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THE MAIN CONCEPTS

Understanding structure

Julia Giora
Jonas Castro
Donat Agosti

Publication

➤ Definition

- To publish is to make content available to the general public.

➤ Definition

- **Scientific publication:**

- The principal medium for communicating results of scientific research.
- Represents the permanent record of the collective achievements of the scientific community over time.

➤ Definition

- Scientific publication:

- Articles, books, thesis, dissertations, abstracts, notes, communications.
- Peer-reviewed publications

- International Code for Zoological Nomenclature
- International Code of Nomenclature for Algae, Fungi, and Plants

Taxonomic Treatment

➤ Definition

- Well-defined part of a scientific publication documenting the features of a particular taxon:
    - diagnosis of the taxon;
    - reference to previous work;
    - extended description;
    - notes on the distribution and habitat;
    - citation of material;
    - general comments about the taxon.

➤ Treatment

GoldenGATE Imagine

Calculations of EOD repetition rate were taken by measuring all successive inter-pulse intervals over one minute recordings. The EOD rate for each fish was characterized by three parameters: 1. The mean pulse rate in Hz calculated as the reciprocal of the mean of all IPIs (in seconds). 2. The standard deviation (SD) around the mean pulse rate in Hz. This measure of variance indicates the stability of the EOD repetition rate. 3. The coefficient of variance (CV) calculated as a percentage [mean/SD*100]. Because the CV is weighted by the mean, it is used for standardized comparisons of the relative stability of the pulse rate over a wide range of rates. The mean and SD of these three measures were then calculated among all recorded adult or post-larval specimens and are presented here to summarize diurnal and nocturnal EOD activity.

Results

Brachyhypopomus draco, new species
Figs. 1, 2

Holotype. MCP 41540, 1 male, 137.3 mm LEA; Brazil: Rio Grande do Sul: Parque Estadual de Itapuã: lagoa Verde (30°22'52.4"S, 51°01'25"W), 12 Jan 2004, D. Cognato, L. R. Malabarba, C. H. Machado & R. Q. Carvalho.

Paratypes. All from Brazil: Rio Grande do Sul: **Laguna dos Patos drainage**: MCP 41539, 1 male, 147.1 mm LEA; collected with the holotype. UFRGS 8888, 1 male, 126.4 mm LEA; same locality of the holotype, 18 Jan 2006, J. Giora, A. P. Dufech & J. Ferrer. MNRJ 30916, 2 (1 male, 151.8 mm LEA; 1 female, 128.4 mm LEA); same locality of the holotype, 9 Feb 2004, D. Cognato, M. Azevedo, A. Schaan & C. Hiroshi. MCP 41538, 2 (1 male, 88.4 mm LEA; 1 female, 85.2 mm LEA); Estrada do Mar road, [29°43'9"S, 50°56'0"W], 20 Nov 2003, L. R. Malabarba, J. Giora, J. Anza & D. Cognato. MNRJ 30915, 2 (1 male, 69.9 mm LEA; 1 female, 85.2 mm LEA); Cidreira, lagoa Fortaleza, [30°8'58"S, 50°14'30"W], 11 Jul 2003, L. R. Malabarba. UFRGS 6671, 3 (2 males, 85.7–107.0 mm LEA; 1 female, 96.3 mm LEA); Terra de Areia, creek into rio Três Forquilhas, along the road RS486, [29°33'22"S, 50°4'19"W], 20 Nov 2003, L. R. Malabarba, J. Giora, J. Anza & D. Cognato. **Rio Uruguay drainage**: UFRGS 6748, 1 (male, 90.8 mm LEA); Rosário do Sul, Sanga do Jacaré, BR290, [30°12'4"S, 55°3'17"W], 18 Jun 2004, D. Cognato, W. Crampton, J. Giora & D. Rocha. MZUSP 94428, 8 (2 males, 95.6–126.7 mm LEA; 6 females, 51.9–103.94 mm LEA); UFRGS 6753, 1 (male, 88.3 mm LEA); Rosário do Sul, stream tributary of arroio Gueromana, BR290, [30°1'0"S, 55°2'318"W], 19 Jun 2004, D. Cognato, W. Crampton, J. Giora & D. Rocha. UFRGS 6785, 4 (2 males, 79.3–105.1 mm LEA; 2 females, 84.5–85.3 mm LEA); UFRGS 6494, 1 (male, 92.5 mm LEA); UFRGS 6497, 1 (male, 90.1 mm LEA); Rosário do Sul, sanga do Jacaré, BR290, [30°12'42"S, 55°3'17"W], 26 Nov 2003, L. R. Malabarba, J. Giora, D. Cognato, G. Neves & J. Ferrer. UFRGS 6789, 4 (2 males, 106.5–126.3 mm LEA; 2 females, 71.5–80.0 mm LEA); Rosário do Sul, stream tributary of arroio Gueromana, BR290, [30°1'0"S, 55°23'18"W], 26 Nov 2003, L. R. Malabarba, J. Giora, D. Cognato, G. Neves & J. Ferrer. UFRGS 6507, 1 (male, 92.9 mm LEA); UFRGS 6509, 1 (male, 92.5 mm LEA); UFRGS 6511, 1 (male, 98.3 mm LEA); São Gabriel, stream tributary of arroio Pirai, BR290, [30°18'56"S, 54°24'22"W], 26 Nov 2003, L. R. Malabarba, J. Giora, D. Cognato, G. Neves & J. Ferrer.

