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A Systematic Study of the Subgenus *Seladonia* of the Genus *Halictus* in Asia (Hymenoptera, Apoidea, Halictidae) IV[1), 2)]

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Abstract. The fourth report of a systematic study of the subgenus *Seladonia* Robertson of the genus *Halictus* (Hymenoptera, Halictidae) in Asia is presented. Seventeen species and one subspecies are treated including redescription of seven species and one subspecies, *Halictus* (*Seladonia*) *pjalmensis pjalmensis* Strand, *H. pjalmensis gaschunicus* Blüthgen, *H. cephalicus* Morawitz, *H. varipes* Morawitz, *H. secundus* Dalla Torre, *H. verticalis* Blüthgen, *H. transbaicalensis* Blüthgen, *H. petraeus* Blüthgen and *H. mondaensis* Blüthgen. The nine species recorded from Asia which we could not examine the type in the present study are only cited.

Key words: taxonomy, Hymenoptera, Halictidae, *Halictus*, *Seladonia*, Asia.

In the fourth report of a systematic study of the subgenus *Seladonia* Robertson of the genus *Halictus* (Hymenoptera, Halictidae) in Asia, we treat 17 species and one subspecies and redescribe eight species and one subspecies, *Halictus* (*Seladonia*) *pjalmensis pjalmensis* Strand, *H. pjalmensis gaschunicus* Blüthgen, *H. cephalicus* Morawitz, *H. varipes* Morawitz, *H. secundus* Dalla Torre, *H. verticalis* Blüthgen, *H. transbaicalensis* Blüthgen, *H. petraeus* Blüthgen and *H. mondaensis* Blüthgen. We only cited the other nine species recorded from Asia which we could not examine the type in the present

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study.

We will describe new species mainly collected in our recent expedition to Central Asia and Xinjiang Uygur Auton. Region, China with a key to East Palaearctic species of *Halictus* (*Seladonia*) in separate papers (Dawut & Tadauchi,Tadauchi & Dawut, in preparation).

17-1. *Halictus* (*Seladonia*) *pjalmensis pjalmensis* Strand

(Figs. 44: A-D, 45: A-B)

Halictus pjalmensis Strand, 1909, Arch. Naturgesch., 75: 47 [male, Chinese Turkestan: Pjalma-Chotan].

Halictus subauratovestitus Blüthgen, 1929, Konowia, 8: 80 [female, China: Kaschgar].

Halictus (*Seladonia*) *pjalmensis pjalmensis*: Ebmer, 1987, Senckenbergiana biol., 68: 345 [in list].

Redescription (Based on the type of *Halictus subauratovestitus* Blüthgen).

Female. BL 8.30 mm, fore wing with tegula 5.90 mm (n=1).

Color: Generally dark, very weakly golden reflections on face, mesoscutum and scutellum; non-metallic parts brownish black; mandible with apical 1/3 reddened; clypeus yellowish brown apically; flagellum beneath yellowish brown, scape and pedicel brownish black; lateral lobe of pronotum yellow apically; tegula yellowish transparent; veins and pterostigma yellowish; femur reddish brown, apical part of femur, basal part of tibia and tarsi yellow; tibial spurs testaceous; posterior margins of metasomal terga brownish black.

Pilosity: Generally yellowish to pale fulvous, dense, short velvet hairs, 150 - 180 μ on vertex, 150 - 190 μ on face, 150 - 230μ on pronotum, 60 - 90 μ on mesoscutum centrally, 110 - 150 μ on scutellum marginally and sternal scopa 210 - 300 μ; tomental hairs behind eyes and lateral lobe of pronotum well developed; tegula with yellowish short dense hairs anteriorly; basilateral patch on T1 well developed of very short velvet hairs; metasomal terga with broad apical bands of pale yellowish velvet hairs, T1-4 complete, T2-4 with broad basal bands of the same hairs, complete, surface with a little longer suberect, sparse, pale yellowish hairs.

Structure: *Head*: HW : HL = 2.10 : 1.70; HW : MsW : MtW = 2.13 : 2.26: 2.33. Vertex flat in frontal view, shiny and smooth. Mean ratio of POD : OOD : OCD = 0.37: 0.39 : 0.15. Eyes with upper interorbital distance nearly as long as lower interorbital distance, MOD : UOD : LOD = 1.57 : 1.43 : 1.16. Postocellar PP, 5 - 25 $\mu\phi$, IS = 0.1 - 1.5, distinct, ocellocular PP, 5 - 28 $\mu\phi$, IS = 0.1 - 1.5, postocellar depression relatively conspicuous. Frons slightly convex; frontal carina relatively long, longer than carina-

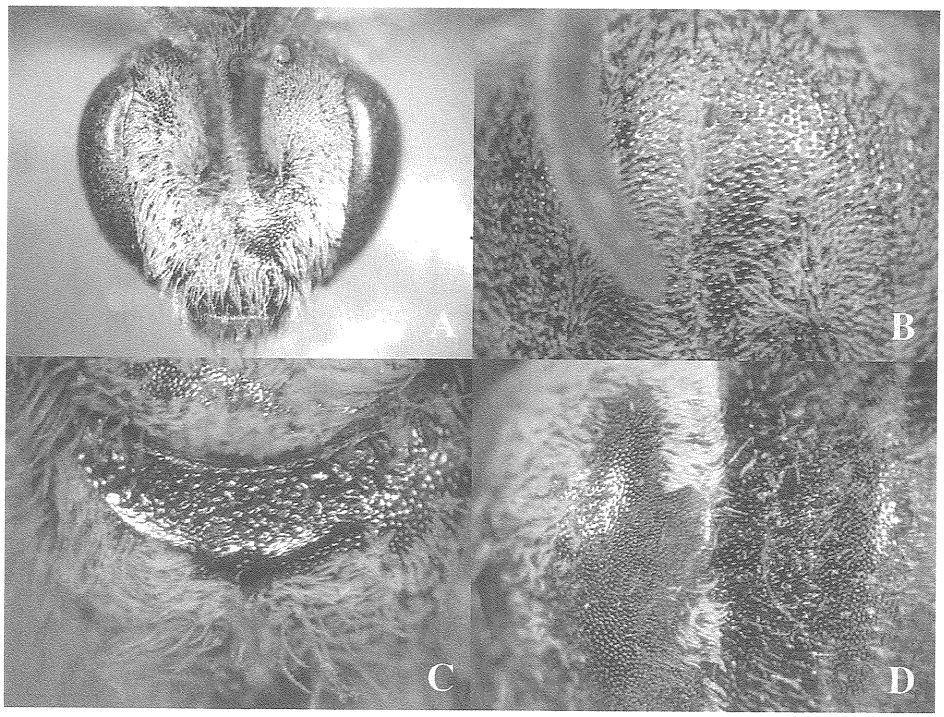

Fig. 44: A - D. *Halictus* (*Seladonia*) *pjalmensis pjalmensis* Strand, female. A: head in frontal view; B: mesoscutum; C: propodeum; D: metasomal terga.

ocellus distance. Paraocular area with PP, 10 - 28 $\mu\varnothing$, IS = 0.2 - 1.5 above. Supraclypeus slightly lower than clypeus, with PP dense, 10 - 30 $\mu\varnothing$, IS = 0.1 - 1.5. Clypeus with marginal area weakly depressed, CPL : CAL : APL = 0.46 : 0.77 : 0.21, smooth and shiny with sparse PP, 3 - 15 µø, IS = 0.5 - 10. Genal area broader than eye, EW : GW = 0.57 : 0.66, surface with small PP, rather shiny and smooth. *Mesosoma*: Pronotum without ridges, lateral surface nearly smooth and shiny. Mesoscutum smooth and shiny with distinct PP, 15 - 28 $\mu\varnothing$, IS = 0.1 - 2.5, scutellum medially not depressed longitudinally, with denser and smaller PP anteromedially. Scutellum : metanotum : propodeal dorsum = 0.57 : 0.31 : 0.34. Propodeal dorsum with enclosure slightly depressed, ridges strong and irregular, occupying basal 4/5 rugosed, and apical 1/5 smooth and shiny; lateral field smooth and shiny, with distinct dense PP. Tegula smooth broadly. Inner hind tibial spur with 3 - 4 relatively long and round-tipped teeth. *Metasoma*: T1 smooth and shiny with small, dense PP basally and centrally, 5 - 15 $\mu\varnothing$, IS = 0.1 - 2, rather smaller PP on apical narrow area, T2, 3 with sparser PP, 10 - 15 µø, IS = 0.5 - 2.0. Metasomal sterna weakly tessellate with small indistinct PP.

Male. Not available in this study.

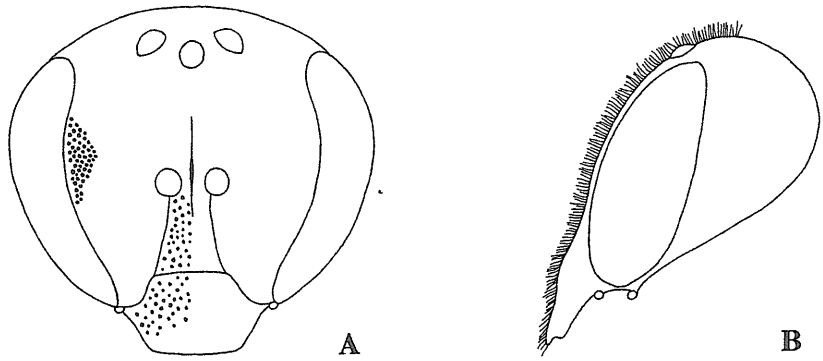

Fig. 45: A - B. *Halictus* (*Seladonia*) *pjalmensis pjalmensis* Strand, female. A: frontal view of the head; B: lateral view of the head.

Type material examined: Type female of *Halictus subauratovestitus* Blüthgen, Kaschgar, Chinese Turkestan (Berlin Zoological Museum, Germany).

Remarks: The female of this species is easily recognized in the *H. seladonius* species group by the body covered with dense short yellowish velvet hairs, the propodeum short and the dorsal face of propodeum with broad impunctate shiny space, and the metasomal terga with dense apical and basal hair bands.

Distribution: China (Xinjiang Uygur Auton. Region).

Floral association: Not available.

17-2. *Halictus* (*Seladonia*) *pjalmensis gaschunicus* Blüthgen

(Figs. 46: A-E, 47: A-B)

Halictus pjalmensis gaschunicus Blüthgen, 1935, Dt. ent. Z., 1935: 111 [female & male, Gobi, Oase: Sacau].

Halictus (Seladonia) pjalmensis gaschunicus: Ebmer, 1987, Senckenbergiana biol., 68: 345 [in list].

Redescription (Based on the type of *Halictus pjalmensis gaschunicus* Blüthgen).

Female. BL 8.50 mm, fore wing with tegula 6.50 mm (n=1).

Color: Generally dark, golden reflections on face and mesoscutum; non-metallic parts brownish; mandible with apical 1/3 reddened; apical part of clypeus and labrum brownish yellow; flagellum beneath brownish yellow, scape and pedicel brown except for basal and apical parts brownish yellow; lateral lobe of pronotum yellow; tegula yellowish transparent; veins and pterostigma yellowish; femur reddish yellow, apical part of femur, basal part of tibia and tarsi yellow; tibial spurs testaceous; posterior margins of metasomal terga yellowish brown.

Pilosity: Generally yellowish to pale fulvous, dense, short velvet hairs, 180 - 200μ on vertex, 150 - 180μ on face, 180 - 250μ on pronotum, 80 - 100µ on mesoscutum centrally, 100 - 150μ on scutellum marginally and sternal scopa 220 - 280μ; tomental hairs behind eyes and lateral lobe of pronotum well developed; tegula with yellowish short dense hairs anteriorly; basilateral patch on T1 well developed of very short velvet hairs; metasomal terga with broad apical bands of pale yellowish velvet hairs, T1-4 complete, T2-4 with broad basal bands of the same hairs, complete, surface with a little longer suberect, sparse, pale yellowish hairs.

