margin with



FIGURES 96–122. *Caenis uruzu*. Male imago: 96, genitalia, v.v.; 97–98, details of forceps, v.v.; 99, lateral filaments of abdomen; 100, preesternal triangle; 101, detail of finger-like projection of abdominal tergum II, l.v. Nymph: 102, detail of anteromedian emargination of labrum; 103, labrum, d.v.; 104, detail of posteromedian projection of tergum II; 105, labium, v.v. (setae omitted on right side); 106–107, pronotal lateral margin; 108, middle coxa; 109, hind coxa; 110, operculate gill; 111, microtrichia on submarginal ventral row of operculate gill; 112, foreclaw; 113, middle claw; 114, hind claw; 115, setae on dorsum of middle and hind femora; 116, microtrichia on dorsum of operculate gill; 117, seta on posterior margin of hind tibia; 118, seta on hind tarsi; 119, setae on transverse dorsal row on fore femora; 120, fore leg; 121, middle leg; 122, hind leg.

scale-shaped microtrichia, surface of the head completely covered by short triangular spinules; 2) meso- and metacoxal processes semicircular (Fig. 92); 3) middle and hind tarsi with one row of simple setae, and another of serrated setae; 4) tarsal claws generally curved apically (Figs. 86–88); 5) abdominal color pattern as in Figs. 177 and 183; 6) labrum with slightly rounded lateral margins; 7) segment II of labial palp 1.55–1.68 times the length of segment III; 8) lingua of hypopharynx with concave fore margin (similar to Fig. 156); 9) IX sternum apically rounded, setae on hind margin strong and apically bent inwards; 10) scale-shaped microtrichia present on dorsum of body and gills II (Figs. 8i–j in Malzacher 2001).

Distribution (Fig. 187). Argentina (Misiones), Brazil (Rio Grande do Sul).

***Caenis tenella* (Navas) comb. nov. (Figs. 123–138, 147–148, 162, 168, 176, 182)**

Eurycaenis tenella Navas, 1932a: 112 (male, female)

Brachycercus tenella; Thew, 1960: 202; Domínguez et al., 2006: 197

Brachycercus tenellus; Soldán, 1986: 294

Caenis grimi Malzacher, 2001: 15 (male, female, eggs) syn. nov.

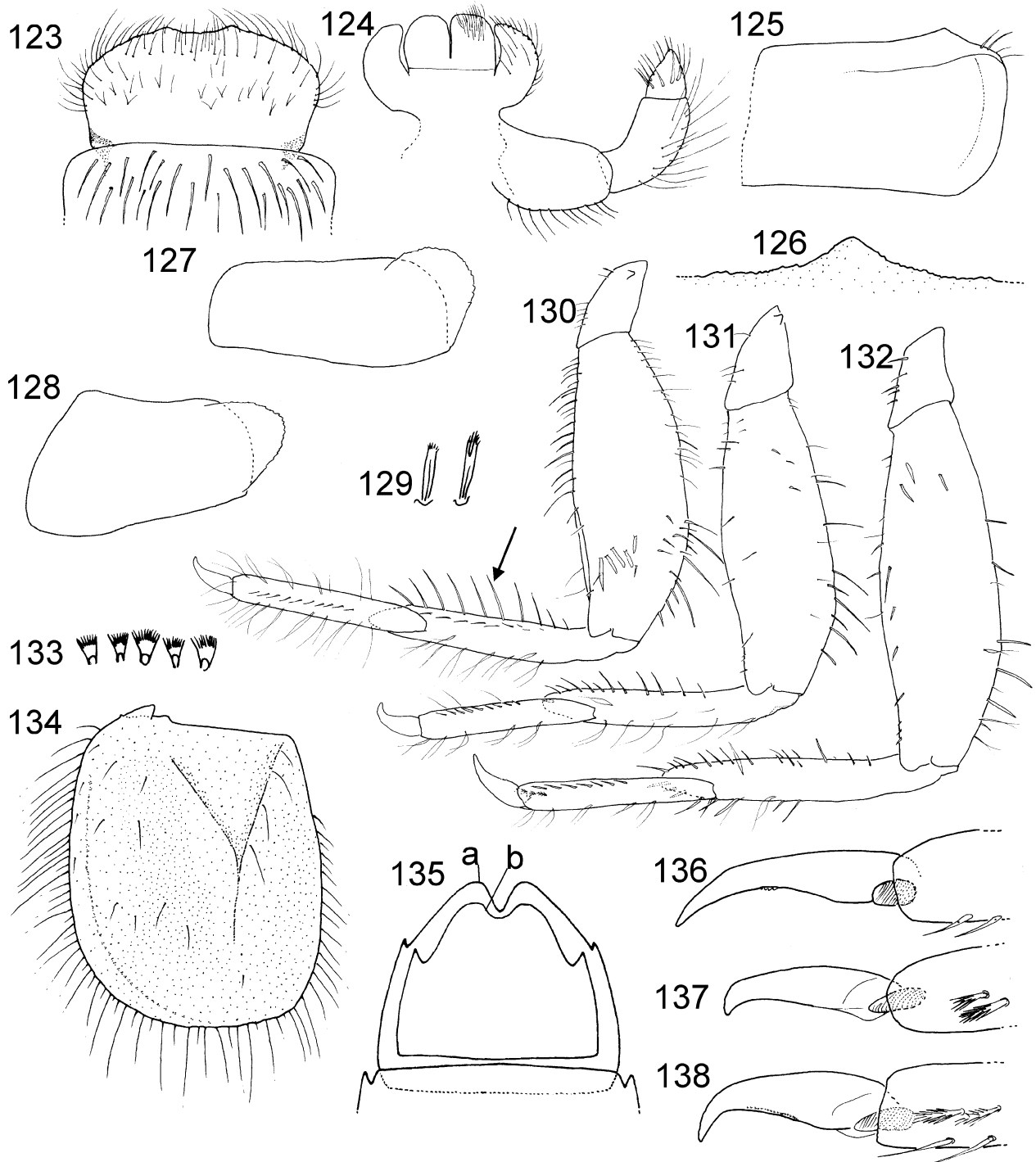
Type material. *Eurycaenis tenella*: holotype male imago and allotype female imago (MUNSA) from ARGENTINA: Buenos Aires, San Miguel, 9-XII-1932 and 3-XI-1931, Williner S. J. col. *Caenis grimi*: holotype male imago (IFML) from ARGENTINA: Formosa, Laguna Yema, S 24° 22' – W 61° 09', 11-XI-1985, E. Domínguez col.; 50 paratypes imagos of both sexes, data as holotype.