Non-type material. The following specimens were used to record the distribution of the new species, but are not used in the species description and are not part of the type series. However, they do not differ in morphometric or meristic characteristics from the type specimens. **Brazil, Rio Grande do Sul:** MCP 20215, 5, and MCP 20217, 3: Eldorado do Sul, MCP 20711, 1: Osório: UFRGS 7686,

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➤ Treatment

https://doi.org/10.15468/39omei

30, Viamão and UFRGS 7707, 3, Viamão; UFRGS 8473 [illegible] Grande - Rio Pardo; UFRGS 8938, 1, rio Tramandaí; UFRGS 6780, 11, São Gabriel; UFRGS 6750, 14, Rosário do Sul - Alegrete; UFRGS 8263, 28, Charqueadas. **Paraguay**: USNM 181483, 5, Pueblo Ybytymi, Departamiento Paraguarí; ANSP 170412, 1, Deparatamiento Missiones; ANSP 175180, 1, Departamiento Missiones. **Uruguay**: ZVC-P 2727, 1, Departamiento Artigas, laguna Redonda.

Diagnosis. *Brachyhypopomus draco* can be distinguished from all described congeners by the extreme broadening of the distal portion of the caudal filament in males during the reproductive period to form a distinct paddle shaped structure (*vs.* moderately broadened distally in *B. pinnicaudatus* and *B. brevirostris*) into paddle-shaped structures; and versus broadened along most of the length of the caudal filament in *B. occidentalis*, *B. diazi*, *B. beebei*, and *B. janeiroensis*). *Brachyhypopomus draco* can be further diagnosed from other species of the genus by the following characters: caudal filament length 17.3-35.2% of LEA (*vs.* 36.5-50.0% in *B. jureiae*; 33.0-50.0% in *B. janeiroensis*; and 13.3-20.0% in *B. bombilla*); pectoral fin ray length 4.1-5.8% of LEA (*vs.* 6.7-7.9% in *B. pinnicaudatus*); body depth 8.8-12.2% of LEA (*vs.* 12.1-16.2% in *B. pinnicaudatus*); snout length 20.7-30.0% of HL (*vs.* 31.7-32.2% in *B. jureiae*); gape width 9.5-16.5% of HL (*vs.* 17.8-23.1% in *B. pinnicaudatus*); interorbital distance 22.7-35% of HL (*vs.* 14.9-20.5% in *B. bombilla*); branchial aperture 16.5-26% of HL (*vs.* 24.9-31.0% in *B. pinnicaudatus*); head width at operculum 48.4-65% of HL (*vs.* 60.0-73.0% in *B. pinnicaudatus*); head width at eyes 31.3-45.6% of HL (*vs.* 24.7-31.7% in *B. bombilla*); number of anal fin rays 155-198 (*vs.* 188-211 in *B. jureiae*; 251-295 in *B. brevirostris*; 214-228 in *B. beebei*; and 200-240 in *B. occidentalis*); upper jaw equal to lower jaw (*vs.* upper jaw slightly longer than lower jaw in *B. bombilla*, *B. occidentalis*, *B. diazi*, *B. brevirostris*, and *B. jureiae*).

Description. Morphometric and meristic data are presented in Table 1. Head conical, nearly triangular in lateral view; snout short; eyes small; mouth terminal with upper jaw equal to lower jaw; no teeth in both jaws. Body slender, slightly laterally compressed. Dorsal profile straight from snout to supraoccipital, slightly convex posteriorly to caudal filament. Ventral profile gently convex from lower jaw to anal-fin origin, slightly convex to nearly straight along anal-fin base. Highest body depth located posterior to anal-fin origin. Body depth increasing smoothly from head to body region near the 30th anal-fin ray, clearly gradually decreasing from that point to caudal filament. Caudal filament moderately short, slender and laterally compressed in females, juveniles and males in non-reproductive period; caudal filament paddle-shaped in sexually mature males (see sexual dimorphism, below). Cycloid scales covering uniformly the body except head and fins. Scales smaller on all anterior quarter portion of body; posterior scales at dorsal and medial body regions two to four times larger in diameter than anterior ones; smallest scales covering region of anal-fin pterygiophores. First anterior perforated scale of lateral line above pectoral fin origin and lateral line extending to caudal filament tip, hardly discernible. Branchial aperture small and slightly anterior to pectoral fin origin. Anus with the presence of urogenital papilla in males and females, although less developed in juveniles. Pectoral fins rounded with pigmented rays and perpendicular insertion; pectoral-fin rays i-ii + 13-15 [15-17 total pectoral-fin rays, n = 47, median = 16]. Anal fin relatively long with vii-xii + 148-186 rays [155-198 total anal-fin rays, n = 41, mean = 181.3] which are pigmented. Anal-fin origin located posterior to posterior edge of pectoral fin. Precaudal vertebrae 21-23 (20-22 anterior, 1-2 transitional; n= 6).

