

## Rediscovery of *Oxyagrion bruchi* Navás from Argentina, with a description of its larva (Odonata: Zygoptera: Coenagrionidae)

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**Abstract.** *Oxyagrion bruchi* Navás is redescribed, illustrated, and diagnosed. A neotype is designated. The larva is described and compared with other known sympatric species of the genus.

**Resumen.** *Oxyagrion bruchi* Navás, 1924 es redescrito, ilustrado y diagnosticado. Se designa un neotipo. Su larva es descrita por primera vez y comparada con las otras especies conocidas simpátricas del género.

**Résumé.** L'*Oxyagrion bruchi* Navás, 1924 est redécrit, illustré et diagnostiqué. Un néotype est désigné. La larve est décrite pour la première fois et comparée avec les larves des espèces sympatriques de ce genre.

**Key Words.** Odonata, dragonfly, *Oxyagrion*, Coenagrionidae, Zygoptera, Argentina.

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### INTRODUCTION

The exclusively South American genus *Oxyagrion* Selys, includes 23 species of predominantly red coenagrionid damselflies. *Oxyagrion bruchi* was described by Navás (1924) based on a single male specimen collected in Alta Gracia, Córdoba province, Argentina. The species was never recorded again, the type is lost (Costa 1978), and its taxonomic status was deemed doubtful (Muzón & von Ellenrieder 1998, 1999).

In her revision of the genus *Oxyagrion*, Costa (1978) suggested that specimens described by Ris (1918) from Bolivia (Coroico and Río Zongo) as *Oxyagrion terminale* 'form b', were in fact *O. bruchi*. Later (1999) Mauffray described *O. tennesseini* from Ecuador, providing a comparison with *O. bruchi*, seemingly the most similar species, based on Navás' (1924) original description.

Several larvae of a species of *Oxyagrion* from Salta province, Argentina, were reared to adult. They conform in every way to Navás' (1924) original description and we believe that they represent *bona fide* *O. bruchi*. Examination of material deposited in the MLP and FML collections revealed more specimens of the same taxon, from Salta, Tucumán and Córdoba provinces, and some teneral specimens were later collected at a different locality in Salta province.

The larvae of 14 species of *Oxyagrion* have thus far been described (Needham & Bullock 1943, Bulla 1973a, Costa 1988, Costa et al. 2000), from which six share parts of the distribution range of *O. bruchi*.

### METHODS AND MATERIALS

All characters were illustrated with the aid of a camera lucida. Measurements are in mm, and total length and abdominal length do not include appendages. Wing

terminology follows Riek & Kukalová-Peck (1984). Abbreviations for structures used throughout the text are as follows: FW: forewing; HW: hindwing; px: postnodal crossveins; S1–10: abdominal segments one to 10. Examined material is deposited at following collections: Departamento Científico Entomología, Museo de La Plata, ARGENTINA (MLP); Fundación Miguel Lillo, Tucumán, ARGENTINA (FML); Florida State Collection of Arthropods, Gainesville, Florida, U.S.A. (FSCA); Museu Nacional Rio de Janeiro, Rio de Janeiro, BRAZIL (MNRJ); Dr. N. von Ellenrieder personal collection, Salta, ARGENTINA (NVE); Dr. R.W. Garrison personal collection, Sacramento, California, U.S.A. (RWG).

#### TAXONOMY

##### *Oxyagrion bruchi* Navás, 1924

(Figs. 1–3, 6–10, 13–21, 23–25)

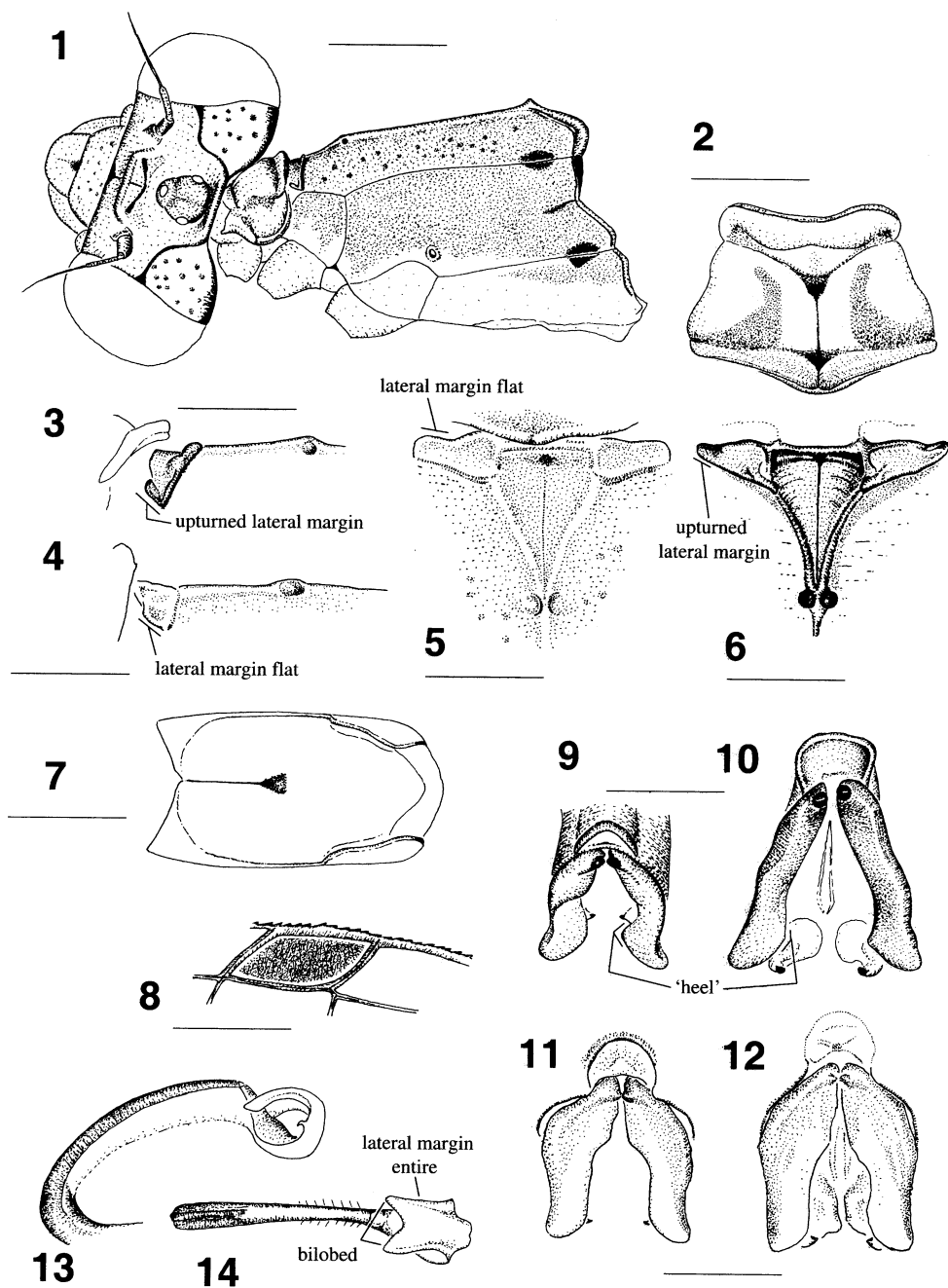
*Oxyagrion bruchi* Navás, 1924:331–332, fig. 13 [description, illustration of male S10 and posterior margin of HW]; Costa 1978:53, 58, 85–89 [key, transcription of original description]; Rodrigues Capítulo 1992:55 [distribution record from Córdoba province]; Mauffray 1999:165, 169–170 [comparison with *O. tennesse*]; Muzón & von Ellenrieder 1998:23 [distribution record from Córdoba province with doubt]; Muzón & von Ellenrieder 1999:124 [doubtful status].