Additional material. One reared male subimago and nymphal exuviae from ARGENTINA: Misiones, P.P. Urugua-í, arroyo Uruzú, S 25° 51' – W 54° 10', 322 m, 7-11-XII-1999, C. Molineri col.; 3 male imagos and 1 nymph Misiones, San Pedro, confluencia ríos Alegría y Pirai-Guazu, 22-23-XI-1998, E. Domínguez et al. cols.; 11 female imagos Misiones, 25 km S El Soberbio, 21-XI-1998, E. Domínguez et al. cols.; 1 nymph, 1 male and 2 female imagos Misiones, Candelaria, 2 km E Bonpland, río del Camping, 15-II-1985, E. Domínguez col.; 1 male and 7 female imagos Misiones, Mado, 16-II-1985, E. Domínguez col.; 5 male and 5 female imagos Misiones, 10 km NE de San Vicente, INTA Cuartel Victoria, 30-XI-1986, E. Domínguez col.; 1 nymph Misiones, Puerto Mado, arroyo Yacutinga, 19-20-XI-1998, E. Domínguez et al. cols.; 11 male and 3 female imagos Misiones, P.N. Iguazú, 26-XI-1998, río Iguazú, Puerto Canoas, Domínguez, Molineri & Nieto cols.; 9 male and 15 female imagos Misiones, 10 km NE de San Vicente, INTA Cuartel Victoria, 20-XI-1998, E. Domínguez et al. cols.; 6 male and 20 female imagos URUGUAY: Salto Arapey, 4 km de Las Termas, Carbonell col.; 2 male and 2 female imagos Cerro Largo, arroyo Quebracho (curso superior), 4-8-III-1959, Carbonell col.; 30 male and 30 female imagos Tacuarembó, arroyo Laureles, 10-XI-1954, Carbonell col.; 50 female adults Salto, Paso Yacaré, arroyo Itapebi, Zolessi et al. cols. BRAZIL: 3 nymphs, Nova Teutonia, 100 km E. Cacado, S 27° 11' – W 52° 23', III-1962; 1 nymph, Seara, S 27° 09' – W 52° 15', 18-IV-1962; 2 nymphs, Tupitinga, Santa Cruz Riv., S 27° 30' – W 51° 12', XII-1962; Rio Grande do Sul, Arroio do Hilario, S 30° 43' – W 53° 30', XI-1964. All the material in IFML, except 20 male and 50 female imagos in MCFU and nymphs from Brazil in col. Malzacher.

Imagos. Navas (1932a) descriptions are uninformative, but Malzacher (2001) give a complete treatment of male and female imagos (as *C. grimi*).

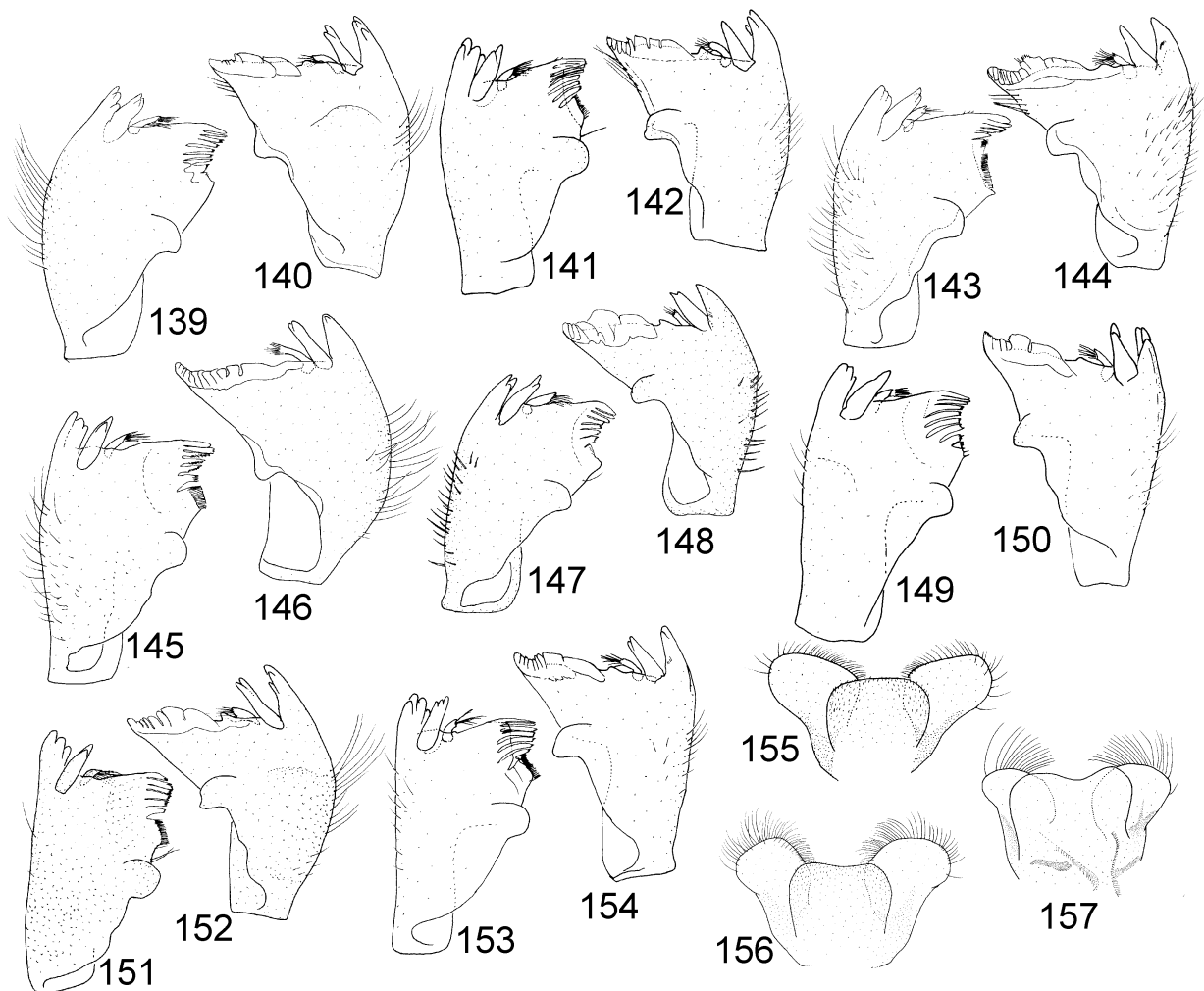
Mature nymph (Fig. 162). Length of female: body, 3.8 mm; caudal filaments, 2.5–2.8 mm; length of male: body, 2.7 mm; caudal filaments, 2.0 mm. General coloration yellowish to brownish. Head shaded gray on occiput and between antennae (Fig. 168), stronger on a transverse band behind lateral ocelli; venter of head paler than dorsum; antennae whitish, with strong setae on scape and pedicel; hind margin of the head with short bifid setules. Mouthparts: clypeus (Fig. 123) with strong setae directed posteriorly, labrum as in Fig. 123, sometimes with small bifid setae; labium (Fig. 124) with short and conic distal segment on palpi (segment II of labial palp 1.80–2.43 times the length of segment III), and large subquadrate glossae. Thorax. Pro-