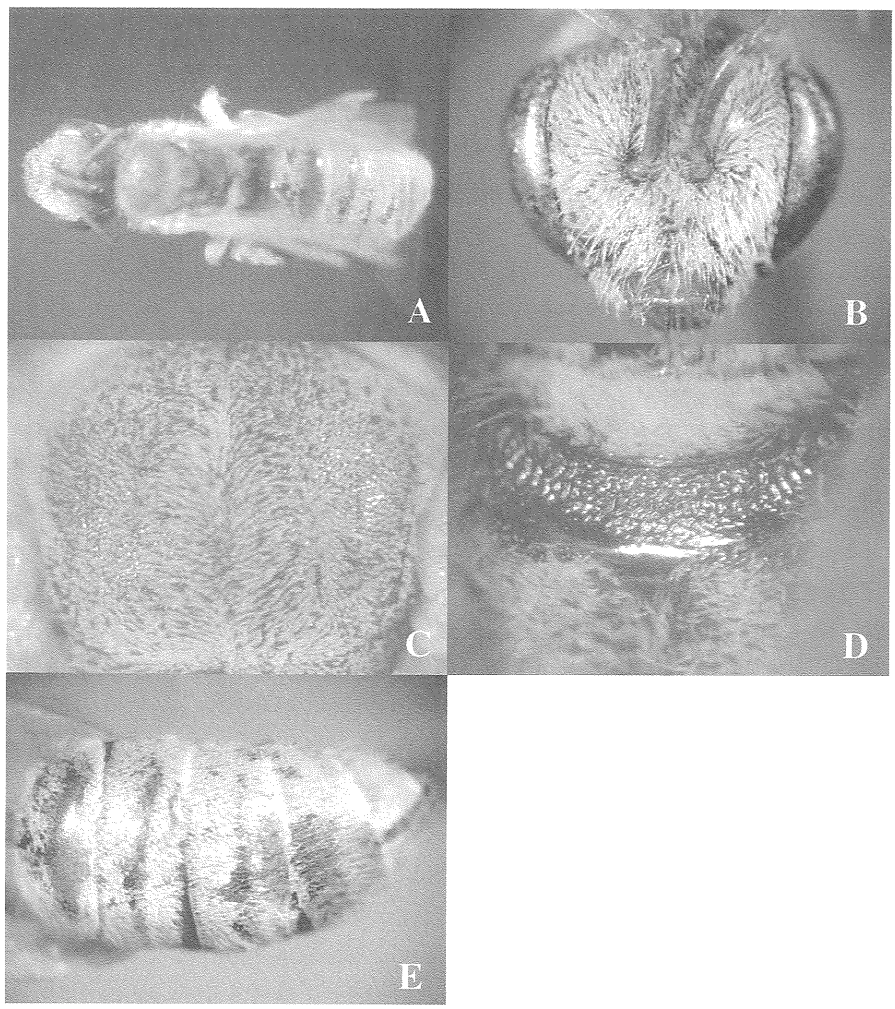

Fig. 46: A - E. *Halictus (Seladonia) pjalmensis gaschunicus* Blüthgen, female. A: whole body; B: head in frontal view; C: mesoscutum; D: propodeum; E: metasomal terga.

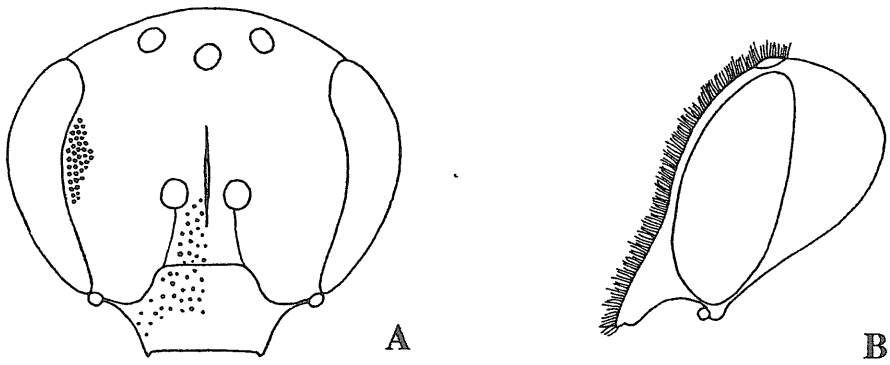

Fig. 47: A - B. *Halictus (Seladonia) pjalmensis gaschunicus* Blüthgen, female. A: frontal view of the head; B: lateral view of the head.

Structure: *Head*: HW : HL = 2.10 : 1.80; HW : MsW : MtW = 2.20 : 2.21: 2.35. Vertex flat in frontal view, shiny and smooth. Mean ratio of POD : OOD : OCD = 0.38 : 0.39 : 0.23. Eyes with upper interorbital distance nearly as long as lower interorbital distance, MOD : UOD : LOD = 1.60 : 1.41 : 1.23. Postocellar PP, 5 - 20$\mu\emptyset$, IS = 0.1 - 2, distinct, ocellocular PP, 10 - 25 $\mu\emptyset$, IS = 0.1 - 3, postocellar depression relatively conspicuous. Frons slightly convex; frontal carina relatively long, longer than carina-ocellus distance. Paraocular area with PP, 5 - 28$\mu\emptyset$, IS = 0.2 - 0.8 above. Supraclypeus slightly lower than clypeus, with PP, 5 - 25$\mu\emptyset$, IS = 0.5 - 5. Clypeus with marginal area weakly depressed, CPL : CAL : APL = 0.48 : 0.79 : 0.28, smooth and shiny with sparse PP, 3 - 18$\mu\emptyset$, IS = 0.5 - 15. Genal area narrower than eye, EW : GW = 0.55 : 0.45, surface with small PP, rather shiny and smooth. *Mesosoma*: Pronotum without ridges, lateral surface nearly smooth and shiny. Mesoscutum smooth and shiny with distinct PP, 10 - 25$\mu\emptyset$, IS = 0.1 - 1, scutellum with denser and smaller PP anteromedially. Scutellum : metanotum : propodeal dorsum = 0.58 : 0.33 : 0.36. Propodeal side shagreened with roughened PP; propodeal dorsum with enclosure slightly depressed, ridges irregular, occupying basal 2/3 rugosed, and apical 1/3 smooth and shiny; lateral field smooth and shiny, with distinct dense PP. Tegula smooth broadly. Inner hind tibial spur with 4 - 5 relatively long and round-tipped teeth. *Metasoma*: T1 smooth and shiny with small, dense PP basally and centrally, 5 - 18$\mu\emptyset$, IS = 0.1 - 2, rather smaller PP on apical narrow area, T2, 3 with sparser PP, 10 - 18$\mu\emptyset$, IS = 0.5 - 2.0. Metasomal sterna weakly tessellate with small indistinct PP.

Male. Not available in this study.

Type material examined: Type female of *Halictus pjalmensis gaschunicus* Blüthgen, Oaz Sachjou, Gashunskoe, Gobi, Robkozlov, 28. vii. 1895 (Berlin Zoological Museum, Germany).

Remarks: The female of this subspecies is different from the nominate subspecies by the apical part of clypeus brownish yellow, the propodeal enclosure with apical 1/3 smooth and shiny, and the dorsal face of propodeum with broader shiny impunctate space near enclosure.

Distribution: Mongolia

Floral association: Not available.

18. *Halictus* (*Seladonia*) *laticephalus* Warncke

Halictus laticephalus Warncke, 1984, Linzer boil. Beitr., 16: 306 [female & male, Turkey].
Halictus (*Seladonia*) *laticephalus*: Ebmer, 1987, Senckenbergiana biol., 68: 341 [in list].
Description. See Warncke (1984).

Specimens examined: Not examined the type in this study.

Remarks: Warncke (1984) described this species based on three females and two males from Turkey. The female of this species is similar to *H. seladonius*, but is separated from it by the broader head, the dorsal face of propodeum apically smooth with fine sparse punctures and the metasomal tergum 1 smooth and shiny with stronger punctures. The male of this species is also recognized by the metasomal tergum 1 smooth and shiny with stronger punctures.

Distribution: Turkey.

Floral association: Not available.

19. *Halictus* (*Seladonia*) *cephalicus* Morawitz

(Figs. 48: A-E, 49: A-E, 50:A-E)

Halictus cephalicus Morawitz, 1873, Hor. Soc. Ent. Ross., 10 (1874): 173 [female, Kaukasus].
Halictus (Seladonia) cephalicus: Ebmer, 1987, Senckenbergiana biol., 68: 354 [in list].
Halictus conjungens Blüthgen, 1921, D. Ent. Z., 1920: 299 [female, Greece]; Blüthgen, 1923, Arch. Naturgesch., A89(5): 235 [female, Transkaukasia].
Halictus neuter Blüthgen, 1923, Arch. Naturgesch., A89 (5): 235 [female, Transcaucasia].

Redescription.

Female. BL 5.80 - 9.15 mm, WL 4.0 - 6.2 mm (n=5).

Color: Generally clear, golden green reflections, especially on face, mesoscutum, scutellum and metasomal terga; non-metallic parts rather brownish than blackish; mandible with apical half reddened; flagellum beneath brownish, scape and pedicel blackish; lateral lobe of pronotum yellow apically; tegula yellowish brown transparent; veins and pterostigma yellowish brown; tibia and tarsi yellowish brown.

Pilosity : Generally yellowish white to pale fulvous, 200 - 300μ on vertex, 150 - 200μ on face, 210 - 260μ on pronotum, 200 - 250μ on mesoscutum centrally, 230 - 280μ on mesoscutellum marginally; tomental hairs behind lateral lobe of pronotum weakly developed; tegula with yellowish short hairs anteriorly; basilateral patch on T1 weakly developed; metasomal terga with broad apical bands of yellowish white hairs, T1 broadly interrupted, T2 narrowly interrupted, T3-4 complete, surface with short yellowish hairs; marginal sternal hairs 270 - 300μ.

Structure: *Head*: HW : HL = 1.88 : 2.15; HW : MsW : MtW = 1.88 : 1.76 : 1.92.

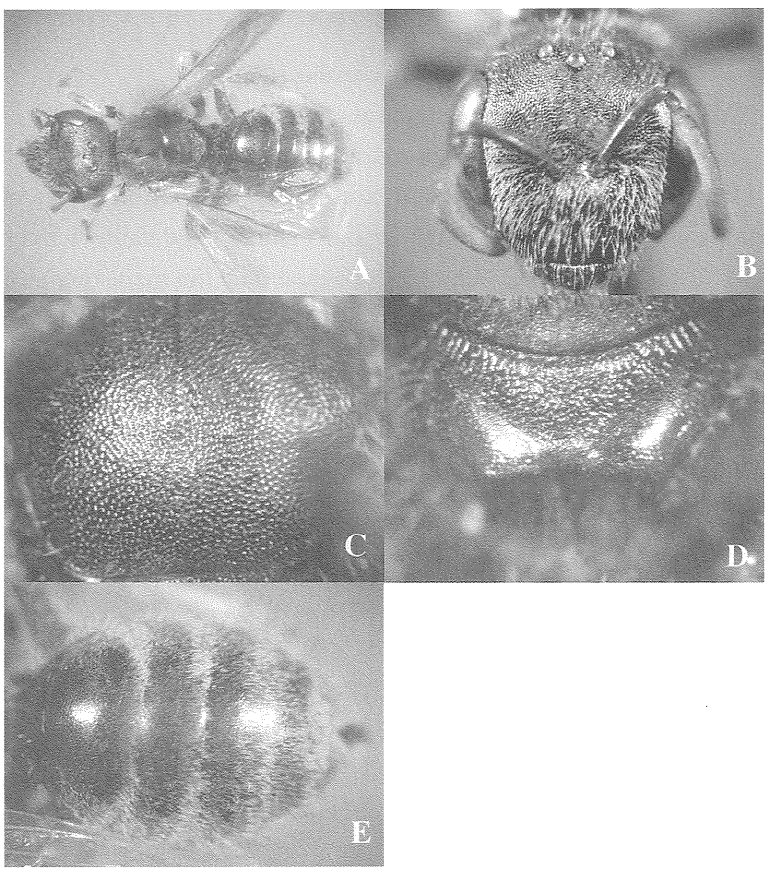

Fig. 48: A - E. *Halictus* (*Seladonia*) *cephalicus* Morawitz, female. A: whole body; B: head in frontal view; C: mesoscutum; D: propodeum; E: metasomal terga.