*Oxyagrion terminale* Ris 1918:127–128 (nec *Oxyagrion terminale* Selys, 1876) [description of male and female from Coroico and Río Zongo, Bolivia, as *Oxyagrion terminale* form b]; Bulla 1973a:13, 15 [in part: larvae from Ruta 42, Jujuy province]; Bulla 1973b:505 [at least in part: mention from Bolivia, and Salta and Jujuy provinces in Argentina].

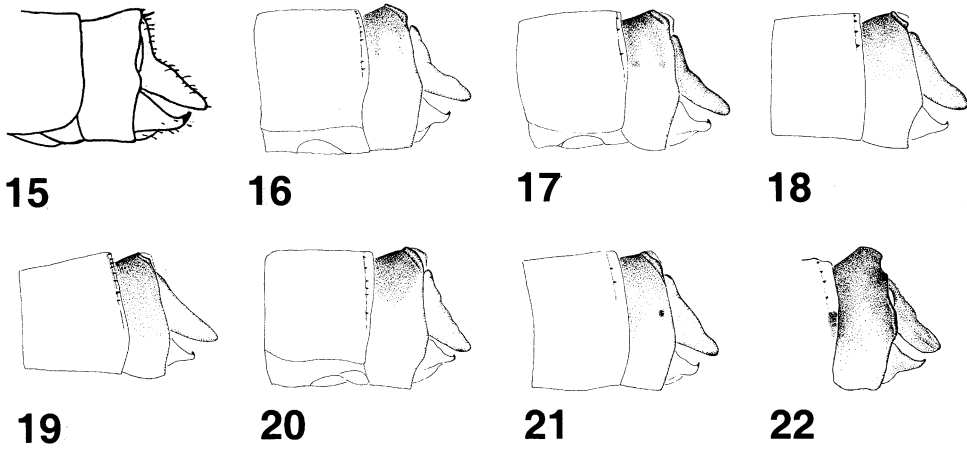
*Neotype designation.* The holotype of this species, a male from Alta Gracia, Córdoba Province, Argentina, 7.v.1920 (L. Navás col.) (Navás 1924) is lost (Costa 1978, G. Masó, Museo de Zoología de Barcelona personal communication, and C. Martin, Museo Nacional de Ciencias Naturales, Madrid, Spain, personal communication) and its original description is insufficient to readily identify the species. Herein we designate a neotype in order to objectively define the nominal taxon and to ensure that future researches have access to the name-bearing specimen at a recognized scientific collection in case of nomenclatorial questions. Although the specimen from Villa Belgrano, Córdoba province, would most approximate the type locality and would thus be considered the best candidate for neotype designation according to recommendation 75A of the ICZN, we have not chosen it because it is incomplete (lacking head and S8–10). We have instead selected the best preserved available specimen.

Neotype and type locality by present designation: Neotype (male). ARGENTINA: Salta Prov.: unnamed stream at Lesser, 24°40'56" S 65°28'40" W, 1312 m, 23.ix.2005 (N. von Ellenrieder), emerged in lab. 9.x.2005 (MLP).

*Specimens examined.* (16 males, 9 females: all teneral). ARGENTINA. Salta Prov.: Neotype, stream at Lesser, 24°40'56" S 65°28'40" W, 1312 m, 23.ix.2005, emerged in lab. 9.x.2005 (N. von Ellenrieder), 1 male (MLP); same data but 13.x.2005, 3 males emerged 19.x.2005 (NVE); same data but 1 male (MLP); same data but 1 female emerged 26.x.2005 (NVE); same data but 1 female emerged 29.x.2005 (MLP); same data but 2 females (in ethanol) emerged 02.xi.2005 (NVE); same data but 12.xi.2005, 1 male emerged 14.xi.2005 (NVE); same data but 1 male



