

NEW BEES OF THE FAMILY MEGACHILIDAE (HYMENOPTERA APOIDEA) FROM PALESTINE

BY

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The bees described and recorded below were collected and kindly sent to me by Dr. H. Bytinski-Salz, Tel-Aviv, and Mr. J. Wahrman, Jerusalem, Palestine. The types of the new species and the new variety, as well as, the allotypes of *Osmia sordita* R. Benoist and *Osmia wadicola* Alfken are in my collection.

O S M I A

Osmia eremoplana sp. n. (fig. 1)

♀. Length 10 mm.

Black; head broad, a little broader than thorax; clypeus shining, with shallow rugose and large punctures, disk with a median longitudinal polished line from base but not reaching apical margin; apical margin of clypeus projected broadly polished impunctate and truncate, very narrowly and slightly concave in middle, sides rounded; supraclypeal area dull, finely very densely granulate punctured; mandibles broad tridentate (dentition visible in the paratypes); antennae black; scape very long; second joint of flagellum longer than first, third of fourth; third joint of flagellum equal to fourth and somewhat longer than first; flagellum joints 3 to 8 somewhat broader than long (all seen from above); vertex and occiput densely finely rugosely punctured,

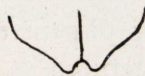


Fig. 1. — Seventh tergite of *Osmia eremoplana* sp. n. ♂.

moderately shining; median ocellus with a very small polished impunctate and shining area above; clypeus with white hairs mostly at sides, disk almost bare in middle, subapical area covered with short golden hairs, apical margin bare; sides of face and supraclypeal area, apical half of front, with somewhat dense white hairs (the hairs on front yellowish-brown in the apex); vertex and occiput with yellowish-brown hairs (the hairs near ocelli intermixed with dark brown); cheeks with very sparse and short white hairs. Mesonotum densely rugosely punctured, moderately shining, with yellowish-brown hairs, sparse in middle of disk, long and dense at sides; scutellum moderately shining, densely rugosely punctured, somewhat sparsely and shining in middle, disk with a median longitudinal polished line from base to apical margin; area of metathorax dullish, median triangle minutely and densely granulate punctured (except narrowly the base), rest shining and shallowly punctured; mesonotum narrowly on each side in front, postscutellum, area of metathorax, thorax at sides, with white hairs; scutellum with yellowish-brown hairs; tegulae testaceous; wings subhyaline, nervures and stigma dark brown; spurs and hind claws reddish-brown; anterior and middle femora with white hairs beneath and on outer sides; tibiae with brown hairs above and at sides; hind tibiae with black-brown hairs on inner side; hind basitarsi with black-brown hairs on inner and outer sides; apex of hind tibiae with a tuft of short white hairs. Abdomen shining; first tergite short, punctured, apical margin densely and very finely punctured; second tergite with a deep basal depression reaching sides, disk transversely slightly convex, somewhat densely punctured and somewhat sparsely punctured in middle, apical margin densely and very finely punctured; third tergite with a basal slight depression not reaching sides; first tergite with dense white hairs at sides; second tergite with a broad and dense apical white hair-band interrupted and attenuated within; third tergite with a broad and thick apical white hair-band slightly attenuated in middle; fourth and fifth tergites with entire, broad and thick, apical white hair-bands; sixth tergite with very short white hairs covering surface; disk of second and third tergites with very short and somewhat sparse black-brown hairs towards sides; disk of fourth and fifth

tergites with very short dark black-brown hairs; sixth tergite with apical margin rounded; ventral scopa reddish-brown, sixth sternite with short and dense greyish-white hairs.

♂. Length 10 mm.

