

## 한국産 모래거저리族 (딱정벌레目, 거저리科)의 분류학적 정리 I. 모래거저리屬과 작은모래거저리屬

### Taxonomic Notes of Tribe Opatrini (Coleoptera, Tenebrionidae) from Korea I. Genus *Gonocephalum* Solier and *Opatrum* Fabricious

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**Abstract** – Fourteen species of the genus *Gonocephalum* and one species of the genus *Opatrum* (Tenebrionidae, Opatrini) from Korea have been previously recorded. They are taxonomically reviewed based on many faunistic reports and research papers. We also examined many specimens including voucher materials of the previous studies. Among the recorded species, *G. sabulosum* is excluded because it was misidentified for the individual variation of *Opatrum subaratum*. We couldn't find any Korean materials of four species (*G. japanum*, *G. bilineatum*, *G. outreyi*, *G. malayanum*), and used the materials determined from other countries. Key to 13 species of the genus *Gonocephalum*, illustrations of adults and male aedeagus are provided.

**Key Words** – Taxonomy, *Gonocephalum*, *Opatrum*, Opatrini, Tenebrionidae, Coleoptera, Korea

**초 록** – 한국産 거저리科 모래거저리族에 속하는 2屬 (모래거저리屬과 작은모래거저리屬)에 대하여 현재까지 기록되어온 보고서들을 종합하고 과거 생물상보고서들의 기록 표본을 확인한 결과 2속 15종이 기록되어 왔으며 이들에 대하여 분류학적 재검토를 실시하였다. 그 가운데 *Gonocephalum sabulosum*은 *Opatrum subaratum*의 변이를 오동정 해 온 것으로 판단하여 제외시켰고 *G. japanum*, *G. bilineatum*, *G. outreyi*, *G. malayanum*의 국내 표본은 확인하지 못하고 국외 표본을 비교 관찰하여 본 논문에서는 총 2속 14종을 보고하는 바이다. 각 종의 연구사 및 국내외 분포지역을 서술하였고 *Gonocephalum* 속의 검색표는 문헌 및 실제 표본을 검토하여 작성하였으며 표본을 확인한 종들의 성충사진과 해부가 가능한 웅성 외부생식기 사진을 첨부하였다.

**검색어** – 분류, 모래거저리屬, 작은모래거저리屬, 모래거저리族, 거저리科, 딱정벌레目, 한국

The family Tenebrionidae is a large group of the order Coleoptera and is widely distributed throughout the world with approximately 18,000 species of about 1,700 genera. This family is extremely variable in size, ranging 1~50 mm, body form, and vestiture. They feed on plant material including decaying plant litter, dead wood, fungal fruiting bodies, especially bracket fungi, and

sometimes algae. Because this family is a large group with a great deal of variation, they are considered to be a taxonomically difficult group. A total of 98 species and 47 genera of 15 tribes have been recorded in Korea (Kwon and Choi, 1986; Chûjô and Lee, 1994). Among these records, we found several errors due to misidentifications and misprints. We also found that some previous

sly recorded species were missing and others were including by error. In the present study, the genera *Gonocephalum* and *Opatrum* of the tribe Opatrini are taxonomically reviewed. Several species of two genera are known to damage planted seeds or young seedlings and they mostly inhabit sand dunes of seacoast or soil of riverside (Kim and Kim 1999). All the previous studies have been reviewed and we recognized 14 species of the genus *Gonocephalum* and one species of the genus *Opatrum*. Korean Tenebrionidae have been firstly recorded by Kolbe (1886) including two species in the genus *Gonocephalum*. Since then, Heyden (1887), Cho (1928), Miwa (1935), Kaszab (1952, 1968), Chûjô (1963) and Kwon et Choi (1986) reported 13 species. Among them, *G. sabulosum* is found to be a misidentification of *O. subaratum*. However, we couldn't find four species (*G. malayanum*, *G. japanum*, *G. bilineatum* and *G. outreyi*) from Korea. We consider that the former three species have been misidentified as other species. The *G. malayanum* was only one record from Korea (Kaszab, 1952), but we couldn't find its material. Otto Merkl of HNHM informed that the late Kaszab had received the Korean specimen (Is. Jeju) from other museum. However he didn't know where the material was. We found that *G. japanum* (Kim, 1996b) was misidentified for the individual variation of *G. sexuelle*. However we couldn't find other materials previously recorded. The *G. bilineatum* is distributed Japan to Southeast Asia, but Kwon and Choi (1986) reported distribution of Korea. It resembles the *G. coenosum* but differs in body size, antennae segments length ratio and pronotum side margin. The *G. outreyi* was recorded to Korea by Kaszab (1952), and we couldn't find Korean material. This species resembles *G. coriaceum* and *G. persimile*.

As a result of this study, 13 species of the genus *Gonocephalum* including four species with doubtful Korean distribution and one species of the genus *Opatrum* are reported here with key, historical records, localities, and photos. The tribal and generic arrangement mostly follow Gebien's (1938~1944). The photos of adults and male genitalia were taken with the stereomicroscope (LEICA MZ APO Zoom). The majority of the specimens examined are from Sungshin Women's University (SS-WU), Korea Universities (KU), Natural History Museum of Ehwan Woman's University (EWU), British Museum Natural History (BMNH), Hungarian Natural History Museum (HNHM), Otuma University, Japan. Abbreviations for the provinces of Korea are as follows; SE:

Seoul; GG: Gyeonggi-do; GW: Gangwon-do; CB: Chungcheongbuk-do; CN: Chungcheongnam-do; GB: Gyeongsangbuk-do; GN: Gyeongsangnam-do; JB: Jeollabuk-do; JN: Jeollanam-do; JJ: Jeju-do; PB: Pyeonganbuk-do.

## Systematic Accounts

### Tribe Opatrini 모래거저리族

#### Genus *Gonocephalum* Solier, 1834 모래거저리속

*Gonocephalum* Solier, 1834, Ann. Soc. Ent. France, III: 498 (Type Species: *Tenebrio fuscum* (= *rusticum*))

Diagnosis: Body small to large, oblong or oval. Clypeus with anterior margin nearly triangular shape, deeply grooved at middle part. Eye transverse, not entirely divided. Lateral margin of pronotum not blunt, middle part surface with large wrinkled figure. Apical segment of maxillary palpi triangular or securiform. Protibiae slender or slightly enlarged, more or less bent, apex gradually broadened with outer marginal spines. Mesosternal process protuberant nearly same as mesocoxa. Tarsus segment narrow; pro-, meso-, metatarsus segment each 5-5-4. Elytra upper surface with small grains, granules and without striae of shiny bulge granule rows.

