

Notes on Fabrician species of *Bombus* Latr. and *Psithyrus* Lep., with designations of lectotypes (Hym., Apidae).

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A study of the Scandinavian *Bombus* and *Psithyrus* necessitated an examination of the Fabrician type material and, besides selecting a few lectotypes, I use the opportunity to comment the preserved specimens of some taxa. The material is represented in the private collection of Fabricius, the Kiel collection, which now is deposited in the Zoological Museum, Copenhagen, and in the Sehested & Tönder Lund collection (called the Copenhagen collection) belonging to the same museum. The material in the Copenhagen collection is better curated than that of the Kiel collection, which unfortunately has been rearranged in different ways. Specimens may have been moved around and this may also be the case with the labels, probably written by Fabricius himself. These labels are noted below as original labels. The species are listed by the number given in the catalogue by Zimsen (1964), this being in the same order as in the Fabrician monographs. The Fabrician descriptions of humble bees concern the size and the colour of the coat. Details in the colour of the hairs are usually not given and in a few cases this is pointed out below.

1073. ***Apis cryptarum*** Fabricius. Syst. Ent. 1775 p. 379:6.

Kiel collection: A single queen in a poor condition. Eyes and the second to sixth abdominal segments are wanting. The individual agrees with the description. The thorax, however, is dorsally supposed to be black but it is not quite "immaculato" owing to the very slight indication of a narrow yellow collare. Labels: 1) *cryptarum* (original label), 2) *Bombus terrestris* var. *cryptarum* F., 3) *B. lucorum* (L.) ♀ A. Löken det. 1965, 4) *Apis cryptarum* Fabr. l e c t o t y p e A. Löken design. 1965.

Apis cryptarum Fabr. is an infrasubspecific form of *Bombus lucorum* (L.).

1077. **Apis soroensis** Fabricius. Gen. Ins. 1776 p. 246.

Kiel collection: A single large queen in a poor condition. Head, all right legs, left fore and intermediate legs are wanting. Thorax, first tergite and a narrow anterior part of second tergite have black hairs, while the remaining tergites are very fainted, light ferrugineous. The description: "... hirsuta nigra ano albo" has to be taken very wide to include this specimen. Labels: 1) *soroensis* (original label), 2) *B. ? arcticus* ssp. ♀ A. Löken det. 1965. While Denmark is the only area mentioned in Gen. Ins. and in Ent. Syst. (1793 p. 318: 12) "Lapponia Dom. de Paykull" is added in Syst. Piez. (1804 p. 345: 10). In the latter the description is furthermore altered to "... abdomen postice late album". The described dark form of *B. soroensis* is not known from Lappland. It may be Fabricius himself misidentified the specimen, which probably is *B. arcticus diabolicus* Friese ♀ (= *B. arcticus alpiniformis* Rich.)*.

Zimsen mentions two specimens noted as *lapponicus* F. When I visited Copenhagen in February 1965, only the above mentioned queen was present.

Copenhagen collection: There are two queens both of which are in a fair condition. They agree with the description, which, however, does not mention the very slight indication of a yellow collare. One specimen bears the labels: 1) *soroensis* (original label), 2) *Apis soroensis* Fabr. ♀ lectotype A. Löken design. 1965. The other specimen is labelled *B. soroensis* (Fabr.) ♀ A. Löken det. 1965.

Apis soroensis Fabr. = *Bombus soroensis* (Fabr.).

1078. **Apis lapponica** Fabricius. Ent. Syst. II. 1793 p. 318: 13.

Kiel collection: One of two workers is in a fair condition. It agrees with the description, which, however, does not mention the yellow hairs of the first tergite. Labels: 1) *lapponica* (original label), 2) *B. lapponicus* (Fabr.) ♂ A. Löken det. 1965. The other worker is in a very poor condition. Only part of head and dorsal

*) From author's notes, not yet published: *B. alpinus* var. *diabolicus* Friese is revised to *B. arcticus* Kirby and recognised as a subspecies, i.e. *B. arcticus diabolicus* Friese 1911 (= *B. arcticus alpiniformis* Richards 1931).

part of thorax with the wings are kept. It may agree with the description. No labels.

Copenhagen collection: There are two queens both of which are in good condition and agree with the description. One of the specimens has the labels: 1) *B. lapponica* D: de Paykull (The letter B seems to be a corrected A), 2) *Apis lapponica* Fabr. ♀ lectotype A. Löken design. 1965. The other specimens is labelled *B. lapponicus* (Fabr.) ♀ A. Löken det. 1965.

