

Expanding the workflow from scholarly published data to GBIF

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GBIF Global Nodes Meeting, Leiden, October 19, 2019

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The scope

- Ca 500M pages published, including the scholarly taxonomic knowledge about the Earth' taxa
- Each year new data is published in over 1.000 journals and books, including ca 17,000 new animal species
- Data published with implicit, well defined relation to species (taxonomic treatments)
- Data in publications are micro-citation networks with external and internal links
- All scientific names are published, including their history (synonomies)
- Scientific taxonomic names are citations of data in published records
- Tens of millions of treatments are referenced in the literature and databases
- Billions of facts about species can be derived and linked to the source publication
- Data in taxonomic publications are in the public domain
- Text and data mining tools exist to extract, annotate and make accessible data from publications
- The Biodiversity Literature Repository is in place making data (Figures, Taxonomic Treatments) findable, accessible, interoperable, reusable)
- A fully automated workflow to liberate data exists from a journal article to the reuse of data in GBIF
- Publications are in place providing semantically enhanced data.



Data in taxonomic publications is very rich

Data is not copyrighted and thus freely accessible and reusable.

Data in a publication:

★ Metadata

- Journal
- Authors
- Affiliations
- ORCID

★ Figures, caption, figure citations

★ Tables, caption, table citations

- Bibliographic references, bibliographic reference citations

- Materials and methods
- Methodologies
- Collection codes
- Measuring standards

- Taxonomy
- Synonymic lists

★ Identification keys

- **Taxonomic treatments**

Data in **taxonomic treatments**

★ Taxon name

- Taxonomic name labels
- Nomenclatural acts

★ Thematic Sections

- Descriptions with traits

★ Typed citations of previous treatments (synonymy)

★ Distribution

- Behavior

★ **Materials citations**

- Relations with other taxa

Data in **materials citations**

- Taxon name

★ country

★ locations

★ Geo-coordinates

★ Collecting dates

★ Collector

★ Collecting Methods

★ Habitat

★ Microhabitat

★ Collected from

★ Identifying persons

★ Collection codes

★ Specimen codes

- Specimen counts

★ DNA Accession codes

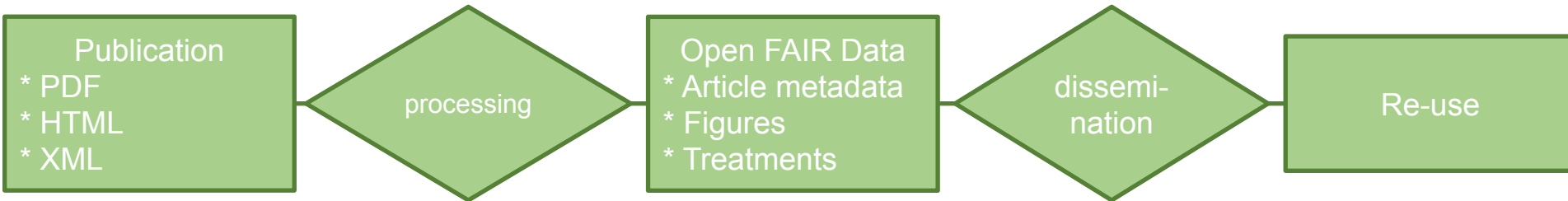
★ Type status

Scholarly
publication
PDF
Print

★ Data liberated from publications and used by GBIF

Blue List of data in taxonomic publications: <http://plazi.org/activities/blue-list/>

Plazi scholarly published data liberation and dissemination workflow



Publication

- * PDF
- * HTML
- * XML

processing

Open FAIR Data

- * Article metadata
- * Figures
- * Treatments

dissemination

Re-use

article with enriched metadata

figure

treatment

dataset

treatments

figures

occurrence

Biodiversity Literature Repository

<https://doi.org/10.5852/ejt.2018.445>

<https://www.gbif.org/dataset/5dfd4ff4-6c8b-47f4-9aa7-0f6b1b2af967>

<https://www.gbif.org/occurrence/1937470259>

<https://www.gbif.org/species/149668647>



Unique names, removing duplicate treatments with the same name:

all: 218.785

genus: 40.750

species: 165.634

infraspecies: 6.044

Plazi provided names, not found anywhere else in the backbone sources:

all: 48.744

genus: 1.861

species: 43.770

infraspecies: 3.113

Plazi mediated treatments in GBIF

286K



Coming

- * Multiplying the data input to GBIF
- * collaboration with Publishers to streamline publishing of observation records
- * adding synonyms

Collaboration

- * Make it an imperative to have your treatments in GBIF
- * Convince the user of your data to cite specimens with persistent digital identifiers in publications
- * Use the treatment persistent identifiers in your work



Thank you!