#### Key to the Korean species of *Gonocephalum* Solier based on the external characters

1. Protibia very broad, with outer margin sharply edged ..... 2
  - Protibia slender not broad, with outer margin mostly rounded ..... 5
2. Body smaller and oblong oval; pronotum rather simply convex above, lateral margins strongly sinuate before base, hind angles acute; elytra granulate, sparsely with pale hairs; 7~9 mm ..... *persimile* (Lewis)
  - Body oval, rather larger and transverse; elytra with granule very clear striae ..... 3
3. Body a little larger; pronotum hind angle very acute; elytra upper surface not striae with coarsely irregularly granule; 9~12 mm ..... *terminale* Reichardt
  - Body oval more larger, not shining, rather transverse; pronotum hind angle rectangular; protibia outer margin curved ..... 4
4. Body larger, relatively more oblong and less shining, more finely granulate; pronotum comparatively more widely extensive; male protibia with inner margin clearly emarginate in basal half, female one simply,

- strongly widened to apex; 11~13 mm .....  
 ..... *recticolle* (Motschulsky)
- Body more larger, rather oval, more transverse; upper surface not densely covered with granules and short hairs; elytra finely but clearly striated, with interstices flatted a little convex and not wrinkled but finely, closely granulate; 11~12 mm ..... *pubens* (Marseul)
5. Body longer and slender; pronotum width narrower than elytra; elytral length 3 times of pronotum length, extensive toward apex; protibia apex rather extensive with blunt or acute ..... 6
- Body oval, convex, remarkably transverse; pronotum width same as base of elytra; elytra raised behind scutellum with smooth and shining ..... 11
6. Eyes larger; gena rather rounded and widest at line at middle of eye; pronotum width narrower with front angles more acute and slightly protruded forward; protibia apex rather acute; 9.5~12 mm .....  
 ..... *sexuale* (Marseul)
- Eye smaller; pronotum width broader with front angle triangular blunt, hind angle less acute; protibia apex rather blunt ..... 7
7. Body less convex paralleled, upper surface with granule and hair; pronotum less extensive laterally, front angle blunt triangular enlarged forward, hind angle rectangular ..... 8
- Body rather large, less convex; pronotum broader than elytra, more widely extensive laterally, hind angle less acute; elytra interstices and striae clear ..... 10
8. Body larger and subparallel-sided; antennae 3rd segment 4 times longer than 2nd segment; pronotum laterally broadly extensive, with shallow longitudinal groove along median elevation, lateral margin just widely arcuate, hind angles subrectangular; elytra interstice protuberance, striae clear but with rarely hair, feebly and transversely wrinkled; 9~12 mm .....  
 ..... *bilineatum* (Walker)
- Body a little smaller; ocular canthus wide and short; pronotum upper surface with granule and hair clear, side margin impressed, middle part convex; front angle triangularly extensive ..... 9
9. Body very small; sides rather paralleled; upper surface densely covered with yellowish hair and granule; gena angulate acutely rectangular; antennae 3rd segment 1.5 times longer than 2nd segment; pronotum hind angle blunt, upper surface with 3 granules of inverse triangular pattern; 5~7mm ... *reticulatum* Motschulsky
- Body not so small; eye a little smaller; gena angulate lateral and widest at line before eye; antennae 3rd segment 3 times longer than 2nd segment; pronotum comparatively broader with hind angle a little acute; elytra interstices clearly protuberance, striae with puncture rows; 7~9.5 mm ..... *coenosum* Kaszab
10. Body long and large, flattened, with hair; antennae 3rd segment 4.5 times longer than 2nd segment; ocular canthus enlarged sinuately; pronotum width same as elytra width, extensive with laterally impressed, hind angle very acute; elytral striae very clear; protibia slender with oblique line to forward; 10~12 mm .....  
 ..... *malayanum* Gebien
- Body large rather convex; ocular canthus wide and short; antennae 3rd segment 3 times longer than 2nd segment; pronotum width broader than elytral width, front and hind angles comparatively less acute; elytra laterally moderately arcuate; 10.5~12 mm .....  
 ..... *japanum* (Motschulsky)
11. Pronotum anteriorly narrowed, anterior margin less hollowed, front angle acute; protibia downward not protruded; elytra upper surface with granule, striae not clear; 9~11 mm ..... *oureyi* Chatanay
- Pronotum side margin subparalleled, front angle triangular, hind angle very acute; protibia outer margin slender, apex narrowed elytra striae clear and interstice with hair ..... 12
12. Body mostly oblong oval; pronotum surface bumpy not as narrower as elytra with front angles not very acute and protruded; elytral interstices not shining, upper surface sparsely haired and weakly and finely striated; 7~9 mm ..... *coriaceum* (Motschulsky)
- Body more longer; pronotum width same as base of elytra, front angle more acute; elytral interstices protuberant and striae clear with hair; 10~12 mm .....  
 ..... *koreanum* Kaszab

***Gonocephalum koreanum* Kaszab, 1952**

우리모래거저리 (Fig. 1A)

*Gonocephalum koreanum* Kaszab, 1952, Ent. Arb. Mus. G. Frey-München, 3(2): 452, 549-550, 676 (Korea Chemulpo); Chûjô et Lee 1992: 33; Kim JI 1996a: 13; Kim WT 1995: 406; Kwon *et al.* 1996: 163

Material examined: 1 ♂, Korea Chemulpo, 1952 (HN-HM)

Distribution: Korea

***Gonocephalum recticolle* (Motschulsky, 1866)**

곰보거저리 (Figs. 1B, 2(1a, 1b, 1c))

*Opatrum recticolle* Motschulsky, 1866, Bull. Soc. Nat. Mosc., 39: 173; Cho 1957: 52; 1963: 50; Cho *et als.* 1968: 261; Heyden 1887: 259; Kwon et Choi 1986: 107; Kim et Yoo 1987: 508; Lee *et al.*, 1985: 408; Masaki 1934: 263; Okamoto 1924: 183