Black; all head below ocelli, with dense shining white hairs covering surface; vertex, occiput and cheeks, with short and somewhat sparse white hairs; mandibles bidentate; antennae black; second joint of flagellum longer than first, third or fourth; flagellum joints 3 to 10 longer than broad. Thorax with somewhat dense white hairs above at sides and beneath. Tergites 1 to 6 with apical hair-bands as in the ♀, denser and broader at sides; sixth tergite without lateral dentition, disk with white hairs not covering surface, apical margin entire and with a broad white hair-band; disk of fifth tergite with very short and sparse white hairs mostly towards sides; seventh tergite bent, broader than long, apical margin broadly and somewhat shallowly emarginate in middle (apex of the emargination blunt), disk with a median longitudinal carina from base to apical margin (fig. 1); sternites with apical margins broadly brown; second sternite plain, apical margin slightly arched, disk transversely towards apical margin slightly convex and forming a narrow carina the middle of which united with apical margin; third sternite broad, apical margin emarginate in middle and with a fringe of dull golden hairs.

El-Auja-Rafan (Negev), 1 ♀ (*type*), 1 ♂ (*allotype*); 2 ♀♀ (*paratypes*), about 9 mm.; 1 ♂ (*paratype*), about 11 mm.; 1 ♂ (*paratype*); all 3.III.1946 (J. Wahrman). Paratypes were returned to Mr. Wahrman.

Osmia eremoplana s. n., may be compared with *Osmia alborufa* Alfken, from Turkey, but the two species differ in many details. *Osmia eremoplana* differs in having a polished longitudinal line in middle of the disk of clypeus starting from base but not reaching, the apical margin, the pilosity otherwise coloured.

***Osmia sordita* R. Benoist**

1929. *Osmia sordita* R. Benoist, ♂, Bull. Soc. Ent. France, p. 99.
1935. *Osmia sordita* J. D. Alfken, Verh. Deutsch. Kol. Mus.,
Bremen, I. B., 2 H., p. 175.
1938. *Osmia sordita* J. D. Alfken, Deutsch. Ent. Zeitschr., II,
p. 424.

Benoist described this species from Jaffa, and the ♀ is new as follows:

♀. Length 7 mm.

Head and thorax black; clypeus convex, shining, densely punctured, apical margin crenulate; mandibles reddish; scape black; flagellum yellowish-red except the black-brow first joint; vertex and occiput shining densely punctured; clypeus, sides of face, front, with rather dense white hairs; vertex with very short white hairs; occiput bordered with short, very dense erect white hairs; cheeks densely covered with short depressed shining white hairs. Mesonotum shining, finely and densely punctured, with short white hairs not covering surface; scutellum with similar hairs but somewhat longer; thorax with dense shining white hairs at sides; area of metathorax dull; legs reddish, except the brownish-black coxae and trochanters; wings hyaline; base of wings with nervures yellowish-brown, rest of nervures black-brown; middle and hind tibiae with white hairs above and at sides; hand basitarsi with white hairs on outer side. Abdomen shining, reddish, last tergite and sides of fifth black; first and second tergites very finely punctured, apical margins with white hair-bands broadly interrupted in middle (the apical hair-band of second very probably rubbed out in middle); tergites 3 to 5 with entire white hair-bands; disk of tergites 2 to 5 with very thin and very short, sparse and erect, white hairs; sixth tergite with similar hairs, somewhat denser and not covering surface; ventral scopa poor and white.

Ramat Gan, 1 ♀ (*allotype*), 12.VI.1940 (H. Bytinski-Salz).

***Osmia bodenheimeri* sp. n.**

♀. Length 7 mm.

