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Classification, natural history, and evolution of the Korynetinae (Coleoptera: Cleridae). Part IV. The new genus Nolafigura Opitz, and fourteen new species of Korynetes Herbst

WESTON OPITZ

Research Associate, Florida State Collection of Arthropods, Division of Plant Industry/Entomology, Florida Department of Agriculture and Consumer Services, 1911 SW 34th Street, Gainesville, FL 32614-7100, USA - opitz@kwu.edu
ZooBank : http://zoobank.org/D67F4DA0-C173-4ED8-BCD7-94E5A3A1FF87

Introduction

A rich taxon shipment of African checkered beetles from Alain Coache (ACCF), Roland Gerstmeier (RGCG), and Ruth Müller (TMSA) provided the opportunity to increase our knowledge about the Cleridae fauna of Africa. In a previous publication (Opitz, 2017: 421), I alluded to the general paucity of information about the Cleridae of Africa. Now, I am delighted to make this contribution to enhance our knowledge of the Cleridae fauna of Africa. In a previous publication Opitz, 2017: 421. The genus Korynetes was established by Herbst (Herbst, 1792: 148) and revised by Opitz (Opitz, 2015: 107).

Materials and Methods

While morphological criteria are used to determine species status, I adhere to the biological species concepts as discussed by Standfuss (1896), Dobzhansky (1937), and Mayr (1963). The operational criteria for the delimitation of species involve morphologic structure and any other available criteria that suggest reproductive isolation among members of metapopulation lineages (de Queiroz, 2007). Experience with morphological structure is generally a reasonable criterion with which to hypothesize reproductive isolation. In this study, consideration for species status involves: Integumental color, structure of the pronotum, arrangement of elytral punctures, and characteristics of the aedeagus.

Methods involving dissections, measurements, and morphological terminology follow those described in Opitz (2010: 35). Brown (1956) was used to coin scientific names.

Abbreviations used in this treatise are defined as follows:

- EW/FW = eye width/frons width (measured at 500 x from the front of the head);
- PW/PL = pronotal width (across the widest portion of the pronotal disc)/pronotal length (from midline anterior margin to midline posterior margin);
- EL/EW = elytral length (from humeral angle to apex)/elytral width (greatest dorsal width of one elytron).

Habitus photographs were taken with a Leica Z 16 APO microscope equipped with JVC KY-F75U-CCD camera and controlled by Syncroscopy Auto Montage software (Cambridge, United Kingdom). The SEM micrographs were produced with a Scanning Electron Microscope-S-3500N (Hitachi Science Systems, Ltd., Tokyo, Japan).

Repository of Specimens

I used codens as noted in Arnett, Jr. et al. (1993) to indicate repositories of specimens, with some modifications to accommodate codens for personal collections:

- ACCF: Alain Coache Collection, Impasse de l’Artémise 004700, La Brillanne, France (alain.coache@college.org).
- AMNH: American Museum of Natural History, Department of Entomology, Central Park West at 79th Street, New York, New York 10024-5192, United States of America (Lee Herman; herman@amnh.org).
- BMNH: British Museum of Natural History, Department of Entomology, SW 5BD, London, United Kingdom (Beulah Garner; b garner@nhm.ac.uk).
- CASC: California Academy of Sciences, Department of Entomology, Golden Gate Park, San Francisco, California 94118, United States of America (Jere Schweikert; jaschweikert@calacademy.org).

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Abstract. – This work involves establishment of the genus Nolafigura Opitz, new genus, description of its type species N. coachei Opitz, new species, and description of fourteen new species in the established genus Korynetes Herbst. The Korynetes new species involve: K. apicus Opitz, K. bifidus Opitz, K. clavulus Opitz, K. divilgatus Opitz, K. fuscopedis Opitz, K. krugeri Opitz, K. ligulatus Opitz, K. luminosus Opitz, K. morulus Opitz, K. pelidnus Opitz, K. peliosus Opitz, K. procerus Opitz, K. serratus Opitz, and K. ustulatus. Also, a lectotype designation and redescription is provided for K. nigritarsis Pic. Included in this work are 12 Electron Micrographs, 16 habitus photographs, 13 photographs of genitalia, and 3 distributional maps. To facilitate the identification of the new taxa described herein, the new names are associated with previously described genera and species.


