

Taxonomic Review of Genus *Stenodynerus* Saussure (Eumeninae, Vespidae, Hymenoptera) with Description of a New Species in Korea

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Key Words:

Taxonomy
Hymenoptera
Vespidae
Eumeninae
Stenodynerus
New Species
Korea

Ten Korean eumenine wasp species of the genus *Stenodynerus*, including one new species and six newly recorded species (*Stenodynerus chinensis simillimus*, *S. coreanus*, *S. clypeopictus*, *S. funebris*, *S. frauenfeldi*, *S. kalinowskii*, *S. pappi*, *S. pullus*, *S. tergitus* sp. nov., *S. tokyanus*) from Korea were taxonomically reviewed. The male of *S. pappi* was collected for the first time. Additional characters to distinguish several congeners were also discussed.

With respect to the Korean *Stenodynerus*, three species, *S. kalinowskii*, *S. coreanus*, *S. pappi*, have been reported by Radoszkowski (1890), Tsuneki (1970), Giordani Soika (1972, 1976), Gusenleitner (1981, 1985), Yamane (1990) and Kurzenko (1995). They were originally described from the Korean Peninsula. Considering the number of species known from adjacent regions (refer to Yamane, 1990 and Kurzenko, 1995), Korean *Stenodynerus* has been treated with little attention, and of which the large parts still remain masked.

As a result of careful comparisons with the species from adjacent regions, ten species are herein reported, including six newly recorded species from Korea and one new species, *Stenodynerus tergitus* sp. nov.

Materials and methods

This study was based on materials from the following Korean collections: Korean Entomological Institute, Korea University, Seoul; Dept. of Biology, Gyeongsang Univ., Jinju; Dept. of Biology, Sungshin Women's Univ., Seoul; Dept. of Biology, Yeungnam Univ., Kyeongsan. The voucher specimens of the adjacent regions were prepared and provided by Sk. Yamane (Kagoshima Univ., Japan) and N.V. Kurzenko (Biology and Pedology Institute, Vladivostok, Russia).

The enumeration of species is alphabetical. A diagnostic key, illustrations and remarks for all species, and a description of new species are provided. Terminologies for structures primarily followed those of Carpenter and Cumming (1985), and Cumming (1989).

Abbreviations for provincial names are as follows: SL (Seoul), KG (Kyeonggi-do), GW (Gangweon-do), CB (Chungcheongbuk-do), CN (Chungcheongnam-do), GB (Gyeongsangbuk-do), GN (Gyeongsangnam-do), JB (Jeonrabuk-do), JN (Jeonranam-do), JJ (Jeju-do).

Systematic Accounts

Genus *Stenodynerus* Saussure

Stenodynerus Saussure, 1863: 228 (as division of subgenus *Odynerus* of genus *Odynerus* Latreille; type species: *Stenodynerus chinensis* Saussure, 1863, designated by Bohart, 1939); v.d.Vecht and Fischer, 1972: 64; Carpenter, 1986: 85; v.d.Vecht and Carpenter, 1990: 55.

Nannodynerus Bluthgen, 1938 (1937): 281 (as subgenus of *Euodynerus* Bluthgen; Type species: *Lionotus teutomicus* Bluthgen, 1937, original designation); Bluthgen, 1938: 453, 458 (as genus). The synonymy was confirmed by v.d.Vecht (1966).

The members of the genus can be distinguished from others by the following character combination: body small and slender, usually less than 10 mm in length (head to metasomal tergum 2); anterior vertical face of pronotum with a (pair of) distinct fovea(e); mesepisternum with epicnemial carina; tegula slightly longer than wide, with convergent posterior end reaching the pretegula end; metasomal tergum 1 lacks transverse carina, but the border line between anterior vertical face and dorsal horizontal face obtusely angled in some forms; prestigma less than one-fourth of stigma in length.