Taxonomic treatments are data that can be made FAIR

Taxonomic name

Publication type

Taxonomic treatment Open Access Access

Traumatotumutilla ocellaris Klug 1821

Bartholomay, Pedro R., Williams, Kevin A., Lopez, Vinicius M., Oliveira, Marcio L.

Traumatotumutilla ocellaris (Klug, 1821)

(Fig. 26-55)

Mutilla ocellaris Klug, 1821: 321. Lectotype (designated here), ♀, Brazil, [Para], Cameta (ZMB), examined.

Mutilla polita Smith, 1855: 48. Holotype (by monotypy), ♂, Brazil, Amaz., [sic] (BMNH), examined **syn. nov.**

Mutilla trinacria Gerstaecker, 1874: 68. Holotype, ♀, Brazil, Paraná (ZMB), examined **syn. nov.**

Mutilla gemina Gerstaecker, 1874: 69. Lectotype (designated here), ♀, Brazil, [Rio Grande do Sul], Alegrete (ZMB), examined **syn. nov.**

Mutilla caryana Burslem, 1875: 475. Lectotype (designated here), ♀, Argentina, Córdoba (MACN), examined **syn. nov.**

Mutilla acara Cresson, 1862: 73. Holotype, ♂, Brazil, Mato Grosso do Sul, Chapada dos Guimarães (OMNH), examined **syn. nov.**

Ephuta (*Traumatotumutilla*) *caryana* André, 1902: 55 (new combination)

Ephuta (*Traumatotumutilla*) *gemina* André, 1902: 55 (new combination)

Ephuta (*Traumatotumutilla*) *lasioagistra* André, 1902: 55 (new combination)

Ephuta (*Traumatotumutilla*) *ocellaris* André, 1902: 55 (new combination)

Ephuta (*Traumatotumutilla*) *acara* André, 1902: 56 (new combination)

Ephuta (*Traumatotumutilla*) *trinacria* André, 1902: 57 (new combination)

Mutilla polita André, 1902: 74 (incertae sedis)

Traumatotumutilla caryana André, 1904: 40 (new combination)

Traumatotumutilla lasioagistra André, 1904: 40 (new combination)

Traumatotumutilla gemina André, 1904: 40 (new combination)

Traumatotumutilla trinacria André, 1904: 40 (new combination)

Traumatotumutilla acara André, 1904: 40 (new combination)

Traumatotumutilla ocellaris André, 1904: 40 (new combination)

Traumatotumutilla lasioagistra André, 1904: 40 (new combination)

Traumatotumutilla gemina André, 1904: 40 (new combination)

Traumatotumutilla trinacria André, 1904: 40 (new combination)

Traumatotumutilla acara André, 1904: 40 (new combination)

Traumatotumutilla ocellaris André, 1904: 40 (new combination)

Diagnosis. FEMALE. Mesosoma generally slender; not constricted anterior to propodeal spiracles; lateral margins slightly and smoothly diverging anterior; anterior face of T1 usually densely setose and micropunctate to punctate. MALE.

Integument entirely black to brownish-black; rarely vestigially marked with reddish on T2.