ZooBank : http://zoobank.org/1B82257A-1FD-41FD-865F-C10E76D752E
- **CMNC**: Canadian Museum of Nature, Insect Collection, Post Office Box 3443, Station D, Ottawa, Ontario, Canada K1P 6P4, Canada (Robert S. Anderson; randerson@cmns-nature.ca). François Genier: [fgenier@cmns-nature.ca].
- **CMNH**: Carnegie Museum of Natural History, Invertebrate Zoology, 4400 Forbes Avenue, Pittsburgh, Pennsylvania 15213, United States of America (Robert L. Davidson; davidson@carnmuseum.org; Robert Androw: androw@carnegiemnh.org).
- **FMNH**: Field Museum of Natural History, Department of Entomology, Roosevelt Road at Lake Shore Drive, Chicago, Illinois 60605, United States of America (Crystal Maier: cmaier@fieldmuseum.org).
- **FSCA**: Florida State Collection of Arthropods, Division of Plant Industry/Entomology, Florida Department of Agriculture and Consumer Services, 1911 SW 34th Street, Gainesville, FL 32614-7100, United States of America (Paul E. Skelley; Paul.Skelley@FreshFromFlorida.com).
- **RGCC**: Roland Gerstmeier Collection, Technisches Universität München, Lehrstuhl für Zoologie, AG Entomologie, Hans-Carl-von-Carlowitz-Platz 2, 85354 Freising, Germany (t.gerstmeier@tum.de).
- **RMNH**: Naturalis Biodiversity Center, Vondellaan 55, 2323 AA, Leiden, The Netherlands (Hans Huijbregts: hans.huijbregts@naturalis.nl).
- **SDEI**: Deutsches Entomologisches Institute, Leibniz-Zentrum für Agrarlandschafts-und Landnutzungsforschung e. V. Eberswalde Str. 64, D-15374 Müncheberg, Germany (Lutz Behne: lbehne@senckenberg.de).
- **TAMU**: Texas A & M University, College of Agriculture and Life Sciences, Department of Entomology, Minnie Belle Heep Building, College Station, Texas 77843-7029, United States of America (Andrew J. Graf; ciphers_the_noble@tamu.edu).
- **TMSA**: Transvaal Museum, 01 Paul Kruger Street, P. O. Box 413, 0001 Pretoria, Republic of South Africa (Ruth Eberhardt; mugler@nfi.co.za).
- **WFBM**: William F. Barr Museum, University of Idaho, Department of Plant, Soil, and Entomological Sciences, 606 Rayburn Street, Moscow, Idaho 83844-2339, United States of America (Luc Leblanc; leblancl@uidaho.edu).
- **WOPC**: Weston Opitz Collection, Research Associate, Florida State Collection of Arthropods, Division of Plant Industry/Entomology, Florida Department of Agriculture and Consumer services, 1911 SW 34th Street, Gainesville, Florida 32614-7100, United States of America (opitz@kwsu.edu).

### Taxonomy

**Nolafigura** Opitz, new genus  

### Type Species  
**Nolafigura coachei** Opitz, new species.

### Diagnosis  
In a key to the genera of Korynetinae (Opitz, 2011) *Nolafigura* keys out to *Korynetes* Herbst from which *Nolafigura* is distinguished by showing a campaniform prothorax and by lacking an acumination on the posterior angles of the pronotum.

### Synapotypic characteristic  
Prothorax campaniform (Fig. 1).

### Description  
**Size.** Length 5.0-6.0 mm. – Width 1.2-1.5 mm.  
**Form.** Oblong, subcylindrical, about 4 times longer than broad.  
**Vestiture.** Disc of cranium and pronotum profusely vested with dark setae, elytral disc vested with 1º setae and shorter profusely distributed 2º setae.  
**Head.** Cranium quadrate (Fig. 4), frons very wide, indented with small setiferous punctuation, latter not contiguous. – Gula large (Fig. 7), quadrate, sutures linear, post-gular process short and bifid distally (Fig. 8). – Labrum short, medial incision deep and broad. – Mandible, body short, subacuminate. – Maxilla (Fig. 3), terminal palpomeres subsecuform. – Labium (Fig. 3), terminal palpomere subsecuform. – Eyes small, coarsely facetted, ocular notch small. – Antenna (Fig. 5), capitulum, capitulum laxis, scape large, longer than combined length of pedicel and antennomeres 3, funicular antennomeres (Fig. 6) filiform, progressively shorter to capitulum, capitular antennomeres 9 and 10 triangularly expanded, antennomere 11 ovoid.  
**Thorax.** Pronotum campaniform/quadrade, convex, side margins not serrulate, disc finely punctate, proctoercoonal process (Fig. 9) expanded distally. – Pronotal projection long, contacting but not fused to proctoercoonal process. – Elytral basal 1/2 sculptured with large spheroid asetiferous punctures that diminish in elytral distal 1/4, asetiferous punctures subseriate, 1º setae always adjacent to asetiferous punctation, 2º setae present (Fig. 2), epipleural fold narrows to elytral apex, anterior margin not carinate. – Legs, tibial spur formula 2-2-2, tarsal pulvillar formula 3-3-3, unguis (Fig. 11, 12) with slightly-developed denticle. – Metendosternite with well-developed furcal laminae (Fig. 10).

**Abdomen.** With 6 visible sternites. – Aedeagus (Fig. 29) shorter than length of abdomen, with 2 phallobasic lobes, latter fimbriate. – Apices of lateral plates of spicular fork acuminate, spicular apodemes fused together.

### Distribution  
This monotypic genus is known from Benin, West Africa.

### Etymology  
The generic name *Nolafigura* is a Latin compound name derived from the noun *nola* (= little bell) and *figuro* (= form). I refer to the bell-like shape of the prothorax. Gender: Feminine.

**Nolafigura coachei** Opitz n. sp.  
(Fig. 1-13, 29, 42)  
ZooBank: [http://zoobank.org/A56A854D-0FCD-4E53-9AFB-CC8F8FBF2EA6](http://zoobank.org/A56A854D-0FCD-4E53-9AFB-CC8F8FBF2EA6).

**Holotype.** ♂. AFRIQUE DE L’OUEST, BENIN ATTOGON, FORET DE NIAOULI, DANS TERMITIERE, 03 V 2013, LEG ALAIN COACHE (= West Africa, Benin, Attogon, Niaouli forest) (FSCA).

**Paratypes.** Six specimens:  
– Benin, West Africa, Attogon, Village, 03 V 2013, Alain Coache (ACCF, 1)  
– idem, Niaouli forest, 28-JV-2013, Alain Coache (ACCF, 3; WOPC, 2).
Diagnosis. – This is the only known species in Nolafigura, readily identifiable by viewing Fig. 13.

Description

Size. – Length 5.4 mm. – Width 1.5 mm.

Form (Fig. 13).

Color. – Mouthparts, antennae, and legs testaceous, remainder dark blue.