This genus is mainly Holarctic in distribution, with

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fewer species in Neotropical and Oriental Regions. Thirty four species have been recorded from the Palearctic Region, including twelve species from the Far East (Gusenleitner, 1981; Kurzenko, 1995).

Key to the Korean species

1. Interocellar region conically protruded (in lateral view, vertex deeply sloped) (Fig. 2A). Female vertex without depression, and cephalic fovea not discernable with nearby punctures. Anterior vertical face of pronotum with one round fovea (Fig. 2B). Frons with sparse punctures of which inter-space as long as or slightly longer than puncture diameter (Fig. 2A).
..... *coreanus*
- Interocellar region simple, at most elevated on the level of ocellus. Female vertex with a median round depression bordered by a posterior carina, and cephalic fovea distinct. Anterior vertical face of pronotum with a pair of foveae, each of which is round or long oval in shape (in the latter shape, they are touching at the bottom). Frons with dense and close punctures (often forming reticulum between punctures), always separated less than puncture diameter. 2
2. Metasomal tergum 1, in profile, angled between anterior and dorsal surfaces (Figs. 7A and 10A); of which anterior vertical face almost impunctate with a median longitudinal carina on upper half (Fig. 7E). Base of metasomal sternum 2, in profile, obtusely angled (Fig. 7A). A pair of cephalic foveae separated almost by diameter of posterior ocelli (Figs. 7C and 10B). Anterior vertical face of pronotum in the middle part with a pair of round foveae (Fig. 7B). Propodeal shelf absent, upper mid end of propodeal submedian carina touching posterior mid end of metanotum; propodeal concavity with uppermost diverged longitudinal median carina (Y-shape), from which dense oblique striae run on the whole face (Fig. 10C). 3
- Metasomal tergum 1, in profile, rounded (Figs. 3D, 4D, 8B, and 9I); of which anterior vertical face densely punctate without median carina. Base of metasomal sternum 2, in profile, rounded. One or a pair of closely spaced cephalic foveae present (Figs. 1D, 3B, and 9H). Anterior vertical face of pronotum with U or V-shaped medial fovea (Figs. 3A, 4C, 5C, and 9C). Propodeal shelf present (propodeal submedian carina and metanotum separating in dorsal median part) except *pullus* which has no shelf; propodeal concavity with at most simple (not diverged) longitudinal medial carina which is usually evanescent or lost on upper half. 4
3. Apical border of metasomal tergum 2 reflex upward almost at a right angle, and its preceding portion strongly depressed, forming a wide transverse groove through the whole tergum (Fig. 7D). ... *pappi*
- Metasomal tergum 2 without a distinct groove on

- preapical part, and of which apical border slightly depressed (Fig. 10A). *tokyanus*
4. Metasomal terga 1 and 2 with weak and shallow punctures which are not forming the reticulum between punctures (Fig. 8A). Propodeal shelf absent; upper median pit of propodeum (just behind the metanotum) long oval shape. Almost entire metapleuron and lateral face of propodeum with fine striae mixed with very weak and sparse punctures (Fig. 8B). *pullus*
 - Metasomal terga 1 and 2 with very strong and deep punctures, especially those on tergum 1 strongly reticulate (the punctures larger and deeper toward base) (Figs. 5A and 6B). Propodeal shelf present even if short; median pit of propodeum nearly round. Ventral metapleuron usually not striated but sometimes shagreened, and lateral face of propodeum at least partly with weak reticulum or carinae. 5
 5. Clypeus slightly higher than wide (♀) and almost as high as wide (♂) with shallow and sparse punctures (Figs. 1A and 1B). Female vertex with a pair of cephalic foveae which are very close (Fig. 1D). Terminal segment of male antenna, seen from above, flat and almost rectangular shape, not tapered (Fig. 1E and F) *clypeopictus*
 - Clypeus (slightly) wider than high with dense and deep punctures in both sexes (Figs. 4A, 4B, 9A, and 9D). Female with one cephalic fovea. Terminal segment of male antenna tapered (Figs. 3B and 9H). 6
 6. Pronotal carina on dorsal part developed well (acutely carinate), and of which margin translucent (Fig. 3A, arrow). Anterior vertical face of pronotum with distinct long transverse striae (or sometimes dully carinate) above the medial fovea which is U-shaped (Fig. 3A). Occipital carina somewhat abruptly bent and angled on the level of clypeal base (Fig. 3E, arrow). Submedian carina of propodeum well defined and dentate through the whole length, especially it strongly protrudes to be a pair of acute triangular laminae behind the metanotum (Fig. 3C). *frauenfeldi*
 - Pronotal carina developed weakly on dorsal part (not acutely carinate) without translucent margin. Anterior vertical face of pronotum without or with at most short fine striae (Figs. 5C and 9C); medial foveae V-shape (Figs. 4C, 5C, and 9C). Occipital carina curved smoothly, without angle (Fig. 3F). Submedian carina of propodeum weak and intermittent, the protrusion behind the metanotum lacks or, if any, weak. 7
 7. Apical border of metasomal tergum 2 upward reflex (Figs. 4D and 9I). Pronotal carina shortly interrupted on the corresponding part to foveae on pronotal anterior vertical face. Pronotal anterior vertical face above the medial fovea without striae (or which is evanescent in several materials) (Fig. 9C). Propodeal