Coloration in life. General body color brownish varying from dark brown to yellowish brown; dark brown near dorsal mid-

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Treatment

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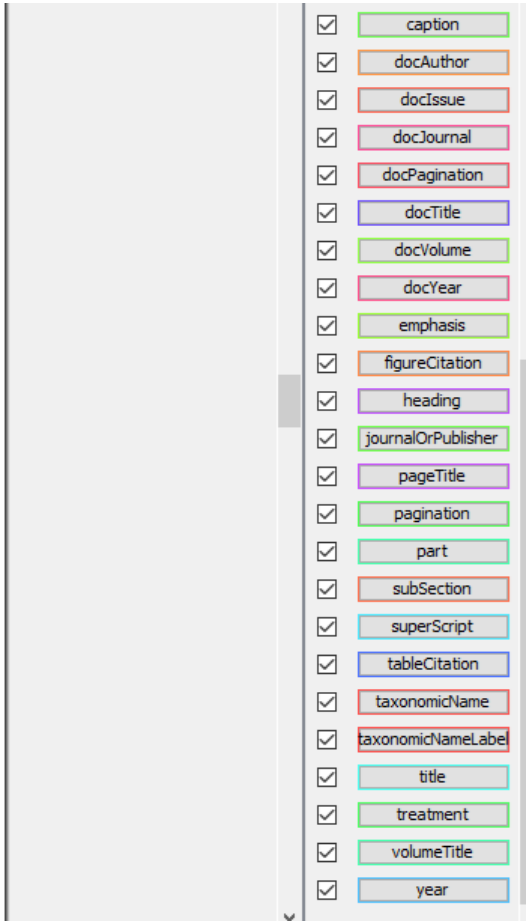
line and clearing ventrally. A highly variable number of dark brown bands, well delineated or not, nearly perpendicular or oblique to longitudinal body axis, running posterodorsally from base of anal-fin rays to nearby lateral line and occurring from head to tip of caudal filament. Anal and pectoral-fin rays speckled brown, with hyaline inter-radial membranes. Adults and juveniles exhibit the same coloration pattern.

Secondary sexual dimorphism. During reproductive period, established through monthly variation analysis of male and female gonads in a *B. draco* population, males undergo hypertrophy of the distal portion of caudal filament (Fig. 2). This has been observed between August and December in a population studied from the type-locality (A. Schaan, J. Giora and C. Fialho, in preparation). Extremely vertical broadening and lateral compression give the caudal filament a paddle-like shape. After the reproductive period, this structure regresses until the caudal filament resembles those of females and juveniles. In addition, adult males are significantly larger than females.

Fig. 2. *Brachyhypopomus draco*, holotype, MCP 41540, male, 137.3 mm LEA. Detailed images of head, above, and tail, below.

Electric organ discharge. *Brachyhypopomus draco* generates a continuous train of pulse-type EODs. Adult specimens (with developing or fully developed gonads) (72.6-105 mm LEA) exhibited the following EOD parameters. The mean EOD repetition rate (per individual) during the day ranged from 15.7-24.6 Hz (mean among all specimens 19.6 Hz, SD 2.5, n = 11 individuals/fishes) with a standard deviation (SD) of 0.4-1.2 Hz (mean 0.7, SD 0.3, n = 11), and coefficient of variance of 1.8-7.0 % (mean 3.9 %, SD 1.88, n = 11). The lowest and highest absolute pulse rates recorded from all diurnal recordings were 13.7 and 29.2 Hz respectively. During the hours of peak foraging activity, 1-3 hours after sunset, the mean EOD repetition rate (per individual) ranged from 34.2-45.8 Hz (mean among all specimens 38.6 Hz, SD 5.2, n = 6), with a standard deviation of 2.8-10.8 Hz (mean 2.9, SD 1.1, n = 6), and a coefficient of variation of 8.3-27.3 % (mean 20.7 %, n = 6). The lowest and highest absolute pulse rates recorded from all nocturnal recordings were 8.4 and 80.2 Hz respectively.

In sum, adult specimens of *B. draco* exhibited a distinct increase in pulse rate from the resting day-time state (mean 19.6 Hz) to the nocturnal active state (mean 38.6 Hz). The coefficient of variation of pulse rate during nocturnal activity (mean 20.7 %) was considerably higher than during the day (mean 3.9%), reflecting the greater variability in pulse rate



➤ Treatment

https://doi.org/10.15468/39omei

0.7042; SD=0.0422; n = 6), [2-sample t-test: df = 14; t = 10.1; P = 0.59]. All recorded specimens had been held in social isolation for several days before they were recorded. This is known to minimize the hormonally-induced modulation of the P2 phase in sexually mature males (Stoddard *et al.*, 2003). Further investigation is required to explore whether EOD differences emerge in males that are exposed to normal social stimuli (*i.e.* the presence of sexually mature conspecifics).

All recordings presented here were made during the southern summer (December) when ambient water temperature is typically in the range 24 – 30° C. During the winter, water temperatures in Rio Grande do Sul decline to as low as 10° C. We noted that these seasonal temperature changes have a significant impact on the waveform duration and shape of the EODs of *B. draco*. The PPF of the EOD declines substantially, and the P2 phase becomes diminished in relative amplitude. We will present detailed observations on this phenomenon elsewhere. Loureiro & Silva (2006) discuss the effect of temperature on the EODs of *B. bombilla*.