Head. – Antennal capitulum well developed (Fig. 5), capitulo antennomeres 9 and 10 triangular, antennomere 11 ovoid. – Terminal maxillary and labial palpomeres subsecuiriform. – Eyes much narrower than frons (EW/FW 18/40).

Thorax. – Pronotum (Fig. 1) campaniform/quadrate (PW/PL 78/78), side margins sinuous; elytral asetiferous punctures diminish in size at elytral distal 3/4, punctures subseriate, interstitial spaces smooth and shiny (EL/EW 215/50).

Abdomen. – Pygidium transverse/scutiform. – Aedeagus (Fig. 29), with 2 phallobasic lobes, latter fimbriate, phallobase slightly constricted at middle 1/2, phallobasic rod short.

Variations. – Except for body size, the available specimens are quite homogeneous.

Natural History. – The available specimens were collected during April and May.

Distribution (Fig. 42). – This species is known only from Benin, West Africa.

Etymology. – The specific epithet, coachei, is a dedicative patronymic to honor Alain Coache for his contributions to Taxonomic Entomology.

Fig. 3-8. - Structures of Nolafigura coachei n. sp. - 3 : Mouthparts. - 4 : Head. - 5 : Complete antenna. - 6 : Funicular antennomeres. - 7 : Head venter. - 8 : Post-gular process.
**Korynetes apiculus** Opitz n. sp.

(Fig. 14, 30, 42)

ZooBank: [http://zoobank.org/B15520CC-C8C9-4CFE-AD6A-2A064B92C23D](http://zoobank.org/B15520CC-C8C9-4CFE-AD6A-2A064B92C23D)


**Diagnosis.** – The genus *Korynetes* was revised in 2015 (Opitz, 2015). This work included a key to species. *Korynetes apiculus* specimens key out to *K. latipennis* Pic, from which *K. apiculus* specimens differ by showing a slenderer body form.

**Description**

**Size.** – Length 3.0 mm. – Width 1.2 mm.

**Form** (Fig. 14).

**Color.** – Mouthparts, antenna, and legs testaceous. – Cranium, thorax, elytra, and abdomen blue.

**Head.** – Cranion coarsely punctate. – Antennal capitulum lax, funicular antennomeres become progressively shorter to capitulum, antennomeres 9 and 10 cupuliform, antennomere 11 spheroid. – Eyes shallow, much narrower than frons (EW/FW 13/25).

**Thorax.** – Pronotal side margins minutely serrulate, disc quadrate (PW/PL 58/58), coarsely punctate throughout disc, with postero-lateral angle. – Elytral punctation arranged into 10 striae, punctuation extends to near elytral apex, elytral interstitial spaces smooth and shiny, upper margin of epipleural fold not serrulate, epipleural margin abruptly narrows at elytral distal 3/4th (EL/EW 170/50).

**Abdomen.** – Pygidium scutiform, aedeagus as in Fig. 30. – Phallobase broad, phallic apex extended.

**Natural History.** – The available specimen was collected during December.

**Distribution** (Fig. 42). – Known from South Africa.

**Etymology.** – The specific epithet, *apiculus*, is a Latin name with the meaning of “point”. I refer to the extended form of the elytral apex.

**Korynetes bifidus** Opitz n. sp.

(Fig. 15, 31, 42)

ZooBank: [http://zoobank.org/61C50B48-A745-4FC1-9DFB-BC63A917D996](http://zoobank.org/61C50B48-A745-4FC1-9DFB-BC63A917D996)


**Paratypes.** Eighteen specimens:

– Senegal. Nianing, 13-1-2007, Alain Coache (ACCF, 3; WOPC, 1)
– idem, 18-1-2007, Alain Coache (ACCE, 1)
– idem, 19-1-2007, Alain Coache (ACCE, 1; WOPC, 1)
– idem, 20-1-2007, Alain Coache (ACCE, 2; WFBM, 1; WOPC, 1)
– idem, 11-1-2007, Alain Coache (BMNH, 1)
– idem, 7-1-2007, Alain Coache (CMNH, 1)
Diagnosis. – The genus *Korynetes* was revised in 2015 (Opitz, 2015). This work included a key to species. *Korynetes bifidus* specimens key out to *K. scabripennis* Spinola, from which *K. bifidus* specimens differ by showing yellow legs. The legs are black in specimens of *K. scabripennis*.

Description

**Size.** – Length 6.8 mm. – Width 2.8 mm.

**Form** (Fig. 15).

**Color.** – Mouthparts, antenna, legs, and abdominal sternites IV-VI testaceous; cranium, thorax, and elytra dark blue; visible abdominal sternites I-III brown.

**Head.** – Cranion coarsely punctate. – Antennal capitulum lax, funicular antennomeres become progressively more moniliform, antennomeres 9 and 10 triangular, antennomere 11 spheroid. – Eyes shallow, much narrower than frons (EW/FW 25/40).

**Thorax.** – Pronotal side margins not serrulate, disc very transverse (PW/PL 120/92), punctate throughout disc, interstitial spaces smooth and shiny, with posterolateral angle. – Elytral punctuation arranged into 12 striae, punctuation extends to elytral posterior 3/4, elytral interstitial spaces smooth and shiny, upper margin of epipleural fold not serrulate, epipleural margins ends at about distal 3/4 (EL/EW 260/95).

**Abdomen.** – Pygidium scutiform, aedeagus as in Fig. 31, phallobasic rod bifid distally, posterior angle of spicular plate prolonged and acuminate.

**Variations.** – Size: Length 5.5-6.0 mm; width 2.0.-2.7 mm. Other than body size, the beetles before me are quite homogeneous.

**Natural History.** – The available specimens were collected during February, April, and October, some in an ultraviolet light trap.