valvula with narrow and shallow emargination on posterior upper margin (Fig. 9E, arrow). Terminal segment of male antenna comparatively short, not reaching the apex of segment 10 (Fig. 9B). 8

- Apical border of metasomal tergum 2 depressed (Figs. 5A and 6B). Pronotal carina widely interrupted on the middle part, ca. one third of the dorsal width (Fig. 5C, dotted line). Pronotal anterior vertical face above the medial fovea very often with fine transverse striae (Fig. 5C). Propodeal valvula with wide and deep emargination on posterior upper margin (Fig. 6A). Apical segment of male antenna longer, reaching the apex of segment 10 or slightly exceeded (Fig. 6C). 9

- 8. Apical border of metasomal tergum 2 reflex upward almost at a right angle, and its preceding part strongly depressed and forming a wide transverse groove (as in *pappi*) (Fig. 9F and I). Clypeus less wider than high (the width/the height less than 1.2 in both sexes) (Fig. 9A and D). *tergitus* sp. nov.

- Apical border of metasomal tergum 2 obtusely reflex, and its preceding part not forming a distinct groove, at most narrowly impressed (Fig. 4D). Clypeus rather wider than high (the width/the height more than 1.3 in both sexes) (Fig. 4A and B). *funebri*

- 9. Apical border of metasomal tergum 2 strongly depressed; in profile, the dorsal margin of metasomal tergum 2 flat or slightly concave (Fig. 5A, arrow). *kalinowski*

- Apical border of metasomal tergum 2 weakly and gradually depressed; in profile, the dorsal margin of tergum 2 evenly convex (Fig. 6B). *chinensis simillimus*

Korean Species of the Genus Stenodynerus Saussure

Stenodynerus chinensis simillimus Yamane et Gusenleitner

Stenodynerus chinensis simillimus Yamane et Gusenleitner, 1982: 115 (in key), 119-121.