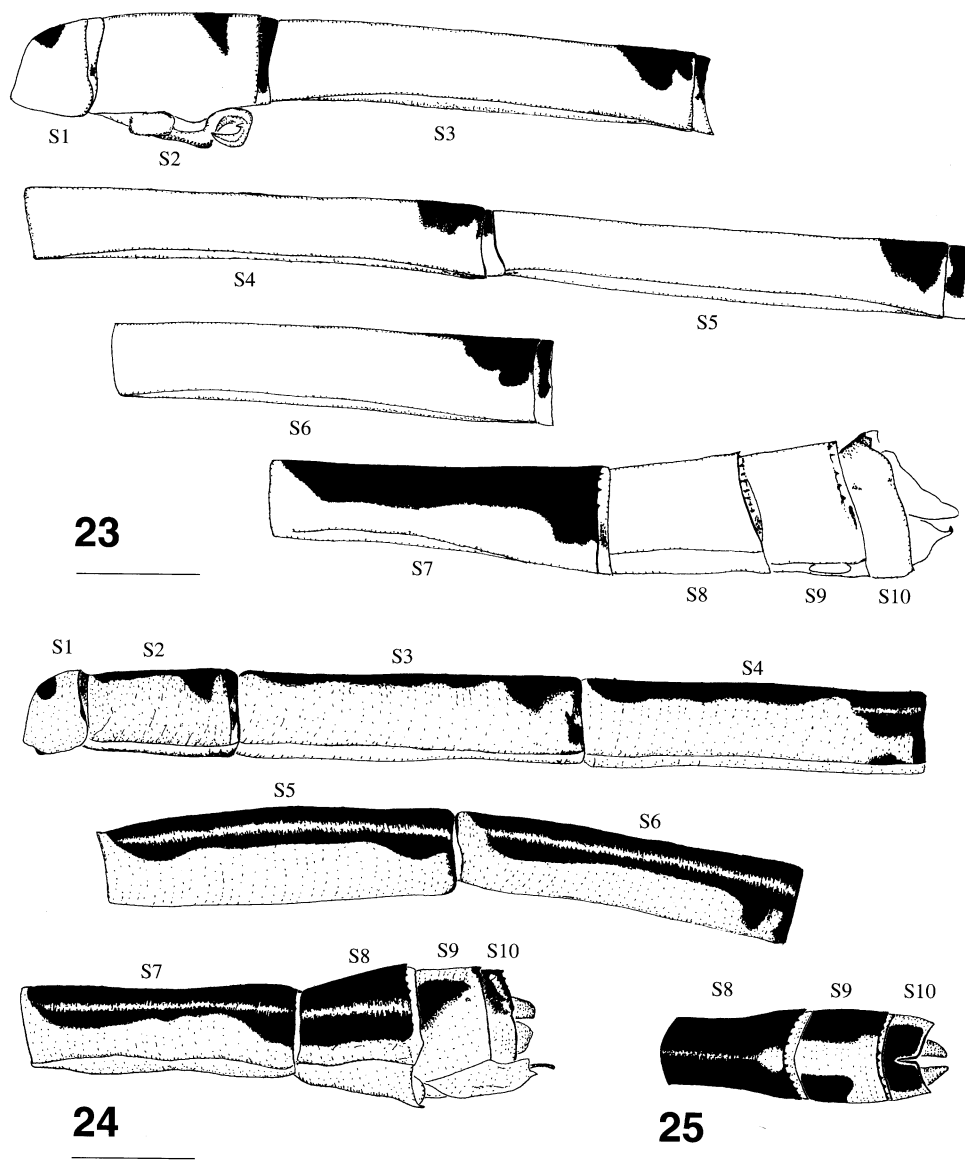
Figures 1–14. Figs. 1–3, 6–10, 13–14: *Oxyagrion bruchi* Navás, 1924; Figs. 4–5, 11–12: *Oxyagrion tennesseense* Mauffray, 1999 (paratypes). 1. Head and thorax, dorsal view (female); 2. prothorax, dorsal view (female); 3–4. posterior lobe of prothorax and antero-dorsal portion of pterothorax, lateral view (female); 5–6. mesostigmal plates, dorsal view (female); 7. pterothorax, ventral view (male); 8. FW pterostigma, dorsal view (male neotype); 9, 11. caudal appendages, dorsal view (male); 10, 12. caudal appendages, posterior view (male); 13. genital ligula, lateral view (male neotype); 14. genital ligula, dorsal view (male neotype). Scales Figs. 1, 7: 1 mm, 2–6, 8–14: 0.5 mm.



Figures 15–22. Male S10, lateral view: 15–21: *Oxyagrion bruchi* Navás, 1924; 15. Holotype (lost, taken from Navás 1924); 16–21. variability in series from Lesser, Salta. Fig. 22: *Oxyagrion tennesseini* Mauffray, 1999 (paratype). Scale: 1 mm.

emerged 18.xi.2005 (RWG); same data but 1 female emerged 28.xi.2005 (RWG); same data but 1 male (in ethanol) emerged 28.xi.2005 (NVE); same data but 8.iv.1998, 1 male emerged in lab. (MLP); National Park El Rey, Pozo Verde pond, 24°45'22" S 64°41'37" W, 1302 m, 27.iv.2006 (N. von Ellenrieder), 1 male, 1 female (FSCA); same data but 1 male (NVE); National Park El Rey, in bush, nr creek at Los Patos pond, 24°43'52" S 64°36'42" W, 861 m, 26.iv.2006 (N. von Ellenrieder), 1 female (RWG); National Park El Rey, nr Cascada Los Lobitos, in bush, 24°41'40" S 64°38'27" W, 884 m, 26.iv.2006 (N. von Ellenrieder), 1 male (MNRJ); Campamento Tablillas, 22°37'60" S 63°51'00" W, 458 m, 26.xii.1969 (P. Fidalgo), 1 female (FML); Orán Department, National Route 50, km 21–33, Angosto del Pescado, 22°53'00" S 64°27'00" W 700 m, 10–13.xi.1978 (P. Fidalgo), 1 female (FML). Tucumán Prov.: pools by road 157, near Monteagudo, 27°01'07" S 65°39'07" W, 1400 m, 8.i.1997 (J. Muzón and N. von Ellenrieder), 1 male (MLP); Tafí Department, Horco Molle, 26°49'00" S 65°19'00" W, 465 m, 07.xi.1971 (C. Porter), 1 male (FML); same data but 18.iv.1970 (P. Fidalgo), 1 male (FML). Córdoba Prov.: Villa General Belgrano, 21°58' S 64°34' W, 700 m, 7.iii.1997 (L. Mola) 1 male (MLP).