Distribution. *Brachyhypopomus draco* is widely known from central, southern and coastal regions of Rio Grande do Sul state, Brazil, and Uruguay. It is known from three drainages: laguna dos Patos, rio Uruguay and rio Tramandaí, and was also found at two localities in Paraguay (ANSP 170412, ANSP 175180, USNM 181483).

Etymology. Name "draco", from the Greek "drakon" meaning dragon, in reference to the shape of distal portion of caudal filament in mature males, similar to that illustrated in these imaginary creatures.

Habitat. *Brachyhypopomus draco* inhabits river edges, slow-moving creeks, lagoons and flooded areas with muddy or sandy bottom and abundant emergent or floating vegetation. The species was particularly abundant in the type locality, a lagoon (30°22'52.4"S, 51°01'25"W) inside a state preserved

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➤ Treatment

PEIXES

Ordem Clupeiformes
- Família Clupeidae
  - *Platanichthys platana* (Regan, 1917)
- Família Engraulidae
  - *Lycengraulis grossidens* (Agassiz, 1829)

Ordem Characiformes
- Família Acestrorhynchidae
  - **Acestrorhynchus pantaneiro* Menezes, 1992
- Família Anostomidae
  - *Leporinus obtusidens* (Valenciennes, 1837)
  - *Schizodon jacuiensis* Bergmann, 1988
- Família Characidae
  - **Aphyocharax anisitsi* Eigenmann & Kennedy, 1903
  - **Astyanax eigenmanniorum* (Cope, 1894)
  - **Astyanax* aff. *fasciatus* (Cuvier, 1819)
  - *Astyanax henseli* Melo & Buckup, 2006
  - **Astyanax jacuhiensis* (Cope, 1894)
  - *Astyanax laticeps* (Cope, 1894)
  - *Bryconamericus iheringii* (Boulenger, 1887)
  - **Charax stenopterus* (Cope, 1894)
  - **Cheirodon ibicuhiensis* Eigenmann, 1915
  - **Cheirodon interruptus* (Jenyns, 1842)
  - **Cyanocharax alburnus* (Hensel, 1870)
  - *Diapoma speculiferum* (Cope, 1894)
- Família Lebiasinidae
  - *Pyrrhulina australis* Eigenmann & Kennedy, 1903
- Família Prochilodontidae
  - *Prochilodus lineatus* (Valenciennes, 1837)

Ordem Siluriformes
- Família Ariidae
  - *Genidens genidens* (Cuvier, 1829)
- Família Aspredinidae
  - *Bunocephalus erondinae* Cardoso, 2010
  - **Pseudobunocephalus iheringii* (Boulenger, 1891)
- Família Auchenipteridae
  - *Glanidium* sp.
  - *Trachelyopterus lucenai* Bertoletti, Pezzi da Silva & Pereira, 1995
- Família Callichthyidae
  - **Callichthys callichthys* (Linnaeus, 1758)
  - **Corydoras paleatus* (Jenyns, 1842)
  - *Corydoras undulatus* Regan, 1912
  - **Hoplosternum littorale* (Hancock, 1828)
- Família Heptapteridae
  - *Heptapterus mustelinus* (Valenciennes, 1836)
  - *Heptapterus sympterygium* Buckup, 1988
  - **Pimelodella australis* Eigenmann, 1917

➤ Treatment

Família ACESTRORHYNCHIDAE

Essa família possui apenas um gênero, *Acestrorhynchus*, com 14 espécies. São peixes carnívoros e predadores, com boca grande provida de dentes cônicos e/ou caniniformes e dentes no palato. Apresentam um focinho pontiagudo e possuem o corpo alongado e comprimido lateralmente.

***Acestrorhynchus pantaneiro* Menezes, 1992**
Peixe-cachorro
Figura 5

Figura 5. *Acestrorhynchus pantaneiro* Menezes, 1992 (Peixe-cachorro).

Características morfológicas. Possui uma mancha umeral preta arredondada logo após a cabeça e uma mancha negra na base dos raios medianos da nadadeira caudal; linha lateral completa com 93 a 108 escamas perfuradas; 25 a 30 séries de escamas entre a linha lateral e a origem da nadadeira dorsal; 15 a 17 séries de escamas entre a linha lateral e a origem da nadadeira anal. Tamanho máximo 24,0 cm de comprimento padrão (CP - medido da ponta do focinho até a base da nadadeira caudal).

➤ Treatment

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➤ Treatment

Ordem Gymnophiona
Família CAECILIIDAE
***Chthonerpeton indistinctum* (Reinhardt and Lütken, 1862)**
Cobra-cega, Minhocão, Cecília
Figura 52

Figura 52. *Chthonerpeton indistinctum*

Características morfológicas. Assim como todos os integrantes da ordem Gymnophiona, *Chthonerpeton indistinctum* não tem membros e possui o corpo alongado e quase cilíndrico (GUDYNAS *et al.*, 1988; ACHAVAL; OLMOS, 2007), lembrando o aspecto de uma minhoca. Apresenta uma série de anéis incompletos ao longo do corpo e o comprimento varia de 99 até 530 mm, sendo que a largura é maior na porção média do corpo, seguida da largura na região do pescoço e da largura na porção próxima à cloaca (GUDYNAS *et al.*, 1988). A cabeça é achatada dorsoventralmente, sendo mais larga na região posterior. O focinho se projeta além da boca e as narinas são ovais, dirigidas dorsolateralmente e ficam mais próximas do focinho do que dos olhos. A distância entre os olhos é maior do que a distância entre as narinas (GUDYNAS *et al.*, 1988). Possui um tentáculo retrátil com funções sensoriais (ACHAVAL; OLMOS,

➤ Treatment

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Specimen

➤ Definition

- A gathering, or part of a gathering, of a single species or infraspecific taxon.
- Mounted either as a single preparation or as more than one preparation with the parts clearly labelled as being part of the same specimen or bearing a single, original label in common.
    - A specimen may not be a living organism or an active culture.