Materials Examined: 1 ♂ 1 ♀, Uidong, SL, 20-IV-1960, Jae, 8-VI-1974, H. R. Lee; 1 ♂, Hwacheon, GW, 6-VI-1967, C. W. Kim; 1 ♀, Aemubong, KG, 16-VI-1974, O. J. Lee; Mt. Naejang, JB, J. I. Kim; 1 ♂, Cheoneum temple, Mt. Chiri, 6-V-1977, E. S. Oh; 2 ♀ ♀, Ssanggye temple, Mt. Chiri, JN, 5-VI-1977, S. S. Jeong; 1 ♀, Mt. Hwanghak, Kimcheon, GB, 6-VI-1978, S. B. Hong; 2 ♀ ♀, Mt. Surak, SL, 11-VI-1983, K. L. Choi, M. S. Kim; 1 ♂ 1 ♀, Mt. Cheonma, KG, 12-VI-1983, O. Jin, 23-VI-1997, M. S. Lee; 1 ♀, Geomundong, Yecheon, 13-VII-1984, K. S. Jang; 1 ♀, Eunhye temple, GB, 30-V-1987, E. A. Jeong; 1 ♀ 1 ♂, Mt. Weolak, 30-V-1987, O. H. Heo, J. I. Lee; 2 ♂ ♂, Bokwang temple, KG, 24-VI-1978, M. L. Kim, 3-VI-1987, S. J. Won; 2 ♀ ♀, Mt. Cheonggye, Seocho-gu, SL, 28-V-1989, Y. H. Kang, 4-V-1990, Y. H. Lee; 1 ♀, Unmun temple, Cheongdo-gun, 20-V-1989, B. S. Shon; 1 ♀, Kwangneung, 21-V-1989, M. H. Kim;

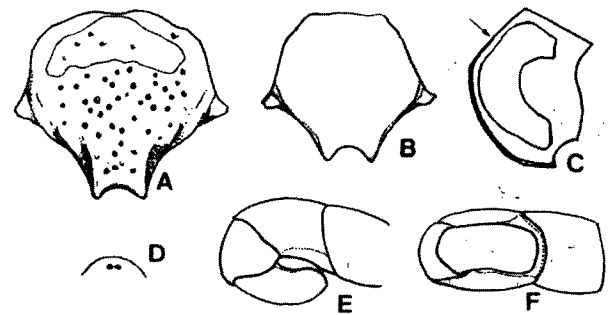


Fig. 1. *Stenodynerus clypeopictus*. A, Clypeus (♀). B, Clypeus (♂). C, tegula. D, Cephalic fovea and posterior carina. E, Male antennal segments 10-13, in profile. F, Ditto, dorsal view.

1 ♀, Bulyeonggyok, Uljin, GB, 10-V-1991, J. A. Kim; 1 ♂, Mt. Duryun, 28-V-1993, J.-k. Kim; 1 ♀, Yeongpyeong-ri, Yeongjung-myeon, Pocheon, 21-VII-1996, J.-k. Kim; 1 ♀, Mt. Gyeryong, CN, 7-VI-1997, M. H. Lee; 1 ♂, Gangshibong, Pocheon-gun, 21-VII-1998, J. D. Yeo; 9 ♀ ♀ 5 ♂ ♂, Yeungnam Univ. campus, Kyeongsan-shi, GB, 13-V-1988, 16-V-1989, Y. R. Shin, J. H. Joo, 18-V-1989, I. K. Lee, H. J. Seo, 23-V-1989, Y. J. Seo, E. J. Kim, 15-V-1991, K. H. Kang, Y. S. Kim, 28-V-1991, M. A. Lee, 30-V-1991, S. M. Jeong, 17-VI-1993, H. J. Lee, 23-VI-1993, S. H. Kim, 24-VI-1994, Y. M. Choi.

Distribution: Korea (new record), Japan (Yamane, 1990).

Remark: This species is very similar to *S. kalinowskii*. Differences in structure between these two species are given in remarks of *S. kalinowskii* herein.

Stenodynerus clypeopictus (Kostylev)

Odynerus clypeopictus Kostylev, 1940: 28.

Materials Examined: 1 ♀, Mt. Naejang, JN, 4-VIII-1974, C. W. Kim; 1 ♀, Palyari, 19-X-1980, S. H. Nam; ♀, Mt. Mugap, Kwangju, KG, 15-IX-1991, H. C. Park; 1 ♂, Mt. Chiak, GW, 2-VIII-1982, M. L. Kim; 1 ♀, Gorangpo-ri, Baekhak-myeon, Yeoncheon-gun, KG, 13-VII-1987, J. I. Kim; 1 ♀, Nam-myeon, Taean-gun, CN, 2-VIII-1992, J.-k. Kim; 2 ♂ ♂, Guin temple, Mt. Sobaek, CB, 3-VIII-1994, H. D. Yeo; 1 ♂, Okdae-ri, Yeongchun, Danyang-gun, 5-VIII-1994, K. I. Suh.