Description. FEMALE. Body length 7 mm. Head. Posterior margin slightly concave. Occipital carina ending in lateral tubercles; tubercles subparallel; virtually as long as wide. Vertex width 0.85 × pronotal width. Eye almost circular; its length in frontal view 1.15 × the distance from its ventral margin to mandibular condyle. Frons, vertex, and gena densely and finely foveolate-punctate; more sparsely so on gena and malar space. Gena carina present, well defined, broadly separated from antennal tubercles. Mandibles with small subapical notauli. Dorsal pronotal carina present, not antennal tubercles; lateral scrobal carinae absent. Antennal tubercles coarsely rugose. Flagellomere 1 2.6 × pedicel length; flagellomere 2 1.4 × pedicel length. Mesosoma. Mesosoma 0.8 × as long as wide. Pronotum slightly narrower than mesothorax. Anterior face of propodeum well-defined, conspicuously and finely striated longitudinally. Mesosomal dorsum densely and coarsely areolate-punctate throughout. Humeral carina present, disconnected from epaulet, not at all produced apically; antero-lateral corners of pronotum rounded in dorsal view. Epaulets slightly produced from anterior margin of pronotum, rounded. Pronotal spiracle virtually flat against lateral margin of pronotum. Sculpture of mesosomal pleurae concealed by dense setation, except dorsal fourth of metapleuron impunctate, smooth. Lateral face of propodeum mostly smooth; impunctate, sparsely shallow punctures. Post-spiracular area undefined. Ratios of width of humeral angles, pronotal spiracles, widest point of mesonotum, narrowest point of mesonotum and propodeum posterior to propodeal spiracles, 64:73:71:61:47. Lateral margin of mesosoma not emarginated anterior to propodeal spiracle; sculpture of humeral spots sparse shallow foveolate-punctate. Sculpture T3-6, except pygidial plate, obscured by dense setation. S1 with conspicuous longitudinal carina, equally high throughout. S2 sparse foveolate-punctate; antero-medial crest-fold vestigial; subapical slope absent. S3-6 dense coarse foveolate-punctate. Pygidial plate subovate, defined by lateral carinae except at basal half of plate carinae; surface with longitudinal interrupted subapical costations; interstices apparently impunctate, smooth. MALE (based on the holotype of *T. acara*). Body length 7-12 mm. Head. Rounded subquadrate; posterior lateral angles rounded. Vertex width 0.8 × pronotal width. Eye almost circular. Ocelli small; OOD 3.5 × DLO, IOD 0.7 × DLO. Occipital carina distinct. Frons and gena sparsely and finely foveolate-punctate, more densely so on frons. Gena carinae. Antennal scrobae concave to eye margin; with prominent transverse dorsal scrobal carina separated from eye margin and torulus. Clypeus convex medially; concave laterally immediately below antennal insertion; coarsely and densely punctate with a pair of short, closely spaced, blunt tubercles on apical margin. Scape bicarinate, inner carina less pronounced. Flagellomere 1 1.5 × pedicel length; flagellomere 2 2 × pedicel length. Mandible obliquely tridentate apically, inner tooth slightly larger than middle tooth; lacking dorsal or ventral projections. Mesosoma. Epaulets well defined, slightly pronounced, rounded, broadly disconnected from humeral carina. Anterior face of propodeum smooth, impunctate medially, with a conspicuous longitudinal concave medial area; fine sparse to dense coarse punctate laterally. Mesosomal dorsum mostly glabrous and impunctate except for dense punctures anteromedially. Mesoscutum densely foveolate-punctate; notauli and parapsis vestigial, partially visible at posterior third of mesoscutum. Scutellum slightly convex, densely and coarsely areolate-punctate. Axilla produced posterolaterally as truncate projection, with conspicuous flat posterior face, coarsely and densely foveolate-punctate dorsally, except posterior half impunctate. Metanotum virtually equally wide throughout, T2 sun-face obscured by dense setation. Propodeum convexly and densely areolate dorsally and along posterior margin of mouth; impunctate lateral face; posterolateral margins smoothly rounded; dorsal face rounded into posterior face; posterior margin of dorsal face not angulate. Lateral face of pronotum and mesopleura sculptured obscured by dense setation; mesopleura roundly swollen, without any conspicuous projections on dorsal half. Metapleuron virtually smooth, shining and impunctate throughout. Wings. Forewing with moderate elongate sclerotized pterostigma; marginal cell elongated; truncate apically; three submarginal cells, vein of third cell vestigial. Legs. Simpy setose; no strong spiny discoid tubercles dorsally; spurs finely serrate on margins. *Mesotarsus* T1 0.5 × as wide as T2; T2 length 0.9 × its width; T2 sparsely and finely foveolate-punctate with interspersed micropunctures at basal third; T3-5 sparsely and finely foveolate-punctate with

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Publication date:

May 17, 2019

DOI:

10.5072/zenodo.367955

Keywords(s):

Hymenoptera

Mutillidae

Traumatotumutilla

Published in:

Revision of the Traumatotumutilla americana species group (Hymenoptera: Mutillidae), pp. 1-34 in Zootaxa 4608 pp. 13-21.

Related identifiers:

10.5281/zenodo.2944377

10.5281/zenodo.2944383

10.5281/zenodo.2944395

10.5281/zenodo.2944397

10.5281/zenodo.2944419

Part of

10.11646/zootaxa.4608.1.1

http://zenodo.org/record/2944349

http://publication.plazi.org/id/FFFF102F02F83FFA6

FF04FFD6820015A

Referenced by:

10.1234/science.123

6 Alternate identifiers:

http://zoobank.org/07DCD046-B540-4823-8160-5B1449CEB871

http://treatment.plazi.org/id/03C8B554FF8F9B2F

F53F9386A050709

7 Custom keywords:

div:genus

Traumatotumutilla

div:specificEphuta

ocellaris

div:kingdom

Animalia

div:typicalStatus

lectotype, holotype

div:order

Hymenoptera

div:collectionCode

ZMB, BMNH, MACN, OMNH, FEIS, MZSP, MNHN, INPA, OSCA, DZUP, MNHR, LACM, ENUS, MPFG, FSCA, CDSO, AMNH, INHS, RBINS, USNM, ZMUC, OSC, UMRSP, MNHN, UDCO, ENUS, AMNH, FSCA, CDSO, AMNH, UFGD

div:scientificNameAuthorship

Klug

div:phylum

Arthropoda

div:speciesRank

species

div:family

Mutillidae

8 Locations:

iprhu9 (7:5216665, 43:34689) (Z)

Amazonas: Humata, iprhu9 (7:5118'569;20:48'8"W; 12:02:20:04) (IPRA)

Taxonomic Treatment

Text (ctd.)