**Diagnosis.** The male of *Oxyagrion bruchi* is most similar to *O. tennesseini* Mauffray, 1999, and *O. terminale* Selys, 1876, in cercus and paraproct morphology in lateral view (Figs. 15–22) and shape of genital ligula (Figs. 13–14). The most notable difference with both *O. tennesseini* and *O. terminale* occurs in the cercus in posterior and dorsal views; the cercus is about equally wide at tip and at mid-length in *O. bruchi* (Fig. 10), while it is much narrower at tip than at mid-length in the other two species (Fig. 12), and it has a distinct angulation on the tip's inner side, forming a 'heel' in *O. bruchi* (Figs. 9–10), that is absent in *O. tennesseini* (Figs. 11–12) and *O. terminale*. It also differs from *O. terminale* (both in males and females) by the much smaller black triangular spot on venter of pterothorax, which is about as wide as 1/6–1/7 of pterothorax width in *O. bruchi* (shared with *O. tennesseini*) and 1/3–1/4 in *O. terminale*. *Oxyagrion bruchi* shares the presence of blue areas on male S8 only with



Figures 23–25. Abdominal color pattern of *Oxyagrion bruchi* Navás, 1924; 23. male neotype S1–10, lateral view; 24. female S1–10, lateral view; 25. female S8–10, dorsal view. Scale: 1 mm.

*O. tennesse*, *O. haematinum* Selys, 1876, and *O. hempeli* Calvert, 1909. From these species, only *O. hempeli* is partially sympatric (in Córdoba province in Argentina) with *O. bruchi*, and its male can be easily distinguished from *O. bruchi* by its shorter paraproct (not reaching half of the cercus length in lateral view; almost reaching its tip in *O. bruchi*, Figs. 16–21), lack of tubercles on inner side of base of cercus (present in *O. bruchi*, Figs. 9–10), and deep lateral clefts on distal segment of genital ligula (lateral sides entire in *O. bruchi*, Figs. 13–14). The other partially sympatric

*Oxyagrion* species (Costa 1978), *O. chapadense* Costa, 1978, *O. miniopsis* Selys, 1876, *O. pavidum* Hagen in Selys, 1876 and *O. rubidum* (Rambur, 1842), differ by the absence of blue on S8 (present in *O. bruchi*, Fig. 23), as well as by cercus and genital ligula morphology. The male of *O. haematinum* differs from that of *O. bruchi* by the entire distal margin on the distal segment of genital ligula (bilobed in *O. bruchi*, Fig. 14), and paraproct surpassing tip of cercus in lateral view (not reaching tip in *O. bruchi*, Figs. 16–21).

The blue areas on S9–10 of the female of *O. bruchi* (Figs. 24–25) distinguish it from the partially sympatric *O. chapadense*, *O. miniopsis*, and *O. pavidum*, all of which have a completely black S10. The shape of the interlaminal sinus (area between mesostigmal plates and mid-dorsal mesepisternal carinae) is rectangular in *O. rubidum* whereas it is triangular in *O. bruchi* (Fig. 6); mesepisternal pits are lacking in *O. hempelii* but are present in *O. bruchi* (Figs. 3, 6). The length of the inner margin of the mesostigmal plate of *O. terminale* and *O. haematinum* (Costa 1984) is less than twice as long as the narrowest point of its outer area, while it is more than twice its outer length in *O. tennesseini* and *O. bruchi*, and the interlaminal sinus is as wide as long or wider, while it is longer than wide in the latter two species (Figs. 5–6). Females of *O. bruchi* and *O. tennesseini* differ only by the shape of the mesostigmal plates, which have upturned lateral margins in *O. bruchi* (Figs. 3, 6), while they are almost flat in *O. tennesseini* (Figs. 4–5).

*Description of Neotype male* (Figs. 8, 13–14, 23). Labium and labrum yellowish white, labrum with a small dark brown spot dorsomedially; anteclypeus yellowish white, postclypeus, antefrons and postfrons pale reddish brown. Postocular area pale reddish brown, delimited by a distinct dark brown irregular line and with dark brown specks (as in Fig. 1). Two basal segments of antennae reddish brown, remainder black.

Legs largely yellow, with slender black spines; femora with a brown longitudinal stripe and tibiae with brown spots on outer surface; distal end of tarsi and pretarsi dark brown. Prothorax largely yellow with some brown areas dorsally. Mesepisternum, mesepimeron and metepisternum mostly reddish brown, metepimeron pale yellow; medial half of mesepisternum darker brown, with dark brown specks; a dark brown spot on posterior end of both lateral sutures (as in Fig. 1). Venter of thorax pale yellowish white, with a triangular dark brown spot at its center (as in Fig. 7) about as wide as 1/6 of thorax. Wings hyaline, venation brown; pterostigma covering one cell, reddish brown surrounded by a submarginal yellow hairline (Fig. 8); wings petiolated to Ac, at midpoint between ax 1 and 2; px 12 in FW, 10 in HW; RP2 branching between px 5–6 in FW, between 4–5 in HW; IRP2 arising at level of px 9 in FW, of px 8 in HW.

Venter of abdomen pale yellow; S1 and S4 with a midventral black line. Dorsum and sides (Fig. 23) predominantly red on S2–6, light blue on S8–10, and black on S7. S1 pale yellowish brown with black mediodorsal spot; S2 with a submarginal black transverse spot at posterior 1/4; S3–6 with a black rounded spot at posterior 1/5, which on S6 extends anteriorly to about midlength of segment; S7 mostly black; S8–9 almost entirely light blue, except for small black posterolateral spot on intersegmental membrane; S10 with posterior and anterior margins dark brown. Cercus pale yellowish white with ventral tip dark brown, and dorsal tubercle shiny black; paraproct yellow with pointed mediodorsal projection black. Cercus in posterior and dorsal view about equally wide at tip and at mid-length (as in Fig. 10), and with

a distinct angulation on tip's inner side, forming a 'heel' (as in Figs. 9–10). Paraproct not reaching tip of cercus in lateral view (Fig. 23, as in Figs. 16–21). Genital ligula distal segment with entire lateral margin and distal margin bilobed (Fig. 14), and with a small lateral lobe on each side slightly distal to flexure point of distal segment (Fig. 13).