*Gonocephalum recticolle*: ESK & KSAE 1994: 176;

Kim WT 1995: 406; Kwon *et al.* 1996: 163

Materials examined: GG: 17♂♂ 7♀♀, Gapyeong Mt. Myeongji, 13-14. IV. 1991, JI Kim; GW: 1♀, Sokcho Seorakdong, 3. VIII. 1993, SK Lee; GB: 2♂♂ 1♀, Andong Hahwaemaul, 11. IV. 1999, SY Kim (SSWU)

Distribution: Korea, Japan, Siberia, Taiwan

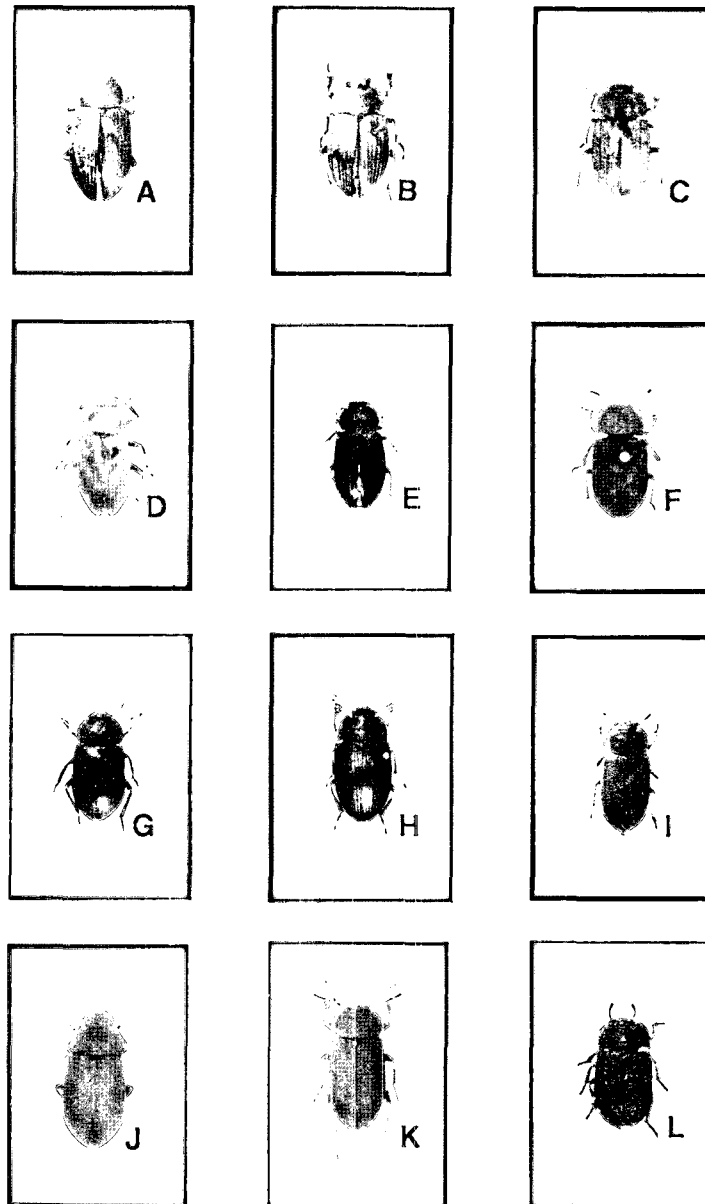


Fig. 1. A: *Gonocephalum koreanum* Kaszab; B: *Gonocephalum recticolle* (Motschulsky); C: *Gonocephalum terminale* Reichardt; D: *Gonocephalum sexuale* (Marseul); E: *Gonocephalum coriaceum* (Motschulsky); F: *Gonocephalum coenosum* Kaszab. G: *Gonocephalum persimile* (Lewis); H: *Gonocephalum pubens* (Marseul); I: *Gonocephalum reticulatum* Motschulsky; J: *Gonocephalum outreysi* Chatanay; K: *Gonocephalum malayanum* Gebien; L: *Opatrum subaratum* Faldermann.

***Gonocephalum terminale* Reichardt, 1936**

모래거저리사촌 (Fig. 1C)

*Gonocephalum terminale* Reichardt, 1936, Tabl. Anal. Fauna URSS 19: 110; Chûjô 1963: 152-153; ESK & KSAE 1994: 176; Kim et Lee 1979: 92; Kaszab 1952: 679; Kim JI 1980: 142; 1981a: 65 (모래거저리사촌); Kwon et Choi 1986: 107; Kwon *et al.* 1996: 163; Masumoto 1985: 35; Yoon et Nam 1979: 146 (젓빛거저리: misidentification)

Materials examined: GG: 1♂1♀, Gapyeong, 23. IX. 1989, JI Kim; 1♀, Mt. Myeongji, 29. IV. 1997, JI Kim (SSWU)

Distribution: Korea, E.Siberia, Japan

***Gonocephalum sexuale* (Marseul, 1876)**

길쭉모래거저리 (Figs. 1D, 2(2a, 2b, 2c))

*Opatrum sexuale* Marseul, 1876, Ann. Soc. ent. Fr. (5) 6: 98

*Gonocephalum sexuale*: Chûjô 1963: 152-153; Chûjô & Baba 1979: 51; ESK & KSAE 1994: 176; Kaszab 1952: 457; Kim WT 1995: 406; Kwon et Choi 1986: 107; Masumoto 1985: 36

Materials examined: GG: 1♂1♀, Gwangleung, 13. VI. 1959, GH Lee et IS Hong; GW: 2♀♀, Hwengsung Mt. Balgyo, 6. VI. 1998, TM Han; 1♂, Inje Mt. Bangtae, 15. VIII. 1995, JI Kim; 1♀, Pyeongchang, 1. VII. 1985, ME Kim; 1♂1♀, Samcheok Pungkok, 6. VIII. 1991, YJ Jang (SSWU)

Distribution: Korea, E.Siberia, Japan, N.China

***Gonocephalum coriaceum* (Motschulsky, 1857)**

고려거저리 (Figs. 1E, 2(3a, 3b, 3c))