➤ Definition


NMW. 11275
(1st)
GITON fasciatus pantherinus STD. 1908
SYN-TYPUS
Santos
1908
Kons. Santos

Material Citation

➤ Definition

- A reference to or citation of one, a part of, or multiple specimens in scholarly publications (Agosti, Guidoti 2021).
    - Allows separation in GBIF of material citation based data sets from those of specimen, observation, or sequence.

➤ Definition

Review of world genera of Ceinae, with the description of two new Palaearctic species of *Spalangiopelta* Masi (Hymenoptera, Chalcidoidea, Pteromalidae)

Holotype

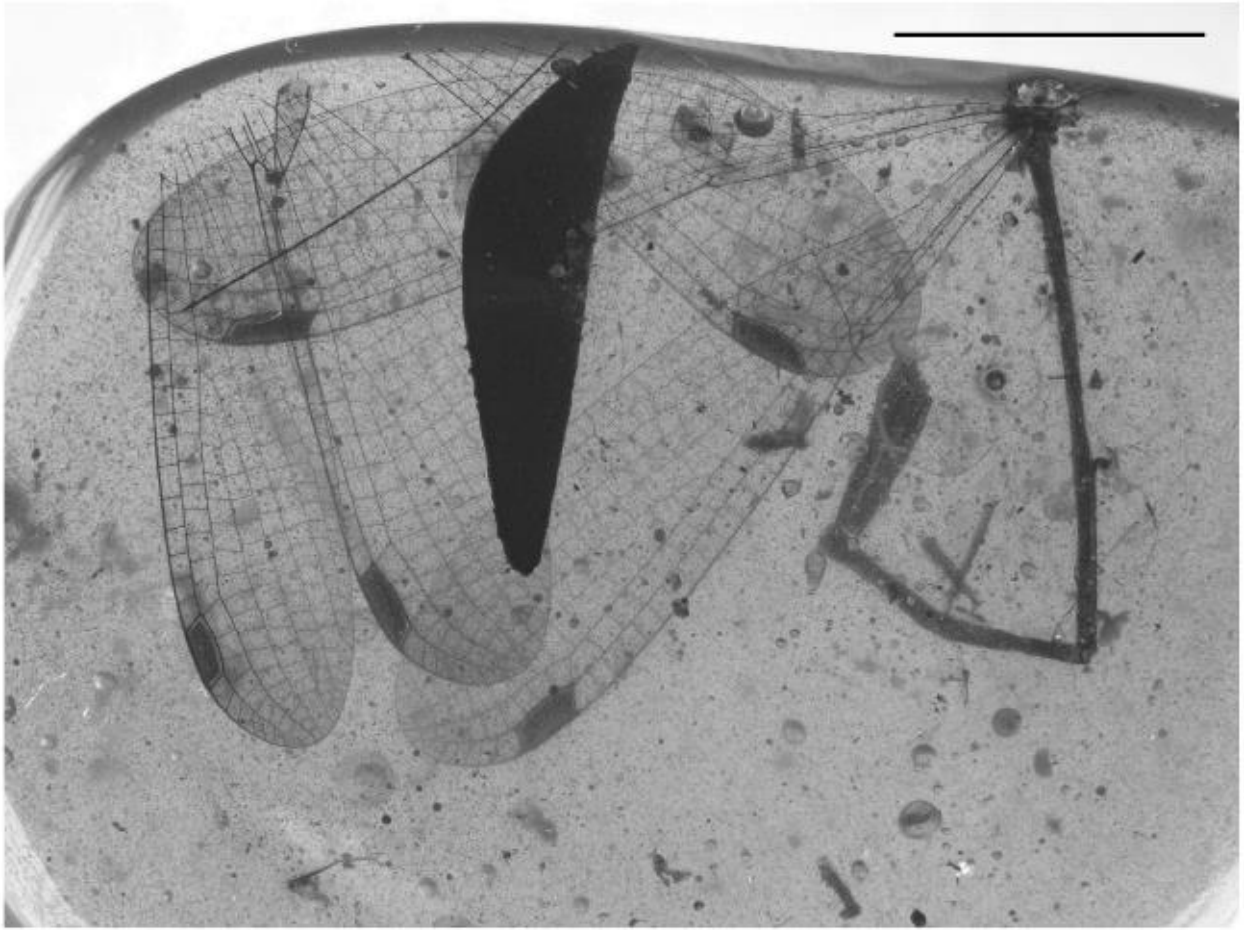
GREECE: 1 ♀, Kerkini lake near Vironia, Malaise trap, Ramna Site, 41°17′42.5″ N; 23°11′33.1″ E, 750 m asl, 13 Oct. –19 Oct. 2008, leg. Gordon Ramel (BMNH).