**Distribution** (Fig. 43). – Known from Benin.

**Etymology.** – The specific epithet, *clavulus*, is a Latin name that stems from *clavula* (= diminutive club). I refer to the small size of the antennal capitulum.

*Korynetes divilgatus* Opitz n. sp.

(Fig. 18, 33, 42)

ZooBank: [http://zoobank.org/C32F397B-AA96-48E0-B96B-4235C0D91E1FA](http://zoobank.org/C32F397B-AA96-48E0-B96B-4235C0D91E1FA)


**Paratypes.** Five specimens:

**South Africa**

– West Cape, Seweweekspoort, 33°26′S – 21°25′E, 10.12.1995, beating, Endrödy-Younga (TMSA, 1; WOPC, 1)

– Gamkaberg national Reserve, 33°41′S – 21°54′E, 8-9-XI-1995, beating, C. L. Belamy (TMSA, 2; WOPC, 1).

**Diagnosis.** – The extended shape of the last antennomere will distinguish the members of this species from congeners.

**Description**

**Size.** – Length 3.0 mm. – Width 1.0 mm.

**Form** (Fig. 18).

**Color.** – Mouthparts, antenna, and legs testaceous, except tarsi dark brown. – Cranium, thorax, elytra, and abdomen black.

**Head.** – Cranion coarsely punctate. – Antennal capitulum lax, funicular antennomeres become progressively moniliform, antennomeres 9 and 10 cupuliform, antennomere 11 spheroid. – Eyes shallow, much narrower than frons (EW/FW 10/30).

**Thorax.** – Pronotal side margins slightly serrulate, disc slightly transverse (PW/PL 60/55), coarsely punctate throughout disc, with posterolateral angle. – Elytral punctuation arranged into 11 striae, punctuation extends to elytral posterior 3/4, elytral interstitial spaces smooth and shiny, upper margin of epipleural fold not serrulate, epipleural margin ends near distal 3/4 (EL/EW 125/40).

**Abdomen.** – Pygidium scutiform, aedeagus as in Fig. 33. – Base of tegmen with sclerotized ring. – Posterior angle of spicular plate prolonged and acuminate.

**Variations.** – Size: Length 2.3-3.8 mm; width 0.8.-1.2 mm. Other than body size, the beetles before me are quite homogeneous.
Natural History. – The available specimens were collected by beating, during December.

Distribution (Fig. 42). – Known from South Africa.

Etymology. – The specific epithet, divilgatus, is a Latin name derived from divilgo (= spread). I refer to the extended shape of the last antennomere.

Korynetes fuscopedis Opitz n. sp. 
(Fig. 19, 43) 

ZooBank: http://zoobank.org/C575FP01-1D07-4B04-A064-01150597047B 


Diagnosis. – The genus Korynetes was revised in 2015 (Opitz, 2015). This work included a key to species. Korynetes kruger specimens key out to K. enodis Opitz, from which K. kruger specimens differ by showing the striate elytral asetiferous punctures extending beyond the elytral middle.

Description  

Size. – Length 3.8 mm. – Width 1.4 mm.

Form (Fig. 17).

Color. – Mouthparts, antenna, and legs testaceous, except metathoracic femora brown. – Cranium, thorax, elytra, and abdomen black.

Head. – Cranium coarsely punctate. – Antennal capitulum lax, funicular antennomeres become progressively shorter to capitulum, antennomeres 9 and 10 cupuliform, antennomere 11 spheroid.

Thorax. – Pronotal sides margins minutely serrulate, disc slightly transverse (PW/PL 75/70), coarsely punctate throughout disc, with posterolateral angle.

Elytral punctuation arranged into 10 striae, punctuation extends to near elytral apex, elytral interstitial spaces smooth and shiny, upper margin of epipleural fold not serrulate, epipleural margin ends near elytral distal 3/4 (EL/EW 160/50).

Abdomen. – Pygidium scutiform, aedeagus as in Fig. 34. – Phallobose slightly spatulate.

Variations. – Size: Length 2.2-3.8 mm; width 1.0-1.4 mm. Except for body size, the available specimens are quite homogeneous.

Natural History. – The available specimens were collected from 23 November 23 to 3 December, in a Malaise trap.

Distribution (Fig. 42). – Known from The Republic of South Africa.

Etymology. – The specific epithet, kruger, is a noun in apposition and refers to the type locality.

Korynetes ligulus Opitz n. sp. 
(Fig. 20, 35, 43) 

ZooBank: http://zoobank.org/6A30DD0-C7FE-4BD8-99C6-9FE31B0D189 


Paratypes. Forty-one specimens:

Republic of South Africa

– Waterberg, Geelhoutbosch farm, 24°22’S 27°33’E, 10-X-1995, Pyrethrum fogging Peltophorum africanum, Endrödy & Bellamy (TMSA, 2; WOPC, 1)

– Northern Prov., Geelhoutbosch farm, 24°22’S 27°33’E, 15-I-1999, general, C. L. Bellamy (TMSA, 2; WOPC, 1)

– idem, 24°22’S 27°33’E, 3-X-1995, beating around camp, Endrödy & Bellamy (WOPC, 1)

– idem, 24°22’S 27°33’E, 2-XI-1999, Bellamy. MacFyden (TMSA, 1)

– idem, 24°22’S 27°33’E, 14-1-1999, C. L. Bellamy (TMSA, 1)

– 20 km W Thabazimbi, 24°35.191’S 27°14.959’E, riparian forest by Crocodile River, 4.11-29.11.2000, flight intercept trap, T. K. Philips (WOPC, 1)

– idem, 5-II-2000, riparian forest by Crocodile River, flight intercept trap, T. K. Philips (WOPC, 1)

– idem, 12-XII-5.II.2000, riparian forest by Crocodile River, flight intercept trap, T. K. Philips (WOPC, 2)
Fig. 13-16. - Habitus of Nolafigura and Korynetes species. - 13: Nolafigura coachei n. sp. - 14: Korynetes apiculus n. sp. - 15: K. bifidus n. sp. - 16: K. clavulus n. sp.
The available specimens were collected from October through February, one at 1022 m. Endrödy-Younga captured one specimen by fogging the African blackwood [*Peltophorum africanum* Sond (Fabaceae)]. Endrödy-Younga collected another specimen on *Acacia* Miller (Fabaceae). Other specimens were collected by beating and in a flight intercept trap.