and mesonotum brownish-yellow with pale blotches, with very few grayish markings. Anterolateral margin of pronotum rounded and with setae (Fig. 125). Wingbuds shaded with gray on posterior half. Metanotum whitish. Legs (Figs. 130–132): forelegs yellowish, middle and hind legs whitish; shaded with gray on coxae; coxal projections rounded with serrated margin (Figs. 127–128); fore femora with subdistal transverse row of dorsal



FIGURES 123–138. *Caenis tenella*, nymph. 123, labrum, d.v.; 124, labium, v.v. (palpus and setae at the right, omitted); 125, pronotum, left half; 126, detail of posteromedian projection of abdominal tergum II; 127, middle coxa; 128, hind coxa; 129, setae on dorsal transverse row of fore femora; 130, foreleg; 131, middle leg; 132, hind leg; 133, microtrichia of submarginal ventral row of operculate gill; 134, operculate gill; 135, IX sternum, v.v. (a, female; b, male); 136, fore-claw; 137, middle claw; 138, hind claw.

setae (Figs. 129–130), middle and hind femora with few dorsal setae, mainly along posterior margin (Figs. 131–132); fore tarsus with one row of robust simple setae; middle tarsus with one row of serrated setae; hind tarsus with one row of simple setae and one row of serrated setae; tarsal claws with small denticles, more numerous on hind claws (Figs. 136–138), apex moderately to strongly curved. Abdomen whitish with yellowish zones on median projection of tergum II, lateral zones of terga VII–IX, and on tergum X (Fig. 176); median projection of abdominal tergum II small (Fig. 126). Abdominal sterna whitish without marks (Fig. 182). Posterolateral pointed projections on abdominal segments III–IX. Abdominal gill II (Fig. 134) yellowish translucent very slightly shaded with gray, dorsum only with simple setae, stout setae (Fig. 133) present on the ventral submarginal row; gills III–VI shaded completely with grayish, with a blackish spot at the base (visible through operculate gills, Fig. 176). Sternum IX apically with a deep V-shaped notch (Fig. 135) and with bifid setules on hind margin. Cerci whitish.



FIGURES 139–157. Left and right mandibles, d.v.: 139–140, *C. argentina*; 141–142, *C. burmeisteri*; 143–144, *C. dominguezi*; 145–146, *C. gonseri*; 147–148, *C. tenella*; 149–150, *C. ludicra*; 151–152, *C. plaumanni*; 153–154, *C. uruzu*. Hypopharynx, v.v.: 155, *C. burmeisteri*; 156, *C. dominguezi*; 157, *C. tenella*.

Diagnosis. *Caenis tenella* can be distinguished from the other species of *Caenis* by the following combination of characters. In the imago: 1) general coloration whitish-yellow; 2) prosternal triangle anteriorly elongated, pointed to slightly rounded in males, somewhat wider and rounded apically in females; 3) median filament on abdominal tergum II absent; 4) fore legs 0.5–0.6 times length of body; 5) forceps apically rounded; 6) central sclerite of styliger dome-shaped; 7) apophyses of styliger sclerite bent inwards; 8) penes

with projected and pointed lateral lobes; 9) color of katapisternum similar to the rest of thoracic sclerites. In the nymph: 1) head color pattern as in Fig. 168, hind margin with short bifid setules; 2) meso- and metacoxal processes present but small (Figs. 127–128); 3) middle tarsus generally with one row of serrated setae; 4) tarsal claws with small denticles, apex curved (Figs. 136–138); 5) labrum with slightly rounded lateral margins, clypeus with strong setae (Fig. 123); 6) labial glossae large and subquadrate (Fig. 124), segment II of labial palp 1.80–2.43 times the length of segment III (Fig. 124); 7) lingua of hypopharynx relatively large and with concave fore margin (Fig. 157); 8) IX sternum apically with a deep V-shaped notch and with bifid setules on hind margin.

Discussion. Navas (1932) described this species from a pair of imagos of both sexes. As the types have been lost, serious doubts about the identity of the species existed (Thew 1960, Soldán 1986, Domínguez et al. 2006), but the pinned holotype and allotype of *Eurycaenis tenella* Navas (1932) were recently discovered in Salta (Argentina). The examination of these types and those of *Caenis grimi* Malzacher (2001), showed that both species are the same, and are here proposed as subjective synonyms. Thus the new combination *Caenis tenella* (Navás) is created to accommodate this species.

Distribution (Fig. 186). Argentina (Formosa, Misiones, Buenos Aires), Uruguay, Brazil (Rio Grande do Sul).

