

Catalogue of the sub-Saharan species of the genus *Seladonia* Robertson, 1918, with description of two new species (Hymenoptera: Apoidea: Halictidae)

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Pauly, A. Catalogue of the sub-Saharan species of the genus *Seladonia* Robertson, 1918, with description of two new species (Hymenoptera: Apoidea: Halictidae).

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This paper is a synonymic catalogue of the 18 species of the genus *Seladonia* Robertson, 1918 (Apoidea: Halictidae) from sub-Saharan Africa. Two new species are described: *S. cyanella* spec. nov., a small blue endemic species of the Yemeno-Erythrean area; *S. kuhlmanni* spec. nov., an endemic species of the species rich South African Karoo. Lectotypes are designated for *Halictus atroviridis* Cameron, 1906, *H. capensis* Friese, 1909, *H. jucundus* Smith, 1853 and *H. chalybaeus* Friese, 1925.

Introduction

The revision of the bee genus *Seladonia* Robertson, 1918, has recently focused attention: Ebmer (1987) revised the European species, Sakagami & Ebmer (1987) Oriental species, Dawut & Tadauchi (2000-2003) Asian species, Ze-Qing et al. (2004) the Chinese species. New World species were also investigated (Janjic & Packer, 2001). Ethiopian species of *Seladonia* were first simply listed by Pauly (1999), without designation of lectotypes and references. *Seladonia* belongs to the group of halictine bees with strong wing venation (sensu Michener 1978). The phylogeny of the *Halictus* genus-group (including *Seladonia*) was recently studied by Pesenko (2004). Following his system, *Seladonia* is considered as a separate genus as *Halictus* Latreille, 1804 and splitted into six subgenera. We have adopted here the generic status of *Seladonia*, but reserve our opinion for including subgenera like *Vestitohalictus* Blüthgen, 1961, into *Seladonia*.

Abbreviations used in descriptions: HL = head length, HW = head width, IOD = interocellar distance, UID = upper interorbital distance, LID = lower interorbital distance,, GW = genal width, EW = eye width, in side view, EL = eye length.

Acronyms of collections studied and names of managers:

AMNH: American Museum of Natural History, New York (E.L. Quinter)

BMNH: British Museum of Natural History, London; now The Natural History Museum (G. Else)

IRSNB: Institut royal des Sciences naturelles de Belgique, Brussels (J.-L. Boevé)

MCSN: Museo Civico di Storia Naturale "Giacomo Doria", Genova (V. Raineri)

MNHNP: Museum National d'Histoire Naturelle (S. Kelner-Pillault; J. Casewitz Weulersse)

MNHUB: Museum für Naturkunde der Humboldt Universitet, Berlin (F. Koch)

MRACT: Musée Royal de l'Afrique Centrale, Tervuren (J. Decelle; E. de Coninck)

- RMNH: Nationaal Natuurhistorisch Museum (Naturalis), Leiden (C. van Achterberg)
 NRS: Naturhistoriska Riksmuseet, Stockholm (S. Erlandsson, P.I. Persson)
 OOL: Biologie Zentrum des Oberösterreichischen Landesmuseums, Linz (F. Gusenleitner; M. Schwarz)
 USNM (= NMNH): National Museum of Natural History, Smithsonian Institution, Washington (R. McGinley, M.J. Mello)
 ZMA: Zoölogisch Museum Amsterdam (W. Hogenes)
 M. Kuhlmann, Münster, private collection.

Catalogue of the sub-Saharan species

Seladonia Robertson, 1918

- Seladonia* Robertson, 1918: 91. Type-species: *Apis seladonia* Fabricius, 1794, by original designation.
Pachyceble Moure, 1940: 54. Type-species: *Pachyceble lanei* Moure, 1940, by original designation and monotypy.

Seladonia africana (Friese, 1908)

- Halictus virescens* var. *africanus* Friese, 1908: 124. Holotype, ♀: Kilimandjaro, Kibonoto, 1000-1300 m, 6. ix., Sjöstedt leg. (NRS, Stockholm). Examined.
Halictus jucundus komensis Cockerell, 1939: 601, ♀. Holotype ♀: N.W. Victoria, Nyanza, 0-100, East end of Kome Island, 12.i.1919, G.D.H. Carpenter leg. (BMNH, London). Examined.