Vertex flat in smaller specimens and flatter in larger specimens in frontal view, shiny and smooth, more or less roughened with roughened PP. Mean ratio of IOD : OOD : OCD = 0.28 : 0.41 : 0.26. Eyes with inner margins subpararelled, MOD : UOD : LOD = 1.37 : 1.20 : 1.18. Postocellar PP, 15 - 20$\mu\phi$, rather ill-defined, ocellocular PP, 15 - 25$\mu\phi$ IS = 0.2, postocellar depression weak. Frons slightly convex; frontal carina considerably short, shorter than carina-ocellus distance. Paraocular area with PP, 15 - 25$\mu\phi$, IS = 0.1 - 0.5 above, 25 - 30$\mu\phi$, IS = 0.2 - 1 below. Supraclypeus slightly higher than clypeus, with PP, 8 - 30$\mu\phi$, IS = 1 - 2.5. Clypeus slightly convex, CPL : CAL : APL = 0.40 : 0.67 : 0.23, smooth and shiny with sparse PP, 15 - 30$\mu\phi$, IS = 1 - 3.5. Genal area broader than eye, EW : GW = 0.44 : 0.75, surface with small PP, shiny and smooth near eye and weakly shagreened behind. *Mesosoma*: Pronotum with many horizontal short ridges and a long vertical ridge; lateral surface weakly shiny and weakly tessellate. Mesoscutum smooth and shiny with distinct PP, 15 - 25$\mu\phi$, IS = 0.5 - 2.5, scutellum medially not depressed longitudinally, with denser and smaller PP anteromedially. Scutellum : metanotum : propodeal dorsum = 0.40 : 0.21 : 0.31. Propodeal side homogeneously tessellate with small indistinct PP; propodeal dorsum with enclosure slightly depressed, ridges strong and irregular, occupying nearly all over, lateral field very weakly tessellate and weakly shiny, with broadly impunctate space near enclosure; propodeal declivity smooth and shiny with sparse PP. Tegula nearly smooth broadly. Inner hind tibial spur with 4 relatively long and round-tipped teeth. *Metasoma*: T1 smooth and shiny with small, dense distinct PP basally, 8 - 15$\mu\phi$, IS = 0.5 - 2, smaller PP on apical narrow area, T2, 3 smooth and shiny with weaker and smaller PP, 8 - 20$\mu\phi$ IS = 0.5 - 1.5.Metasomal sterna weakly tessellate with small indistinct PP.

Male. BL 7.20 mm, WL 4.85 mm (n=1).

Color: As in female, non-metallic parts rather brownish than blackish; flagellum beneath yellowish orange, scape and pedicel blackish; lower 1/3 of clypeus, labrum, median part of mandible except apical 1/3 and basal parts and pronotal lobe apically lemon yellow; tegula brownish transparent with yellowish patch visible beneath; legs brownish, apices of femora, tibiae except middle parts and all tarsi lemon yellow; fore tibiae inward and below slightly brownish; posterior margin of metasomal terga broadly yellowish brown transparent.

Pilosity: Relatively paler and tomental patch less developed as in female; hairs 200 - 250μ on vertex, 200 - 330μ on face, 300 - 330μ on pronotum, 230 - 350μ on mesoscutum centrally, 390 - 430μ on mesoscutellum marginally, and sternal hairs posteriorly 230 - 370μ ; metasomal terga with apical bands of yellowish white hairs, T1-2 broadly interrupted, T3-4 narrowly interrupted, surface with very short yellowish hairs.

Structure: *Head*: HW : HL = 1.70 : 1.86; HW : MsW : MtW = 1.70 : 1.60 : 1.75. Vertex

round in frontal view, shiny and smooth, postocellar PP more or less roughened, 20 - 25μø IS = 0.1 - 0.5, ocellocular PP distinct, 25 - 28μø, IS = 0.1 - 1. Flagellar segments F1-3 Ls : F10 L : F2 W = 0.13 : 0.26 : 0.28 : 0.29 : 0.19. Supraclypeus mildly convex, smooth and shiny with PP irregular in size and distribution medially 8 - 20μø, IS = 0.5 - 3. Clypeus convex, smooth and shiny with sparse PP, 10 - 25μø, IS = 1 - 5, CPL : CAL : APL = 0.48 : 0.83 : 0.29. Genal area broader than eye, EW : GW = 0.40 : 0.57. *Mesosoma*: Pronotum with stronger and longer lateral ridges than in female. Mesoscutum smooth and shiny with distinct PP, 15 - 25μø, IS = 0.2 - 1, scutellum medially not depressed longitudinally, with similar PP. Scutellum : metanotum : propodeal dorsum = 0.40 : 0.23 : 0.27. Propodeal side smooth and shiny with dense PP, 15 - 20μø, IS = 0.5 - 1.5, without lineolation

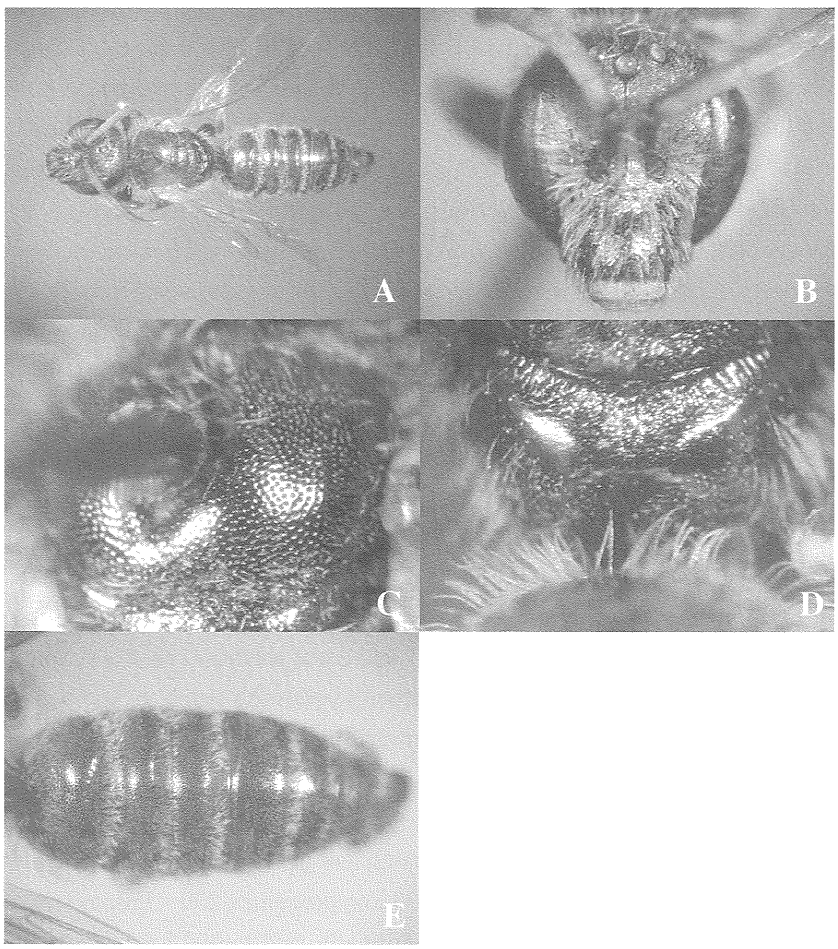

Fig. 49: A - E. *Halictus* (*Seladonia*) *cephalicus* Morawitz, male. A: whole body; B: head in frontal view; C: mesoscutum; D: propodeum; E: metasomal terga.

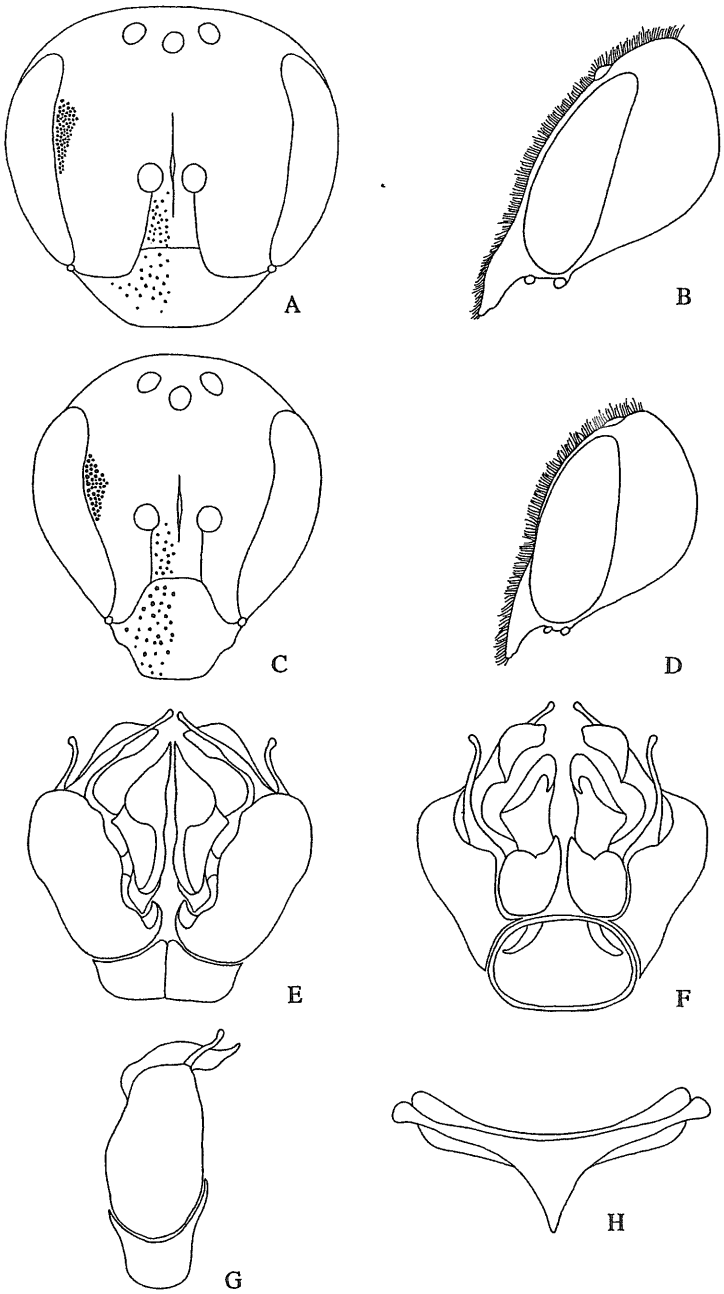

Fig. 50: A - H. *Halictus* (*Seladonia*) *cephalicus* Morawitz. A: frontal view of the head, female; B: lateral view of the head, female; C: frontal view of the head, male; D: lateral view of the head, male; E: dorsal view of the male genitalia; F: ventral view of the male genitalia; G: right lateral view of the genitalia; H: sterna 7 and 8 of the male.

below; propodeal enclosure with stronger ridges than in female, apical 2/3 anastomosing and basal 1/3 paralleled; lateral field nearly smooth and shiny, with broad impunctate space near enclosure, broadly distinctly punctate below; propodeal declivity smooth and shiny with distinct PP. Tegula as in female. Hind tibia : hind basitarsus : hind distitarsus = 1.27 : 0.73 : 1.10. *Metasoma*: T1 smooth and shiny all over with anterior declivity with sparse PP, disc with dense PP, 8 - 17$\mu\varnothing$, IS = 0.1 - 1.5, marginal area with sparser PP; T2,3 similar to T1 with PP a little weaker. Genitalia: Gonostylus with apex dilated; dorsal lobe long and slender, ventral lobe slender, distinctly shorter than main body.

Specimens examined: Syntype female (Zool. Inst., Russian Academy of Sciences, St. Petersburg). other material: TURKEY: 1 female, Antakya, 2. vi. 1965 (M. Schwarz); 1 female, Sariyer, Istanbul, 19. v. 1964 (E. Grünwaldt); 1 female, Halkali, Istanbul, 22. v. 1964 (E. Grünwaldt). GREECE: 1 female, Metallikon, 10. v. 1964 (E. Grünwaldt); 1 female, Lamia, 4. v. 1964 (E. Grünwaldt); Elevtheroupolis: 3 females, 30. v. 1964 (E. Grünwaldt); 1 female, 31. v. 1964 (E. Grünwaldt); Rhodos Is., Akropolis: 2 females, 27-28. viii. 1972 (J. Klimesch); 1 female and 1 male, 14-22. x. 1971 (J. Klimesch).