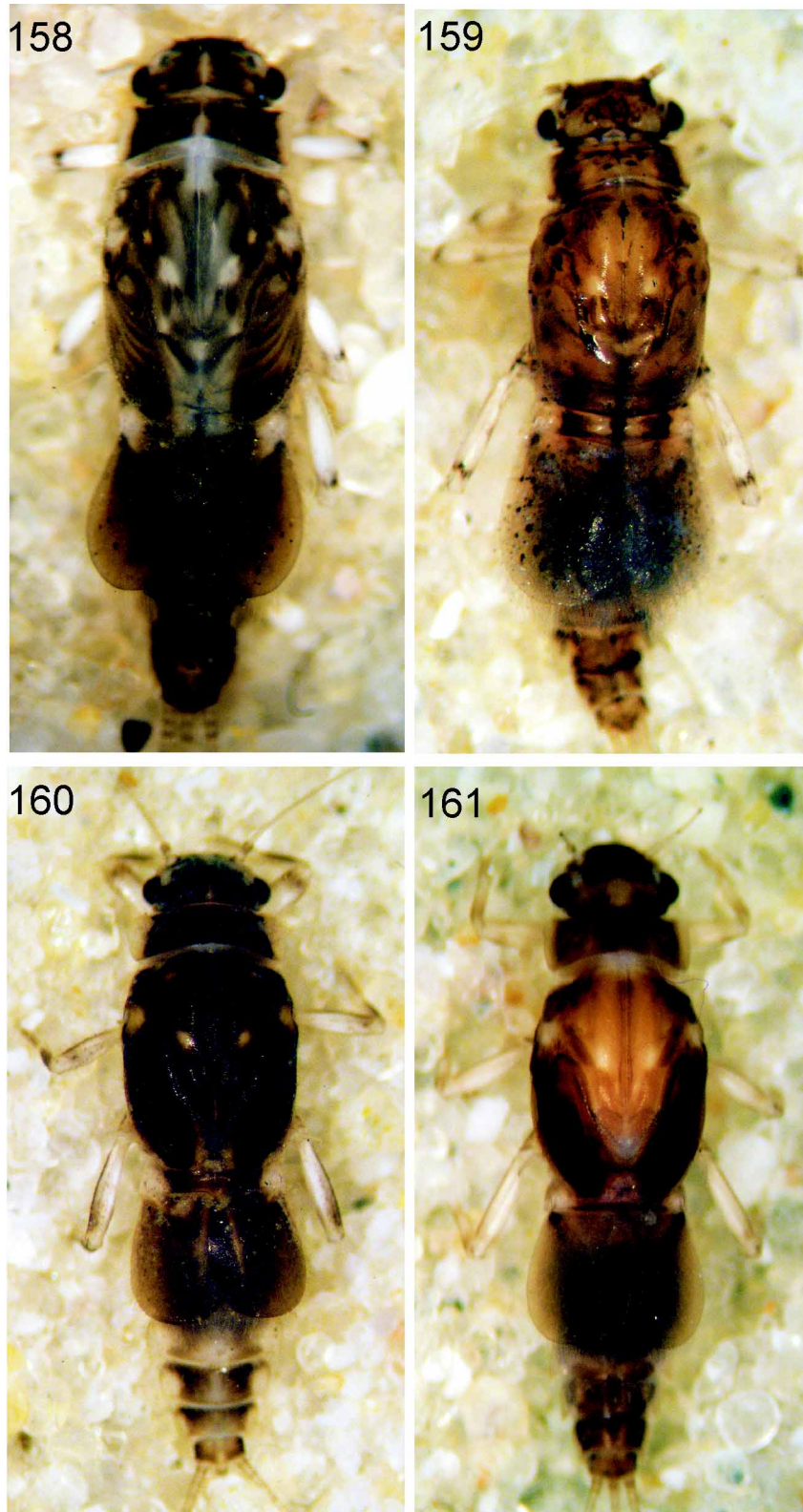
***Caenis uruzu* new species (Figs. 96–122, 153–154, 164, 171, 178, 184)**

Type material: Holotype male imago (reared) with nymphal exuviae (genitalia and nymphal parts in slides) from ARGENTINA: Misiones, P.P. Urugua-í, arroyo Uruzú, 7-11-XII-1999, C. Molineri col. Paratypes: 13 male imagos from URUGUAY: Piraraja, Orilla Cebollati, 9-XII-1952, Carbonell col.; 11 nymphs same data as holotype; 1 nymph ARGENTINA: Misiones, 10 km NE de San Vicente, INTA Cuartel Victoria, 20-XI-1998, E. Domínguez, C. Molineri, C. Nieto cols.; 6 nymphs idem except date 30-XI-1986, E. Domínguez col; 2 nymphs Misiones, Bonpland, arroyo del Tigre, 26-XI-1986, E. Domínguez col.; 3 nymphs from Misiones, 25 km S El Soberbio, 21-XI-1998, E. Domínguez, C. Molineri, C. Nieto cols.; and 1 nymph from Misiones, Puerto Mado, arroyo Yacutinga, 19-20-XI-1998, E. Domínguez, C. Molineri, C. Nieto cols. Holotype and paratypes deposited at IFML, except 7 male imagos in MFCU, and 3 male imagos and 2 nymphs in FAMU.