Distribution: West palaeartic (see Gusenleitner, 1981 for detailed localities), Kazakhstan, USSR (Sahaline, South Primorsk), Korea (new record), Japan (refer Yamane, 1990 for detailed localities).

Remark: Of the Korean species, only this species show the distinguishing clypeus in female, and rectangular shaped terminal segment of the male antenna. Additionally clypeal lower part which is free from the eye is almost as long as in the female, and slightly shorter in the male than eye-touching upper part. In other species, the lower free part is distinctly shorter

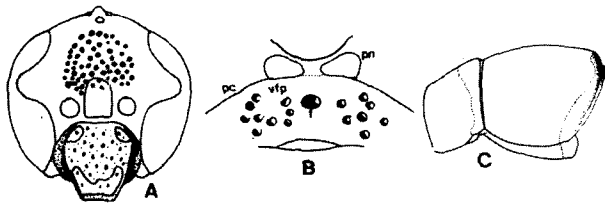


Fig. 2. *Stenodynerus coreanus*. A, Head, frontal view. B, Anterior vertical face of pronotum (vfp) and median fovea (f). C, Metasomal segments 1 and 2, in profile. p, pronotum. Pc, pronotal carina.

than the upper part in both species. The outer upper margin of tegula is nearly straight rather than round (Fig. 1C, arrow; cf. Fig. 5B).

In coloration, this species is very similar to the *S. frauenfeldi*. They have extensive yellow maculation. Although the female of *S. frauenfeldi* is more extensive in whole body coloration, the legs are more extensively maculated: Entire tibiae of all legs are covered with yellow maculation except the apical small areas (but the maculation is limited on outer face in the *S. frauenfeldi*). Male of this species has a yellow band along the lower half of ocular sinus to the clypeal base, but the maculation is very short or usually absent in *S. frauenfeldi*.

Stenodynerus coreanus (Tsuneki)

Nannodynerus coreanus Tsuneki, 1970: 19.

Stenodynerus coreanus (Tsuneki): Vecht and Fischer, 1972: 66; Gusenleitner, 1981: 271 (in key), 296-298; Kruzenko, 1995: 302; Kim and Yoon, 1996: 204.

Materials Examined: 2 ♀♀, Mt. Baekyang, JB, 4-VIII-1974, C. W. Kim; 1 ♀, Kyuryong temple, Mt. Chiak, GW, 30-VII-1975, J. I. Kim. No male specimen herein examined.

Distribution: Korea

Remark: As shown in the key, the cephalic foveal character, and the tubercle on intercellular region are the most distinct in this species. Additionally female clypeus has a wide flat face. From a frontal view, sloped marginal and the median flat face well demarcated. Apical emargination of clypeus is very shallow. The punctures of clypeus are very small and sparse. Apical border of metasomal tergum 2 is abruptly depressed (Fig. 2C).

Stenodynerus frauenfeldi (de Saussure)

Odynerus (*Odynerus*, div. *Stenodynerus*) *frauenfeldi* Saussure, 1867: 15.