Remarks: This species is very similar to *H. varipes* Morawitz, but is separated from it by the mesoscutum with very close smaller punctures and the metasomal tergum 1 with weaker and smaller punctures, and the apical hair bands of metasomal terga T3-4 complete in female.

Distribution: Kaukasus, Transkaukasia, Turkey, Greece, Rhodos Is., Bulgaria, old Yugoslavia.

Floral association: Not available in Asia.

20. *Halictus* (*Seladonia*) *varipes* Morawitz

(Figs. 51: A-E, 52: A-B)

Halictus varipes Morawitz, 1876, in Fedchenko, Turkestan Mellifera, 2: 223 [female & male, Turkestan].

Halictus (Seladonia) varipes: Ebmer, 1987, Senckenbergiana biol., 68: 355 [in list].

Halictus niloticus Smith, 1879, Descr. New Spec. Hymenop., 32 [female, Sudan: White Nile].

Halictus magrettii Vachal, 1892, Bull. Soc. Ent. France, 61: 137 [female, Sudan].

Halictus dives Pérez, 1895, Esp. nouv. Mellif. Barbarie, 52 [female, Biskra].

Halictus omanicus Pérez, 1907, Bull. Sci. Fr. Belg., 41: 489 [female, Muskat].

Halictus varipes var. *koptica* Blüthgen, Bull. Soc. Ent. Egypte, 17: 16 [female & male, Egypt].

Halictus sudanicus Cockerell, 1945, Ann. Mag. Nat. Hist., (11) 12: 352 [female, Sudan].
Halictus tokarensis Cockerell, 1945, Ann. Mag. Nat. Hist., (11) 12: 352 [female, Sudan].
Halictus dissensis Cockerell, 1945, Ann. Mag. Nat. Hist., (11) 12: 353 [female, Sudan].
Halictus medanicus Cockerell, 1945, Ann. Mag. Nat. Hist., (11) 12: 354 [female, Sudan].
Halictus mogrensis Cockerell, 1945, Ann. Mag. Nat. Hist., (11) 12: 355 [female, Sudan].
Halictus tokariellus Cockerell, 1945, Ann. Mag. Nat. Hist., (11) 12: 355 [male, Sudan].
Halictus medaniellus Cockerell, 1945, Ann. Mag. Nat. Hist., (11) 12: 356 [male, Sudan].

Redescription.

Female. BL 6.00 - 7.50 mm, fore wing with tegula 4.50 - 6.70 mm (n=10).

Color: Generally clear, rather golden green reflection, especially on face, mesoscutum, scutellum; non-metallic parts rather blackish to blackish brown; flagellum below brownish; lateral lobe of pronotum with apical small area yellow; tegula brownish yellow transparent; veins and pterostigma brownish yellow; apices of femora, bases and apices of tibia and tarsi yellowish brown; tibial spurs yellowish; posterior margins of metasomal terga yellowish brown.

Pilosity: Generally white, 160 - 200μ on vertex, 180 - 210μ on face, 210 - 230μ on pronotum, 150 - 180μ on mesoscutum centrally, 200 - 230μ on scutellum marginally and sternal scopa 250 - 260μ; tomental hairs on lateral lobe of pronotum less developed; tegula with yellowish, relatively short hairs anteriorly; metasomal terga with moderate apical bands of white hairs, T1-2 interrupted, T3-4 complete, surface with short yellowish hairs.

Structure: *Head*: Slightly wider than long. HW: HL = 2.01: 1.81; HW: MsW: MtW = 2.01: 1.78: 1.92. Vertex flat in frontal view and round near eyes. MOD: UOD: LOD = 0.18: 0.33: 0.15. OCD relatively long. MOD: UOD: LOD = 1.32: 1.20: 1.05. Eyes with inner margins subparalleled. Postocellar PP, 15 - 25$\mu\phi$, dense and rather roughened. Ocellocular PP, 15 - 20$\mu\phi$, IS = 0.1 - 2, postocellar depression relatively conspicuous. Frons weakly convex, frontal carina as carina-ocellus distance. Paraocular area with PP 20 - 25$\mu\phi$ above, 20 - 30$\mu\phi$ or more below. Supraclypeus conspicuously higher than clypeus, with sparse PP, 10 - 25$\mu\phi$, irregular in distribution, IS = 0.1 - 2.5 or less, smooth and shining. Clypeus flat, including apical margin. CPL: CAL: APL = 0.44: 0.73: 0.20, smooth and shiny, with PP 15 - 33$\mu\phi$, IS = 0.1 - 5 basally, sparser below. Gena conspicuously broader than eye, EW: GW = 0.47: 0.60 on average. *Mesosoma*: Pronotum with relatively strong oblique ridges, below with several lateral ridges, lateral surface weakly rugosed. PP on mesoscutum and scutellum irregular, 15 - 25$\mu\phi$, rarely 30$\mu\phi$, IS = 0.1 - 2, smooth and shiny. Scutellum medially not depressed longitudinally, with PP 15 - 28, IS = 0.1 - 3, propodeal side with dense, coarse, dinsinct PP. Mesoscutellum: metanotum: propodeal dorsum = 0.40: 0.27: 0.38. Propodeal dorsum with

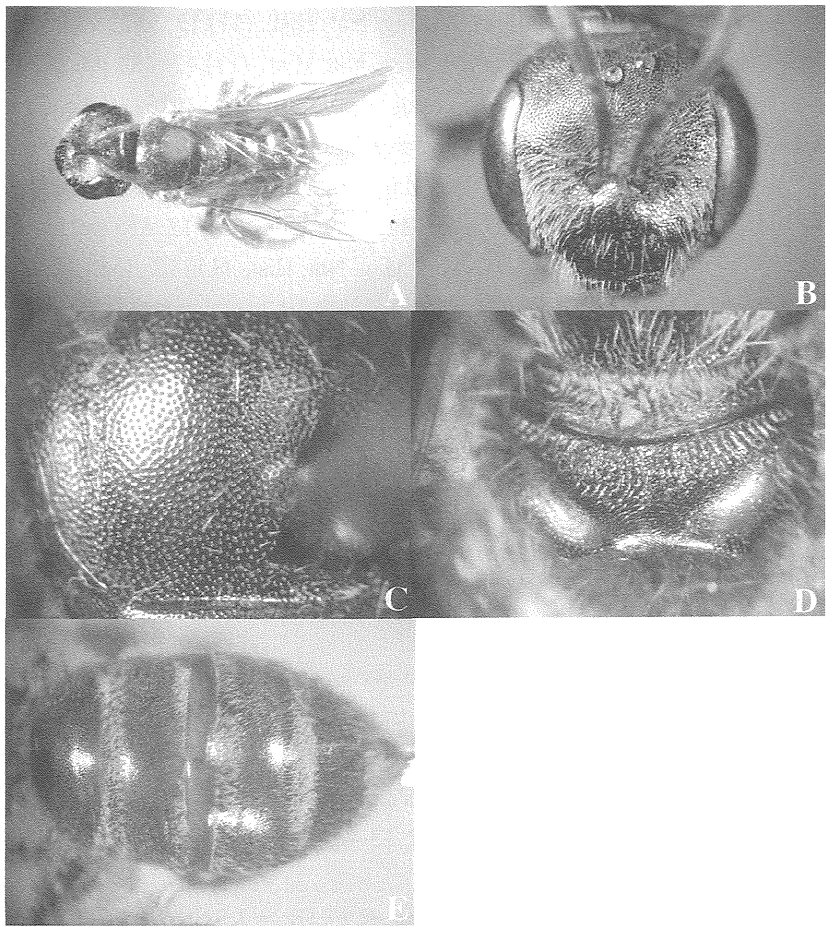

Fig. 51: A - E. *Halictus* (*Seladonia*) *varipes* Morawitz, female. A: whole body; B: head in frontal view; C: mesoscutum; D: propodeum; E: metasomal terga.

enclosure nearly flat, ridges occupying basal half, medially anastomosing and paralleled in lateral part. Inpunctate space of propodeal side very broad and tessellate. PP of propodeal declivity above small and very sparser. Tegula nearly smooth broadly. Inner hind tibial spur with 4-5 relatively long teeth. *Metasoma*: T1 smooth and shiny with small, dense PP medially and apically, 10 - 15$\mu\phi$, IS = 0.1 - 8. T2, 3 weakly tessellate with rather denser PP, 8 - 15$\mu\phi$, IS = 0.1 - 1.5. Metasomal sterna tessellate with moderate distinct PP.

Male. Not available in this study.

Specimens examined: Syntype female (Zool. Instit., Russian Academy of Sciences, St. Petersburg). Other material: BANGLADESH: Gazipur Distr.: 1 female, IPSA Campus, 16. i. 1993 (O. Tadauchi); same locality and collector as above: 3 females, 3. i. 1993; 1

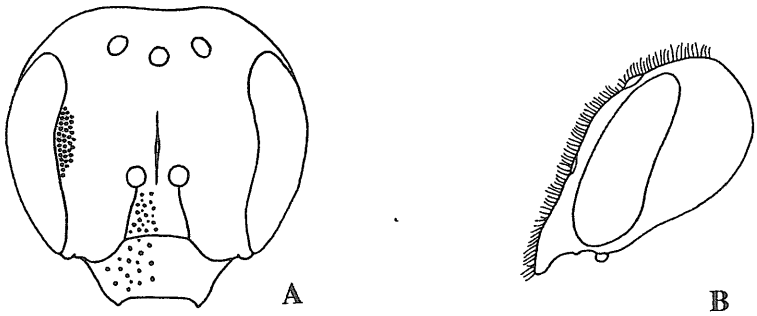

Fig. 52: A-B. *Halictus* (*Seladonia*) *varipes* Morawitz A: frontal view of the head, female; B: lateral view of the head, female.

female, 5. i. 1993; 1 female, 3. iii. 1993; Bhawal Nat. Park, Gazipur Distr. (O. Tadauchi): 3 females, 31. i. 1993; 2 females, 9. ii. 1993; 1 female, 1. iii. 1993; Nat. Botan. Garden, Mirpur, Dhaka (O. Tadauchi): 2 females, 23. i. 1993; 2 females, 2. ii. 1993; 2 females, 13. ii. 1993; 1 female, Raiganj, Raiganj Distr., 26. i. 1993 (O. Tadauchi); 1 female, Khord, Niomatpur, Naogaon Distr., 27. i. 1993 (O. Tadauchi). TURKEY: 2 females, Gurun, As. Turk., 3. vi, 1970 (K. Kusdas). EGYPT: 1 female, Fayed, Egypt, iv. 1943 (Dr. H. Priesner).

Remarks: This species is very similar to *H. cephalicus* Morawitz, but is separated from it by the mesoscutum with very close stronger and larger punctures and the metasomal tergum 1 with stronger and larger punctures, and the apical hair bands of metasomal terga T2-4 complete in female.

Distribution: Bangladesh, old Turkestan, Turkey, Sudan, Egypt, Algeria.

Floral association (Bangladesh): *Brassica* spp. (mustard), *Brassica oleracea* (broccoli), *Calendula officinalis*, *Brassica pekinensis* (Chinese cabagge), *Cosmos bipinnatus*, *Cosmos sulphureus*, *Anthenis rigescens*, *Tagetes patula* (marigold).

21. *Halictus* (*Seladonia*) *secundus* Dalla Torre

(Figs. 53: A-E, 54: A-B)

Halictus parumpunctatus Morawitz (nec Schenck 1876), 1893, Hor. Soc. Ent. Ross., 28 (1894): 72 [female, old Turkestan: Varsa minor].

Halictus secundus Dalla Torre, 1896, Catal. Hym., 10: 82 [nom. nov. for *H. parumpunctatus* Morawitz].

Halictus (*Seladonia*) *secundus*: Ebmer, 1987, Senckenbergiana biol., 68: 357 [in list].