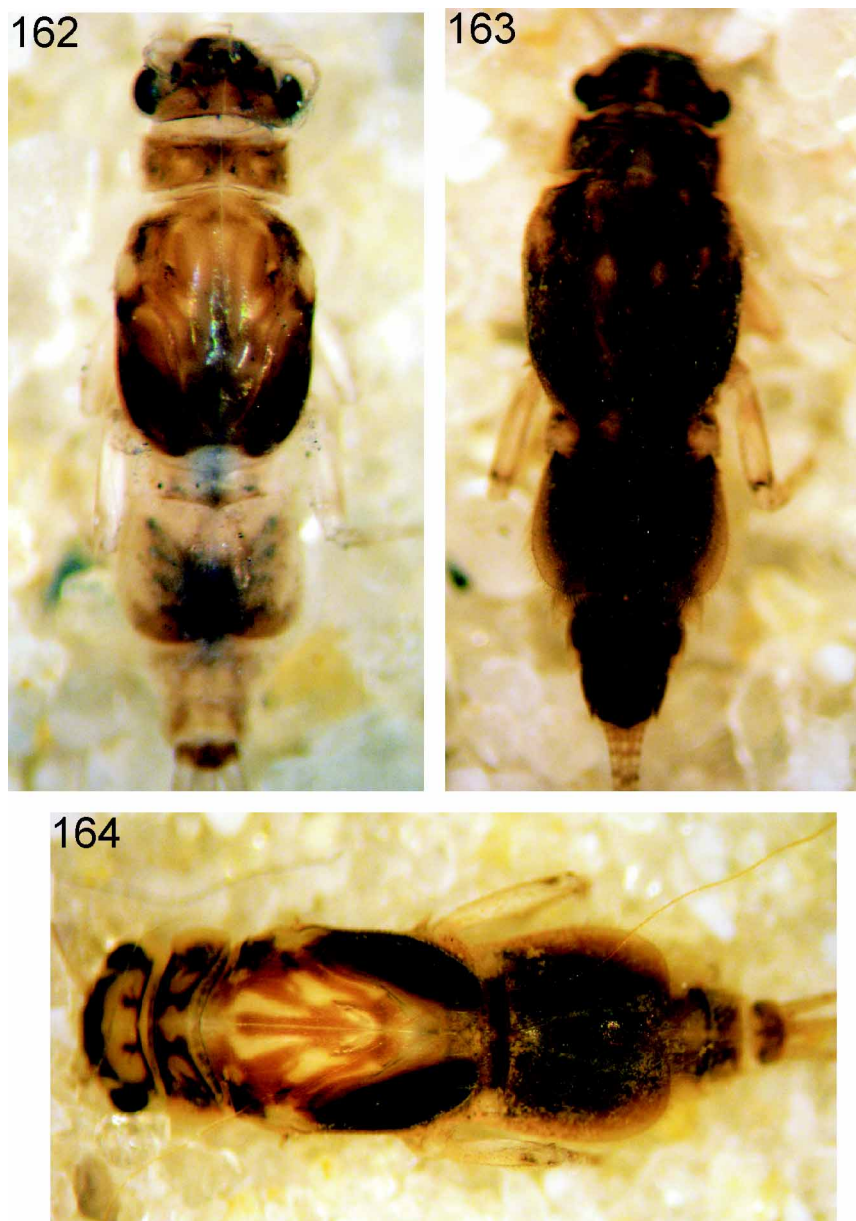
Etymology. The name, noun in apposition, alludes to one of the rivers where the species was collected.

Male imago. Length: forewings, 2.7–3.1 mm; body, 2.5–3.4 mm. General coloration yellowish-brown. Head dorsally brownish shaded with gray, occiput behind eyes blackish; head ventrally paler; antennae yellowish. Thorax. Prothorax with yellowish-brown sclerites and whitish-yellow membranes; pronotum with gray markings; prosternum shaded with black on prosternal triangle and fore margin; prosternal triangle with concave sides, anteriorly blunt (Fig. 100). Mesonotum chestnut, mesoscutellum dark brown; metanotum and pterothoracic pleurae and sterna yellowish-brown. Legs. Coxae and trochanters yellowish, femora whitish with yellow margins, tibiae yellowish, tarsi whitish. Foreleg of subequal length to body. Forewings hyaline slightly shaded with gray on C and Sc areas, longitudinal veins grayish-yellow, cross veins translucent. Abdomen yellowish-white extensively shaded with gray, tergum I slightly darker than the rest, pleural membranes whitish, tergum X yellowish with medial line blackish; finger-like projection on abdominal terga II long (Fig. 101). Genitalia (Fig. 96): styliger with yellowish sclerites, shaded with gray laterally; central sclerite large and elongated, apophyses of styliger sclerites wide at base and becoming thinner toward apex, hind margin of styliger plate convex (Fig. 96); forceps yellowish, apically rounded (Figs. 96–98); penes whitish with rounded lateral lobes (Fig. 96). Caudal filaments whitish shaded with light gray.

Female imago. Unknown.



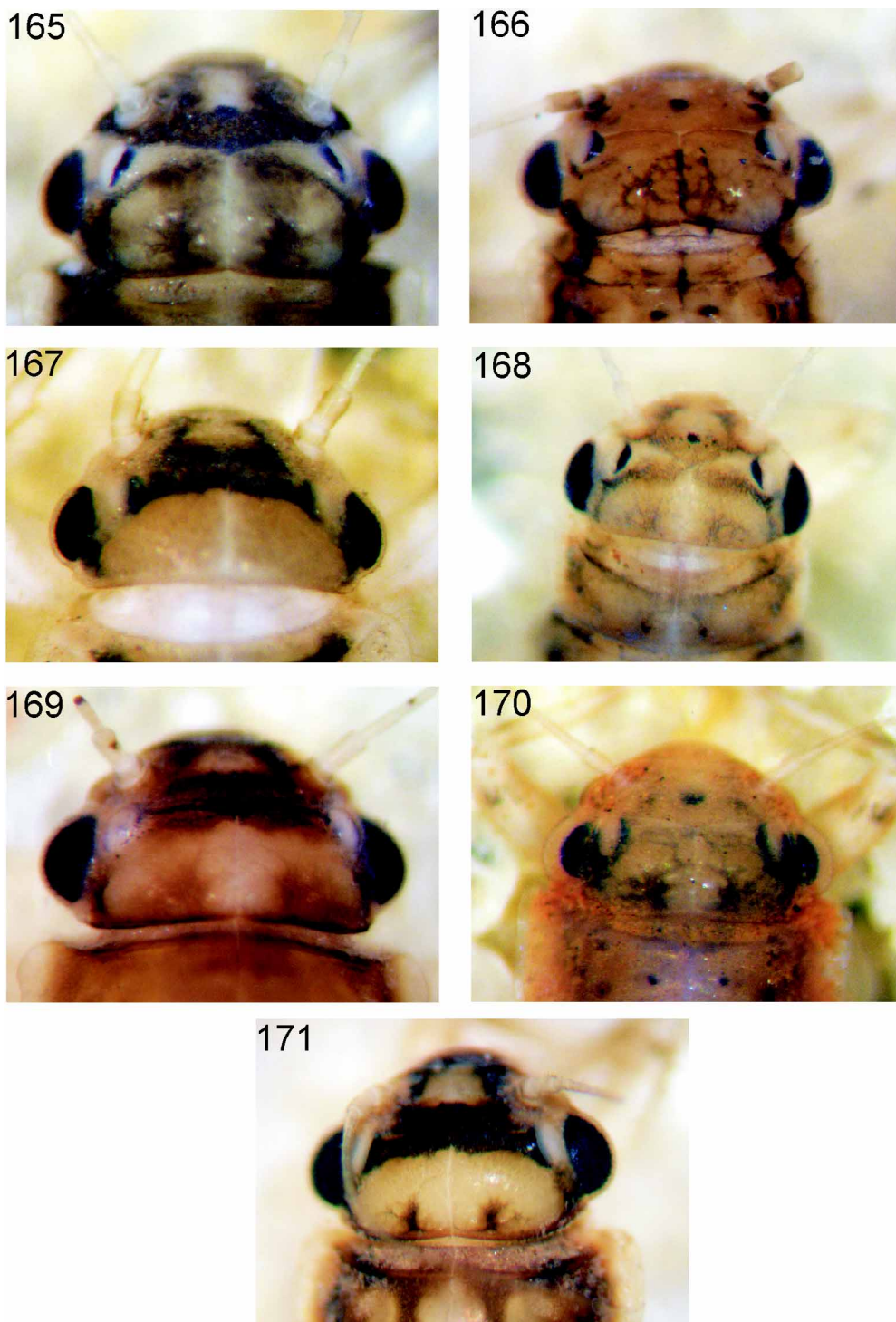
FIGURES 158–161. Nymph, general view: 158, *C. argentina*; 159, *C. burmeisteri*; 160, *C. dominguezi*; 161, *C. ludicra*.