**Distribution** (Fig. 43). Known only from The Republic of South Africa.

**Etymology.** The specific epithet, *ligulus*, (= ladle) is a Latin noun. I refer to the shape of the tegmen.

**Korynetes luminosus** Opitz n. sp. (Fig. 21, 36, 44)


**Holotype.** ♀ S. AFRICA, Cape P., Pniel Road, 35 km W Kimberley, 15.XII.1984, H. & A. Howden (CMNC).

**Paratypes.** Three specimens:

- **South Africa.** Cape Province, Pniel Road, 35 km W Kimberley, 15.XII.1984, H. & A. Howden (CMNC; 2; TMSA; 1; WOPC, 1).

**Diagnosis.** The genus *Korynetes* was revised in 2015 (Opitz, 2015). This work included a key to species. *Korynetes ligulus* specimens key out to *K. enodis* Opitz, from which *K. ligulus* specimens differ by showing less serrulated side margins of the pronotum, the asetiferous elytral punctures extend beyond elytral middle 1/2, and the pronotal disc is densely punctated.

**Description**

**Size.** Length 3.5 mm. Width 1.4 mm.

**Form** (Fig. 21).

**Color.** Mouthparts testaceous, except terminal palpalomeres brown.

**Mouthparts.** Testaceous, except terminal palpalomeres brown.

**Head.** Cranium vested with shallow punctation. Antennal capitulum lax, funicular antennomeres become progressively more moniliform, antennomeres 9 and 10 cupuliform, antennomere 11 oval.

**Thorax.** Pronotal side margins not serrulate, disc transverse (PW/PL 61/53), coarsely punctate throughout disc, with sharp posterostral angle. *Elytral punctuation* arranged into 10 striae, punctuation ends just before elytral apex, elytral interstitial spaces smooth and shiny, upper margin of epipleural fold not serrulate, epipleural margin ends near distal 3/4 (EL/EW 130/45).

**Abdomen.** Pygidium scutiform. Aedeagus as in Fig. 35. Tegmen spatulate. Phallos without postapical sclerotization. Posterior angle of spicular plate prolonged, spicular apodeme extraordinarily elongated.

**VARIATIONS.** Size: Length 2.5-4.0 mm; width 1.0-1.6 mm. Other than body size the beetles before me are quite homogeneous.

**Natural History.** The available specimens were collected from October through February, one at 1022 m. Endrödy-Younga and C. L. Bellamy captured one specimen by fogging the African blackwood [*Peltophorum africanum* Sond (Fabaceae)]. Endrödy-Younga collected another specimen on *Acacia* Miller (Fabaceae). Other specimens were collected by beating and in a flight intercept trap.

**Diagnosis.** The genus *Korynetes* was revised in 2015 (Opitz, 2015). This work included a key to species. *Korynetes ligulus* specimens key out to *K. latipennis* Pic, from which *K. luminosus* specimens differ by showing a slenderer body form.

**Description**

**Size.** Length 3.5 mm. Width 1.4 mm.

**Form** (Fig. 21).

**Color.** Mouthparts, antenna, and legs testaceous. Cranium, thorax, elytra, and abdomen black.

**Head.** Cranium coarsely punctulate. Antennal capitulum lax, funicular antennomeres become progressively shorter to capitulum, antennomeres 9 and 10 cupuliform, antennomere 11 spheroid. Eyes shallow; much narrower than frons (FW/EL 10/40).

**Thorax.** Pronotal side margins minutely serrulate, disc slightly transverse (PW/PL 50/70), coarsely punctate throughout disc, with posterolateral angle. *Elytral punctuation* arranged into 10 striae, punctuation extends to near elytral apex, elytral interstitial spaces smooth and shiny, upper margin of epipleural fold minutely serrulate, epipleural margin narrows to elytral apex (EL/EW 170/50).

**Abdomen.** Pygidium scutiform, aedeagus as in Fig. 36. Phallobase broad, phallic apex large triangular.

**VARIATIONS.** Size: Length 2.2-3.8 mm; width 1.0-1.4 mm. Except for body size, the available specimens are quite homogeneous.

**Natural History.** The available specimens were collected during December.

**Distribution** (Fig. 44). Known from South Africa.

**Etymology.** The specific epithet, *luminosus*, is a Latin name with the meaning of “full of light”. I refer to the bright hue emitted from the dorsose of these beetles.

**Korynetes morulus** Opitz n. sp. (Fig. 22, 44)

ZooBank: [http://zoobank.org/8E1B22B5-30BC-4FE5-AFB0-68A9F94C302D](http://zoobank.org/8E1B22B5-30BC-4FE5-AFB0-68A9F94C302D)

Fig. 17-20. - Habitus of *Korynetes* species. - 17: *K. kruger* n. sp. - 18: *K. divilgatus* n. sp. - 19: *K. fuscopedis* n. sp. - 20: *K. ligulus* n. sp.
Paratype. One specimen:

South Africa
– Cape Province, Worcester, Sept. 1928, R. E. Turner (BMNH, 1)
– Malmsbury, 7-X-1951, on Compositae (WOPC, 1).