Seladonia atroviridis (Cameron, 1906)

- Halictus atroviridis* Cameron, 1906: 325, ♀. Lectotype ♀: "Cape Colony, Pearston" (BMNH, London, Hym. no. 17a 862a). Examined in 1977, here designated in order to ensure the name's proper and consistent application.
Halictus capensis Friese, 1909: 131, ♀. Lectotype ♀ "Kapland, Klein Namaland, Steinkopf, L. Schultze S." (AMNH, New York, no. 24843). Examined, here designated in order to ensure the name's proper and consistent application.
Halictus austrovagans Cockerell, 1932: 247, ♀. Holotype ♀: "Cape Province, Nieuwoudtville, 18.xi.1931, A. Mackie leg." (BMNH, London). Examined.
Halictus viridibasis Cockerell, 1945: 519, ♂. Holotype ♂: "Cape Province, Mossel Bay, i.1922" (BMNH, London). Examined.

Seladonia centrosa (Vachal, 1910)

- Halictus centrosus* Vachal, 1910: 328, ♀. Holotype ♀: "Belgian Congo, Kalumba, Neave leg." (on the East shore of Tanganyka, following Cockerell, 1937: 100) (MRACT, Tervuren). Examined.

Seladonia diducta (Cockerell, 1932)

- Halictus diductus* Cockerell, 1932: 247, ♀. Holotype ♀: "Cape Province, Port Elisabeth, 29.x.1931, A. Mackie leg." (BMNH, London). Examined.

Seladonia experta (Cockerell, 1916)

- Halictus expertus* Cockerell, 1916: 209, ♀. Holotype ♀: "Cape Colony, Rosebank Experiment Station, 9. xii.1909, C.K. Brain leg." (Depositary unknown). Not examined, according to description is a *Seladonia*. Status: as it was collected in South Africa and by the fact that the country is well sampled and many species are described previously it might be possible to be a synonym.

Seladonia foana (Vachal, 1899)

- Halictus foanus* Vachal, 1899: 233, ♀. Holotype ♀: "Haut Zambèze, E. Foa leg., 88-94" (MNHN, Paris). Examined.

Halictus adolfifrederici Strand, 1911: 140, ♀. Holotype ♀: "Westlich Ruwenzori, NW Beni, Urwald, i.1908" (MNHUB, Berlin). Examined.

Halictus subinceratus Cockerell, 1940: 178, ♀. Holotype ♀: "S. Rhodesia, Vumba, Umtali, 2-26.v.1932, J. Ogilvie" (BMNH, London). Examined.

Halictus laticinctulus Cockerell, 1946: 159, ♀. Holotype ♀: "Natal, Van Reenen, Drakensberg, xii.1926, R.E. Turner leg." (BMNH, London). Examined.

Seladonia hotoni (Vachal, 1903)

Halictus hotoni Vachal, 1903: 389, ♀. Holotype ♀: "Monteiro, Delagoa Bay" (IRSNB, Brussels). Examined.

Halictus trichiurus Cockerell, 1940: 182, ♀. Holotype ♀: "Cape Province, Kirstenbosch, 10.x.1931, J. Ogilvie leg." (BMNH, London). Examined.

Halictus pontificus Cockerell, 1940: 184, ♀. Holotype ♀: "Orange Free State, North Bank Halt, Norval's Pont, 12.iv.1934, J. Ogilvie leg." (BMNH, London). Examined.

Halictus pervirens Cockerell, 1940: 185, ♀. Holotype ♀: "Cape Province, Huguenot, 5-10.ii.1932, J. Ogilvie leg." (BMNH, London). Examined.

Halictus candescens Cockerell, 1945: 154, ♀. Holotype ♀: "Cape Province, Bot River, 7.xi.1933" (stylised!) (BMNH, London). Examined.

Seladonia iridicolor (Cameron, 1905)

Halictus iridicolor Cameron, 1905: 186. Type: "Kapland, Brak Kloof" (Depositary unknown). Not examined, according to description it is a *Seladonia*. Status: as it was collected in South Africa and by the fact that the country is well sampled and many species are described previously it might be a synonym.