*Opatrum coriaceum* Motschulsky, 1857, tud. Ént. 6: 34; Kolbe 1886: 201; Cho 1957: 52

*Gonocephalum coriaceum*: Chûjô 1963: 152-153; Chûjô 1994: 247; Chûjô et Baba 1979: 49-50; Chûjô et Lee 1992: 33; 1994: 189; ESK & KSAE 1994: 176; Kaszab 1952: 451; Kim *et al.*, 1972: 222; Kim et Lee 1979: 83; Kim JI 1981b: 344; 1983: 83; Kim WT 1995: 405; Kwon et Choi 1986: 106; Kwon *et als.* 1996: 163; Masumoto 1985: 35-36; Masumoto et Kondo 1984: 4; Yoon et Nam 1978: 83

Materials examined: GG: 1♂, Bundang Gumi, 12. VIII. 1998, MK Kim; 1♂1♀, Gapyeong Daesungri, 19. V. 1984, HS Park; 2♀♀, Seomyeon, 21. VIII. 1998, MK

Kim; 1♀, Maseok, 28. V. 1988, SJ Lee; 1♂1♀, Goyang Ilyeong, 21. V. 1983, JO Yoon; 2♂♂, Namyangju Pyeongnae, 28. IV. 1980, JI Kim; 1♂, 3. V. 1984, HJ Lee; 5♀♀, Mt. Cheonma, 23. IV. 1961, WS Shim; 1♂1♀, 5. V. 1968, SH Nam; 1♂, 13. VI. 1981, MH Suh; 1♀, 11. VI. 1981, YH Shin; 1♂, 26. VI. 1984, HS Kim; 1♀, Sudong Naebang, 28. V. 1980, HK Park; 1♀, Temple Bogwang, 19. VI. 1978, JH Kim; 1♂, 9. V. 1982, HJ Lee; 10♂♂10♀♀, Pocheon Gwangleung, 13. V. 1962, MJ Lee et JS Park; 1♂, 7. VI. 1968, BI Noh; 1♀, Pyeongtaek Daean, 18. VII. 1998, TM Han; 1♂, Sungnam Namhansansung, 19. IX. 1994, SH Mo; SE: 1♂, Gongleung, 21. V. 1994, MJ Shim; 1♂, Jeungleung, 25. V. 1996, JH Choi; 1♀, Seocho Mt. Cheonggye, 6. VI. 1994, JH Lim; 1♀, Seodaemun Ehwa Univ., 13. VI. 1984, SK Jeong; 1♂, Mt. Woomyeon, 28. V. 1994, MJ Shim; GW: 2♂♂, Chuncheon Gangchon, 21. V. 1983, SH Park; 1♂, 18. VI. 1989, KS Jang; 1♂, 21. V. 1995; 4♂♂4♀♀, 19. V. 1998, TH Kang; 5♂♂2♀♀, Gosung Gansung, 10. VII. 1990, JI Kim; 1♀, Taebaek Dankunkak, 30. V. 1999, HW Jang; 1♂1♀, Wonju Munmak, 8. V. 1984, L Won; CB: 2♂♂2♀♀, Baekgok Daemunri, 7. VII. 1998, TM Han; 1♀, Chungju, Mt. Sokri, 22. VI. 1989, HS Bae; 1♂, Umsung Mt. Gayeop, 28. IV. 1989, HR Ro; CN: 1♀, Daejeon Samcheon, 20. V. 1993, KA Lee; GB: 1♂, Bulyeongvalley, 27. VI. 1990, BK Choi; 1♂, Munkyeongsaesae, 10. VII. 1977, SW Paek; 1♂, Yeongpyeong Jangsu, 30. VII. 1986, HS Kim; 7♂♂2♀♀, Uljin Wonnam Deoksinri, 29. V. 1999, JI Kim *et als.*; GN: 1♂, Nakdongriver, 22. IV. 1984, SJ Kang; 1♀, Yeongpyeong Gosari, 22. VI. 1989, JD Yoon; JB: 2♂2♀, Jeongup Mt. Naejang, 5. VII. 1985, JW Cheon; 2♂♂, 26. V. 1985, KH Oh; 1♂2♀♀, 26. V. 1994, JI Kim; 2♂♂, 19. VII. 1998, TM Han; 1♂, Puan Baekryeonri, 9. X. 1981, JI Kim; JN: 1♂, Gangjin, 28. V. 1993, SH Kang; 1♂, Is. Huksan, 6. VII. 1978, SJ Yoon; 6♂♂1♀, Jangsung Baekyangsa, 24. V. 1994, JM Park; 2♂♂2♀♀, Mt. Duryun, 23. VI. 1993, HG Kim; 1♂1♀, Wando Is. Geomundo, 13. VII. 1984, KS Jang (SSWU, KU and EWU)

Distribution: Korea, China, Japan, NE.China, Taiwan

***Gonocephalum coenosum* Kaszab, 1952**

긴뺨모래거저리 (Figs. 1F, 2(4a, 4b, 4c))

*Gonocephalum coenosum* Kaszab, 1952, Ent. Arb. Mus. G. Frey 3: 643-646; Chûjô 1963: 152-153; Chûjô et Imsaka 1982: 59; Chûjô et Lee 1992: 32; ESK & KSAE 1994: 176; Kim JI 1983: 83; Kim WT 1995: 405;