Remarks. The lectotypes of *Mutilla ocellaris*, *Mutilla gemina*, *Mutilla caryana*, and *Mutilla lasioagistra* are herein being officially designated because although the specimens were labelled as lectotypes by Michel (Figs 32-35), the taxonomic acts were never published. Regarding the type of *Mutilla acara*, Cresson (1916) provided a list of all the types of Hymenoptera described by the author along with the collection number of the specimen considered by him to be the "types". We argue that these specimens can be considered as the holotypes of Cresson's species since it was the author himself that designated and labeled them as "type" (Fig. 45). This species seems to be widespread in the Pampas, Chaco, and Cerrado areas of South America, with some populations being found as far north as Amazon areas in Brazil (Figs. 56, 79). One record is made to Becerril, Cesar Department in Colombia, although we suspect that might be a case of mislabelled specimen. Such a wide distribution range explains the highly variable color patterns observed in both sexes of *T. ocellaris*. Examination of the types of *T. trinacria*, *T. gemina*, *T. caryana*, *T. lasioagistra* and *T. ocellaris*, revealed them to be structurally similar and varying only in minor setae and color differences with multiple intermediate color forms found between species. In fact, these five species form a clear color gradient from south to north with *T. caryana* and *T. ocellaris* being at each extreme of the color spectrum. There is a clear tendency for the males to have predominantly black setae in southern specimens whilst northern specimens, formally a known variety, have predominantly silvery-white setae. Several intermediate color forms for the males of this species have been found, but each has identical genitalic characters to *T. acara*. The association of *T. acara* with *T. ocellaris* was based on mating pairs found in the MACN collection and observed in situ by V.L. Separating females of *T. ocellaris* from *T. quadrum* can be difficult in certain areas of Brazilian Cerrado due to their overall morphological similarities in the shape of the mesosoma.

Traumatotumutilla ocellaris is perhaps one of the most variable species in South America, with males and females having different color forms throughout their distribution. That, associated with their frequently overlapping distribution with *T. quadrum* makes it difficult to tell females of these species apart even when using structural characters. Females of *T. ocellaris* tend to have the frontal and mesosomal dorsal sculpture finer, denser, and smaller than females of *T. quadrum*. The front almost always finely, densely foveolate-punctate in *T. ocellaris* and coarsely, sparsely areolate-punctate in *T. quadrum*. This difference in sculpture is also found on the mesosoma, but there are more exceptions in *T. ocellaris*. Most specimens of *T. ocellaris* also have distinct setose areas posterolaterally on S2, which have obvious micropunctures varying in density between specimens and that are not present in *T. quadrum* to the best of our knowledge. Also, there appears to be a tendency for the lateral carinae of the pygidial plate to be more sharply defined and longer in *T. quadrum* females than in *T. ocellaris*. The sculpture of T1, as indicated in the key above, is apparently the only consistent trait for differentiating these species, as even when the setae are obliterated in *T. ocellaris*, dense micropunctures can still be seen.

Published as part of Bartholomay, Pedro R., Williams, Kevin A., Lopez, Vinicius M. & Oliveira, Marcio L., 2019, Revision of the Traumatotumutilla americana species group (Hymenoptera: Mutillidae), pp. 1-34 in Zootaxa 4608 (1) on pages 13-21, DOI: 10.11646/zootaxa.4608.1.1

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Dates of material collected

Communities

License

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Metadata (ctd.)

Capitan Caceres (-27.225666, -65.639) (Z)

4km S kilometers South of Capitan Caceres, 430m (pre-

ters above sea level), 27°15'56.93834W; 162°17'24.24

12.XI.2003, Irwin & Parker (EMUS)

9 Dates:

Collected

2000-04-15

1964-02-02

1945-01-29

1961-12-18

1902-04-03

10 Communities:

Biodiversity Literature Repository

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Bartholomay, Pedro R., Williams, Kevin A., Lopez,

Vinicius M. & Oliveira, Marcio L. (2019, May 17).

Traumatotumutilla ocellaris Klug 1821. Revision of the

Traumatotumutilla americana Species Group

(Hymenoptera: Mutillidae). Pp. 1-34 in Zootaxa.

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