Black; clypeus slightly convex, finely punctured and shining, nearly covered with short white hairs, apical margin truncate and subcrenulate; mandibles tridentate, base narrowly brown, rest yellowish-brown, teeth dark brown; vertex and occiput finely and very densely punctured, shining; scape black-brown, narrowly brown in the apex; flagellum brown, light brown in front (except the last and first joints); second joint of flagellum nearly as long as first but longer than third or fourth; flagellum joints 3 to 10 broader than long; vertex and occiput with short and somewhat sparse yellowish-white hairs; cheeks with short, very dense depressed shining white hairs; front, sides of face, supraclypeal area, densely covered with shining white hairs. Mesonotum finely, very densely punctured, shining; tegulae yellowish-brown; area of metathorax very finely densely granulate punctured and moderately shining above; base of wings yellowish-brown, rest of wings hyaline, nervures and stigma black-brown; mesonotum with very short yellowish-white hairs, very sparse on disk, dense and white at sides; thorax with dense shining white hairs at sides and beneath; legs brown; anterior and middle femora with shining white hairs on outer side and beneath; anterior tibiae with very fine and short sparse shining white hairs not covering surface above; middle and hind tibiae with fine and short shining white hairs above covering surface; hind spurs pale. Abdomen brownish-black, shining, without depressions; first and second tergites densely and very finely punctured, subapical area with very dense and very fine punctures; apical margins of tergites broadly yellowish-brown, and with entire dense and narrow, white hair-bands; sixth tergite with whitish very short hairs; ventral scopa white.

♂. Length 8 mm.

Black; mandibles yellow, tridentate, apical tooth somewhat long; scape black-brown and brown in the apex; flagellum brown, light brown in front; second joint of flagellum longer than first,

third or fourth; flagellum joints 3 to 5 broader than long, third somewhat shorter than fourth or fifth; rest of joints somewhat longer than broad, last joint blunt in the apex (all seen from above); between second and third joints of flagellum concave, last joint obliquely truncate and slightly convex in the apex beneath (seen from in front); pilosity as in the female, but mostly rubbed out (the specimen not fresh). First and second abdominal tergites with all subapical area and apical margins brown; tergites 3 to 5 with all subapical area brown and apical margins pale; sixth tergite broader than long, with basal short lateral tooth, sharp in the apex, apical margin pale and nearly rounded; seventh tergite with two short and narrow parallel spines, blunt in the apex; second and third sternites without apical emarginations; second sternite with a slight longitudinal and narrow convexity in middle of disk (seen from laterally); sternites dark brown; apical margins of sternites brown; sternites with poor pilosity but apical margin of third and fourth with a projected white fringe.

Pardes Hannah, 1 ♀ (*type*), 1 ♂ (*allotype*), 11.VII.1946 (H. Bytinski-Salz).

Osmia bodenheimeri sp. n., is related to *Osmia sordita* R. Benoist, but the latter differs in having the area of metathorax dull, the mandibles testaceous and brown in the apex, second antennal joint (first joint of flagellum) longer than third (second joint of flagellum), and it is otherwise coloured. *Osmia bodenheimeri* may be compared with *Osmia consanguinea* R. Benoist (1929, Bull. Soc. Ent. France, p. 98) and *Osmia taprurensis* R. Benoist (1929, *ibid.*, pp. 98-99). *Osmia bodenheimeri* differs from *Osmia consanguinea* in the colour of the integument of abdomen, the punctuation of clypeus, the area of metathorax which is dull in *consanguinea* and moderately shining in *bodenheimeri*, and from *Osmia taprurensis* in the characteristic light yellow mandibles of the ♂ (except the apex) and the peculiarly shaped basal joints of flagellum, and in the yellowish-brown hind spurs. It is named after Professor F. Bodenheimer, Jerusalem.

Osmia hierichonica sp. n.

♀. Length 8,5 mm.

Black; clypeus convex, shining, densely and finely punctured, with a very narrow polished basal longitudinal area reaching middle of disk; apical margin of clypeus truncate and subcrenulate; mandibles black, apex of teeth black-brown; antennae black, flagellum dark black-brown in front; supraclypeal area shining, densely and finely punctured; vertex and occiput finely very densely punctured and shining; front, supraclypeal area, sides of face, clypeus with white hairs, the hairs on apical margin of clypeus a little projected and yellowish-white; vertex and occiput with short yellowish-white hairs; cheeks with short and sparse white hairs not covering surface. Mesonotum and scutellum shining, finely and densely punctured, with short yellowish-white hairs not covering surface; scutellum with similar punctures, with an impressed median longitudinal polished line from base to apex and with rather sparse yellowish-white hairs; tegulae black-brown on inner side and light brown on outer side; area of metathorax dull; wings clear, nervures and stigma black-brown; thorax with white hairs at sides; legs black; tarsi dark brown, last small joint in the apex and all claws, yellow-brown; anterior femora with white hairs on outer side and beneath; middle femora with white hairs beneath; tibiae with dense white hairs above (of the hind ones denser); basitarsi with white hairs on outer side and yellowish-brown hairs on inner side; hind spurs yellowish. Abdomen shining, without depressions; first and second tergites somewhat sparsely and very finely punctured, the punctures of subapical area and apical margin somewhat finer and denser; tergites 1 to 5 with transverse, entire and narrow, apical white hair-bands, that on first interrupted in middle; sixth tergite with short and thin depressed, somewhat sparse white hairs not covering surface of disk; ventra scopa white.