UUID - C240D44A5A1BFFFF1A53FF91FFF0FFCF

➤ Definition

Holotype. Specimen no. SMNS Bu-158 deposited in the amber collection of the paleontological department at the State Museum of Natural History in Stuttgart [Germany].

A new stem-coenagrionoid genus of damselflies (Odonata: Zygoptera) from mid-Cretaceous Burmese amber



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➤ Boundaries

➤ WHAT DEFINES A MATERIAL CITATION?

Holotype. IAvH-P 9238, 137.0 mm LEA, (COI GenBank MN832888), Colombia, Tolima, Honda, Magdalena river, Upper Magdalena basin, 5°12′05.56″ N 74°43′56.63″ W, J. A. Maldonado-Ocampo, W. G. R. Crampton & N. Lovejoy.

Paratypes. IAvH-P 7819, 17, 119.0–154.0 mm LEA, Colombia, Tolima, Honda, Magdalena river, Upper Magdalena basin, 5°12′05.56″N 74°43′56.63″W, W. G. R. Crampton. IAvH-P 7820, 5 + lc&s, 123.0–148.0 mm LEA, Colombia, Tolima, Honda, Magdalena river, Upper Magdalena basin, 5°12′05.56″N 74°43′56.63″W, W. G. R. Crampton. IAvH-P 7821, 5, 130.0–145.0 mm LEA, Colombia, Tolima, Honda, Magdalena river, Upper Magdalena basin, 5°12′05.56″N 74°43′56.63″W, W. G. R. Crampton.

Boundaries

GoldenGATE Imagine

Holotype. IAvH-P 9238, 137.0 mm LEA, (COI GenBank MN832888), Colombia, Tolima, Honda, Magdalena river, Upper Magdalena basin, 5°12'05.56" N 74°43'56.63" W, J. A. Maldonado-Ocampo, W. G. R. Crampton & N. Lovejoy.

Paratypes. IAvH-P 7819, 17, 119.0–154.0 mm LEA, Colombia, Tolima, Honda, Magdalena river, Upper Magdalena basin, 5°12'05.56"N 74°43'56.63"W, W. G. R. Crampton. IAvH-P 7820, 5 + lc&s, 123.0–148.0 mm LEA, Colombia, Tolima, Honda, Magdalena river, Upper Magdalena basin, 5°12'05.56"N 74°43'56.63"W, W. G. R. Crampton. IAvH-P 7821, 5, 130.0–145.0 mm LEA, Colombia, Tolima, Honda, Magdalena river, Upper Magdalena basin, 5°12'05.56"N 74°43'56.63"W, W. G R Crampton.

➤ Boundaries

➤ Clues

collectionCode

Ancistrus maldonadoi, new species

urn:lsid:zoobank.org:act:ED1397C7-5087-4EB8-94D8-326A42AEEE2D

(Fig. 4, Tab. 2)

Holotype. MUSM 57733, 114.7 mm SL, male, Peru, Manu District, Manu Province, río Madre de Dios basin, río Salvación, 12º55'05"S 71º27'36"W, 21 May 2006, M. Hidalgo.

Paratypes. Peru: río Madre de Dios basin: INPA 58921, 10, 40.6–101.9 mm SL (2, 68.6–101.9 mm SL), Manu, Parque Nacional del Manu, quebrada Culli, ca. 12º10'S 71º00'W, 5 Sep 1988, H. Ortega *et al.*; MPUJ 14358, 2, 68.9–72.7 mm SL, same data from holotype; MUSM 3766, 1, 87.0 mm SL, Manu, Salvación, quebrada Culli, 12º51'S 71º23'W, 5 Sep 1988, H. Ortega; MUSM 11620, 1, 77.5 mm SL, Sandia, Zona Reservada Tambopata Candamo, río Ebehua-baeji basin, río Beshuajali, 13º14'45"S 70º00'02"W, 25 Jul 1997, F. Chang; MUSM 11665, 2, 68.3–81.1 mm SL, Sandia, Zona Reservada Tambopata Candamo, río Ebehua-baeji basin, río Explorada, 13º14'34"S 70º00'01"W, 28 Jul 1997, F. Chang; MUSM 57732, 4, 58.0–64.2 mm SL (2, 61.6–64.2 mm SL), same data from holotype; MUSM 57832, 5, 61.5–147.2 mm SL (4, 74.5–147.2 mm SL), Paucartambo, Pillcopata, Tono, rio Huacarya, 12º55'05"S 71º27'36"W, 13 May 2006, M. Hidalgo; MUSM 58079, 2, 47.6–74.4 mm SL (1, 74.4 mm SL), Paucartambo, Pillcopata, río Queros, 12º56'41"S 71º21'22"W, 17 May 2006, M. Hidalgo; MUSM 58521, 6, 49.5–76.3 mm SL (2, 65.6–67.6 mm SL), Paucartambo, Pillcopata, Queros, río Sabaluyoc, 12º56'38"S 71º21'09"W, 17 May 2006, M. Hidalgo; MUSM 58671, 4, 40.9–83.0 mm SL (1, 83.0 mm SL), Quispicanchis, Camanti, río Inambari basin, stream without name, 13º11'29"S 70º33'16"W, 7 Aug 2010, M. Hidalgo; MZUSP 125014, 2, 85.1–85.4 mm