Seladonia jucunda (Smith, 1853)

Halictus jucundus Smith, 1853: 56. Lectotype ♀: "S.Africa, Kap, no. 45121" (BMNH, London). Examined, here designated in order to ensure the name's proper and consistent application.

Halictus jucundus benguellensis Cockerell, 1908: 121, ♀. Holotype: 1 ♀ "Angola, Benguela hinterland, flowers of an orchid, i.1908, Wellman leg." (? USNM, Washington). Not examined.

Halictus banalianus Strand, 1911: 139, ♀. Holotype ♀: "Congo, Banalia, Aruwimi, v.1908" (MNHUB, Berlin). Examined.

Halictus duplocinctulus Cockerell, 1940: 182, ♂. Holotype ♂: "S. Africa, Orange Free State, Bosrand, Afdeeling Farm, 30.iii.1934" (BMNH, London). Examined.

Halictus jucundiformis Cockerell, 1940: 181, ♀. Holotype ♀: "Cape of Good Hope, Nels Poort, 4.xii.1933" (BMNH, London). Examined.

Halictus jucundus madecassus Pauly, 1984: 122, ♂ ♀. Holotype ♀: "Madagascar, Tamatave, Fampantanambao, 1962, J. Vadon leg." (MRACT, Tervuren).

Seladonia lucidipennis (Smith, 1853)

Halictus lucidipennis Smith, 1853: 62, ♀ ♂. Type: N. India (BMNH, London). Examined.

Halictus varipes Morawitz in Fedtschenko, 1876: 223, ♀ ♂. Lectotype (designation by Blüthgen, 1954): Dshisak (= Dzizak), Ferghana, col. Fedtschenko (Moscow). Not examined.

Halictus vernalis Smith, 1879: 30, ♀. Holotype ♀: Ceylon (BMNH, London). Examined.

Halictus niloticus Smith, 1879: 32, "♀". Type: 1 ♀!, Sudan, White Nile (BMNH, London). Examined.

Halictus magrettii Vachal, 1892: 137, ♀. Type: Soudan, Suakin (m!), i.1883, P. Magretti, n°96 (MCSN, Genova). Examined.

Halictus dives Pérez, 1895: 52, ♀. Lectotype ♀: Algeria, Biskra (MNHN, Paris), designated by Ebmer, 1972: 600. Examined.

Halictus omanicus Pérez, 1907: 489, ♀. Lectotype ♀: Mascate (= Muscat) (MNHN, Paris), designated by Ebmer, 1972: 629. Examined.

Halictus variipes var. *koptica* Blüthgen, 1933: 16, ♂ ♀. Types: Egypt (Wien); 1 ♂ "type" (MNHUB, Berlin), examined.

- Halictus (Seladonia) sudanicus* Cockerell, 1945: 352, ♀. Holotype ♀: Sudan, Shendi, 15.xi.1928, on benseem, A.H.Hussein leg. (BMNH, London). Examined.
- Halictus (Seladonia) tokarensis* Cockerell, 1945: 352, ♀. Types ♀: Sudan, Gout, Tokar, 3.vi.1916, flowers of castor oil, R. Cottam leg. (BMNH, London). Examined.
- Halictus (Seladonia) dissensis* Cockerell, 1945: 353, ♀. Holotype ♀: Sudan, Dissa, 24.ii.1929, R.S. Audas Bey leg., C.10998 (BMNH, London). Examined.
- Halictus (Seladonia) medanicus* Cockerell, 1945: 354, ♀. Holotype ♀: Sudan, C.R.F. Medani, 1.ii.1923, in house, H.W. Bedford, C. 4883 (BMNH, London). Examined.
- Halictus (Seladonia) mogrensis* Cockerell, 1945: 355, ♀. Holotype ♀: Sudan, Mogren, 23.vi.1930, on tomato flowers, H.W. Bedford leg., C.10978 (BMNH, London). Examined.
- Halictus (Seladonia) tokariellus* Cockerell, 1945: 355, ♂. Holotype ♂: Sudan, Tokar, 6.i.1932, *Abutilon*, A.H. Hussein leg., C. 11024 (BMNH, London). Examined.
- Halictus (Seladonia) medaniellus* Cockerell, 1945: 356, ♂. Holotype ♂: Sudan, C.R.F. Medani, 17.iii.1925, cotton, H.W. Bedford leg., C. 11026 (BMNH, London). Examined.
- Halictus (Seladonia) morinellus hyemalus* Warncke, 1982: 134, ♀. Holotype ♀: Iran, Bandar-Abbas, 28. xi.1968, col. et leg. K. Warncke (OOL, Linz). Not examined. Ebmer, 1988: 356 (synonymy).