Diagnosis. – The small size (3.0 mm), acute shape of the hind region of the elytra, and completely black body color will distinguish the members of this species from congeners.

Description

Size. – Length 3.0 mm. – Width 1.8 mm.

Form (Fig. 22).

Color. – Black. – Elytral disc with bluish luster.

Head. – Cranium coarsely punctate. – Antennal capitulum lax, funicular antennomeres become progressively more moniliform, antennomeres 9 and 10 cupuliform, antennomere 11 spheroid. – Eyes shallow, much narrower than frons (EW/FW 10/30).

Thorax. – Pronotal side margins slightly serrulate, disc transverse (PW/PL 49/56), coarsely punctate throughout disc, with sharp posterolateral angle. – Elytral punctuation arranged into 11 striae, punctuation extends to elytral apex, elytral interstitial spaces smooth and shiny, upper margin of epipleural fold not serrulate, epipleural margin ends near distal 3/4, remainder of elytral margin slightly sinuous (EL/EW 140/50).

Abdomen. – Pygidium scutiform.

Variations. – Size: Length 2.7-3.0 mm; width 1.0-1.8 mm. The pronotal disc may show a more golden sheen and the elytral disc may be more blackish.

Natural History. – The holotype was collected in a ground trap, whereas one paratype was gathered from a Compositae.

Distribution (Fig. 44). – Known from The Republic of South Africa.

Etymology. – The specific epithet, morulus, (= black) is a Latin adjective and refers to the color of these beetles.

Korynetes nigrirarsus Pic
(Fig. 23, 37, 44)

Corynetes nigrirarsis Pic, 1948: 1.


Parалectotypes: One. Republic of South Africa, Boknes, E. Cape, 20-1-1948, J. C. van Hille (RMNH). Corpora 1950: 311. There are two specimens in the RMNH collection with the same information and handwriting on the collection labels. I believe that both of these specimens were before Pic at the time of his description preparation. However, Pic did not fix the name to either specimen; therefore, I invoke Article 74 of the ICZN (1999) and designate a lectotype and parалectotype for this nominal species.

Diagnosis. – The black coloration of the tarsi of these beetles will distinguish them from congeners.

Redescription

Size. – Length 2.0 mm. – Width 1.0 mm.

Form (Fig. 23).

Color. – Mouthparts testaceous, except terminal palpal meromes brown. – Antennae and tibiae testaceous. – Femora, tarsi, prothorax, elytra, and abdomen black.

Head. – Cranium coarsely punctate. – Antennal capitulum lax, funicular antennomeres become progressively more moniliform, antennomeres 9 and 10 cupuliform, antennomere 11 spheroid. – Eyes shallow, much narrower than frons (EW/FW 5/20).

Thorax. – Pronotal side margins slightly serrulate, disc transverse (PW/PL 42/35), disc coarsely punctate, with sharp posterolateral angle. – Elytral punctuation substrate, punctures extend to elytral middle, elytral interstitial spaces smooth and shiny, epipleural margin ends near distal 3/4 where elytral margin not serrulate, upper margin of epipleural fold not serrulate (EL/EW 90/27).

Abdomen. – Pygidium scutiform. – Aedeagus as in Fig. 37.

Variations. – Size: Length 2.0-2.8 mm; width 1.0-1.3 mm. Except for differences in size and some variation of tarsal darkness, the beetles before me are quite homogeneous.

Natural History. – Most specimens were collected by beating, some on flowers, and some from flowering shrubs. C. L. Bellamy collected these beetles from the Butterfly Bush Buddleya Linnaeus (Scrophulariaceae).

Distribution (Fig. 44). – In addition to the type specimens I examined 45 specimens:

The Republic of South Africa
– W. Cape, Matjiesriver, 8 km SW, 33°24'S – 21°59'E, 11-II-1995, beating, C. L. Bellamy.
– Gamkaberg Nat.Res., 33°41'S – 21°54'E, 8-9-XII-95, beating, C. L. Bellamy
– E. Cape, Hankey, 33°50'S – 25°54'E, 6-XII-1995, flowering Buddleya, C. L. Bellamy
– Cape Prov., Alexander, 20 km N, 33°33'S – 28°23'E, 7-II-1987, on flowers, Endrödy-Younga
– Little Karoo, Baviaanskloof, 33°39'S – 24°31'E, 6-XII-1995, flowering Buddleya, C. L. Bellamy
– Cape Province, Keurboomstrand, 33°46'S – 24°56E, 6-XII-1995, beating, C. L. Bellamy
– Cape Province, Keerboomstrand, 34°00'S – 23°07E, 15-XII-1976, beating, C. L. Bellamy
– Cape Prov., Alexandria, 20 km N, 33°33'S – 28°23'E, 7-II-1987, on flowers, Endrödy-Younga
– Little Karoo, Bavianskloof, 33°39'S – 24°31'E, 6-XII-1995, beating, C. L. Bellamy
– Cape Province, Keurboomstrand, 34°00'S – 23°07'E, 15-XII-1976, beating, white flowering shrubs, Endrödy-Younga;

Namibia
– Namibgrens Farm, 23°37'S – 16°14'E, 4-II-2010, beating, R. Müller. Specimens are deposited in AMNH, CMNH, FMNH, TMSA and WOPC.

Korynetes pelidnus Opitz n. sp.
(Fig. 24, 38, 44)

ZooBank: http://zoobank.org/2f6094E9-C2CF-44CC-B794-2C84B8F1843D

Holotype. ♂. Namibia, Purros, 300 m, 18°44’S – 12°56’E, 15-4-2005, at light, R. Müller (TMSA).