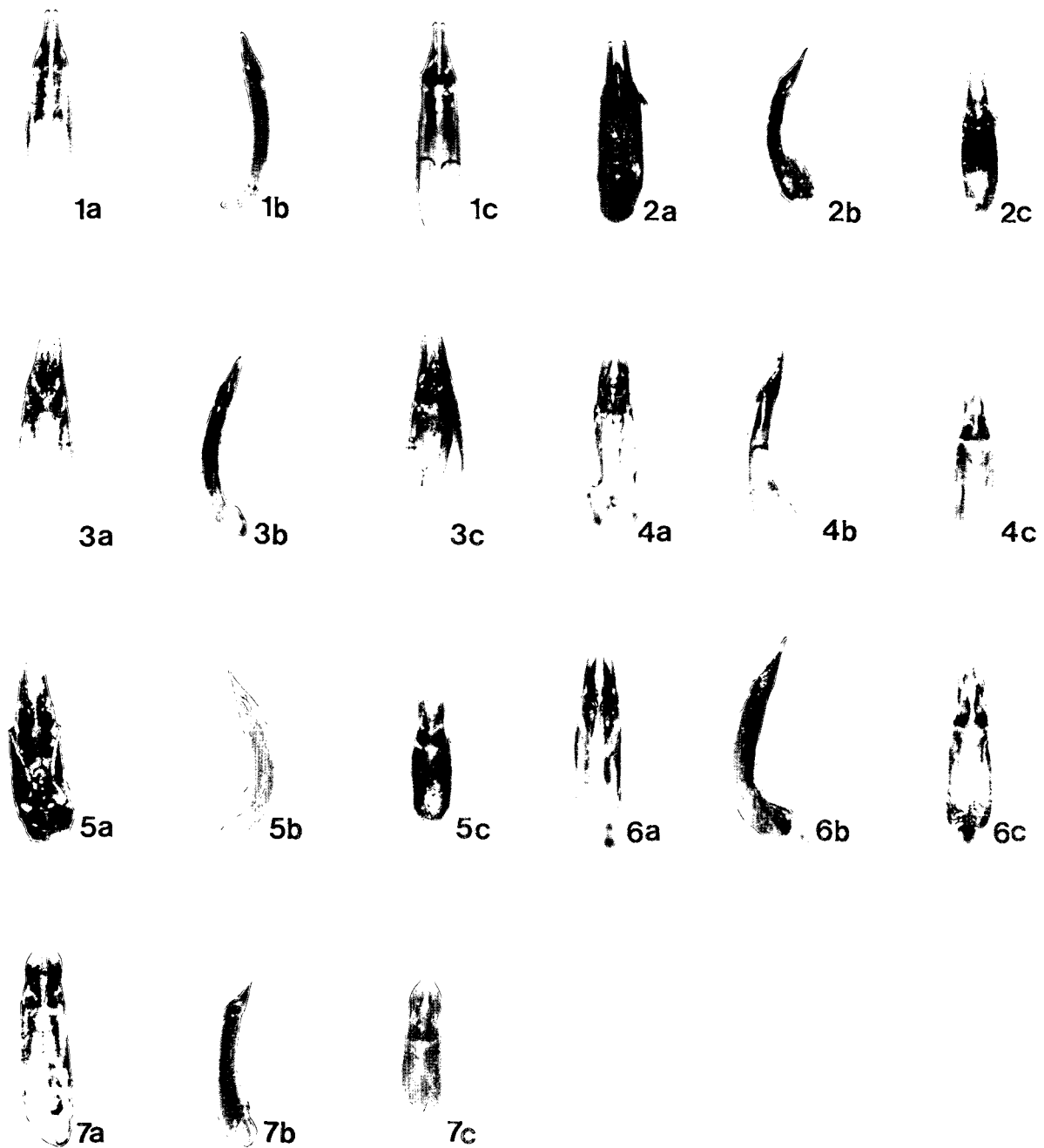


Fig. 2. Male aedeagus of Tenebrionidae. 1 (a-c): *Gonocephalum recticolle* (Motschulsky); 2 (a-c): *Gonocephalum sexuale* (Marseul); 3 (a-c): *Gonocephalum coriaceum* (Motschulsky); 4(a-c): *Gonocephalum coenosum* Kaszab.; 5 (a-c): *Gonocephalum persimile* (Lewis); 6 (a-c): *Gonocephalum pubens* (Marseul); 7 (a-c): *Opatrum subaratum* Faldermann. (a: ventral view, b: lateral view, c: dorsal view);

Kim WT et HS Oh 1991: 155; Kwon et Choi 1986: 106; Kwon *et al.* 1996: 163; Lee et Kwon 1974: 43; Lee *et als.* 1985: 408; Masumoto 1985: 35-36; Masumoto et Kondo 1984: 3

Materials examined: GG: 1 ♂, Namyangju Mt. Cheonma, 17. IV. 1977, YS Kim; 1 ♂, 5. V. 1968, SH Nam; CN: 1 ♀, Nonsan Yeonmu Gonaeri, 22. VII. 1997, JI Kim; GB: 1 ♂, Is. Dokdo, 27. VIII. 1976, IB Yoon; JN: 1 ♂, Is. Chujagundo, 8. VIII. 1969, JS Park; 1 ♂, Is. Ha-

chujado, 17. VII. 1985, SH Nam; 1 ♂, Is. Sohuksando, 8. VIII. 1970, YT Ro; 1 ♂, Yecheon Is. Geomundo, 17-19. VII. 1977, SJ Yoon; 4 ♂ ♂ 1 ♀, Wando Nohwaup 19. VIII. 1982, JI Kim; 1 ♀, 7. VII. 1982, HS Jung; 1 ♂, Wando Namhyangri, 14. VIII. 1998, SH Woo; 6 ♂ ♂ 8 ♀ ♀, Is. Bogil, Tongrigr beach, 3. VIII. 1998, SY Kim; JJ: 1 ♀, Namjeju Andeukvalley, 8. VIII. 1999, SY Kim; 1 ♂ 1 ♀, Sinyang, 15. VII. 1968, IB Yoon; 1 ♀, Quelpart ? (SSWU, KU, EWU and HNHM)

**Distribution:** Korea, China, Japan, Taiwan

***Gonocephalum persimile* (Lewis, 1894)**

코마모래거저리 (Figs. 1G, 2 (5a, 5b, 5c))

*Opatrum persimile* Lewis, 1894, Ann. Mag. nat. Hist. (6) 13: 381

*Gonocephalum persimile*: Chûjô 1963: 152-153; Chûjô et Baba 1979: 50; Chûjô et Lee 1993: 109-110; ESK & KSAE 1994: 176; Kaszab 1952: 680; 1968: 8; Kim JI 1981a: 65; 1995: 141 (*G. persimilis*); Kwon et Choi, 1986: 106; Kwon *et al.* 1996: 163; Masumoto 1985: 35