Seladonia niveocinctula (Cockerell, 1940)

- Halictus niveocinctulus* Cockerell, 1940: 183. Holotype ♀: SW. Africa [Namibia], Windhoek, 14.xii.1933 (BMNH, London). Examined.
- Halictus chalybaeus* Friese, 1925: 136 (nec Friese 1908). Syntypes ♀ ♂: [Namibia] bei Windhuk, xii. Tucher leg. Lectotype ♀, MNHUB, Berlin. Examined, here designated in order to ensure the name's proper and consistent application.
- Halictus chloropinus* Cockerell, 1945: 520, ♂. Holotype ♂: SW. Africa [Namibia], Aus, xii.1929, R.E. Turner leg., (BMNH, London). Examined.

Seladonia opulenta (Benoist, 1950)

- Halictus opulentus* Benoist, 1950: 97, ♀. Holotype ♀: Madagascar, Fianarantsoa, Sandrakely, 25 km N. Ifanadiana, 4.i.1948, G.V. leg. (? MNNHNP, Paris, type lost?). Not examined, according to description.

Seladonia orientalis (Lepeletier, 1841)

- Halictus orientalis* Lepeletier de Saint-Fargeau, 1841: 285, ♀. Holotype ♀: "île Bourbon" [= Réunion]

("Musée de M. Serville", type lost?). Not examined, according to description.

- Halictus reunioni* Pauly, 1984: 123, ♂ ♀. Holotype ♂: Ile Réunion, St Denis, col. J. Vachal (MNHN, Paris).

Seladonia pruinescens (Cockerell, 1937)

- Halictus pruinescens* Cockerell, 1937: 9, ♀. Holotype ♀: S. Africa, Cape Province, Cérès, 12-18.ii.1932, J. Ogilvie leg. (AMNH, New York). Examined.

Seladonia seminiger (Cockerell, 1937)

- Halictus seminiger* Cockerell 1937: 9, ♀. Holotype ♀: "Belgian Congo, Katanga, Dilolo, 24-27.vii.1931, J. Ogilvie leg." (AMNH, New York). Examined.

Seladonia togoensis (Pauly, 1998)

- Halictus (Seladonia) togoensis* Pauly, 1998: 44, ♀, ♂. Holotype ♀: "Togo, Bismarckburg, 22.ix-1.x.1892, L. Conradt leg." (MNHU, Berlin).

Seladonia valligensis (Cockerell, 1937)

- Halictus valligensis* Cockerell, 1937: 90. Holotype ♀: "Belgian Congo, Katanga, Lubumbashi, 8.iv.1921, Michael Bequaert leg." (BMNH, London). Examined.



Figs 1-6. *Seladonia kuhlmanni* spec. nov., female. 1, head, facial view; 2, head, dorsal view; 3, scutum and vertex; 4, propodeum; 5, tergum 1; 6, metasoma.

***Seladonia vansonii* (Cockerell, 1935)**

Halictus vansonii Cockerell, 1935: 90, ♀. Syntypes: 2 ♀♀, Botswana, Kalahari, Kuke Pan, Vernay Lang Exped. Paratype (BMNH, London). Examined.

New taxa***Seladonia kuhlmanni* spec. nov.**

(figs 1-6)

Material.— Holotype, ♀, "South Africa, Western Cape, Knersvlakte, Farm Arizona, 31°19'59"S 18°40'03"E, 13.ix.1999 (leg. and col. M. Kuhlmann). Paratypes: 2 ♀♀, same label data (col. M. Kuhlmann & col. A. Pauly, Gembloux).