Redescription (Based on the type of *Halictus parumpunctatus* Morawitz).

Female. BL 7.18 mm, fore wing with tegula 6.20 mm (n=1).

Color: Generally green reflections on face, mesoscutum and scutellum; non-metallic parts brownish black to black; mandible reddish brown; flagellum beneath reddish brown, scape and pedicel brownish black; lateral lobe of pronotum light brown apically; tegula brownish yellow transparent; veins and pterostigma brownish yellow; legs blackish brown; tibial spurs yellowish brown; posterior margins of metasomal terga brownish.

Pilosity: Generally dull whitish, 160 - 230μ on vertex, 170 - 250μ on face, 250 - 300 μ on pronotum, 160 - 180μ on mesoscutum centrally, 150 - 210μ on scutellum marginally and sternal scopa 260 - 310μ; tomental hairs behind lateral lobe of pronotum developed; tegula with dull whitish short hairs anteriorly; basilateral patch on T1 absent; metasomal terga with apical bands of dull whitish hairs, T1-4 interrupted, surface with short white hairs.

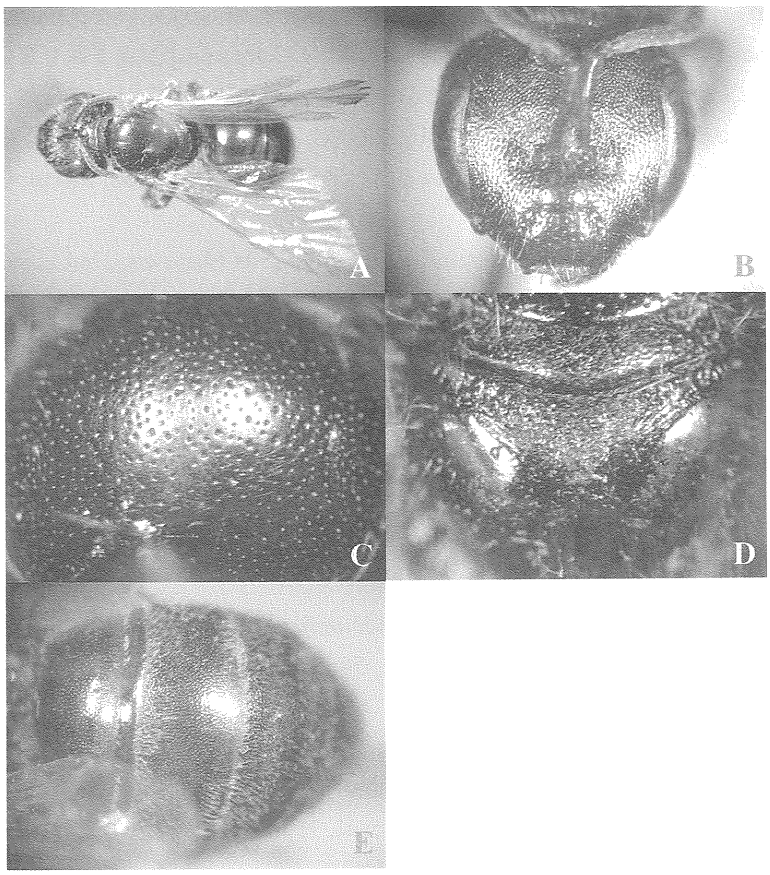

Fig. 53: A - E. *Halictus* (*Seladonia*) *secundus* Dalla Torre, female. A: whole body; B: head in frontal view; C: mesoscutum; D: propodeum; E: metasomal terga.

Structure: *Head*: HW : HL = 2.29 : 2.16; HW : MsW : MtW = 2.29 : 2.39 : 2.43. Vertex flat in frontal view, smooth and shiny with roughened PP. Mean ratio of POD : OOD : OCD = 0.35 : 0.55 : 0.18. Eyes with upper interorbital distance nearly as long as lower interorbital distance, MOD : UOD : LOD = 1.73 : 1.64 : 1.59. Postocellar PP rather ill-defined, ocellocular PP, 10 - 30$\mu\varnothing$, IS = 0.1 - 3, postocellar depression relatively conspicuous. Frons nearly flat; frontal carina relatively long, longer than carina-ocellus distance. Paraocular area with PP, 10 - 25$\mu\varnothing$, IS = 0.1 - 3.5 above, 15 - 30$\mu\varnothing$, IS = 0.1 - 2 below. Supraclypeus notably higher than clypeus, smooth and shiny with PP very sparse, 10 - 30 $\mu\varnothing$, IS = 1 - 5. Clypeus with marginal area weakly depressed, CPL : CAL : APL = 0.45 : 0.82 : 0.40, smooth and shiny with sparse PP, 10 - 30$\mu\varnothing$, IS = 1 - 5, sparser on apically. Genal area conspicuously broader than eye, EW : GW = 0.51 : 0.71, surface broadly smooth and shiny with small PP, a little shagreened. *Mesosoma*: Pronotum without ridges; lateral surface nearly smooth and shiny. Mesoscutum smooth and shiny with PP sparse, 10 - 28$\mu\varnothing$, IS = 0.5 - 5. Scutellum medially not depressed longitudinally, with sparser PP. Scutellum : metanotum : propodeal dorsum = 0.50 : 0.28 : 0.51. Propodeal side smooth and shiny with sparse PP; propodeal dorsum with enclosure slightly depressed, ridges strong and irregular, occupying basal half rugosed, and apical part broadly smooth and shiny, lateral field smooth and shiny, propodeal declivity with sparse PP. Tegula broadly smooth. *Metasoma*: T1 broadly smooth and shiny with small, sparse PP basally and centrally, 10 - 15 $\mu\varnothing$, IS = 1 - 5, rather denser PP on apical

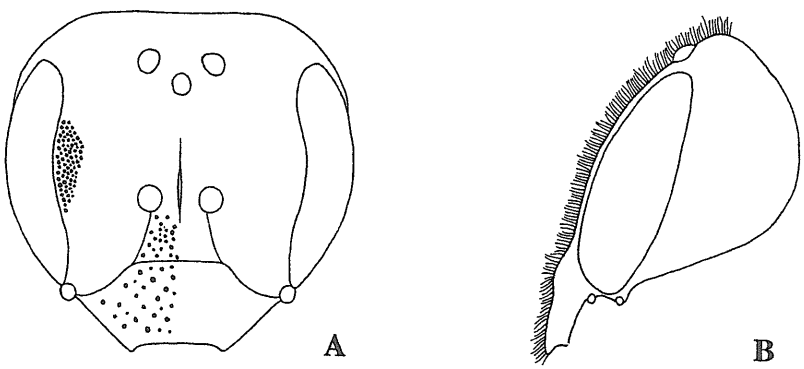

Fig. 54: A-B. *Halictus* (*Seladonia*) *secundus* Dalla Torre, A: frontal view of the head, female; B: lateral view of the head, female.

area, IS = 1 - 3, T2, 3 with denser and smaller PP, 5 - 15$\mu\phi$, IS = 0.1 - 2.5, basally. Metasomal sterna weakly tessellate with sparser PP.

Male. Unknown.

Type material examined: Type female of *Halictus parumpunctatus* Morawitz (nec Schenck 1876), Seravschan, Varsa Inur, Glasunov 1892 (K. F. Morawitz) (Zool. Inst., Russian Academy of Sciences, St. Petersburg).

Remarks: This species is easily recognized by the supraclypeus notably higher than clypeus, the mesoscutum and scutellum with very sparse and weak punctures, the propodeal enclosure weakly rugose at basal 1/2 and smooth and shiny at apical 1/2, the metasomal tergum 1 with distinct sparse punctures, the legs blackish brown and the apical hair bands of metasomal terga 1-4 interrupted.

Distribution: old Turkestan.

Floral association: Not available.

22. *Halictus* (*Seladonia*) *verticals* Blüthgen

(Figs. 55: A-E, 56: A-B)

Halictus verticals Blüthgen, 1931, Mitt. zool. Mus. Berlin, 17: 396 [female, Turkey].

Halictus verticals kurdicus Warncke, 1984, Linzer boil. Beitr., 16: 306 [female & male, Turkey].

Halictus (*Seladonia*) *verticals*: Ebmer, 1987, Senckenbergiana biol., 68: 356 [in list].

Redescription .

Female. BL 7.15-7.50 mm, fore wing with tegula 5.40-5.50 mm (n=3).

Color: Generally blue reflections on face, mesoscutum and scutellum; non-metallic parts brownish black to black; mandible reddish brown; flagellum beneath reddish brown, scape and pedicel brownish black; lateral lobe of pronotum yellow apically; tegula brownish yellow transparent; veins and pterostigma brownish yellow; apical femur, basal and apical tibia and tarsi yellow; tibial spurs yellowish with apical half reddened; posterior margins of metasomal terga reddish brown.

Pilosity: Generally dull whitish, 160 - 200μ on vertex, 160 - 240μ on face, 160 - 240 μ on pronotum, 120 - 160μ on mesoscutum centrally, 200 - 240μ on scutellum marginally and sternal scopa 260 - 310μ; tomental hairs behind lateral lobe of pronotum developed; tegula with dull whitish short hairs anteriorly; basilateral patch on T1 absent; metasomal terga with apical bands of dull whitish hairs, T1-4 interrupted, surface with short white hairs.

Structure: *Head*: HW : HL = 2.00 : 2.10; HW : MsW : MtW = 2.00 : 1.95 : 2.30. Vertex

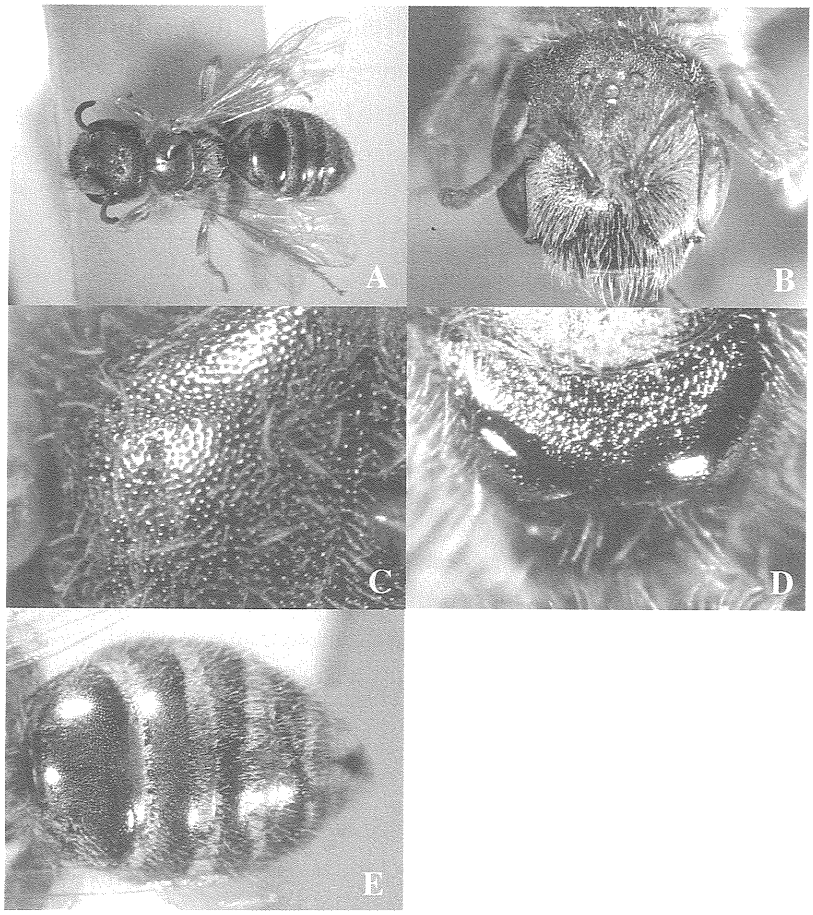

Fig. 55: A - E. *Halictus* (*Seladonia*) *verticals* Blüthgen, female. A: whole body; B: head in frontal view; C: mesoscutum; D: propodeum; E: metasomal terga.