Materials Examined: 2 ♀♀, SL, 10-VI-1956, ?, 15-VIII-1957, ?; 1 ♀, Kwangneung, KG, 20-VIII-1956, ?; 2 ♀♀, Anam-dong, Seongbuk-gu, SL, 26-VIII-1957, H. B. Kim; 1 ♀ 2 ♂♂, Mt. Gaya, GB, 5-VIII-1960, C. W. Kim; 1 ♂, Mt. Taebaek, GW, 5-VIII-1961, W. J. Kim; 2 ♀♀, Hong-

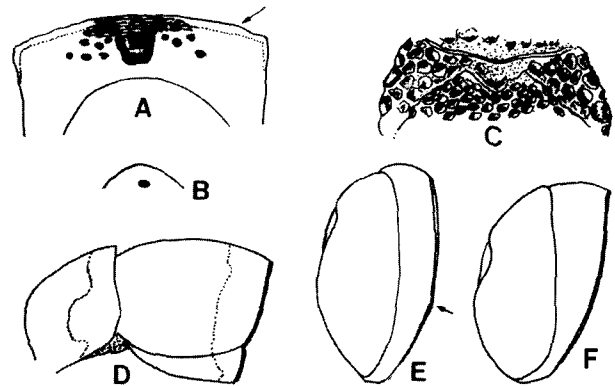


Fig. 3. *Stenodynerus frauenfeldi*. A, Anterior vertical face of pronotum with long carinae, U-shaped median fovea and translucent margin. B, Cephalic fovea and posterior carina. C, Projections of propodeal submedian carina behind the metanotum. D, Metasomal segments 1 and 2, in profile. E, Head, in profile. F, *Stenodynerus chinensis similimus*, head, in profile.

seong, CN, 19-VIII-1961, J. S. Park; 1 ♂, Mt. Godai, KG, 31-VIII-1967, J. I. Kim; 1 ♀, Byeokje, 17-IX-1972, J. I. Kim; 1 ♀, Aemubong, KG, 6-VI-1973, J. H. Kwon; 1 ♂, Gwoigok-ri, Susan-myeon, Jecheon, 6-VI-1974, C. H. Shin; 1 ♀, Mt. Wangbang, KG, 15-VI-1975, E. H. Lee; 1 ♀, Samhwa temple, Mt. Chiak, 4-VI-1977, E. S. Oh; 1 ♀, Mt. Chukryeong, Sudong, 20-VIII-1980, H. K. Park; 1 ♀, Yeonsu-ri, Yangpyeong-gun, KG, 31-VIII-1980, K. S. Jang; 1 ♀ 1 ♂, Mugap Is. Onjin-gun, 4-VIII-1982, J. I. Kim; 1 ♂, Geomun Is., Yecheon, 11-VII-1984, J. I. Kim; 1 ♀, Unsan-myeon, Dangjin-gun, CN, 13-VII-1984, H.S.Choi; 3 ♀♀ 1 ♂, Yeungnam Univ, campus, Kyeongsan-shi, GB, ?-?-1986, Y. B. S., 1-X-1987, J. I. Park, 25-V-1989, S. J. Kim, 5-V-1991, W. Y. Jang; 1 ♀, Sungshin Univ. campus, Seongbuk-gu, SL, 1-VI-1987, S. R. Lee; 1 ♀, Yangpyeong, KG, 13-VIII-1987, J. I. Kim; 1 ♀, Buleum Is., Kwanghwa-gun, KG, 18-VIII-1987, H. J. Ryu; 1 ♀, Muleung-ri, Changdong-myeon, Uljin-gun, GB, 18-VIII-1987, ?; 1 ♀, Deokso, KG, 13-V-1989, K. K. J.; 1 ♂, Jungjido, SL, 4-VII-1990, ?; 1 ♀, Guin temple, Mt. Sobaek, 3-VIII-1994, Y. S. Kim.

Distribution: Far East Russia (Primorie, S. Sahalin, S. Kurile), Korea (new record), Japan.

Remark: Long carinae (or striae) covering above the median fovea of anterior vertical face of pronotum is the unique character of this species. In addition, female of this species is easily distinguished by extensive maculation. Specially, propodeum has large yellow markings dorsally, and the metasomal tergum 1 has an apical band which is swollen on each lateral part (Fig. 3D). However these maculations do not appear in *S. clypeopictus* which has almost same extensive coloration.