Diagnosis.— Superficially like *Seladonia jucunda* but differing by the stronger developed vertex and genae, long acute mandibles, shiny space near enclosure of propodeal area, short rounded teeth of inner hind tibial spur. Differs from other species with acute genae like *Seladonia valligensis* by the non dark metasoma, not striate declivous base of tergum I and the striae of propodeal area not diverging laterally.

Description.— Female. Length 7-8 mm; forewing length 5.0-5.5 mm.

Colour: integument of body, including that of the metasoma, dull greenish with golden metallic reflections. Tegulae amber translucent. Legs black, fore tibia and tarsi, anterior face of tibia and tarsi of mid legs orange brown. Knees of fore and mid legs more yellow.

Pubescence: white bands of tomentum on apical parts of terga I-IV, not interrupted, present also on base of terga II and III (fig. 6); basilateral patch of tomentum on tergum I (fig. 5). Head with non tomental hairs, short on frons, longer on vertex and lower half of face. Scutum with short and long non tomental hairs.

Structure (measurements on holotype): Head as long as wide [HL = HW = 2500 µ; HL/HW = 1], with vertex especially well developed (figs. 1-3) [length of vertex (fig. 1) = 344 µ; length of vertex/IOD = 1.5 in view on fig. 2]. Genal area broad, pointed in the holotype but not in the two paratypes [GW = 1075 µ, EW/GW = 1.43 on the holotype; GW = 750 µ, EW/GW = 1 on the smaller paratype]. Eyes diverging below [UID = 1681 µ, LID = 1853 µ, UID/LID = 0.907]. Clypeus without special plate. Mandible long and acute (fig. 1), as long as the eye [EL = 1465 µ]. Frons and vertex finely and densely punctate (figs 1, 2).

Mesosoma.— Dorsolateral pronotal angle sharply pointed in the holotype, less developed in the paratypes. Punctuation of the scutum small and dense (fig. 3), interspaces smaller than the punctures, shiny. Propodeal area trapezoidal covered by irregular ridges. Propodeum with broadly impunctate and shiny space near enclosure (fig. 4). Sides of propodeum shiny with sparse punctuation.

Legs.— Inner hind tibial spurs with 3-4 short rounded teeth.

Metasoma.— Terga finely and densely punctate, interspaces shiny (fig. 5) and equal to puncture width. Declivous base of tergum I shiny, with sparse and small punctures.

Male unknown.

Biota.— The specimens were collected in the succulent Karoo with loose stands of shrubby vegetation, mostly Mesembryanthemaceae. The soil was loamy sand and the bees visited various flowers.

***Seladonia cyanella* spec. nov.**
 (figs. 7-10)

Material.— Holotype, ♀ (MNHU, Berlin), “**Eritrea**, leg. Kristensen”, labelled as “*Halictus cyanellus* Type” by P. Blüthgen. Paratypes: **Yemen**. Ta’Izz x Al Mukha, 15.iii.1993, 1 ♀ (A. van Harten; ZMA, Amsterdam).— Al Kowd, vii-ix.2001, 2 ♂, light (A. van Harten & S. Al Haruri; ZMA, Amsterdam).— 12 km NW of Manakhah, 27.iii.-5.v.2002, Malaise trap, 1 ♂ (A. van Harten; ZMA, Amsterdam); 3.vii-21. viii.2001, 1 ♂ (A. van Harten; RMNH, Leiden).— Al Kadān, 17.ii-31.iii.1988, 1 ♂ (A. v. Harten & H.M. Naser; col. A. Pauly).— Al Lahima, 16.x.-31.xii.2000, Malaise trap, 1 ♀ (A. van Harten & A.M. Hager; col. A. Pauly).— Suq Bani Mansour, 28.viii-14.xi.2001, 1 ♀ (A. v. Harten; RMNH, Leiden).— Ta’Izz, on road to Mocha, ca 4100 ft, 16.xii.1937, 2 ♂ (BMNH, London).— Usaifira, 1 mile N of Ta’Izz, ca 4500 ft, 21.xii.1937, 2 ♀ (BMNH, London). **Eritrea**. Orti Dari, Keren, 17-22.ii.1900, 1 ♀ (col. P. Magretti; MCSN, Genova).— Mentei, Ben Amer, 1 ♀ (MCSN, Genova).— Mentei, 1 ♀ (r.P. Banomi; MCSN, Genova). **Oman**. Dhofar, Ayun Pools [17°56'N 53°54'E], 10.x.1977, 1 ♂ (K.M. Guichard; BMNH, London).