*Variation.* Medial half of mesepisternum is paler in 20% of examined specimens. Extension of black on abdominal segments is variable; there is in some specimens a narrow (30%) to wide (40%, about 1/3 of segment width) mid-dorsal black stripe on S3–6, which in S6 can cover the entire dorsum (70%); dorsum of S10 varies from blue with just anterior and posterior margins black to entirely black (Figs. 16–21, 23–25); on S8–9 of males there is in some specimens (10%) a lateral black stripe and a pair of minute dorsolateral black spots. Females share the same head and thoracic color pattern (Figs. 1–2) as male, but have a darker abdomen, with dorsum of S2–10 mostly black, except for the light blue spot on S9, which can be rectangular to T shaped (Figs. 24–25). Female posterior lobe of prothorax is smoothly convex and slightly bilobed at apex (Fig. 2), mesostigmal plates are subtriangular, about as wide as space between them, and with upturned lateral margins (Figs. 3, 6).

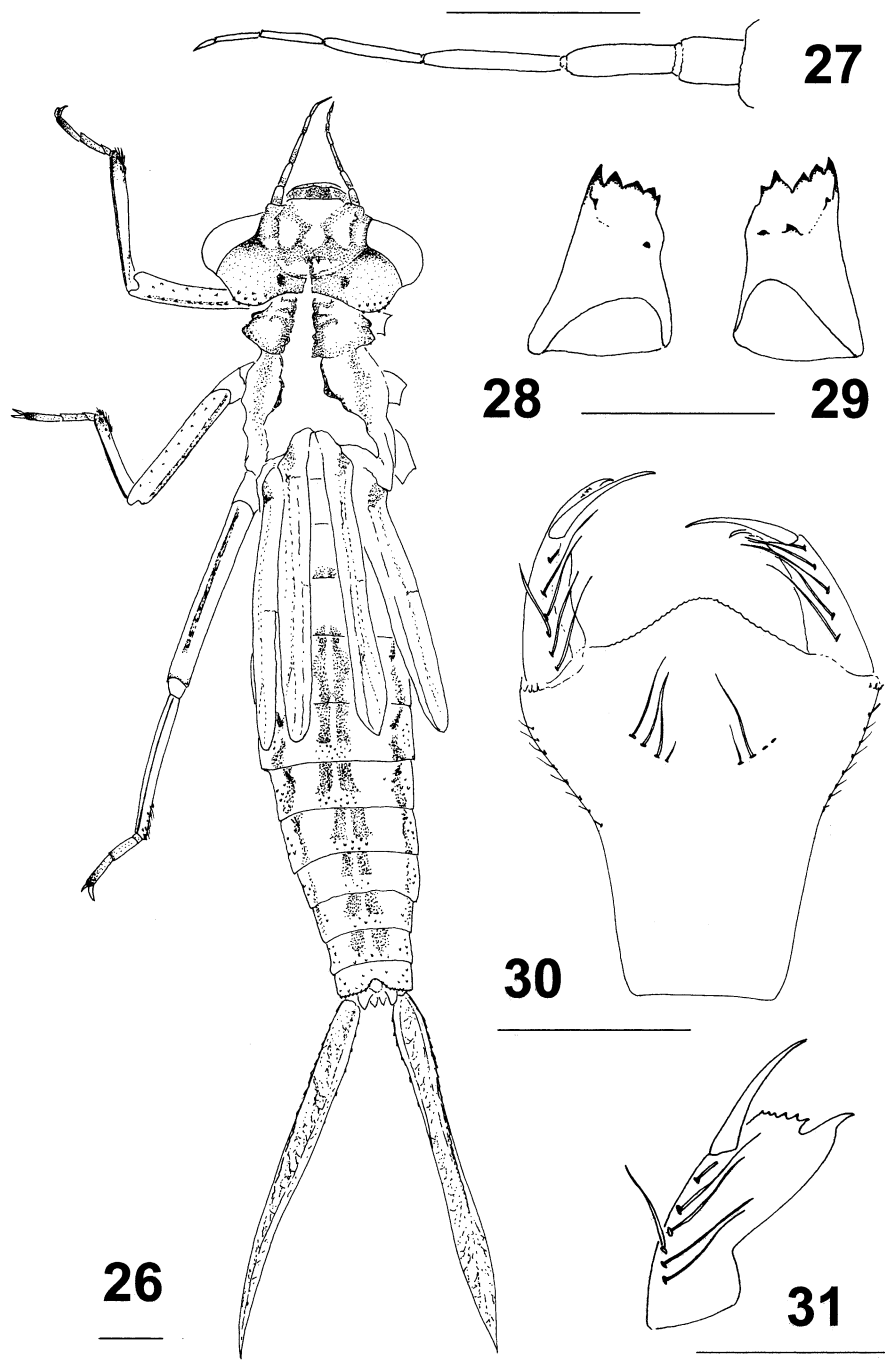
Measurements (in millimeters; average and standard deviation, range in square brackets; females N=7, males N=14, unless indicated otherwise). Total length, females (N=6):  $29.78 \pm 2.17$  [26–31.8], males (N=14):  $31.91 \pm 1.43$  [28.8–34.3]. Abdomen length, females (N=6)  $23.87 \pm 1.97$  [20.3–25.7], males (N=14):  $25.91 \pm 1.13$  [23–27.3]. FW length, females:  $20.01 \pm 1.46$  [18.1–22.8], males:  $19.04 \pm 0.40$  [18.3–19.5]; HW length, females:  $18.41 \pm 1.16$  [16.5–19.8], males:  $18.01 \pm 0.66$  [16.8–19.1]; FW px, females: 11–14, males: 11–14; HW px, females: 10–12, males: 9–12.