round in frontal view, smooth and shiny with distinct PP. Mean ratio of POD : OOD : OCD = 0.28 : 0.50 : 0.40. Eyes with upper interorbital distance nearly as long as lower interorbital distance, MOD : UOD : LOD = 1.65 : 1.55 : 1.55. Postocellar PP rather ill-defined, ocellocular PP, 10 - 20μø, IS = 0.1 - 0.5, postocellar depression relatively conspicuous. Frons convex, frontal carina relatively long, longer than carina-ocellus distance. Paraocular area with PP, 10 - 20μø, IS = 0.1 - 1 above, 10 - 30μø, IS = 1 - 3 below. Supraclypeus slightly higher than clypeus, smooth and shiny with PP very sparse, 10 - 20μø, IS = 1 - 5. Clypeus nearly flat with marginal area weakly depressed, CPL : CAL : APL = 0.30 : 0.70 : 0.35, smooth and shiny with sparse PP, 10 - 40μø, IS = 1 - 5, sparser on apically. Genal area conspicuously broader than eye, EW : GW = 0.53 : 0.84, surface broadly smooth and shiny with small PP. *Mesosoma*: Pronotum without ridges; lateral surface nearly smooth and shiny. Mesoscutum smooth and shiny

with PP dense, 10 – 20$\mu\emptyset$, IS = 0.5 - 1. Scutellum medially not depressed longitudinally, with sparser PP. Scutellum : metanotum : propodeal dorsum = 0.45 : 0.30 : 0.50. Propodeal side smooth and shiny with sparse PP; propodeal dorsum with enclosure slightly depressed, ridges strong and irregular, occupying nearly all over, lateral field broadly smooth and shiny, propodeal declivity with sparse fine PP. Tegula broadly smooth. *Metasoma*: T1 smooth and shiny with small PP basally and centrally, 15 - 20 $\mu\emptyset$, IS = 1- 2, rather denser PP on apical area, IS = 2 - 3, T2, 3 with denser and smaller PP, 10 - 15$\mu\emptyset$, IS = 0.1 - 1, basally. Metasomal sterna weakly tessellate with sparse PP.

Male. Not available in this study.

Specimens examined: TURKEY: Gürün, As. Türk. (K. Kusdas): 4 females, 3. vi. 1970; 1 female, 30. v. - 4. vi. 1972.

Remarks: This species is only known from Turkey. This species is somewhat similar to *H. secundus* Dalla Torre in having the mesoscutum with sparser punctures in female, but is separated from it by the scutellum with denser punctures, the propodeal enclosure weakly rugose nearly all over, the metasomal tergum 1 with dense punctures medially and very sparse apically, and the apical hair bands of metasomal terga 3-4 complete.

Distribution: Turkey.

Floral association: Not available.

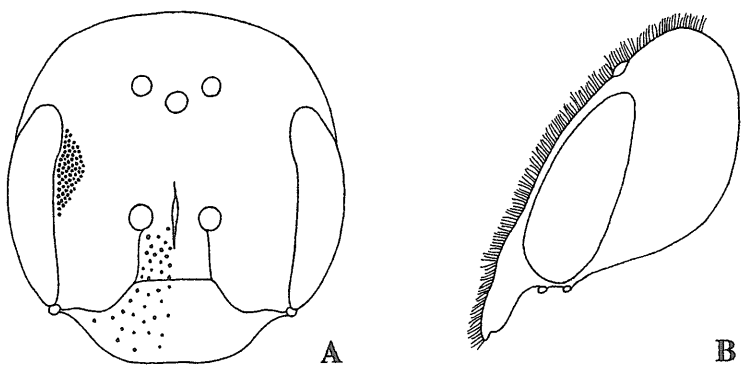

Fig. 56: A-B. *Halictus* (*Seladonia*) *verticals* Blüthgen, A: frontal view of the head, female; B: lateral view of the head, female.

23. *Halictus* (*Seladonia*) *propamisos* Ebmer

Halictus (Seladonia) promamisos Ebmer, 1978, Linzer biol. Beitr., 10: 91-94 [male, Afghanistan: Hazaradjat]; Ebmer, 1980, Linzer biol. Beitr., 12: 482-483 [female, India: Ladakh]; Ebmer, 1987, Senckenbergiana biol., 68: 357 [in list].

Description. See Ebmer (1978, 1980)

Specimens examined: Not examined the type in this study.

Remarks: Ebmer (1978, 1980) described male of this species from Afghanistan and female from India. The female of this species is distinguished from the Asian species of *H. gemmeus* group by the shorter head, distinctly sparse PP on mesoscutum, the metasomal terga with finer and sparser PP, especially on T1 and the propodeum long with dorsal face broad. The male of this species is recognized by the clypeus strongly protuberant, the propodeal enclosure with 3/4 net-like rugose, with 1/4 half moon shape and smooth and shiny, S4 apically deeply concave with acute angle and with short dense dark brown hairs.

Distribution: Afghanistan, India.

Floral association: Not available.

24. *Halictus* (*Seladonia*) *wollmanni* Blüthgen

Halictus wollmanni Blüthgen, 1933, Dt. ent. Z., 1933: 72 [female, Russia: Mugodjar Gebirge].

Halictus (Seladonia) wollmanni: Ebmer, 1987, Senckenbergiana biol., 68: 357 [in list].

Description. See Blüthgen (1933).

Specimens examined: Not examined the type in this study.

Remarks: Blüthgen (1933) described this species from Central Asia based on one female specimen. He noted that this species is similar to *H. geminatus* Pérez by having the short head, but it is different from it by the sculpture on the mesoscutum and scutellum. It is also very similar to the female of *H. secundus* D. T. in having the sculpture of the scutellum and propodeum, but is distinguished from it by the head similar to *gemmeus* and the genal area round, the mandible and legs darker and T3-4 without distinct apical metasomal hair bands.

Distribution: old USSR (Central Asia).

Floral association: Not available.

25. *Halictus* (*Seladonia*) *kessleri* Bramson

Halictus kessleri Bramson, 1879, Bull. Soc. Natural. Moscou, 54: 286 [male, S. Russia: Jekaterinoslaw = Dnepropetrovsk].

Osmia pannonica Zilahi-Kiss, 1915, Rovartani Lapok, 22: 83 [male, Hungary].

Halictus kessleri, Blüthgen, 1921, Dt. ent. Z., 1920: 291 [female].

Halictus kessleri nebulosus Warncke, 1975, Polsk. Pismo ent., 45: 119 [female & male, Turkey].

Halictus kessleri hakkarius Warncke, 1975, Linzer boil. Beitr., 16: 305 [female & male, Turkey].

Halictus (Seladonia) kessleri: Ebmer, 1987, Senckenbergiana biol., 68: 352-354 [in list].

Description. See Blüthgen (1926).

Specimens examined: Not examined the type in this study.

Remarks: This species is mainly known from Europe and also recorded from Turkey, south European Russia and Ukraine. Although Warncke (1975) described two different subspecies of this species from Turkey, Ebmer (1987) considered it was not necessary to divide subspecies.

Distribution: Turkey, Russia (south), Ukraine, Greece, Bulgaria, Romania, old Yugoslavia, Hungary, Slovakia, Austria, Italy, France, Spain.

Floral association: Not available.

26. *Halictus* (*Seladonia*) *transbaicalensis* Blüthgen

(Figs. 57: A-E, 58: A-B)

Halictus transbaicalensis Blüthgen, 1933, Dt. ent. Z., 1933: 76 [female, S. Transbaikal]; Ebmer, 1982, Mitt. Zool. Mus. Berlin, 58: 202 [male, Mongolia].

Halictus (Seladonia) transbaicalensis Ebmer, 1987, Senckenbergiana biol., 68: 372 [in list].

Redescription.(Based on the type of *Halictus transbaicalensis* Blüthgen)

Female. BL 6.86 mm, fore wing with tegula 5.40 mm (n=1).

Color: Generally dark, bluish reflections on face, mesoscutum and scutellum; non-metallic parts brownish black; mandible with apical half reddened; flagellum beneath yellowish brown, scape and pedicel blackish; lateral lobe of pronotum black apically; tegula brownish transparent; veins and pterostigma brownish yellow; legs chestnut brown; tibial spurs yellowish; posterior margins of metasomal terga yellowish brown transparent.

Pilosity: Generally dull whitish, 150 - 200μ on vertex, 150 - 230μ on face, 200 - 230μ

on pronotum, 145 - 160μ on mesoscutum centrally, 240 - 280μ on scutellum marginally and sternal scopa 280 - 300μ; tomental hairs behind lateral lobe of pronotum small; tegula with dull whitish short hairs anteriorly; basilateral patch on T1 small only laterally; metasomal terga with broad apical bands of dull whitish hairs, T1 interrupted, T2-4 complete, surface with short suberect dull whitish hairs; metasamal sterna 1-5 with apical hair bands of short whitish hairs.

Structure: *Head*: HW : HL = 1.86 : 2.03; HW : MsW : MtW = 1.86 : 1.99 : 2.09. Vertex round in frontal view, shiny and smooth, PP fine. Mean ratio of POD : OOD : OCD = 0.37 : 0.39 : 0.11. Eyes with upper interorbital distance nearly as long as lower interorbital distance, MOD : UOD : LOD = 1.29 : 1.24 : 1.10. Postocellar PP, 13 - 20$\mu\varnothing$, IS = 0.1 - 0.5, close, ocellocular PP, 15 - 23$\mu\varnothing$, IS = 0.1 - 1.5, postocellar depression

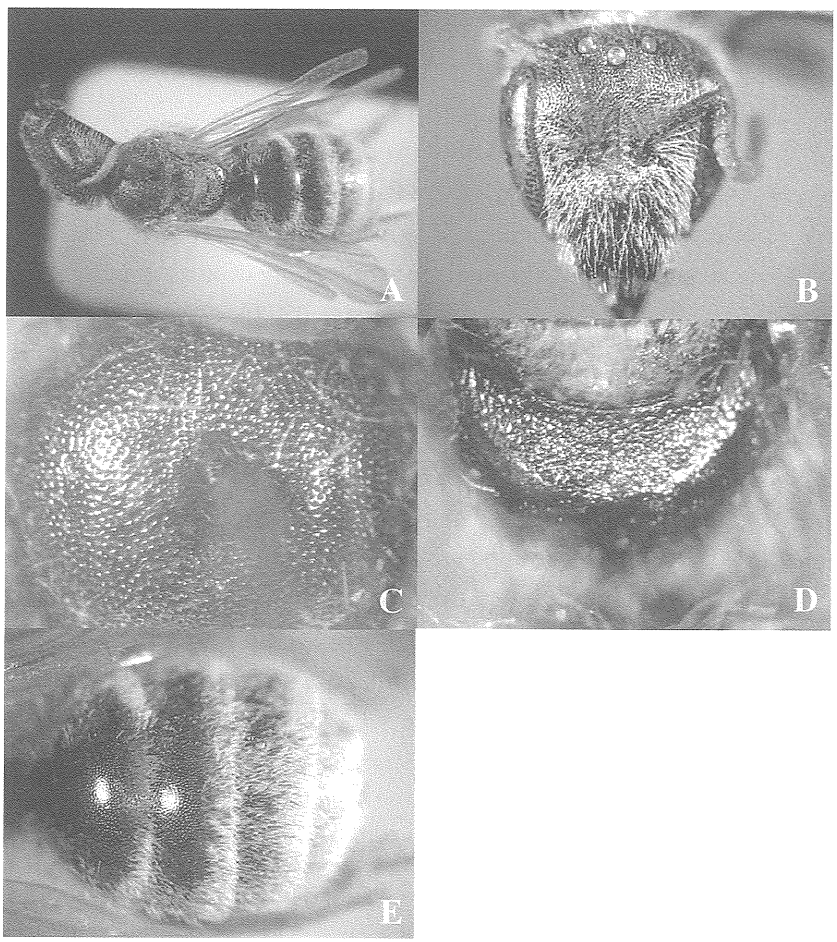

Fig. 57: A - E. *Halictus* (*Seladonia*) *transbaicalensis* Blüthgen, female. A: whole body; B: head in frontal view; C: mesoscutum; D: propodeum; E: metasomal terga.