Diagnosis.— A small *Seladonia* with metallic blue reflections, endemic to the Red Sea Coast. It differs from other small African species by the propodeal area nearly without ridges, the very fine punctation and the black metasoma.

Description.— Female. Length: 4-4.5 mm; forewing length: 3 mm.

Colour: integument of head and mesosoma with blue metallic reflections. Metasoma black. Tegulae amber. Legs dark brown. Inner part of foretibia pale brown.

Pubescence.— White bands of tomentum on apical parts of terga I-IV, the two first interrupted medially. White pubescence on head and mesosoma poor, not obscuring punctation.

Structure.— Head nearly as long as wide (HL = 1250 µ; HW = 1388 µ; HL/HW = 0.9). Length of vertex/IOD = 0.77 (fig.). EW/GW = 1.0. Eyes converging below [UID = 1000 µ; LID = 916 µ; UID/LID = 1.09]. EL = 777µ. Face shiny, finely but not closely punctured, punctures separated by more than twice width of a puncture.

Mesosoma.— Scutum shiny, finely punctured, punctures separated by over one puncture width. Propodeal area with very small ridges occupying basal half, without enclosure, trapezoidal, apical part fully dull.

Legs.— Inner hind tibial spurs with 4 long decreasing teeth.

Metasoma.— Terga very finely punctured, punctures separated by one puncture width, interspaces finely striate on basal half of T1. Declivous base of T1 shiny to finely striate on the top. Apical margin of T1 shiny with few punctures.

Male.— Length 4.5 mm.

Colour.— Head and mesosoma blue with metallic reflections. Metasoma black, T1 with few blue metallic reflections. Flagellum ochre below. Apical part of clypeus ivory yellow. Tarsi, apical of tibias and knees ivory yellow. Tegulae amber translucent.

Structure.— Head as long as wide (HL = 1500 µ; HW = 1500 µ; HL/HW = 1). Second flagellomere L/l = 1.33. IUD = 1028 µ; LID = 814µ; IUD/LID = 1.26. SCL = 300 µ; CL= 342 µ; IAD = 171 µ; IAD/SCL/CL = 1/1.75/2.

Mesosoma.— Scutum shiny, with small punctures, interspaces varying from one to two puncture width. Propodeum with a small depressed enclosure covered with small ridges, apical part fully dull.

Metasoma.— Declivous part and middle of T1 densely punctuate, interspaces finely striate. Gonostyli: see figs 9-10.



Figs 7-10. *Seladonia cyanella* spec. nov. 7, head of female; 8, head of male; 9, gonostyli of male, ventral view; 10, gonostyli of male, lateral view.

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References

- Benoist, R., 1950. Contribution à la connaissance des Hyménoptères Apides de Madagascar.— Mémoire de l'Institut scientifique de Madagascar, Sér. A 4: 97-103.
 Blüthgen, P., 1933. Ein Beitrag zur Kenntnis der Bienenfauna Ägyptens (Hymenoptera: Apidae – Halictidae – Halictinae).— Bulletin de la société royale entomologique d'Egypte 17: 14-27.
 Cameron, P., 1905. On the Hymenoptera of the Albany Museum, Grahamstown, South Africa.— Record of the Albany Museum, Grahamstown 1: 185-265.
 Cameron, P., 1906. Descriptions of some new species of Hymenoptera from Pearson, Cape Colony. Transactions of the South African Philosophical Society, 16: 323-333.