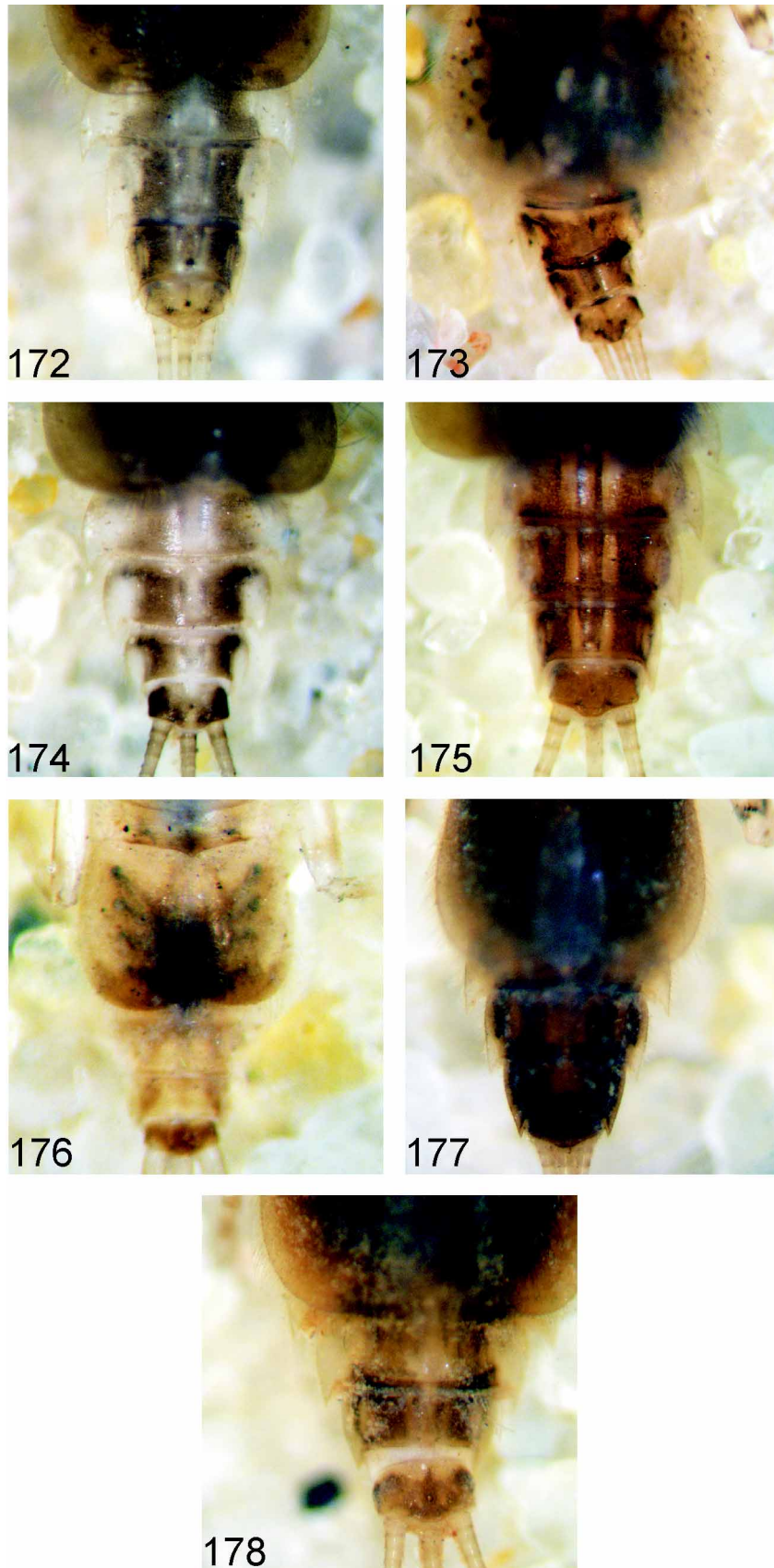
FIGURES 162–164. Nymph, general view: 162, *C. tenella*; 163, *C. plaumanni*; 164, *C. uruzu*.