Paratypes. Twenty-four:

Namibia
– Purros, 18°44’S – 12°56’E, 15-IV-2005, 300 m, at light, R. Müller (TMSA, 1; WOPC, 2)
– Purros, (Hooruzib), 15-16-IV-2005, 300 m, W. Schawaller (TMSA, 4; WOPC, 3)
– Orupembe, 14-IV-2005, 700 m, W. Schawaller (TMSA, 3; WOPC, 2)
– Karas, 42 km SE Keetmanshoop, 26°44’266"S – 18°29’387"E, 25-II-2012, 850 m, H. Mühle (RGCG, 3)

– Thorax, – Elytra, – Metathorax, – Abdomen
Fig. 21-24. - Habitus of Korynetes species. - 21: *K. luminosus* n. sp. - 22: *K. morulus* n. sp. - 23: *K. nigritarsus* n. sp. - 24: *K. pelidnus* n. sp.
Republic of South Africa

Description

- **Size.** Length 3.2 mm. - Width 1.2 mm.
- **Form** (Fig. 24).
- **Color.** - Mouthparts, antenna, and legs testaceous. - Cranium, thorax, elytra, and abdomen black. - Elytra with a slight bluish sheen.

**Head.** - Cranium coarsely punctate, intersticial spaces smooth and shiny. - Antennal capitulum lax, funicular antennomeres become progressively more subquadrat, antennomeres 9 and 10 triangular, antennomere 11 oblong-ovoid. - Eyes shallow, much narrower than frons (EW/FW 10/25).

**Thorax.** - Pronotal side margins serrulate, disc transverse (PW/PL 80/65), coarsely punctate throughout disc, with posteralateral angle. - Elytral punctation arranged into 10 striae, punctation diminish in size towards elytral apex, elytral interstitial spaces smooth and shiny, upper margin of epipleural fold serrulate, epipleural margin ends at about distal 3/4, remainder of elytral margin not serrulate (EL/EW 135/45).

**Abdomen.** - Pygidium scutiform, aedeagus as in Fig. 39. - Phallus lanceolate, with a sclerotized ring around the base of tegmen. - Posterior angle of spicular plate prolonged and acuminate.

**Variations.** - Size: Length 2.5-4.0 mm; width 1.0-1.7 mm. Other than body size, the beetles before me are quite homogeneous.

**Natural History.** - Specimens have been collected in January, February, April, and May, at 300-850 m; most with a light trap.

**Distribution** (Fig. 44). - Known from Namibia and The Republic of South Africa.

**Etymology.** - The specific epithet, pelidosus, (= black & blue) is a Greek name that stems from pelios (= black & blue). I refer to the color of the dorsum of these beetles.

**Korynetes procerus Opitz n. sp.**

(Fig. 26, 40, 44)


**Diagnosis.** - The narrow-oblong body form (Fig. 26) will distinguish the members of this species from congeners.

**Description**

- **Size.** Length 4.0 mm. - Width 1.0 mm.
- **Form** (Fig. 26).
- **Color.** - Mouthparts, antenna, and legs dark brown. - Cranium and elytra black, with bluish luster. - Venter and abdomen black.

**Head.** - Cranium coarsely punctate. - Antennal capitulum lax, funicular antennomeres become progressively shorter towards capitulum, antennomeres 9 and 10 triangular, antennomere 11 ovoid. - Eyes shallow, much narrower than frons (EW/FW 8/40).

**Thorax.** - Pronotal side margins slightly serrulate, disc slightly transverse (PW/PL 68/63), coarsely punctate throughout disc, with feebly developed posteralateral angle. - Elytral punctation arranged into 9 striae, punctation extends to elytral apex, elytral interstitial spaces smooth and shiny, upper margin of epipleural fold not serrulate, epipleural margin narrows to elytral apex (EL/EW 175/37).

**Abdomen.** - Pygidium transversal/scutiform, aedeagus as in Fig. 40. - Phallic apex broad triangular. - Posterior angle of spicular plate prolonged.

**Natural History.** - The available specimens were collected by beating, during December.

**Distribution** (Fig. 44). - Known from the Democratic Republic of the Congo.

**Etymology.** - The specific epithet, procerus, is a Latin name derived with a meaning of “long”. I refer to the oblong, narrow body form of this beetle.
Fig. 25-28. - Habitus of *Korynetes* species. - 25: *K. peilosus* n. sp. - 26: *K. procerus* n. sp. - 27: *K. serratus* n. sp. - 28: *K. ustulatus* n. sp.
**Korynetes serratus** Opitz n. sp.

(Fig. 27, 41, 44)

ZooBank: [http://zoobank.org/1B822574-10FD-41FD-8B6F-C10E7670752E](http://zoobank.org/1B822574-10FD-41FD-8B6F-C10E7670752E)

**Holotype.** ♂. S. AFRICA, TVL, 25 km W Pretoria, 23-29.X. 1984, H. & A. Howden (CMNC)

**Paratypes.** Two specimens:
- South Africa, Transvaal, 25 km W Pretoria, 23-29.X.1984, H. & A. Howden (TMSA, 1; WOPC, 1)

**Diagnosis.** - The genus *Korynetes* was revised in 2015 (Opitz, 2015). This work included a key to species. *Korynetes serratus* specimens key out to *K. latipennis* Pic, from which *K. serratus* specimens differ by showing phallic plates that are partially serrate and they show a slenderer body form