- Cockerell, T.D.A., 1908. New African bees.— The Entomologist 41: 121-122.
- Cockerell, T.D.A., 1916. Report on a collection of South African bees, chiefly from Natal.— Annals of the Durban Museum 1: 204-216.
- Cockerell, T.D.A., 1932. African bees of the group *Seladonia*.— The Entomologist 65: 247-248.
- Cockerell, T.D.A., 1935. Scientific results of the Vernay Lang Kalahari Expedition, March to September 1930, Hymenoptera (Apoidea).— Annals of the Transvaal Museum 17: 63-94.
- Cockerell, T.D.A., 1937. African bees of the genus *Ceratina*, *Halictus* and *Megachile*. British Museum (Natural History), xvi +254 pp.
- Cockerell, T.D.A., 1939. LXVIII. - Descriptions and records of bees.- CLXXIV.— Annals and Magazine of Natural History (11) 3: 592-601.
- Cockerell, T.D.A., 1940. Descriptions and Records of Bees. - CLXXX.— Annals and Magazine of Natural History (11) 6: 176-185.
- Cockerell, T.D.A., 1945. African halictine bees.— The Entomologist 78: 153-156.
- Cockerell, T.D.A., 1945. XXXIV. - Descriptions and Records of Bees. - CXCVII.— Annals and Magazine of Natural History (11) 12: 350-356.
- Cockerell, T.D.A., 1945. Descriptions and records of bees. - CC.— Annals and Magazine of Natural History (11) 12: 514-523.
- Cockerell, T.D.A., 1946. African halictine bees.— The Entomologist 79: 15-18, 42-44, 88-89, 158-161, 177-184.
- Dawut, A. & Tadauchi, O., 2000. A systematic study of the subgenus *Seladonia* of the genus *Halictus* in Asia (Hymenoptera, Apoidea, Halictidae). I.— Esakia 40: 63-79.
- Dawut, A. & Tadauchi, O., 2001. A systematic study of the subgenus *Seladonia* of the genus *Halictus* in Asia (Hymenoptera, Apoidea, Halictidae). II.— Esakia 41: 161-180..
- Dawut, A. & Tadauchi, O., 2002. A systematic study of the subgenus *Seladonia* of the genus *Halictus* in Asia (Hymenoptera, Apoidea, Halictidae). III.— Esakia 42: 121-150.
- Dawut, A. & Tadauchi, O., 2003. A systematic study of the subgenus *Seladonia* of the genus *Halictus* in Asia (Hymenoptera, Apoidea, Halictidae). IV.— Esakia 43: 97-131.
- Ebmer, A.W., 1972. Revision der von Brullé, Lucas und Pérez beschriebenen westpaläarktischen *Halictus*-Arten (Halictidae, Halictinae, Apoidea), sowie Festlegung des Lectotypus von *Lasioglossum (Evy-laeus) angustifrons* (Vachal).— Polskie Pismo Entomologiczne 42 (3): 589-636.
- Ebmer, A.W., 1987. Die europäischen Arten der Gattungen *Halictus* Latreille, 1804 und *Lasioglossum* Curtis, 1833 mit illustrierten Bestimmungstabellen (Insecta: Hymenoptera: Apoidea: Halictidae: Halictinae). 2. Die Untergattung *Seladonia* Robertson, 1918.— Senckenbergiana Biologica 68: 323-375.
- Friese, H., 1909. 8. Hymenoptera Apidae: 119-166. In: Sjöstedt, Y. Wissenschaftliche Ergebnisse der Schwedischen Zoologischen Expedition nach dem Kilimandjaro, dem Meru und den umgebenden Massaisteppen Deutsch-Ostafrikas 1905-1906. Stockholm.
- Friese, H., 1909. Die Bienen Afrikas nach dem Stande unserer heutigen Kenntnisse. In: Schultze, L. Zoologische und Anthropologische Ergebnisse einer Forschungsreise im westlichen und zentralen Südafrika ausgeführt in den Jahren 1903-1905, Band 2.— Denkschriften der medizinisch-naturwissenschaftlichen Gesellschaft zu Jena 14: 83-476, pls IX-X.
- Friese, H., 1925. Neue *Halictus* - Arten aus Süd-Afrika.— Stettiner entomologische Zeitung 86: 135-140.
- Janjic, J. & Packer, L., 2001. New descriptions of *Halictus* (*Seladonia*) from the New World (Hymenoptera: Halictidae).— Journal of Hymenoptera Research 10 (1): 55-75.
- Lepeletier de Saint-Fargeau, A., 1841. Histoire Naturelle des Insectes, Tome second. 680 pp.— Paris, Librairie encyclopédique de Roret.
- Morawitz, F., 1876. Mellifera. - In: Fedtschenko, A. Reise in Turkestan von Alexis Fedtchenko. Auf Veranlassung des General Gouverneurs von Turkestan, General von Kaufmann. Berlin [cited by Dalla Torre as «Turkestan Mellifera 2»].
- Moure, J.S., 1940. Apoidea neotropica.— Arquivos do Zoologia Sao Paulo 2: 36-64.
- Pauly, A., 1984. Classification des Halictidae de Madagascar et des îles voisines. I. Halictinae (Hymenoptera Apoidea).— Verhandlungen der naturforschenden Gesellschaft in Basel 94: 121-156.
- Pauly, A., 1998. Hymenoptera Apoidea du Gabon.— Annales Sciences zoologiques, Musée Royal de l'Afrique centrale, Tervuren 282: 1-121.