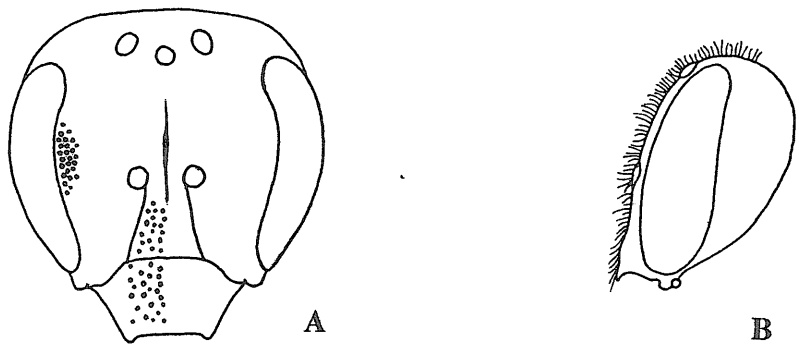

Fig. 58: A - B. *Halictus* (*Seladonia*) *transbaicalensis* Blüthgen, female. A: frontal view of the head; B: lateral view of the head.

slightly present. Frons slightly convex; frontal carina relatively short, as long as carina-ocellus distance. Paraocular area with PP, 15 - 25$\mu\text{ø}$, IS = 0.2 - 0.5 above, 10 - 25 $\mu\text{ø}$, IS = 0.2 - 1 below. Supraclypeus slightly higher than clypeus, with PP, 10 - 25$\mu\text{ø}$, IS = 0.1 - 3, sometimes 5. Clypeus with marginal area weakly depressed, CPL : CAL : APL = 0.89 : 0.44 : 0.39, smooth and shiny with sparse PP, 10 - 25$\mu\text{ø}$, IS = 0.1 - 5. Genal area broader than eye, EW : GW = 0.37 : 0.46, surface with small close PP, rather shiny and smooth. *Mesosoma*: Pronotum with vertical lateral ridges extending below; lateral surface shiny and weakly tessellate. Mesoscutum smooth and shiny with distinct PP, 15 - 30$\mu\text{ø}$, IS = 0.1 - 1.5, scutellum medially very weakly depressed longitudinally, with denser and smaller PP anteromedially. Scutellum : metanotum : propodeal dorsum = 0.46 : 0.28 : 0.37. Propodeal side homogeneously tessellate with a little roughened PP, with lineolation below; propodeal dorsum with enclosure slightly depressed, ridges weak, irregular all over; lateral field smooth and shiny, broadly impunctate. Tegula smooth broadly. Inner hind tibial spur with 5 relatively long and round-tipped teeth. *Metasoma*: T1 smooth and shiny with small, dense PP all over, 6 - 15$\mu\text{ø}$, IS = 0.5 - 3.5, T2, 3 with similar PP, 4 - 13$\mu\text{ø}$, IS = 0.5 - 3. Metasomal sterna weakly tessellate with small indistinct sparser PP.

Male. Not available in this study.

Type material examined: Type female of *Halictus transbaicalensis* Blüthgen, S. Transbaicalian (Berlin Zoological Museum, Germany).

Remarks: The female of this species is similar to *H. petraeus* Blüthgen, but is separated from it by the bluish reflection on the body, the mesoscutum with larger

punctures, the propodeal enclosure with lateral field broadly smooth and shiny, the metasomal tergum 1 with punctures denser apically and the apical hair bands of metasomal terga broad and dense.

Distribution: Mongolia; Russia (Siberia).

Floral association: Not available.

27. *Halictus* (*Seladonia*) *petraeus* Blüthge

(Figs. 59: A-E, 60: A-B)

Halictus petraeus Blüthgen, 1933, Dt. ent. Z., 1933: 78 [female, Tajikistan: Gebirge Peters des Grossen].

Halictus (Seladonia) petraeus Ebmer, 1987, Senckenbergiana biol., 68: 373 [in list].

Redescription (Based on the type of *Halictus petraeus* Blüthgen)

Female. BL 7.8 mm, fore wing with tegula 6.0 mm (n=1).

Color: Head and thorax bluish black, with a little reflection on vertex and mesoscutum; supraclypeus and clypeus black with blackish copper reflection; metasomal terga black; apical area of terga weakly brownish; mandible and legs brownish; flagellar segments below dull yellowish brown; tegula brown; veins and pterostigma brownish yellow.

Pilosity: Hairs on head and thorax dull whitish; 160 - 200μ on vertex, 150 - 210μ on face, 180 - 210μ on pronotum, 130 - 150μ on mesoscutum centrally, 180 - 210μ on scutellum marginally and sternal scopa 250 - 280μ; T1 with weak white patch laterally; metasomal terga with apical bands of white hairs T2-4 complete, surface with short yellowish hairs.

Structure: *Head*: HW : HL = 2.03 : 2.23; HW : MsW : MtW = 2.03 : 2.14 : 2.46. Vertex round in frontal view, shiny and smooth with close PP fine. Mean ratio of POD : OOD : OCD = 0.33 : 0.39 : 0.15. Eyes with upper interorbital distance slightly longer than lower interorbital distance, MOD : UOD : LOD = 1.47 : 1.38 : 1.27. Postocellar PP, 10 - 25$\mu\varnothing$, IS = 0.1 - 0.5, ocellocular PP, 10 - 28$\mu\varnothing$, IS = 0.1- 0.5. Frons nearly flat, frontal carina relatively long, longer than carina-ocellus distance. Paraocular area with PP, 10 - 25$\mu\varnothing$, IS = 0.2 - 1 above, 10 - 35$\mu\varnothing$, IS = 0.1 - 3 below. Supraclypeus conspicuously higher than clypeus, with PP very sparse, 10 - 30$\mu\varnothing$, IS = 0.1 - 3.5 or more, smooth and shining. Clypeus with marginal area weakly depressed, CPL : CAL : APL = 0.95 : 0.51 : 0.31, smooth and shiny with sparse PP, 10 - 25$\mu\varnothing$, IS = 0.1 - 5. Genal area broader than eye, EW : GW = 0.51 : 0.57, surface with small PP, rather shiny and smooth a little shagreened. *Mesosoma*: Pronotum with conspicuously vertical lateral ridges; lateral surface weakly tessellate. Mesoscutum smooth and shiny with distinct PP, 10 - 30$\mu\varnothing$, IS =

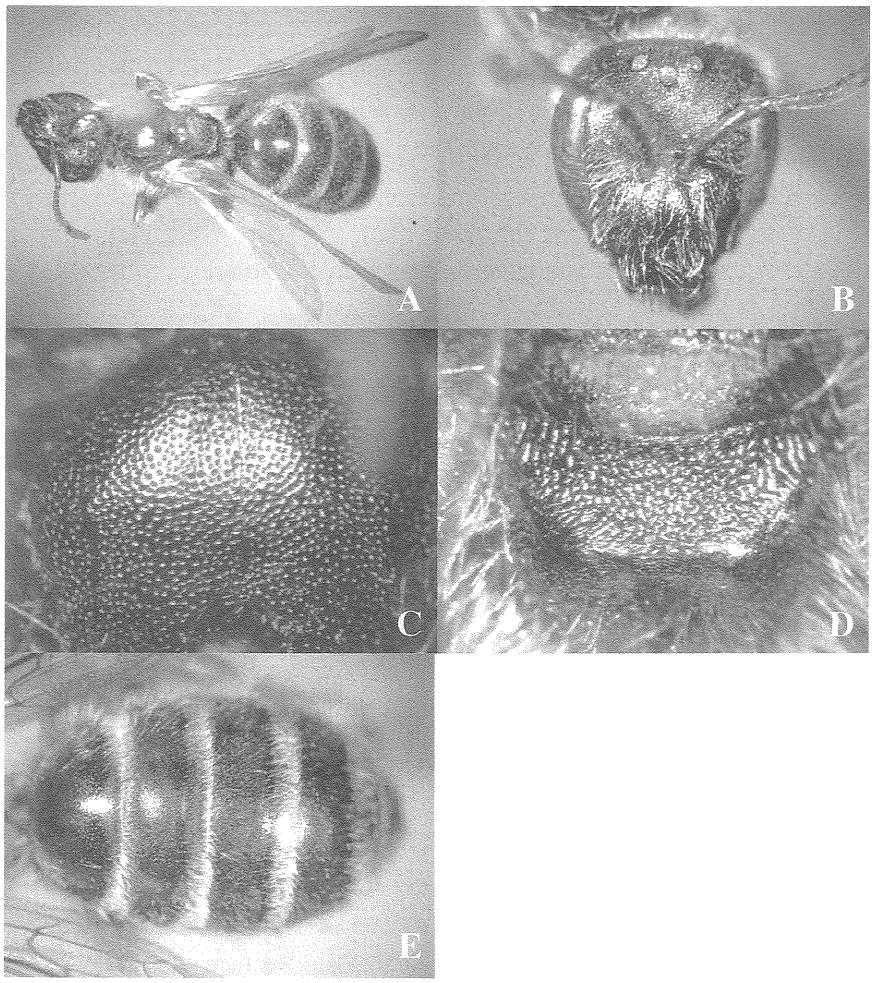

Fig. 59: A - E. *Halictus* (*Seladonia*) *petraeus* Blüthgen, female. A: whole body; B: head in frontal view; C: mesoscutum; D: propodeum; E: metasomal terga.

0.1 - 1.5, scutellum medially very weakly depressed longitudinally, with PP sparser. Scutellum : metanotum : propodeal dorsum = 0.37 : 0.31 : 0.50. Propodeal side homogeneously tessellate with a little roughened PP, with lineolation below; propodeal dorsum with enclosure large, slightly depressed, ridges irregular, occupying basal 5/6 rugosed, lateral field coriacuous. Tegula smooth broadly. *Metasoma*: T1 smooth and shiny with small, dense PP on basal and central area, 5 - 15$\mu\varnothing$, IS = 0.5 - 5, T2, 3 with similar PP, 5 - 15 $\mu\varnothing$, IS = 0.5 - 3. Metasomal sterna weakly tessellate with small indistinct sparser PP.

Male. Unknown.

Type material examined: Type female of *Halictus petraeus* Blüthgen, 1933, Xp. Petra

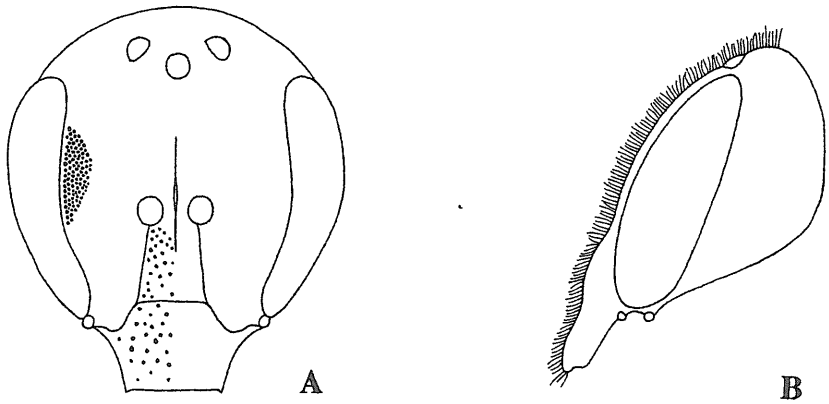

Fig. 60: A - B. *Halictus* (*Seladonia*) *petraeus* Blüthgen, female. A: frontal view of the head; B: lateral view of the head.

Velkago, p. Gurse-Tash, 29. vii. 1911 (A. Golbeki) (Zool. Inst., Russian Academy of Sciences, St. Petersburg).

Remarks: Blüthgen (1933) described this species from Gebrige Peters des Grossen now in Tajikistan. The female of this species is similar to *H. transbaikalensis* Blüthgen, but is separated from it by the mesoscutum with smaller punctures, the propodeal enclosure with lateral field narrowly weakly tessellate, the metasomal tergum 1 with punctures sparser apically and the apical hair bands of metasomal terga narrow and not dense.

Distribution: Tajikistan.

Floral association: Not available.

28. *Halictus* (*Seladonia*) *mondaensis* Blüthgen

(Figs. 61: A-E, 62: A-B)

Halictus mondaensis Blüthgen, 1923, Arch. Naturgesch., A89 (5): 285 [female, Mongolia: Monda].