Mature nymph (Fig. 164). Length of female: body, 4.1–5.5 mm; caudal filaments, 3.5–4.5 mm. Length of male: body, 3.5–3.8 mm, caudal filaments, 3.0 mm. Head yellowish shaded with blackish among ocelli and posterolateral corners (Fig. 171), occiput with a pair of submedian grayish star-like marks; hind margin with frayed microtrichia. Antennae yellowish-white. Mouthparts yellowish shaded with grayish on labrum and mandibles; labrum with rounded lateral margins and shallow anteromedian emargination (Fig. 102–103); distal segment of labial palpi short, segment II of labial palp 1.67–1.90 times the length of segment III (Fig. 105). Thorax. Pro- and mesonotum yellowish light brown with paler zones; with irregular gray markings; anterolateral corners of pronotum lightly to moderately projected (Figs. 106–107). Thoracic sterna paler widely shaded with gray. Wingbuds grayish-black except on Cu area, whitish. Legs yellowish-white; coxae II–III with large, tapering, and distally rounded projections (Figs. 108–109); femora with a grayish subapical mark, dorsum of femora with numerous setae (Figs. 115, 120–122), transverse row at dorsum of femora I with 9 setae; basal and distal portions of tibiae and tarsi paler than the rest; all tarsi with a longitudinal row of robust simple setae, middle and hind tarsi with an additional row of serrated setae; tarsal claws yellowish translucent, very slightly curved, claws I–II with 3–5 small denticles (Figs. 112–113), claw III with 23–25 denticles, increasing in size

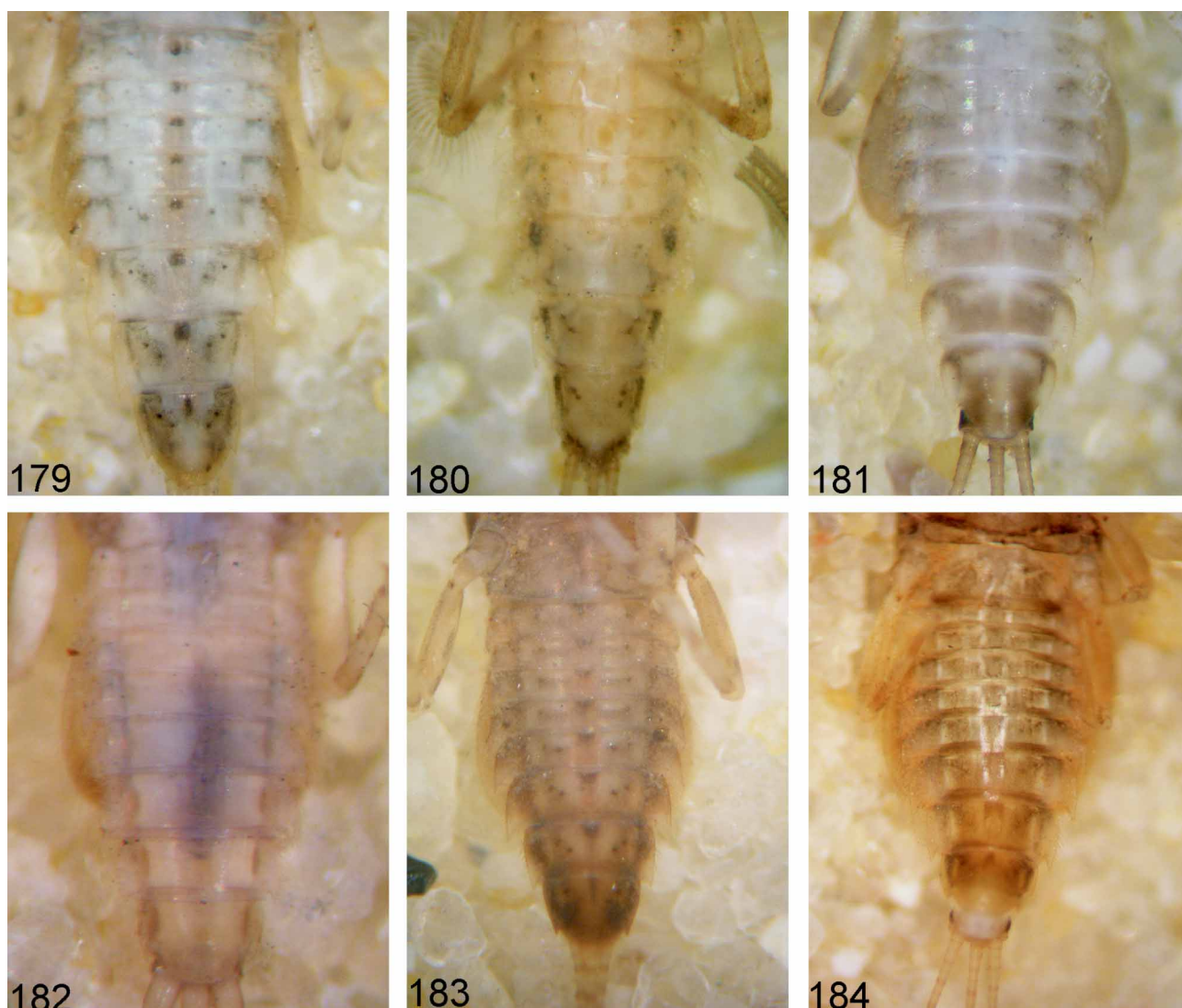
toward apex (Fig. 114). Abdomen dorsally yellowish light brown with paler lateral margins and intersegmental membranes (Fig. 178); terga I–II slightly darker than the rest, lateral zones of tergum II (at gill bases) whitish; median projection of tergum II well developed (Fig. 104). Abdominal sterna (Fig. 184) paler than terga, shaded with grayish almost completely except on a pair of submedian and sublateral whitish marks. Posterolateral spines whitish translucent. Operculate gills (Fig. 110) yellowish-brown, remaining gills grayish; microtrichia on dorsum of gill II as in Fig. 116; microtrichia from the submarginal ventral row as in Fig. 111. Sternum IX rounded apically, setae on hind margin strong and apically bent inwards. Caudal filaments whitish-yellow.



FIGURES 165–166. Nymph, head color pattern: 165, *C. argentina*; 166, *C. burmeisteri*; 167, *C. dominguezi*; 168, *C. tenella*; 169, *C. ludicra*; 170, *C. plaumanni*; 171, *C. uruzu*.