♂. Length 8.5 mm.

The hairs on head longer and denser than in the female; the hairs on front yellowish-white in the apex and those on vertex and

occiput yellowish-brown; last antennal joint truncate and very slightly convex beneath in the apex (seen from in front). Thorax with somewhat long yellowish-brown hairs above and white hairs at sides; tibiae with white hairs above. Tergites 1 to 6 with transverse thin entire yellowish-grey apical hair-bands (interrupted on first), disk with very short and sparse similar depressed hairs not covering surface (very sparse on disk of first); first tergite with a tuft of yellowish-white erect and dense hairs at sides; sixth tergite broader than long, with a short basal spine on each side, apical margin entire and rounded; seventh tergite bifurcate, the narrow and short spines parallel and obtuse in the apex; second sternite with apical margin entire and straight; third sternite with apical margin very slightly emarginate in middle; fourth sternite with apical margin somewhat deeply and broadly emarginate in middle; first sternite with apical white hair-fringe; sternites with golden white hairs; apical margins of third and fourth sternites with a dense and projected golden-white hair-fringe.

Jericho, 1 ♀ (*type*), 1 ♂ (*allotype*), 4.III.1943 (H. Bytinski-Salz). The type and allotype described from very fresh specimens.

Osmia hierichonica sp. n., is closely related to *Osmia crenulata* F. Mor., and both species differ as follows: *Osmia crenulata*, ♀, has the area of metathorax dull; mesosotum and scutellum very densely rugosely punctured, dull, abdomen moderately shining; apical hair-bands of tergites 1 to 5 very thick; the ♂ has third joint of flagellum as long as fourth; disk of tergites with dense erect hairs, apical margins of tergites 1 to 6 with very dense entire hair-bands; sixth tergite with the apical margin entire and ovate.

Osmia hierichonica, ♀ has the area of metathorax dull; mesonotum and scutellum finely and densely punctured, shining; abdomen shining, apical hair-bands of tergites 1 to 5 thin; the ♂ has third joint of flagellum shorter than fourth; disk of tergites with very short and thin, sparse and depressed hairs not covering surface, very sparse on the anterior one; apical margins of tergites 1 to 6 with thin entire hair-bands; sixth tergite with the apical margin rounded. *Osmia hierichonica* may be compared with *Osmia tapruensis* R. Benoist, but both species differ in many details. *Osmia hierichonica*, ♀ has the clypeus convex, shining, densely and finely punctured, with a very narrow basal median longitudinal

area not reaching middle of disk and nearly impunctate and polished; antennae black, flagellum dark black-brown in front; legs black; tarsi dark brown, last small joint in the apex and all claws, yellow-brown; tegulae with outer half light brown, inner half black-brown; wings clear; hind spurs yellowish; abdomen black. (*Osmia taprurensis*, ♀ has not the basal polished and impunctate longitudinal distal area in middle of clypeus; antennae clear brown, testaceous beneath; hind spurs whitish; apical margins of abdominal tergites broadly testaceous.