*Distribution.* 16°07'–31°58' S, 63°51'–68°01' W, 465–1400 m. Argentina: Jujuy Prov. (Bulla 1973a), Salta Prov. (FML, FSCA, MNRJ, MLP, NVE, RWG), Tucumán Prov. (FML, MLP), and Córdoba Prov. (Navás 1924; MLP). Bolivia: La Paz Dept. (Ris 1918).

Ultimate instar larva of *Oxyagrion bruchi*  
(Figs. 26–39)

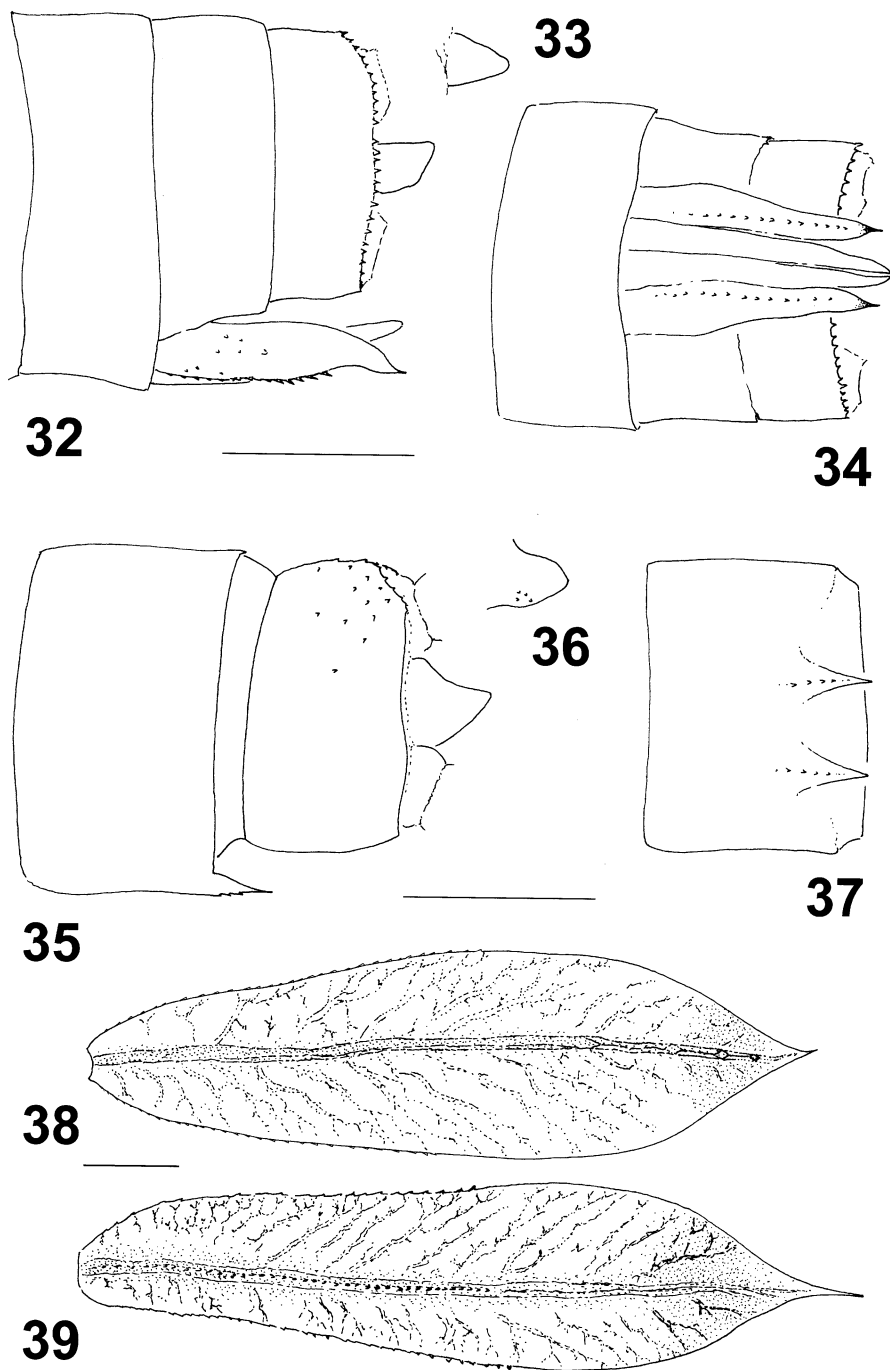
*Specimens examined.* (11 males, 10 females – ultimate instar; NVE). Argentina: Salta Prov.: Lesser, 1312 m, 24°40'57" S 65°28'39" W, stream of clear water and stony bed, larvae found amongst masses of an aquatic macrophyte, 13.x.2005 (N. von Ellenrieder), 6 males (emerged in laboratory), 5 females (3 emerged in laboratory, 2 last larval instar); 12.xi.2005: 2 males (1 emerged in laboratory, 1 last larval instar), 4 females (2 emerged in laboratory, 2 last larval instar); 23.ix.2005: 2 males (1 emerged in laboratory, 1 last larval instar), 1 female (last larval instar); National Park El Rey, La Sala stream, 971 m, 24°43'41.2" S 64°40'16.7" W, 30.xi.2005 (N. von Ellenrieder), 1 male (last larval instar).

*Diagnosis.* The last larval instar of *Oxyagrion bruchi* is similar to that of *O. terminale* (described by Bulla 1973a) in size, proportions of head, prementum and wing pads, overall color pattern, and number of premental setae and palpal setae and teeth. It differs from it by width of lateral caudal lamellae at distal third (twice as wide as their basal width in *O. terminale*; less than a third as wide in *O. bruchi*, Fig. 39), absence of lateral short setae along outer margin of palpal lobe (Fig. 31; present in *O. terminale*), color pattern of femora (pale in *O. bruchi*, Fig. 26; with



Figures 26–31. Last larval instar *Oxyagrion bruchi* Navás, 1924: 26. general aspect, dorsal view (female); 27. right antenna, dorsal view; 28. right mandible, inner view; 29. left mandible, inner view; 30. prementum, dorsal view; 31. left labial palp, dorsal view. Scales: 1 mm.