- Pauly, A., 1999. Classification des Halictini de la Région Afrotrropicale (Hymenoptera Apoidea Halictidae).— Bulletin de l'Institut royal des Sciences naturelles de Belgique 69: 137-196.
- Perez, J., 1895. Espèces nouvelles de mellifères de Barbarie (Diagnoses préliminaires). Bordeaux, Gou-nouilhou, 64 pp.
- Perez, J., 1907. Mission J. Bonnier et Ch. Pérez (Golfe Persique, 1901). II. Hyménoptères.— Bulletin scientifique de la France et de la Belgique 41: 485-505.
- Pesenko, Y.A., 2004. The phylogeny and classification of the tribe Halictini, with special reference to the *Halictus* genus-group (Hymenoptera: Halictidae).— Zoosystematica Rossica 13: 83-113.
- Robertson, C., 1918. Some genera of bees.— Entomological News 29: 91-92.
- Sakagami S.F. & Ebner, A.W., 1987. Taxonomic notes on Oriental halictine Bees of the genus *Halictus* (subg. *Seladonia*) (Hymenoptera Apoidea).— Linzer biologische Beiträge 19/2: 301-357.
- Smith, F., 1853. Catalogue of the Hymenopterous Insects in the Collections of the British Museum. Part I. Andrenidae and Apidae: 1-197, plts 1-6. Trustees of the British Museum; London.
- Smith, F., 1879. Descriptions of new Species of Hymenoptera in the Collection of the British Museum: 1-240.— Trustees of the British Museum; London.
- Strand, E., 1911. Apidae. In: Wissenschaftliche Ergebnisse der Deutschen Zentral-Afrika-Expedition 1907-1908 unter Führung Adolf Friedrichs, Herzog zu Mecklenburg. III. Hymenoptera. Bd. 3: 135-166.— Leipzig, Klinhandte Biermann.
- Vachal, J., 1892. Hyménoptères récoltés au Soudan oriental par le Dr Paul Magretti.— Bulletin de la Société entomologique de France 1892: 135-137.
- Vachal, J., 1899. Hyménoptères rapportés du Haut-Zambèze par M. Edouard Foa.— Bulletin du Muséum d'Histoire naturelle de Paris 1899: 233-234.
- Vachal, J., 1903. Hyménoptères du Congo Français rapportés par l'ingénieur J. Bouyssou.— Annales de la Société entomologique de France 72: 358-400.
- Vachal, 1910. Diagnoses d'Insectes nouveaux recueillis dans le Congo belge par le Dr Sheffield Neave.— Annales de la Société entomologique de Belgique 54: 306-328.
- Warncke, K., 1982. Beitrag zur Bienenfauna des Iran. — 14. Die Gattung *Halictus* Latr., mit Bemerkungen über unbekannte und neue *Halictus*-Arten in der Westpaläarktis und Zentralasien.— Bollettino del Museo Civico di Storia Naturale di Venezia 32 (1981): 67-166.
- Ze-Qing Niu, Yan-Ru Wu & Da-Wei Huang, 2004. A taxonomic study on the subgenus *Seladonia* (Hymenoptera: Halictidae: *Halictus*) in China with a description of a new species.— Zoological Studies 43 (4): 647-670.

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