➤ Boundaries

➤ Clues

Location

Brazil: NMW 47290, 1, 106.1 mm SL, syntype of *Chaetostomus* (*Ancistrus*) *cirrhosus* var. *maculatus* Steindachner, 1881, *Ancistrus malacops*.] [**Colombia**: ANSP 70517, 90.8 mm SL, holotype of *A. lineolatus* Fowler, 1943] [**Peru**: ANSP 8299, 2, 72.0 mm SL (one specimen broken), syntype of *Chaetostomus malacops* Cope, 1872; MUSM 38968, 1, 81.2 mm SL;] [**Ecuador**: BMNH 1880.12.8.69–74, 6, 60.2–85.4 mm SL, syntypes of

Other material examined

Sexually immature specimens (atokes) collected from [Japan: Tohoku Region: Mouth of Tanabu-gawa River (41°16′40″ N, 141°10′30″ E, 7 m deep) in Mutsu Bay, Aomori Prefecture, January 1973, 2 specimens (BW, 0.8–1.5 mm; NSMT Pol 38864–38865)] [Intertidal flats at Matsukawa-ura (37°49′17.1″–11.2″ N, 140°59′04.7″–53.8″ E), Soma, Fukushima Prefecture, 30 May 2002, coll. T. Suzuki et al., 2 (OMNH)] [Tokyo Bay: Detailed locality and date unknown, coll. Döderlein, 1 (BW, 10.0 mm; NHMW 781)] [Subtidal 19 sites (35°17.8′–38.0″ N, 139°40.0′–140°04.0″ E, 7–49 m deep), May and August 1957, March 1958, coll. Fishery Experiment Station of Kanagawa

➤ **Boundaries**

➤ **Clues**

specimenCount

Paratypes

SPAIN • 4 ♂♂ 23 ♀♀: Murcia. Sierra de Española: 14 May 2003. J. Halada leg.: OÖLM] • [2 ♂♂, 4 ♀♀: same collection data as for preceding TJWC (illustrated Figs 12–15)] • [2 ♂♂: Málaga. between Mijas and Benalmadena 16 Apr 1983. NMNL] • [1 ♂: Almería. E-Sierra Nevada. near Alboloduy: 6–7 May 2003. J. Halada leg.: CPC] • [1 ♂: same collection data as for preceding. OÖLM] • [1 ♂: Murcia. 25 km SW of Cartagena: 12 May 2003: J. Halada leg.. OÖLM] • [7 ♂♂, 2 ♀♀: Valencia 80 km SW of Valencia. Muela de Cortes reserve 14 May 2003 J. Halada leg.: OÖLM] • [3 ♂♂, 1 ♀: same collection data as for preceding: TJWC] • [1 ♀: Granada. Maitena. 9 km E of Granada: 1400 m a.s.l.: 1 Jun 1970: M.J. and J.P. Duffels leg.: NMNL]

SubSection

➤ Definition and Boundaries

Abstract

A new genus and species of damselfly, *Burmagrion marjanmatoki* **gen. et sp. nov.**, is described from Early Cretaceous Burmese amber. It is attributed to the basal stem group of Coenagrionoidea. The inclusion of five wings from the same species suggests that the amber piece contains the remains of a mating pair of damselflies.

Key words: damselfly, Coenagrionoidea, fossil insect, Cenomanian

Introduction

Even though numerous Odonata have been described from Cretaceous sedimentary deposits, including representatives from at least 16 families from the Lower Cretaceous Santana Formation in Brazil (Bechly 1996a, 1998b, 2007, 2010) and numerous taxa from Lower Cretaceous deposits in England (Jarzembowski *et al.* 1998) and France (Nel *et al.* 2008), and even though odonate fossils are well represented in Tertiary amber (Bechly 1993, 1996b, 1998a, 2000; Bechly & Wichard 2008), descriptions of damselflies in Cretaceous amber were very rare until the recent boom of paleoentomological studies on Burmese amber. The first description of a damselfly in Cretaceous Burmese amber, *Palaeodisparoneura burmanica*, was published in 2010 (Poinar *et al.* 2010). Meanwhile, several further damselfly taxa have been described from this locality (Huang *et al.* 2015, 2017; Zheng *et al.* 2016a, 2016b, 2016c, 2016d), representing the families Hemiphlebiidae, Perilestidae, Dysagrionidae, Platystictidae, and Platycnemididae—Disparoneurinae, and Mesomegaloprepidae. Further new descriptions are in preparation (Bechly in prep., and André Nel pers. comm. 2016). The present study describes a new genus and species of damselfly from Burmese amber, which is only the third known fossil record from the stem group of the very diverse superfamily Coenagrionoidea.

Material and methods

The fossil is preserved in a small piece of Burmese amber. The specimen was obtained from a German trader and originated from an amber mine in the Hukawng Valley (Kachin State) in Myanmar (Burma) but the precise mine is unknown.

Burmese amber was first assigned to the Early Cretaceous through paleontological evidence (Cruickshank & Ko, 2003). Shi *et al.* (2012) later provided a very precise absolute age at 98.79 ± 0.62 Ma by radiometric U–Pb zircon dating of the volcanoclastic matrix.