Figures 32–39. Last larval instar *Oxyagrion bruchi* Navás, 1924: 32. ovipositor, lateral view; 33. female cercus, dorsal view; 34. ovipositor, ventral view; 35. male S9–10, lateral view; 36. male cercus, dorsal view; 37. male S9, ventral view; 38. dorsal caudal lamella, lateral view; 39. lateral caudal lamella, lateral view. Scales: 1 mm.

a dark band at distal third in *O. terminale*), and color pattern of caudal lamellae (with a diffuse dark apical spot in *O. bruchi*, Figs. 38–39; lacking a darker area at apex in *O. terminale*). These two species differ also in the environments in which they breed; lotic in *O. bruchi* (streams) and lentic in *O. terminale* (ponds and pools). *Oxyagrion bruchi* differs from the sympatric *O. rubidum*, *O. hempeli* (described by Bulla 1973a), and *O. haematinum* (described by Costa et al. 2000) by its indistinct nodus (distinct in the other three species). It can be separated from the remaining known sympatric *Oxyagrion* larvae (described by Costa et al. 2000) by the dark apical spot and dark pigmentation and secondary branching of the tracheae of caudal lamellae (Figs. 38–39; no dark apical spot and caudal lamellae lacking pigmentation and secondary branching of tracheae in *O. basale* and *O. pavidum*, and with secondary tracheae present but slightly pigmented in *O. chapadense*).

*Description.* Head trapezoidal, about 2 times as wide as long at widest point, posterior margin slightly concave, bearing denticles (Fig. 26). Antenna 7-segmented, third antennomere the longest (Fig. 27). Prementum (Fig. 30) 0.76–0.86 times as wide as long, usually with 3+1 (3 long setae plus 1 short medial one) setae on each side (25% of specimens with 4 on one side; 10% with 4 on two sides; 5% with 2+1 on one side, and 5% with 2 on both sides), and with eight lateral short setae; ligula entire and convex, finely crenulated along margin. Labial palp with 5–6 setae along inner margin, and with 6 small teeth, 3 medial ones larger than 3 outer ones, in addition to inner tooth (Fig. 31). Articulation of pre- and postmentum between bases of coxae I. Mandibles (Figs. 28–29) with following formula (*sensu* Watson 1956): L 1'1234 y a b, R 1'1234 y 0 b

Pronotum trapezoidal, two blunt lobes on each side (Fig. 26). Wing pads reaching mid-length of S4 to mid-length of S5 (Fig. 26). Legs pale except dark distal end of tibiae and tarsi. Femora and tibiae with a dorso-longitudinal carina; tibiae with a distal patch of setae in 5 tight rows.

Abdomen with two dark latero-longitudinal stripes as in Fig. 26. Male cerci tapering to end (Figs. 35–36); female cerci quadrangular in lateral view (Fig. 32), triangular in dorsal view (Fig. 33). Gonapophyses of male triangular and denticulate (Fig. 37), of female surpassing distal end of S10 and outer ones with a ventral row of denticles (Fig. 34). Caudal lamellae pale with dark branching veins, more strongly colored at margins, and with a diffuse darker area at tip (Figs. 38–39); maximum width at about 0.75 of their length; about as long as 0.6–0.9 times abdomen length. Marginal spines on dorsal caudal lamella extended for about basal half [0.44 to 0.6] of lamella length along dorsal margin, and along basal two fifths of ventral margin [0.34 to 0.45]; marginal spines on lateral caudal lamellae extended for about basal half [0.41 to 0.5] of lamellae length along dorsal margin, and along basal three fifths of ventral margin [0.46 to 0.58].

Measurements (in mm; average and standard deviation, range in square brackets; females N=10, males N=10, unless indicated otherwise). – Total length, females:  $12.32 \pm 1.80$  [10.7–16], males:  $12.14 \pm 0.92$  [10.75–13.6]. Prementum length, females:  $2.25 \pm 0.05$  [2.2–2.3], males:  $2.24 \pm 0.04$  [2.2–2.3]; prementum max. width, females:  $1.82 \pm 0.06$  [1.7–1.9], males:  $1.82 \pm 0.05$  [1.75–1.9]. Femur I, females:  $1.65 \pm 0.11$  [1.5–1.8], males:  $1.62 \pm 0.06$  [1.5–1.7]; II, females:  $2.22 \pm 0.15$  [2–2.5], males:  $2.20 \pm 0.12$  [2–2.4]; III, females:  $2.91 \pm 0.26$  [2.4–3.35], males:  $2.89 \pm 0.29$  [2.6–3.2]. Inner wing pads, females:  $4.36 \pm 0.24$  [4–4.65], males:  $4.26 \pm 0.29$  [3.9–4.5]; external wing

pads, females:  $4.09 \pm 0.13$  [3.9–4.25], males (N=9):  $3.95 \pm 0.13$  [3.8–4.2]. Abdomen length, females:  $7.55 \pm 1.06$  [6.6–10.25], males:  $7.75 \pm 0.51$  [7–8.6]; dorsal caudal lamella: females (N=7):  $5.58 \pm 0.49$  [4.8–6.15], males (N=6):  $5.4 \pm 0.21$  [5–5.6]; lateral caudal lamellae, females (N=9):  $5.7 \pm 0.41$  [4.9–6.15], males (N=7):  $5.39 \pm 0.25$  [4.9–5.6].