Osmia consanguinea R. Benoist, ♀ with the area of metathorax dull, it differs from *Osmia hierichonica* in the colour of pilosity and the distribution of pilosity on abdominal tergites, in the colour of tegulae and the nervures of the base of wings, in the colour of the mandibles and the length of the body. *Osmia speculum* R. Benoist (1934, Bull. Soc. Ent. France, p. 106), ♀, another related species, it has a dull polished and impunctate linear area on clypeus extended in supraclypeal area and reaching the base of front. This character of clypeus separates *Osmia speculum* from *Osmia hierichonica*.

***Osmia wadicola* Alfken**

1935. *Osmia wadicola* J. D. Alfken, ♀, Deutsch. Kol. Mus., I. B., 2. H., pp. 188-189.

♂. Length 8.5 mm.

Similar to the ♀; third antennal joint with base narrow and apex broad, as long as fourth; fourth antennal joint broad, somewhat broader than long and as long as fifth (in *Osmia bisulca* Gerst., antennal joint much longer than fourth; fourth and fifth joints equally long, as long as broad); sixth abdominal tergite with apical margin polished shining and entire, and with a small lateral spine (in *bisulca*, apical margin emarginate in middle, with a large spine at sides); seventh tergite with two short and somewhat broad spines truncate in the apex and between same with a semicircular emargination, base with a nearly quadrangular prolongation on each side (in *bisulca*, the spines are long narrow and

obtuse in the apex and between same with a very deep emargination); second sternite without transverse elevation, shining and somewhat sparsely punctured, apical margin entire (in *bisulca*, with subapical transverse obtuse elevation); sixth sternite punctured, apical margin broadly polished in middle and slightly concave (in *bisulca*, sixth sternite sparsely punctured).

Jerusalem-Jericho Road, 16 klm., 1 ♀, 1.IV.1942 (H. Bytinski-Salz). Jericho, 1 ♂ (*allotype*), 15.IV.1899 (F. D. Morice).

Osmia daniana sp. n.

♂. Length 11 mm.

Black and related to *Osmia yermasoyiae* Mavrom., from Cyprus; mandibles and antennae black; third antennal joint much longer than fourth, fourth joint much longer than fifth; third antennal joint with apex broader than base, fourth with base as broad as apex, but both longer than broad and broader than next joints (all seen from above), third antennal joint convex in the apex beneath on inner side and fourth joint convex on inner side beneath (seen from below); head with rather long pale fulvous hairs; cheeks with whitish hairs. Thorax with rather long and dense fulvous hairs above; area of metathorax polished impunctate and shining (except narrowly basal margin), rest shallowly and densely punctured, shining; tegulae black-brown; legs black; small tarsal joints 3 to 5 reddish-brown; femora with somewhat sparse yellowish-white hairs mostly on outer side and beneath; anterior tibiae with yellowish-white hairs above; middle and hind tibiae with denser white hairs above; hind spurs pale yellowish-white; hind basitarsi with short white hairs on outer side and dense pale fulvous hairs on inner side. Abdomen covered with pale fulvous hairs longer on two anterior tergites; sixth tergite broader than long, shallowly and densely punctured, with a short basal lateral spine, apical margin polished impunctate and shining, narrow and very slightly concave in middle; seventh tergite short, rectangular, a little narrower than apical margin of sixth, apical margin very slightly concave in middle and side angles rounded; second sternite with a subapical transverse elevation, apical margin

straight; first and second sternites with very sparse pale white hairs; third sternite with the base of disk to middle and the apical margin, with pale white hairs; apical margin of fourth and fifth sternites with pale golden-white hairs.

♀. Length 11 mm.

Black; mandibles black; clypeus densely punctured and shining, covered with rather long white hairs, apical margin produced and slightly concave in middle; vertex densely punctured moderately shining, the area of ocelli finely and very densely punctured; antennae black; third antennal joint much longer than fourth or fifth, fourth joint longer than fifth; sides of face not reaching level insertion of antennae with dense white hairs; supraclypeal area, front, vertex and occiput, with rather long very pale fulvous hairs; cheeks with white hairs. Mesonotum very densely punctured and moderately shining; tegulae black-brown; mesonotum and scutellum with very pale fulvous rather long hairs; thorax with rather long white hairs at sides; legs black; last small tarsal joint deep reddish-brown; femora with rather long white hairs; tibiae with rather long white hairs above and outer sides; hind basitarsi with sparse white hairs on outer side dense and short fulvous hairs on inner side. Abdomen shining; first and second tergites shallowly rugosely punctured more densely laterally and more finely towards apical margins; tergites 1 to 5 have disk with erect rather dense white hairs, denser and longer on each side of the anterior ones, apical margins with entire shining white hair-bands; sixth tergite with apical margin rounded; ventral scopa long dense and dull yellowish-white.