According to Milliron (1960) a worker of *B. lapponicus* (no locality) in the Kiel collection is labelled type by him. This information is however due to some kind of misunderstanding and cannot be correct. None of the actual specimens bear his type label and their condition does not coincide with that for the worker mentioned by Milliron.

As the description is based upon material presented him by G. van Paykull, the only individual bearing this name is selected as lectotype.

Apis lapponica Fabr. = *Bombus lapponicus* (Fabr.).

1085. *Apis equestris* Fabricius. Ent. Syst. II. 1793 p. 320:23.

Kiel collection: There are two individuals, which are either a queen and a worker or two workers. Both individuals are in a poor condition.

The greater specimen is wanting part of head inclusive the main part of clypeus, right foreleg and second to sixth abdominal segments. The individual does not agree with the description: "... caput nigrum, immaculatum". Sub- and supra antennal areas have mainly light greyish-white hairs and the pile of vertex has a mixture of greyish-white and black hairs. Labels: 1) *equestris* (original label), 2) Not *equestris* sensu *arenicola* Ths. *B. ? distinguendus* Mor. A. Löken det. 1965. The rather great labral furrow, which is broadening towards the base, the apical spine of intermediate metatarsus and the pointed apical part of hind metatarsus indicate that the individual may belong to the subgenus *Subterraneobombus* Vogt.

The smaller specimen is a worker which is wanting most of the head (inclusive clypeus, labrum, mandibles), left legs, and abdomen with the exception of the first tergite. The preserved part of the head, which includes sub- and supra antennal areas, is black with the exception of an admixture of light hairs in the middle of the pile of vertex. Thorax has a light yellow collare

without any admixture of black hairs. The interalar band is parallelsided and scutellum is light yellow. Pleurae, the preserved part of venter, and the legs inclusive the corbicular fringes are brownish-black. First tergite has light yellow hairs. The individual may agree with the description. No labels. The specimen is surely not *B. equestris* sensu *arenicola* Ths. The apical edge of the intermediate and hind metatarsus indicate it is an *Anodontobombus* but further identification is uncertain.

The poor and heterogenous material makes it difficult to settle the identity of *Apis equestris* Fabr. Thomson (1872) states in his description of *B. arenicola* that *Apis equestris* Fabr. is another taxon, which he however wrongly synonymized with *B. pomorum* (Panz). Dalla Torre (1882), Schmiedeknecht (1883), Hoffer (1883) also distinguished *B. arenicola* from *B. equestris* (Fabr.), but they questioned the identity of the latter. Later entomologists, however, as for instance Friese & Wagner (1909), Ball (1914), Krüger (1920, 1939), Schmiedeknecht (1930), Stoeckert (1932), Pittioni (1939), Kruseman (1947), Knechtel (1955) and Faester (1958) use *B. equestris* (Fabr.) in sensu *B. arenicola* Ths. without any taxonomical comments. As however the two individuals in the Fabrician collection cannot be recognised as *B. arenicola* Ths. this is a distinct taxon and not a synonym of *Apis equestris* Fabr. The type material of *B. arenicola* is in the Thomson collection in Lund, where lectotype is selected by K. Ander (in press). To my knowledge *B. equestris* auctt. is used in sensu *B. arenicola* Ths. since Drewsen & Schiödte (1838).

Apis equestris Fabr. = ?

1086. **Apis arbustorum** Fabricius. Gen. Ins. 1776 p. 246.

Kiel collection: A single male in a fair condition. The size and the yellow first and anterior half of second tergite do not agree with the description. Labels: 1) *arbustorum* (original label), 2) *B. pratorum* (L.) ♂ A. Löken det. 1965.

Copenhagen collection: Two males in good condition. They agree with the description with the exception of one specimen being rather small. Both individuals have the labels: *B. lapidarius* (L.) ♂ A. Löken det. 1965. The largest individual is furthermore labelled 1) *B.* (corrected A) *arbustorum*, and 2) *A. arbustorum* Fabr. ♂ lectotype A. Löken design. 1965.

Apis arbustorum Fabr. = *Bombus lapidarius* (L.) ♂.

1087. **Apis rupestris** Fabricius. Ent. Syst. II. 1793 p. 320: 26.

Kiel collection: There are three females all of which agree with the description. One specimen is in a good condition. Labels: 1) *Psithyrus rupestris* (Fabr.) ♀ A. Löken det. 1965, 2) *A. rupestris* Fabr. ♀ Lectotype A. Löken design. 1965. The remaining two specimens are in a poor condition. They are labelled respectively, *rupestris* (original label), and *Psithyrus rupestris* (Fabr.) ♀ A. Löken det. 1965.