#### CONCLUSION

The type of *Oxyagrion bruchi* is lost (Costa 1978); however, the color pattern (S8 blue, S10 mostly blue, extension of red on body), measurements (total length 32; abdomen length 26; FW 19.5; HW 18.5; FW px 11; HW px 9), and shape of cercus in lateral view (Fig. 15) of the male specimen described and illustrated by Navás (1924), agree well with our series (average for males: total length 31.91; abdomen length 25.91; FW 19.04; HW 18.01; FW px 11–14; HW px 9–12; Figs. 16–21, 23–25), allowing us to confidently assign our material to that species.

Costa (1978) and Mauffray (1999) mentioned the absence of dark specks on the head and pterothorax and the absence of lighter areas in the pterostigma as characteristic of *O. bruchi*. Navás (1924) however, did not mention either presence or absence of dark spots on dorsal surface of head and thorax, and described the pterostigma as darker centrally in his male specimen, as translated from the Latin, and to which we have added modern vein nomenclature (Riek & Kukalová-Peck 1984) in brackets as follows:

Head and labium pale reddish, apex bilobed, inner sinus rounded; markings brownish, labrum with a medio basal red spot; postclypeus red; vertex red to yellowish brown; hairs long and brown; eyes reddish; antennae reddish, two first antennomeres with anterior articulation brown.

Medial lobe of prothorax posteriorly prominent; dorsally reddish, two proximal-anterior longitudinal stripes and a brown lateral rounded spot; sides brown; ventrally toward legs pale or whitish brown. Thorax ventrally whitish brown, dorsally reddish brown, dorsal reddish brown stripes at medial carina and humeral areas; dorsal suture dark, laterally reddish brown, dorsal suture similarly dark reddish.

Abdomen slender, ventrally brown, dorsally brownish red; S1 with a large rectangular dark basal spot not reaching apex of segment, S2 with a dark anteapical transverse band, S3–5 with a dorsal stripe widened at apex; S6–7 mostly dark, S8–9 mostly blue, S10 partially blue, ventrally brown, dorsal margin uplifted, concave (fig. 13b); cerci dorsally declivous, gradually narrowed, brown, dark dorsally; inferior appendage of wide base, gradually narrowed, apex turned in and arcuate, black, shortened (fig. 13b).

Legs brown, with dark setae, anterior and medial femora with a distinct dark outer stripe; posterior tibiae with 6 spines and external setae, several internal ones.

Wings hyaline, venation dark, petiolate to level of basal (postcostal) vein [Cu crossing]; anal crossing close to inferior sector of quadrangle [CuA] and between the two antenodals, characteristically primarily aligned; arculus at antenodal 2; longitudinal side of quadrangle longer in FW than in HW; 11 px in FW, 9 in HW; subnodal sector [IR2] at nodus, median sector [RP3] moderately basal to subnodal [IR2] in origin; pterostigma rhomboidal, pointed, external margin smoothly convex and continuously curving posteriorly (Fig. 13c), brown, darker centrally; apical area narrow, less dense venation, with 5 post-pterostigmal veins.

All of our specimens have dark specks on head and pterothoracic dorsum (Fig. 1), although obscured by dark brown color on the inner (medial) half of the

mesepisternum in most males, and a narrow pale yellow hairline on the contour of the pterostigma (Fig. 8).

We agree with Costa (1978) in considering Ris' (1918) *Oxyagrion terminale* 'form b' from Bolivia (Coroico and Río Zongo) as *O. bruchi*, based on Ris' description of the color pattern characteristic of this species, who stated "Male (teneral). Dorsum of S2–6 narrowly black, with an ante-terminal widening, in 2 as a narrow transverse stripe, in 3–6 rounded and about 1/5–1/6 of the segment length; dorsum of S7 black, sides red; S8 (strongly compressed) seems to be blue with black narrowing posteriorly and yellowish, the blue turning grayish. Abdomen 27; HW 18; FW Pnx 12. Female (almost adult). S1 yellowish; S2–3 light yellowish red with a narrow black ring at the intersegmental membrane; S4 likewise with terminal wide black spot of 1/5 of the segment length; S5–10 dorsally widely greenish black bronze, laterally light yellowish red; dorsum of S9 with a triangular blue spot narrowing anteriorly on its entire length; S10 with a small basal transverse blue spot. Strong vulvar spine. Pterostigma dark brown, with a narrow light line along its margins; FW Pnx 13; abdomen 28; HW 20."

Bulla (1973a) included four specimens from Jujuy in his description of the larva of *Oxyagrion terminale*, and mentioned that they differed from larvae collected in Buenos Aires by the absence of a series of short setae along the sides of the palpal lobes. This difference agrees with our larvae and exuviae that we have assigned to *O. bruchi*.

Among the examined material of *Oxyagrion terminale*, Bulla (1973b) included five specimens from Salta province (with no locality), and mentioned that the species was also present in San Luis, Córdoba, Jujuy and Bolivia. We found one specimen from Tucumán province (Horco Molle) at the FML identified as *Oxyagrion terminale* by Bulla, which corresponds to *O. bruchi*.

In her review of *Oxyagrion*, Costa (1978) only examined adults of *Oxyagrion terminale* from the eastern slope of southern South America (Buenos Aires, Misiones, Uruguay, Paraguay and Brazil). However, she included provinces from Bolivia and the western portion of Argentina as well as part of its distribution range based on literature records. As a consequence, subsequent authors (Rodrigues Capítulo 1992; Muzón & von Ellenrieder 1998) considered *Oxyagrion terminale* to be widespread across all northern Argentina. All specimens of *Oxyagrion terminale* we have found in examined collections are restricted to the eastern provinces of Argentina (Buenos Aires, Entre Ríos, Misiones), Uruguay and Brazil. All examined *O. bruchi* on the other hand correspond to a western stripe (Córdoba, Tucumán and Salta), which probably extends north to Bolivia if the specimens of 'O. terminale form b' from Ris (1918) belong to this species as we believe based on his description. The precise distribution for both species is thus not still known, nor is it known if they are partly sympatric along a central area or parapatric, but we believe that records of *O. terminale* from Bolivia and NW Argentina should be removed from current listings since they most likely correspond to *O. bruchi*.

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