Dan, 1 ♂ (*type*), 20.III.1941 (H. Bytinski-Salz). Upper Galilea, 1 ♀ (*allotype*). *Osmia daniana* sp. n., is closely related to *Osmia yermasoyiae* Mavrom., and *Osmia mocsaryi* Friese. The ♂♂ of the above two mentioned species are separated from *Osmia daniana* in the absence of any nudosity on antennal joints, in the form of sixth and seventh tergites and of second and third sternites. *Osmia mocsaryi* Friese ♂ has sixth tergite much broader than same of *Osmia daniana* (1938, *Osmia mocsaryi* G. A. Mavromoustakis, Ann. & Mag. Nat. Hist. (11), 11, p. 465, fig. 2), second sternite without subapical elevation, apical margin slightly

produced and rounded in middle. *Osmia yermasoyiae* Mavrom., ♂ has sixth tergite much narrower than same of *Osmia daniana* (ibid., p. 465, fig. 1), second sternite with somewhat thick and transverse, rather median elevation, apical margin convex (not rounded as originally described). *Osmia daniana*, female differs from the females of *Osmia mocsaryi* and *Osmia yermasoyiae* in the form of clypeus, in the colour and distribution of pilosity and especially in the shining white apical abdominal hair-bands.

M E G A C H I L E

Megachile (Chalicodoma) pyrenaica Lep., var. **bytinskii** var. n.

♀. Length 12.5 mm.

Black; head with dense white hairs; vertex and occiput with black-brown hairs. Thorax with pale yellowish-white hairs above (the hairs on scutellum longer), disk of mesonotum with some intermixed brown hairs mostly in middle. First and second tergites covered with white hairs; third and fourth tergites with dense apical white hair-bands, covering all sides, disk with erect and short brown hairs; fifth tergite nearly covered with depressed white hairs, and with some very sparse erect black-brown hairs mostly in middle of disk; sixth tergite covered with depressed white hairs except narrowly the apex, and with some very sparse erect black-brown hairs near the base; legs black; hind tibiae dark black-brown; hind basitarsi dark black-brown, apex black-brown; small tarsal joints deep reddish-brown; ventral scopa brownish-black, sixth sternite with very dark brownish-black short hairs.

Ein Gev, 1 ♀ (*type*), 22.IV.1943 (H. Bytinski-Salz).

Lepeletier (1841, Hist. Nat. Insect. Hymenopt, II, p. 336) in his original diagnosis of *Megachile pyrenaica* (♀) published a short description in Latin and next it a further one in French, but both descriptions are sufficiently different. Benoist (1935, Ann. Soc. Ent. France, CIV, p. 102) interpreted the original description of *Megachile pyrenaica* (♀), according to French diagnosis which is

more complete. My interpretation of *pyrenaica* (♀) is also based on French text of Lapeletier's original description.

The Palestinean form is related to *Megachile* (*Chalicodoma*) *pyrenaica* var. *setulosa* J. Pér., known from Spain, North Western Africa, and the two varieties differ as follows: *Megachile* (*Chalicodoma*) *pyrenaica* var. *bytinskii* n. (*female*) has thorax with pale yellowish-white hairs above, disk of mesonotum with intermixed some brown hairs mostly in middle; ventral scopa brownish-black. *Megachile* (*Chalicodoma*) *pyrenaica* var. *setulosa* J. Pér., (*female*) has the mesonotum and scutellum with black-brown hairs, ventral scopa deep yellowish-brown.