Apis rupestris Fabr. = *Psithyrus rupestris* (Fabr.).

1089. **Apis aprica** Fabricius. Ent. Syst. Suppl. 1798 p. 273.

Kiel collection: A queen and a worker, both of which are in a poor condition. The queen is missing head and the second to sixth abdominal segments. The apical spine of the intermediate- and hind metatarsus as well as the colour pattern of thorax indicate that the specimen is an *Agrobombus*. Thorax is "supra fulvuus immaculatus" but the lost abdomen may not have been in agreement with "... abdomen atrum, ano album". The type area is "Lapponia Alpibus". To my knowledge *B. agrorum* is the only *Agrobombus* represented in Lappland but the species is not recorded with a white tail. Furthermore, the light shade of the colour pattern, particularly the light yellow pleurae and venter, indicate that the queen does not belong to *B. agrorum* subspecies occurring in Northern Scandinavia. Label: Fabr. Samml. unter *apricus*.

The worker has only part of thorax with the wings left and cannot be identified with certainty; nor is it sufficient to indicate whether or not it agrees with the description. Label: *apricus* or *aprice* (original label).

Apis aprica auctt. is synonymized with *B. hypnorum* (L.) and the description indicate this may be correct.

1090. **Apis agrorum** Fabricius. Mant. Ins. I. 1787 p. 301: 23.

Kiel collection: A queen and two workers, all in a poor condition. Only thorax (except ventral part of pleurae), left intermediate- and right hindleg are left of the queen. Label: *agrorum* (original label). One of the workers has part of head and thorax left. Label: *B. agrorum* (Fabr.) ♂ A. Löken det. 1965. The second worker is the best preserved specimen, yet the head is severely damaged. Thorax, right foreleg, both intermediate- and hindlegs as well as abdomen are in a fair condition. Label: *B. agrorum*

(Fabr.) ♀ A. Löken det. 1965. All three individuals may agree with the description. However, the queen is ventrally darker than the workers of which the best preserved specimen has light yellow pleurae and yellowish-white venter. It may be that the queen agree better with the description than the workers, but owing to the poor material I hesitate to select a lectotype.

Apis agrorum Fabr. = *Bombus agrorum* (Fabr.).

1095. **Apis mniorum** Fabricius. Gen. Ins. 1776 p. 247.

Kiel collection: The only specimen is a worker in a poor condition. Head, right fore- and intermediate legs are wanting. The individual does not agree with the description: "... ano rufo". Label: *mniorum* (original label).

Copenhagen collection: A single queen which is in a fair condition. Head, right fore- and intermediate legs are wanting. The 2) *B. agrorum* ssp. *mniorum* (Fabr.) ♀ A. Löken det. 1965. As Fabricius mentions Kiel as the type locality a lectotype is not selected.

Apis mniorum Fabr. = *Bombus agrorum* ssp. *mniorum* (Fabr.).

1099. **Apis autumnalis** Fabricius. Ent. Syst. II, 1793 p. 324: 43.

Kiel collection: A single worker which is in a fair condition and agrees with the description. Labels: 1) *autumnalis* (original label), 2) *B. hortorum* (L.) ♀ A. Löken det. 1965, 3) *A. autumnalis* Fabr. ♀ Lectotype A. Löken design. 1965. The specimen is not mentioned in the catalogue of Zimzen (1964). The taxon has erroneously been synonymized with *B. terrestris* auctt. and *B. lucorum* auctt. except by Nylander (1852 p. 262) who recognised this taxon as a male of *B. hortorum*.

Apis autumnalis Fabr. = *Bombus hortorum* (L.).

1102. **Apis senilis** Fabricius. Syst. Ent. 1775 p. 382: 26.

Kiel collection: A single male in a poor condition. Abdomen is wanting. The specimen may agree with the description. Labels: 1) *senilis* (original label), 2) *agrorum* ♀ Yarrow det. Febr. 1956 (the sex is evidently a writing error), and 3) *Apis senilis* Fabr. ♂ Lectotype A. Löken design. 1965.

Apis senilis Fabr. = *Bombus agrorum* (Fabr.) ♂, s y n. n o v.

1104. **Apis veterana** Fabricius. Ent. Syst. II, 1793 p. 325: 45.

Kiel collection: There are two workers both of which are in a poor condition. One specimen is missing part of head, right fore- and hindleg and the second to sixth abdominal segments.