Materials examined: GG: 14 ♂ ♂ 8 ♀ ♀, Gapyeong Mt. Myeongji, 13. IV. 1991, MY Kim; 3 ♂ ♂, 11. IV. 1992, MH Choi; 1 ♂ 3 ♀ ♀, Dodaeri, 23. IX. 1989, JI Kim; 2 ♂ ♂, 17. III. 1990, JI Kim; 1 ♂, Sudong Mt. Chukryeong, 16. V. 1980, HK Park; 1 ♂, Pyeongnae, 28. IV. 1980, MY Uhm; 1 ♀, Pocheon Gwangleung, 18. V. 1997, KY Lee; 5 ♂ ♂ 5 ♀ ♀, 30. IV. 1961, JI KIM; 1 ♂, 13. V. 1962, MJ Lee; 1 ♂, 26. IV. 1964, MJ Choi; 1 ♂, Baekunvalley, 7. VIII. 1984, SH Nam; 1 ♂, Temple Bokwang 18. VI. 1978, MK Kim; 1 ♂, Sungnam Namhansansung, 12. V. 1991, UK Choi; GW: 1 ♂, Gosung Geojin, 14. VIII. 1980, SJ Yoon; 1 ♀, Wonju Mt. Chiak, 17. V. 1984, KS Chang; CB: 4 ♀ ♀, Chungju Mt. Wolak, 22. V. 1998, TM Han et TH Kang; GB: 2 ♂ ♂, Bonghwa Mt. Cheongryang; 1 ♂, Munkyeongsejae, 26. V. 1996; 4 ♂ ♂ 1 ♀, Uljin Bulyeongvalley, 2. V. 1999, SW Park; 1 ♂ 4 ♀ ♀, 29. V. 1999, JW Chang; 1 ♀, Yeongju Namdaeri, 29. VI. 1998, JI Kim (SSWU, KU and EWU)

**Distribution:** Korea, Japan, Mongolia, NE.China, SE. Siberia

***Gonocephalum pubens* (Marseul, 1876)**

모래거저리 (Figs. 1H, 2 (6a, 6b, 6c))

*Opatrum pubens* Marseul, 1876, Ann. Soc. ent. France (5)6: 97

*O. pubens* de Marseul: Kolbe 1886: 201-202

*O. pubens* Mars. var. *obtusicolle*: Cho 1957: 52; Heyden 1887: 259; Okamoto 1924: 183

*Gonocephalum pubens*: Cho 1963: 50; Chûjô et Baba 1979: 50; Chûjô et Lee 1992: 33-34; 1993: 110; Chûjô 1994: 152-153; ESK & KSAE 1994: 176; Gu Gun 1973: 34-67; Kaszab 1952: 679; Kim et Kim 1972: 157; Kim WT 1995: 406; Kim et Lee 1979: 83 (모래무지거저리); Kim JI 1980: 142; 1981a: 65; 1983: 83; 1995: 141; Kwon et Choi 1986: 106; Kwon *et al.*, 1996: 163; Lee *et als.* 1985: 408 (*Conocephalum*); Masumoto 1985: 35-36

Materials examined: GG: 1 ♂, Gapyeong Mt. Myeon-gji, 23. VII. 1978, JW Lee; 1 ♂, Namyangju Mt. Chon-ma, 24. VI. 1984, MH Lee; SE: 1 ♂, Seocho Mt. Cheonggye, 17. IX. 1989, HG Gu; 1 ♂, Yeongdeungpo, 23. IX. 1909; GW: 1 ♂, Gachilbong, 22. VI. 1984, ES Choi; 17 ♂ ♂ 6 ♀ ♀, Myeongju Okgye, 5. VI. 1980, JI Kim; 37 ♂ ♂ 21 ♀ ♀, Samcheok Meangbang, 15. VIII. 1995, EY Kim; 4 ♀ ♀, Bukpyeong Samhwasa, 27. VI. 1984, SH Park; GB: 1 ♀, Hujeongri, 28. IV. 1985, KS Chang; 33 ♂ ♂ 29 ♀ ♀, Uljin Manghyangbeach, 29. V. 1999, JI Kim *et als.*; 2 ♀ ♀, 2. VIII. 1999, SY Kim; GN: 1 ♂ 2 ♀ ♀, Nakdongriverside, 22. IV. 1984, SH Kang; JB: 23 ♂ ♂ 17 ♀ ♀, Buan Sannae, 27. VI. 1990, JK Jeon; JN: 2 ♂ ♂, Sinan Is. Wooui, 21. VII. 1979, JW Lee; 6 ♂ ♂ 2 ♀ ♀, Wando Is. Bogil, 3. VIII. 1998, SY Kim; 3 ♂ ♂, Yeongkwang Is. Anma, 18. VIII. 1989, JI Kim; JJ: 1 ♂, Andeukvalley, 3. V. 1978, JW Lee; 12 ♂ ♂ 5 ♀ ♀, Namjeju Mosulpobeach, 7. VIII. 1999, SY Kim; 1 ♂ 1 ♀, Hamdukbeach, 16. VIII. 1998, JK Lee (SSWU and KU)

**Distribution:** Korea, China, India, Japan, Taiwan

***Gonocephalum reticulatum* Motschulsky, 1854**

그물모래거저리 (Fig. 1I)

*Gonocephalum reticulatum* Motschulsky, 1854, Étud. Ent. 2: 47; ESK & KSAE 1994: 176 Kaszab 1968: 8; Kwon et Choi 1986: 107; Kwon *et al.* 1996: 163; Medvedev 1992: 636-637

Materials examined: PB: Pyeongyang city, 15. X. 1987, Z. Korsós et L. Ronkay; 20. IX. 1979, H. Steinmann et T. Vászrhelyi (HNHM)

**Distribution:** North Korea (South ?), Mongolia, NE. China, USSR

***Gonocephalum malayanum* Gebien, 1935**  
(Fig. 1K)

*Gonocephalum malayanum* Gebien, 1935, Mém. Mus Hist. mat. Belg. (hors serie) 4(11): 53, t.1, f.1; Kaszab 1952: 677

Materials observed: Indonesia (Bali), 18. VII. 1982; Laos Vapi, 30. IV. 1967 (HNHM)

Distribution: Korea (?), SE. Asia

### *Gonocephalum japonum* (Motschulsky, 1860)

애겨저리

*Opatrum japonum* Motschulsky, 1860, tud. Ént. 9: 16

*Opatrum expansicolle* Lewis, 1894: 380

*O. sexuale* R. best. Tab 142 (nec. Mars.)