Halictus (Seladonia) mondaensis: Ebmer, 1987, Senckenbergiana biol., 68: 373 [in list].

Redescription (Based on the type of *Halictus mondaensis* Blüthgen).

Female. BL 8.50 mm, fore wing with tegula 6.77 mm (n=1).

Color: Generally weak bluish reflections on face, mesoscutum and scutellum; non-metallic parts brownish black; mandible with apical half reddened; flagellum beneath brown, scape and pedicel blackish brown; lateral lobe of pronotum black apically; tegula

brownish transparent; veins and pterostigma brownish yellow; legs brownish black; tibial spurs yellowish; posterior margins of metasomal terga brownish transparent.

Pilosity: Generally dull whitish, 170 - 260μ on vertex, 190 - 260μ on face, 280 - 400 μ on pronotum, 170 - 200μ on mesoscutum centrally, 150 - 240μ on scutellum marginally and sternal scopa 280 - 340μ ; tomental hairs behind lateral lobe of pronotum well developed; tegula with dull whitish short hairs anteriorly; basilateral patch on T1 absent; metasomal terga with apical bands of dull whitish hairs, T1-4 interrupted, surface with short white hairs.

Structure: *Head*: HW : HL = 2.23 : 2.31; HW : MsW : MtW = 2.23 : 2.27 : 2.33. Vertex round in frontal view, roughened with roughened PP. Mean ratio of POD : OOD : OCD = 0.37 : 0.50 : 0.18. Eyes with upper interorbital distance nearly as long

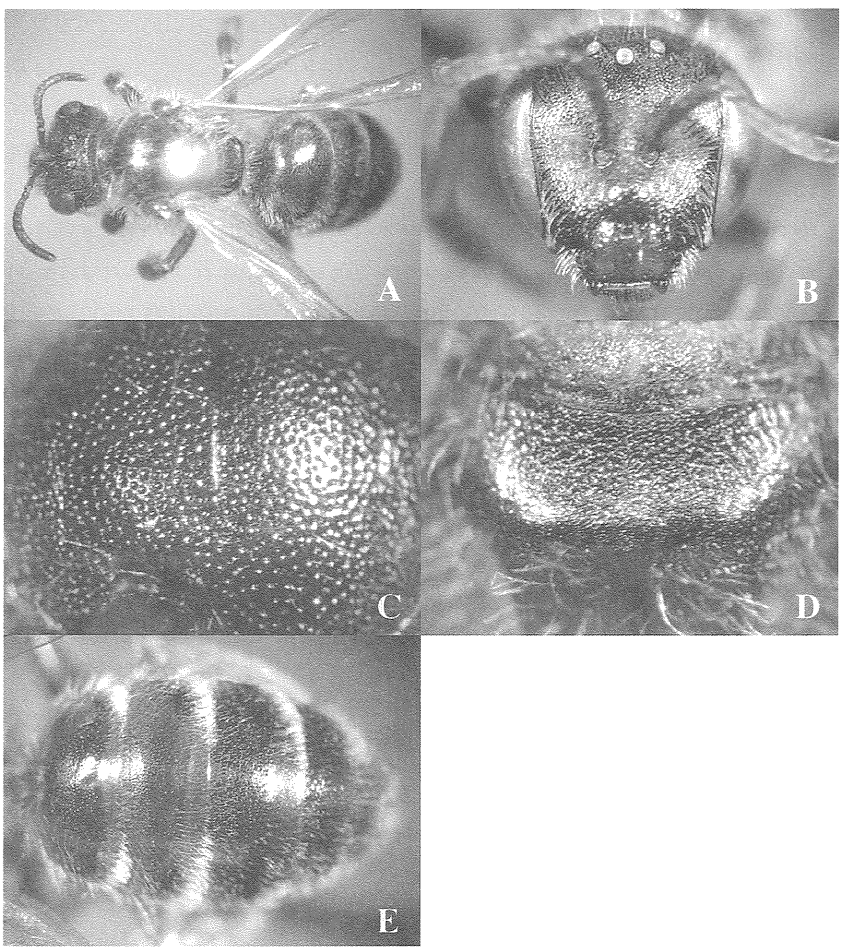

Fig. 61: A - E. *Halictus* (*Seladonia*) *mondaensis* Blüthgen, female. A: whole body; B: head in frontal view; C: mesoscutum; D: propodeum; E: metasomal terga.

as lower interorbital distance, MOD : UOD : LOD = 1.61 : 1.52 : 1.39. Postocellar PP rather ill-defined, ocellocular PP, 20 - 30$\mu\emptyset$, IS = 0.2 - 0.3 a little roughened, postocellar depression relatively weak. Frons nearly flat, frontal carina relatively long, longer than carina-ocellus distance. Paraocular area with PP, 20$\mu\emptyset$, IS = 0.2 - 0.4 above. Supraclypeus slightly higher than clypeus, with sparse PP, 20$\mu\emptyset$, IS = 2 - 4. Clypeus with marginal area weakly depressed, CPL : CAL : APL = 0.47 : 0.94 : 0.40, smooth and shiny with sparse roughened PP, 10 - 30$\mu\emptyset$, IS = 1 - 5. Genal area broader than eye, EW : GW = 0.50 : 0.58, surface with small PP, a little shagreened. *Mesosoma*: Pronotum with weak horizontal ridges; lateral surface coriaceous and shagreened. Mesoscutum smooth and shiny with distinct PP, 15 - 30$\mu\emptyset$, IS = 0.1 - 3, scutellum medially not depressed longitudinally, with denser and smaller PP anteromedially. Scutellum : metanotum : propodeal dorsum = 0.51 : 0.29 : 0.49. Propodeal side homogeneously tessellate with indistinct sparse PP, with lineolation below; propodeal dorsum with enclosure slightly depressed, ridges weak and irregular, occupying basal 3/4 rugosed, and apical 1/4 tessellate; lateral field weakly tessellate, broadly impunctate; propodeal declivity with sparse PP. Tegula smooth broadly. Inner hind tibial spur with 4 - 6 relatively long and round-tipped teeth. *Metasoma*: T1 weakly tessellate broadly and smooth and shiny apically with small, sparse PP basally, 10 - 20$\mu\emptyset$, IS = 1 - 10, rather sparser PP on apical area, IS = 1 - 3 or more, T2, 3 with denser and smaller PP, 6 $\mu\emptyset$, IS = 0.2 - 1, basally. Metasomal sterna weakly tessellate with small indistinct sparser PP.

Male. Unknown.

Type material examined: Type female of *Halictus mondaensis* Blüthgen, 1923, Monda, Mongolei, 6. 08, Weiske (Berlin Zoological Museum, Germany).

Remarks: The female of this species is easily recognized by the head not long, the

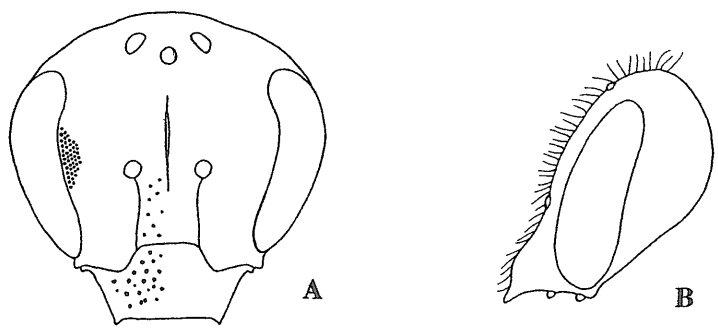

Fig. 62: A - B. *Halictus* (*Seladonia*) *mondaensis* Blüthgen, female. A: frontal view of the head; B: lateral view of the head.

mesoscutum and scutellum with sparser punctures, the metasomal tergum 1 very weakly tessellate with weak sparse punctures and without basilateral patch and the apical hair bands of metasomal terga 1-4 interrupted.

Distribution: Mongolia.

Floral association: Not available.

29. *Halictus* (*Seladonia*) *confusus pelagius* Ebmer

Halictus (Seladonia) confusus pelagius Ebmer, 1993, Linz. Biol. Beitr.: 269 [female & male, Russian Far East: Vladivostok].

Description. See Ebmer (1993).

Specimens examined: Not examined the type in this study.

Remarks: The nominate subspecies was described from USA and the other subspecies were recorded from Europe and Russian Far East, respectively. Ebmer (1993) pointed the female important characters of this subspecies within ssp. of *H. confusus* and different characters from eastern *H. tumulorum higashi* is slanting genal area as seen in *H. c. perkinsi*, and obvious metasomal hair bands, which is more distinct than in *H. c. perkinsi*, or *H. t. higashi*. The male of this subspecies is distinguished from *H. c. perkinsi* by the clypeus more protuberant not so long as in *H. c. alpinus*.

Distribution: Russia (Far East Area).

Floral association: Not available.

30. *Halictus* (*Seladonia*) *tibetanus* Blüthgen

Halictus tibetanus Blüthgen, 1926, Zool. Jb. Syst., 51: 680 [female, Tibet].
Halictus (Seladonia) tibetanus: Ebmer, 1987, Senckenbergiana biol., 68: 373 [in list].

Description. See Blüthgen (1926).

Specimens examined: Not examined the type in this study.

Remarks: Blüthgen (1926) described this species from Gyangtse, Tibet based on one female specimen collected by the Tibet-Expedition of H. J. Walton. The head of the holotype was missing from the original description but the characteristics of this species is the mesoscutum grayish green, the metasomal terga T3-4 with apical hair bands complete and T2-3 with narrow dense basal hair bands, the metasomal terga strongly shiny with dense fine PP, the propodeal enclosure broad half-moon form and finely, densely longitudinally wrinkled, and the dorsal face of propodeum shiny and finely tessellate with dense fine obscure PP.

Distribution: China (Tibet).

Floral association: Not available.

31. *Halictus* (*Seladonia*) *subpetraeus* Blüthgen

Halictus subpetraeus Blüthgen, 1933, Dt. ent. Z., 1933: 80 [female, Uzbekistan: Fergana (Alai)].

Halictus (Seladonia) subpetraeus: Ebmer, 1987, Senckenbergiana biol., 68: 373 [in list].

Description. See Blüthgen (1933).

Specimens examined: Not examined the type in this study.

Remarks: Blüthgen (1933) described this species from Fergana (Alai), now in Uzbekistan based on three female specimens. It is similar to *H. petraeus* and *H. tumulorum*, but is recognized by the metasomal terga with apical hair bands denser, the clypeus basally coarser and distinctly convex, the mesoscutum and scutellum with stronger and denser PP, the propodeum shorter, with enclosure half circle form, a little depressed, the metasomal terga with broad apical depressed area and with PP on T1-2 denser, especially on apical area, surface tessellate.

Distribution: Uzbekistan (Fergana).

Floral association: Not available.

32. *Halictus* (*Seladonia*) *clangulus* Warncke

Halictus clangulus Warncke, 1984, Linzer boil. Beitr., 16: 308 [female, Turkey].

Halictus (Seladonia) clangulus: Ebmer, 1987, Senckenbergiana biol., 68: 372 [in list].

Description. See Warncke (1984).

Specimens examined: Not examined the type in this study.

Remarks: Warncke (1984) described this species based on two female specimens collected from Turkey. It is similar to *H. gavarnicus tataricus* from Kaukasus and *H. confusus*, but is recognized by the malar space broader, the lower paraocular area coarse with relatively obscure punctures, IS < 1, the face with not so dense punctures, the surface shiny, the propodeal enclosure with broad smooth area laterally.

Distribution: Turkey.

Floral association: Not available.

33. *Halictus* (*Seladonia*) *kusdasi* Ebmer

Halictus (Halictus) kusdasi Ebmer, 1975, Linzer boil. Beitr., 7: 46 [female, Turkey].
Halictus (Seladonia) kusdasi: Ebmer, 1987, Senckenbergiana biol., 68: 373 [in list].
Description. See Ebmer (1975).

Specimens examined: Not examined the type in this study.

Remarks: This species was described by Ebmer (1975) based on female specimens from Turkey. It is recognized by the body with obscure punctures, the head and thorax deep black, the head a little longer than broad, the clypeus protuberant, and the propodeal enclosure finely rugosed.

Distribution: Turkey, Israel.

Floral association: Not available.

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