The individual may agree with the description. Labels: 1) *veterana* (original label), 2) *B. arenicola* Ths. ♀ A. Löken det. 1965, 3) *Apis veterana* Fabr. ♂ lectotype A. Löken design. 1965. The other specimen is wanting part of head, both forelegs, left intermediate leg, and abdomen with the exception of the first tergite. It may agree with the description. Label: *B. arenicola* Ths. ♀ A. Löken det. 1965. The taxon has erroneously been synonymized with *B. sylvarum* auctt.

Apis veterana Fabr. = *Bombus arenicola* Ths., s y n. n o v.

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Summary.

The type material of twelve Fabrician species of *Bombus* has been examined. Seven lectotypes are designated. Two new synonyms are established, viz. *Apis senilis* Fabr., 1775 = *Bombus agrorum* (Fabr.) and *Apis veterana* Fabr., 1793 = *Bombus arenicola* Ths. *Apis equestris* Fabr., 1793, is not identifiable on basis of the poor type specimens, but it is definitely not the same as *Bombus arenicola* Ths.

References.

- Ball, F.-J., 1914: Les Bourdons de la Belgique. — Ann. Soc. ent. Belg., 58. Bruxelles.
- Drewsen, Chr. og J. Schiödtte, 1838: Fortegnelse over de danske Arter af Slægterne *Bombus* og *Psithyrus*. — Naturh. Tidsskr., 2, p. 110. Kjøbenhavn.
- Fabricius, J. C., 1775: Systema Entomologiae . . . , pp. 379-382. Flensburg.
- , 1776: Genera Insectorum . . . , pp. 246-247. Kiliae.
- , 1787: Mantissa Insectorum . . . , p. 301. Hafniae.
- , 1793: Entomologica Systematica . . . , 2, pp. 318-326. Hafniae.
- , 1798: Supplementum Entomologiae Systematicae . . . , p. 273. Hafniae.
- , 1804: Systema Piezatorum . . . , p. 345. Braunschweig.

- Friese, H. und F. v. Wagner, 1909: Zoologische Studien an Hummeln. — Zool. Jahrb., 29, p. 58. Jena.
- Faester, K., 1959: In Dänemark getroffene Arten von *Bombus* und *Psithyrus* (Hym, Apidae). — Ent. Medd., 29, p. 152. København.
- Hoffer, E., 1883: Die Hummeln Steiermarks, Part II. — Jahrb. steierm. Landes-Oberrealschule Graz., 32, pp. 5-7. Graz.
- Knechtel, W. K., 1955: Hymenoptera subfamilia apinae. Fauna Repub. pop. rom., Insecta 9, p. 54. Bucuresti.
- Kruseman, G., 1947: Tabellen tot het bepalen van de Nederlandsche soorten der genera *Bombus* Latr. en *Psithyrus* Lep. — Tijdschr. Ent., 87, p. 183. Amsterdam.
- Kröger, E., 1920: Beiträge zur Systematik und Morphologie der mittel-europäischen Hummeln. — Zool. Jahrb., 42, Abt. Syst. pp. 404-405. Jena.
- , 1939: Die Hummeln und Schmarotzerhummeln von Sylt und dem benachbarten Festland. — Schr. Naturw. Ver. Schlesw.-Holst., 23, pp. 57-59. Kiel.
- Milliron, H. E., 1960: Recognition of Bumblebee type specimens, with notes on some dubious names. — Bull. Brooklyn Ent. Soc. 55, p. 93.
- Pittioni, B., 1939: Die Hummeln und Schmarotzerhummeln der Balkan-Halbinsel II, Spez. Teil. — Mitt. K. Naturw. Inst. Sofia, 12, p. 90. Sofia.
- Schmiedeknecht, H. L. O., 1882-84: Apidae Europae. 1, pp. 339-341. Gumperdae et Berolini.
- , 1930: Die Hymenopteren Nord- und Mitteleuropas, pp. 856, 862, 870. Jena.
- Stoekert, F. K., 1932: Die Bienen Frankens (Hym, Apid). — Dt. ent. Z., Beiheft, 78, p. 252. Berlin.
- Thomson, C. G., 1872: Hymenoptera Scandinaviae, 2, pp. 31-32. Lund.
- Torre, Dalla K. W., 1882: Bemerkungen zur Gattung *Bombus* Latr. II. — Ber. naturw.-med. Ver. Innsbruck, 120. Innsbruck.
- Zimsen, Ella, 1964: The type material of I. C. Fabricius, pp. 415-417. Copenhagen.
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