*O. japonicum*: Cho 1969: 307 (*Conocephalum*)

*Gonocephalum japonum*: Cho 1955: 213; 1957: 52; ESK & KSAE 1994: 176; Haku 1936: 120; Kim et Yoo 1987: 507; Kim *et als.* 1990: 181; Kim JI 1993: 215 (*G. japonum*); 1996b: 175 (misidentification); Kim *et al.* 1997: 129; Kim WT 1995: 405; Kwon et Choi 1986: 106 (*G. japonicum*); Kwon *et al.* 1996: 163; Lee et Kwon 1981: 154 (*G. japonicum*); Masaki 1934: 263; Park *et al.* 1996: 220 (*G. japonicum*)

Materials observed: 1♂ 2♀♀, Japan, 20-21. IX. 1880; 1881, Lewis (BMNH)

Distribution: Korea (?), China, Japan

### *Gonocephalum bilineatum* (Walker, 1858)

두줄모래겨저리

*Opatrum bilineatum* Walker, 1858, Ann. Mag. nat. Hist. (3)2: 284

*Gonocephalum kamtschaticum* Motschulsky 1860: 139

*Opatrum orarium* Lewis 1894: 380 (by Gebien, 1939)

*Gonocephalum bilineatum*: ESK & KSAE 1994: 176; Kwon et Choi 1986: 106; Kwon *et al.* 1996: 163

Materials observed: Sikkim, 8-15. XII. 1934; Japan, 1905 (BMNH)

Distribution: Korea (?), China, Hawaii, Japan, Kamchatka, Melanesia, Nepal, PapuaNewGuinea, SE. Asia

### *Gonocephalum outreyi* Chatanay, 1917 (Fig. 1J)

*Gonocephalum outreyi* Chatanay, 1917, Bull. Mus. Hist. nat. paris p.240; ESK & KSAE 1994: 176; Kaszab 1952: 678; Kim JI 1996a: 15; Masumoto et Kondo 1984: 3

Materials observed: China Yunnan, ?; Vietnam, 12. X.

1986 (HNHM); Laos Paklung, 19.I.1920 (BMNH)

Distribution: Korea (?), China, Japan, Taiwan

### Genus *Opatrum* Fabricius, 1775

작은모래겨저리속 (신칭)

*Opatrum* Fabricius, 1775, Syst. Ent. 8: 30-832 (Types Species: *Opatrum sabulosum*)

Diagnosis: Body rather small and convex. Tarsus ventrally with fine and hairy setae. Protarsi penultimate segment broad. Mesosternal process more protuberant than that of mesocoxae. Abdominal sternites with a visible membrane along hind margin of three and four segment. Elytra with lustered striae rows of granules at intervals.

### *Opatrum subaratum* Faldermann, 1835

작은모래겨저리 (개칭) (Figs. 1L, 2 (7a, 7b, 7c))

*Opatrum subaratum* Faldermann, 1835, Mém. Ac. St. Petersb. sav. etr. II: 413; Miwa, 1935: 5; Chujo & Lee 1993: 110; ESK & KSAE 1994: 176; Kaszab 1968: 8-9; Kim JI 1995: 141; Kim WT 1995: 407; Kwon et Choi 1986: 107; Kwon *et al.* 1996: 163

*Opatrum coriaceum* Motschulsky, 1857, Etudes Entom.VI: 34; Kolbe 1886: 202

*Opatrum sabulosum* Linne: Heyden 1887: 259; Cho 1955: 213; 1957: 52; 1963: 50; Cho *et als.* 1968: 261; Gu Gun 1973: 34-66; Lee *et al.* 1985: 408

*Gonocephalum sabulosum*: ESK & KSAE 1994: 177

Materials examined: GG: 1♂, Ansong, 7. V. 1994, UO Kim; 1♀, Anyang Mt. Kwanak, 16. V. 1999, SJ Kim; 1♂ 2♀♀, Anyang Sumokwon, 21. VI. 1991, HS Park; 1♂, 5. V. 1992, SJ Choi; 1♂ 2♀♀, Bucheon Yeokgok, 11. V. 1991, SR Yoon; 1♀, Mt. Wonmi, 29. V. 1991, KM Ko; 1♀, Bukhansansung, 28. V. 1991, SM Kim; 1♀, Bundang Emae, 26. V. 1990, SY Kim; 1♂, Dongducheon, 5. V. 1982, YS Yoo; 2♂♂ 7♀♀, Echeon, Mt. Sulbong, 1. IV. 1984, KS Chang; 1♂ 1♀, Gapyeong Mt. Myeongji, 13. IV. 1991, UK Kim; 1♂ 1♀, 23. IV. 1994, JI Kim; 1♀, Hyeonri, 16. V. 1987, JU Kim; 1♀, Goyang Ilsan, 14. V. 1984, MR Chae; 1♀, Gwangju Ummiri, 13. IV. 1983, KS Chang; 1♀, Hanam Kwagam, 7. V. 1995, MR Yoon; 2♂♂, Hwasung Hamnam, 27. IV. 1988, MO Lee; 1♂ 1♀, Incheon Is. Ganghwado, 10. V. 1997, JH Kim; 1♂, Is. Deokjeok Seopori, 5. VII. 1981, MY Uhm; 2♀♀, Namyangju Mt. Cheonma, 18. IV. 1981, DR Lee; Beolnae, 16. IV. 1991, MJ Kim; 3♀♀, Masuk, 18. V. 1984, SE Yang; 1♂, Migum, 8. V. 1984, MA Park; 1♂, Sudong, 3. V. 1991, JI Kim; 1♂, Mt.