The presence of characteristic wood fibers as well as nuclear magnetic resonance (NMR) spectra both suggest an araucarian tree source (possibly genus *Agathis*) for the fossil resin from this locality (Poinar *et al.* 2007), but Dutta *et al.* (2011) rejected this attribution and rather suggested Pinaceae.

SubSubSection

➤ Definition and Boundaries

Campsicnemus meridionalis sp. nov.
Fig. 1

Material examined

Holotype

ST. HELENA ♂, Centre, High Central Ridge, Cabbage Tree Road, 2500 ft, Mar. 1967 / Coll. Mus. Tervuren, Seconda Mission Zoologique à Sainte-Hélène, J. Decelle, N. et J. Leleup [RMCA]

Paratypes

ST. HELENA (one of the specimens with additional label P. Vanschuytbroeck det. 1971, *Campsicnemus mirabilis* Frey); 3 ♂♂, same data as for holotype. ST. HELENA: 3 ♂♂, Centre, High Central Ridge, 2300-2600 ft, Feb. 1967 / Coll. Mus. Tervuren, Seconda Mission Zoologique à Sainte-Hélène, J. Decelle, N. et J. Leleup. ST. HELENA: 2 ♂♂, Centre, High Central Ridge, 2500 ft, Apr. 1967 / Coll. Mus. Tervuren, Seconda Mission Zoologique à Sainte-Hélène, J. Decelle, N. et J. Leleup. ST. HELENA: 1 ♂, Centre, High Central Ridge, 2600-2700 ft, 16 Sep. 1965 / Coll. Mus. Tervuren, Mission Zool. Ste-Hélène, P. Basilewsky, P.L.G. Benoit et N. Leleup [RMCA].

Etymology

From the Latin "southern". Means the southernmost point of the genus' distribution in the Atlantic Ocean.

Diagnosis

Mid femur with deep ventral subapical excavation, mid tibia and basitarsus densely covered with long setae along entire length, mid basitarsus about 1/3 the length of next segment, antennal postpedicel 3 times longer than high at base, with drawn-out apex.

UUID - FFA3543FF87FFFF16C3AFFE28570E720

Treatment Citation

➤ Definition

- A treatmentCitation is a link to a citation of any given taxonomicName which is related to and in the same rank of the treatment where it’s being referenced

Allows separation in GBIF of material citation based data sets from those of specimen, observation, or sequence.

What to we extract?

- Nomenclature
- Treatment SubSubSection
- Treatment Citation
- Materials Citation

TAXONOMIC TREATMENT

Family RUTACEAE Juss.
Genus *Vepris* Comm. ex A.Juss.

Vepris africana (Hook.f.) O.Lachenaud & Onana, comb. nov.

(Fig. 1).

Glycosmis (?) *africana* Hook.f., *Niger Flora*: 256 (Hooker 1849). — Type: **São Tomé & Príncipe**. São Tomé, without precise locality or date (fr.), *Don s.n.* (holo-, K[K000199556]).

Teclea gossweileri I.Verd., *Bulletin of Miscellaneous Information, Kew* 9: 409 (Verdoorn 1926), **syn. nov.** — *Vepris gossweileri* (I.Verd.) Mziray, *Symbolae Botanicae Upsalienses* 30: 72 (Mziray 1992), nom. illeg. [non *V. gossweileri* I.Verd.]. — Type: **Angola**. Cuanza Norte, Cabiri, 1.VII.1921 (male fl.), *Gossweiler 8328* (holo-, K[K000199528, K000199529]).

DISTRIBUTION. — This species has a very scattered distribution in NW coastal Gabon (around Libreville), coastal Republic of Congo (mouth of Kouilou River), northern Angola, and the north of São Tomé island (Fig. 2).

HABITAT. — Littoral thickets, edge of mangroves, and forest islands in savanna, often associated with rocky outcrops (especially of limestone), 0-1200 m in elevation; often gregarious, sometimes even dominant in its habitat.

PHENOLOGY. — Flowers collected in January, March to July, and September to November, probably all year round; fruits in November.

OTHER STUDIED MATERIAL. — **Angola**. Granja de S. Luiz, Cazengo, 21.XI.1917 (fr.), *Gossweiler 5260* (BM); towards Caçaça, Granja de S. Luiz, Cazengo, 9.XI.1919 (fl. buds), *Gossweiler 5636* (BM); Cassualala, Cuanza Norte, 22.V.1921 (male fl. buds), *Gossweiler 8311* (BM, P06600613); Cuanza Norte, Castendo, 16.X.1922 (bisexual fl.), *Gossweiler 8437* (BM, BR); Hochland von Quela, 1200 m, IX.1938 (male fl.), *Nolde 827* (BM).
Republic of the Congo. Bas-Kouilou, 2.I.1991 (st.), *Dowsett-Lemaire 1496* (BR); Bas-Kouilou, 19.IV.1991 (male fl. buds), *Dowsett-Lemaire 1583* (BR).

Species Distribution

➤ Definition

- The geographic range of a species natural occurrence.
- Defined according to specimen records on scientific publications.

Record

➤ Definition

- Indication of whether the occurrence is related to a collection specimen uploaded to GBIF or a material citation extracted from Plazi Treatment Bank.

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