**Description**

- **Size.** Length 5.5 mm. Width 2.4 mm.
- **Form** (Fig. 27).
- **Color.** Mouthparts, antennae, and legs testaceous. Cramium, thorax, elytra, and abdomen black, except abdominal apex testaceous.
- **Head.** Cramium coarsely punctate. Antennal capitulum lax, funicular antennomeres become progressively more transverse towards capitulum, antennomeres 9 and 10 triangular, antennomere 11 ovoid. Eyes shallow, much narrower than frons (EW/FW 20/47).
- **Thorax.** Pronotal side margins serrulate, disc transverse (PW/PL 104/90), coarsely punctate throughout disc, with posterolateral angle. Elytral punctuation arranged into 12 striae, punctuation extends to elytral apex, elytral interstitial spaces smooth and shiny, upper margin of epipleural fold serrulate, epipleural margin ends just before elytral apex (EL/EW 240/70).
- **Abdomen.** Pygidium scutiform, aedeagus as in Fig. 41. Phallic plates broad and partly serrate.

**Variations.** - The available specimens are quite homogeneous.

**Natural History.** - The available specimens were collected during October.

**Distribution** (Fig. 44). - Known from the Republic of South Africa.

**Etymology.** - The specific epithet, *serratus*, is a Latin name with a meaning of “toothed like a saw”. I refer to the partly serrated condition of the phallic plates.

**Korynetes ustulatus** Opitz n. sp.

(Fig. 28, 44)

ZooBank: [http://zoobank.org/235C4142-4F3B-4A5E-826E-1885FB7211AE](http://zoobank.org/235C4142-4F3B-4A5E-826E-1885FB7211AE)


**Paratypes.** Thirteen specimens:
- Namibgrens farm, 23°37'S – 26°14'E, 4-5-II-2010, 1820 m, at light, Ruth Müller (TMSA, 5; SDEL, 1; WOPC, 2)
- 15 km E Helminghausen, 25°54'S – 16°39'E, 17-II-2010, 1560 m, at light, Ruth Müller (TMSA, 1; WOPC, 1)
- Orumpembe, 18°11'S – 12°33'E, 14-IV-2005, 677 m, light trap, Ruth Müller (TMSA, 1).

**Zambia**

- NW, E of Chisasa, W of Solwezi, 24-X-2008, Snížek (WOPC, 1).

**Diagnosis.** - The combination of small size (4.0 mm) and dark brown coloration of the members of this species will distinguish them from congeners.

**Description**

- **Size.** Length 4.0 mm. Width 1.5 mm.
- **Form** (Fig. 28).
- **Color.** Mouthparts, antennae, legs testaceous. Cramium, thorax, elytra, and abdomen brown.
- **Head.** Cramium coarsely punctate. Antennal capitulum lax, funicular antennomeres become progressively more transverse towards capitulum, antennomeres 9 and 10 triangular, antennomere 11 oblong-truncate. Eyes particularly convex, narrower than frons (EW/FW 15/32).
- **Thorax.** Pronotal side margins serrulate, disc transverse (PW/PL 75/65), coarsely punctate throughout, with posterolateral angle. Elytral punctuation arranged into 10 striae, punctuation extends to elytral apex, elytral interstitial spaces smooth and shiny, upper margin of epipleural fold finely serrulate, epipleural margin ends at about distal 3/4, remainder of elytral margin serrulate (EL/EW 185/60).
- **Abdomen.** Pygidium scutiform.

**Natural History.** - Specimens were collected during February, April, October, and November, at light, and at an altitude that ranges from 667 to 1820 m.

**Distribution** (Fig. 44). - Known from Namibia, Tanzania, and Zambia.

**Etymology.** - The specific epithet, *ustulatus*, (= browned) is a Latin adjective. I refer to the body color of these beetles.

**Discussion**

Morphologic evidence suggests that these beetles are carnivorous. The methods by which they were collected indicates predatory activity among tree branches and flowering plants. It is possible that they also imbibe nectar from flowering plants. The use of flower nectar as a source of moisture and nutrition among checkered beetles was documented by Opitz (2002). Moreover, their small size suggests that they consume very small insects. The prey-size choices in the Cleridae, as a limiting factor in predatory feeding, was studied by Ekis (now Opitz), 1977. Specimens were collected on the flowers of the butterfly bush [Buddleya Linnaeus (Scrophulariaceae)], by beating branches of *Acacia* Miller (Fabaceae), in a flight intercept trap, and in a light trap. Altitudinally, these beetles were collected from 677 to 1820 m.

**Acknowledgments**

I am very grateful to the curators, listed in the section of “Repositories of Specimens”, for entrusting me with collections in their charge. My thanks to Kyle Schneppe and Erick J. Rodriguez for their review of the manuscript and to my wife Galena for technical assistance, Paul E. Skelley for departmental courtesies, and the Florida Department of Agriculture, Division of Plant Industry, for institutional affiliation and support.
OPITZ. – Korynetinae (Coleoptera: Cleridae). Part IV

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Résumé


Fig. 42-44. - Approximate distribution of *Nolafigura* and *Korynetes* species as noted.
SOMMAIRE

Systématique, biologie, et évolution des Korynetinae (Coleoptera: Cleridae). Part IV. Un nouveau genre *Nolafigura* Opitz, et quatorze nouveaux *Korynetes* Herbst Herbst

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Illustration de la couverture : Termitière, Forêt de Niaouli, Attogon, Bénin (03 V 2013, Alain Coache). Biotope de collecte de *Nolafigura coachei* Opitz n. gen., n. sp.

Cover illustration : Termitary, Forest of Niaouli, Atto gon, Benin (03 V 2013, Alain Coache). Collection place of *Nolafigura coachei* Opitz n. gen., n. sp.

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