- Chukryeong, 10. X. 1981, MH Suh; 3 ♂♂ 5 ♀♀, Palyari, 3. V. 1986, SH Park; 1 ♀, Pyeongnae, 28. IV. 1980, JI Kim; 1 ♀, Sachang, 21. V. 1991, JH Na; 1 ♂, Pocheon Kwaneung, 9. V. 1987, SY Yoon; 1 ♂, Mt. Wangbang, 15. VI. 1979, SY Cho; 1 ♀, 3. V. 1984, KS Chang; 1 ♀, Pyeongtaek Gujingae, 5. IV. 1998, TM Han; 1 ♂, Seoneung, 25. V. 1988, JY Jung; 1 ♀, Siheung Daeya, 28. V. 1995, HY Jung; 1 ♀, Dochakri, 23. IX. 1984, KM Ui; 1 ♀, Mt. Chunggye, 6. VI. 1987, SW Hwang; 2 ♀♀, Namhansansung, 6. IX. 1980, MS Choi; 1 ♂, 9. IX. 1982, KR Kim; 1 ♀, Suwon Singal, 19. V. 1990, HJ Lee; 1 ♀, 11. IV. 1997, KJ Choi; 4 ♂♂, 16. V. 1999, YJ Kim; 1 ♀, 29. V. 1999, YR Kim; 1 ♂, Suwon Woncheon, 10. V. 1987, HK Park; 1 ♀, Suwon Mt. Yeogi, 20. V. 1989, HS Lee; 1 ♂ 2 ♀♀, 9. V. 1991, OJ Lee; 1 ♂, Suwon Seoul Univ., 26. V. 1996, HJ Hong; 1 ♂, Yangju Nammyeon, 5. V. 1997, HJ Lee; 1 ♀, Sinsanri, 26. III. 1983, JI Kim; 1 ♂, Yangpyeong Yongmunsa, 17. X. 1980, BK Min; 4 ♂♂ 2 ♀♀, Yongin Naesa, 13. V. 1988, HJ Lee; SE: 1 ♂, Chyeongdamdong, 29. IV. 1982, YS Yoo; 1 ♂, Dobong Ssangmun, 17. V. 1990, HK Kwon; 1 ♂, Dongdaemun Mt. Baebong, 12. V. 1989, HS Bae; 1 ♂, Gaeunsan, 1. VI. 1987, KH Min; 2 ♀♀, 10. V. 1990, SY Choi; 1 ♂, Gangbuk Bundong, 17. V. 1997, JY Jang; 1 ♀, Gangnam Mt. Daemo, 19. V. 1984, SU Lee; 1 ♀, Huninneung, 5. V. 1980, JI Jang; 23 ♂♂ 15 ♀♀, 21. IV. 1984, KS Chang; 1 ♂, Gangsuhgu Ggachisan, 24. V. 1995, JH Ahn; 1 ♂ 1 ♀, Jongro Hongji, 28. V. 1985, UR Kim; 1 ♂ 1 ♀, Mt. Samgak, 30. V. 1988, SB Kim; 1 ♂, Junggok Mt. Acha, 28. V. 1980, SH Kim; 1 ♀, Kwanak Bongcheon, 12. VII. 1990, UJ Lee; 1 ♀, Mt. Kwanak, 10. V. 1992, MY Park; 1 ♀, Kyeonghee Univ., 18. V. 1994, JY Kim; 2 ♂♂ 1 ♀, Mokdong, 28. V. 1987, JM Park; 1 ♂, Nonhyeon, 11. V. 1986, YH Lee; 1 ♀, Nowon Mt. Surak, 6. VI. 1981, HS Jeong; 1 ♂ 1 ♀, 12. V. 1989, HK Gu; 1 ♀, 27. V. 1995, SE Cho; 1 ♂, 5. IX. 1998, UH Cho; 1 ♂, Nowon Nokcheon, 17. V. 1991, JY Jang; 1 ♂, Yuksa, 29. IV. 1990, SH Kuk; 3 ♂♂ 2 ♀♀, Seocho Mt. Chunggye, 18. V. 1991, MJ Lim; 1 ♀, Songpa Macheon, 21. V. 1997, UY Kim; 1 ♀, Sungbuk Bundong, 17. V. 1997, JY Jang; 1 ♀, Donam, 20. V. 1980, JI Kim; 2 ♂♂, 16. IV. 1991, YJ Chang; 4 ♂♂ 3 ♀♀, 15. V. 1996, HS Park; 3 ♂♂ 2 ♀♀, 25. V. 1999, MY Kang; 1 ♀, Unpyeong Galhyeon, 19. V. 1988, UJ Park; GW: 1 ♂, Cheongpyeong, 15. V. 1988, K Moon; 1 ♂, Gounri, 4. IV. 1980, JI Kim; 1 ♀, Nammyeon Seocheon, 22. III. 1990, JI Kim; 1 ♂, Pyeongchang Mt. Odae, 15. VI. 1992, KM Ham; 1 ♂, Mt. Taebaek Dankunkak, 30. V. 1999, SH Cho; CB: 1 ♂, Chungju Danwol, 5. V. 1997, YH Jeon; 2 ♀♀, Gwesan Hwayanri, 25. V. 1996, WJ Jung; CN: 1 ♂, Cheonan Anseo, 4. XI. 1984, JI Kim; 3 ♂♂ 1 ♀, Daejeon Mt. Indal, 4. V. 1997, HJ Lim; 1 ♂, Dangjin Dusanri, 12. VIII. 1984, HS Choi; GB: 1 ♂, Bonghwa Daehyeon, 25. VII. 1986, KS Chang; 1 ♂, Taehangsan Dalgipokpo, 24. VI. 1988, K Moon; 1 ♂ 1 ♀, Uljin Mt. Baekam, 29. V. 1999, JK Lee; JB: 1 ♂ 5 ♀♀, Gochang Buan (Byeonsan 1 ♀, Sununsa 1 ♀), 25. X. 1992, HJ Choi; JN: 1 ♂, Yeocheon Impo, 18-19. VII. 1993, HJ Kim; PB: Pyeongyang, 24. III. 1970 (SSWU, KU, EWU and HNHM)
- Distribution: Korea, China, E.Siberia, Mongolia  
 Remarks: *Opatrum subaratum* have many external variations in elytral granule patterns and tibia external margin, and similar to the *Opatrum sabulosum* from Western Palearctic. However it is distinguished from the latter following characters; generally smaller, pronotum side margin less arched, elytral granule shape hollowed at one side not rounded, protibia external upper margin prolonged.
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(2000년 6월 30일 접수; 2000년 11월 24일 수리)