FIGURES 172–178. Nymph, abdominal terga: 172, *C. argentina*; 173, *C. burmeisteri*; 174, *C. dominguezi*; 175, *C. ludicra*; 176, *C. tenella*; 177, *C. plaumanni*; 178, *C. uruzu*.

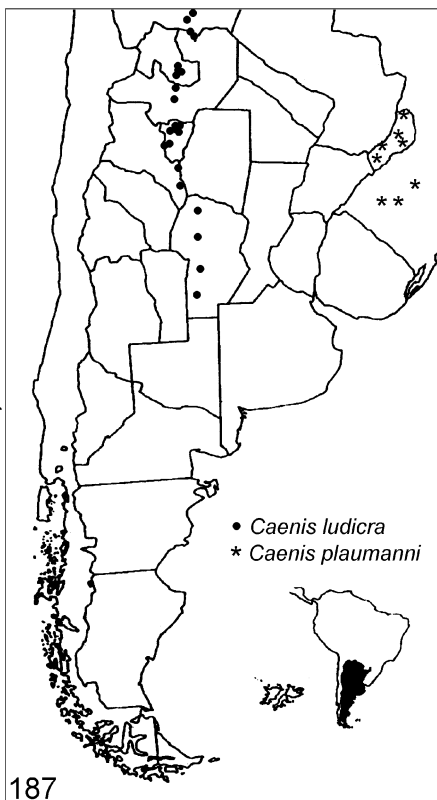
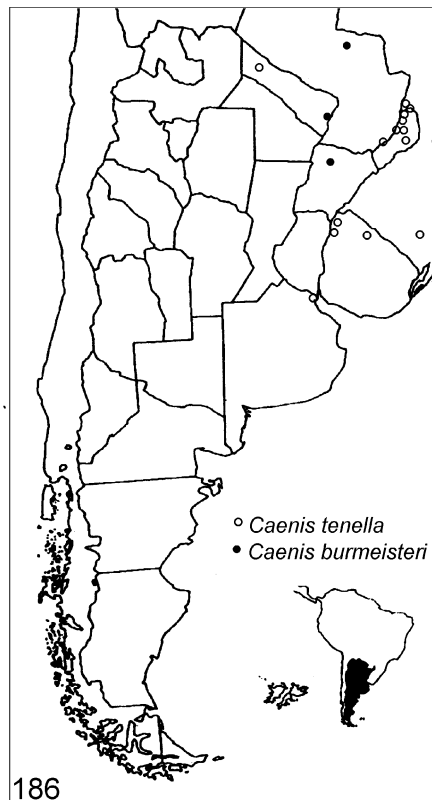
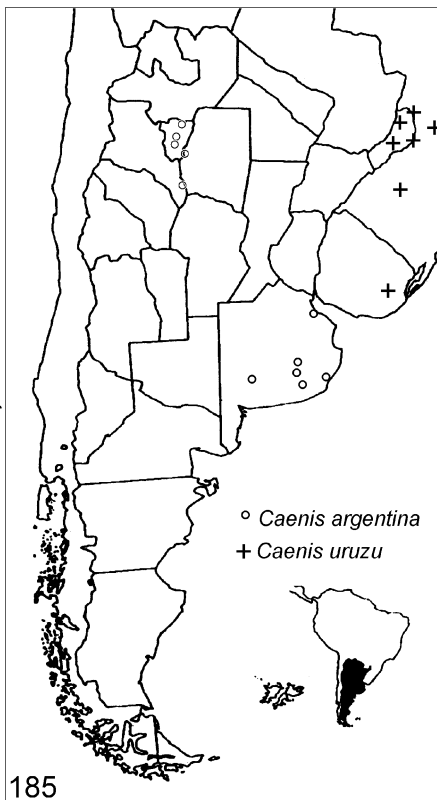


FIGURES 179–184. Nymph, abdominal sterna: 179, *C. argentina*; 180, *C. burmeisteri*; 181, *C. dominguezi*; 182, *C. tenella*; 183, *C. plaumanni*; 184, *C. uruzu*.

Diagnosis. *Caenis uruzu* new species can be distinguished from the other species of *Caenis* by the following combination of characters. In the imago: 1) general coloration yellowish brown; 2) prosternal triangle with concave sides, anteriorly blunt (Fig. 100); 3) median filament on abdominal tergum II long (Fig. 101); 4) fore legs as long as body; 5) forceps apically rounded (Figs. 96–98); 6) central sclerite of styliger elongated (Fig. 96); 7) apophyses of styliger sclerite broad and short (Fig. 96). In the nymph: 1) head color pattern as in Fig. 171, hind margin with frayed microtrichia; 2) coxae II–III with well-developed and apically rounded projections (Figs. 108–109); 3) fore tarsi with a longitudinal row of robust simple setae, middle and hind tarsi with a similar row and an additional row of serrated setae; 4) tarsal claws not strongly curved apically (Figs. 112–114), apical denticle of tarsal claw III much larger than the others; 5) abdominal color pattern as in Figs. 178 and 184; 6) labrum with slightly rounded lateral margins (Fig. 103); 7) distal segment of labial palpi relatively short, segment II of labial palp 1.67–1.90 times the length of segment III (Fig. 105); 8) lingua of hypopharynx with concave fore margin (similar to Fig. 156); 9) IX sternum rounded apically, setae on hind margin strong and apically bent inwards; 10) microtrichia from dorsum and operculate gills bifurcate and frayed (Fig. 116).

Discussion. *Caenis uruzu* new species belongs to the *argentina*-group proposed by Malzacher (2001), because male imagos show a finger-like projection on abdominal tergum II, forelegs are subequal in length to body, and genitalic sclerites are well marked. Nymphs of *C. uruzu* were treated as *C. ludicra* by Malzacher

(2001). However *C. ludicra* shows a marked western distribution, and it is not expected to be found in sympatry with *C. uruzu*. Distribution (Fig. 185). Argentina (Misiones), Brazil (Santa Catarina, Rio Grande do Sul), Uruguay.



FIGURES 185–188. Distribution maps.

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