Stenodynerus funebris (André)

Odynerus funebris André, 1884: 729.

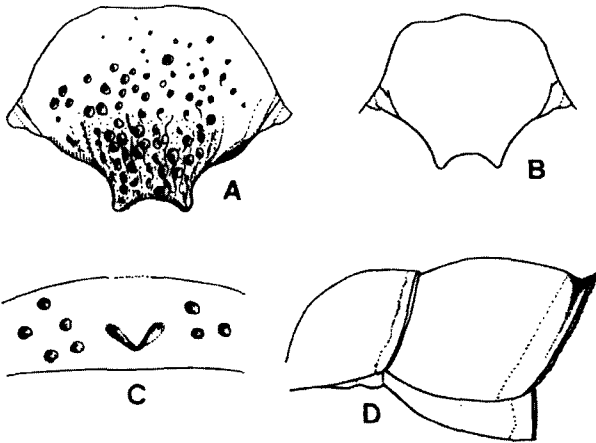


Fig. 4. *Stenodynerus funebris*. A, Clypeus (♀). B, Clypeus (♂). C, Anterior vertical face of pronotum and median fovea. D, Metasomal segments 1 and 2, in profile.

Material Examined: Kuryang-ri, GW, 4-VI-1967, J. K. Oh; Heuibang temple, Mt. Sobaek, CB, 7-VI-1974, J. H. Shin; Mt. Gyebang, GW, 5-VI-1983, M. L. Kim; 1 ♀, Samhwa temple, Bukpyeong-myeon, GW, 27-VI-1984, J. I. Kim; Piagol, Mt. Jiri, CN, 23-VI-1987, O. J. Lee; Geonbong temple, Goseong-gun, GW, 12-VI-1992, J.-k. Kim; 1 ♀, Uiryeong, 17-VI-1994, M. L. Kim.

Distribution: USSR (Amur, Ussuri region, S. Sakaline, Bakaria to N. E. Chian), Korea (new record)

Remark: Gusenleitner (1981) and Kurzenko (1995) characterized this species with entire black pronotum without any maculation. However several specimens herein show the states having a pair of distinct yellow spots to be diminished or clearly lost one. The character does not seem to be useful for confirmation of this species.

Stenodynerus kalinowskii (Radoszkowski)
Odynerus kalinowskii Radoszkowski, 1890: 321.
Stenodynerus kalinowskii (Radoszkowski): v.d. Vecht and Fischer, 1972: 67; Gusenleitner, 1981: 220 (in key), 300-302; Gusenleitner, 1985: 75-76.

Materials Examined: 1 ♀ 1 ♂, Mt. Sokri, CB, 31-VII-1957, ?; 1 ♀, Mt. Gyeryong, 4-VIII-1973, C. W. Kim; 1 ♀, Kwangneung, KG, 14-VII-1975, S. H. Nam; 5 ♀ ♀, Songkwang temple, Mt. Chogye, CB, 9-VIII-1976, C. W. Kim, S.H.Nam; 1 ♀, DonKGuneung, Taigu, GB, 26-VII-1976, H. Takizawa; 2 ♂ ♂, Mt. Gaya, JN, 5-VIII-1980, B. S. Cho; 1 ♀, Mt. Acha, SL, 24-VIII-1980, K. S. Jang; 1 ♂, Ul Is. Ongjin, Kwanghwa-gun, 3-VIII-1982, J. I. Kim; 1 ♀, Seongap Is. Ongjin, Kwanghwa-gun, 4-VIII-1982, J. I. Kim 2 ♂ ♂, Mt. Unmun, GB, 9-VIII-1982, M. I. Kim; 1 ♀ 1 ♂, Bogil Is. Wando-gun, JN, 23-VIII-1982, J. I. Kim; 2 ♀ ♀ 2 ♂ ♂, Mt. Naijang, JB, 2-3-VIII-1983, S. H. Nam; 1 ♀, Jangseungpo,

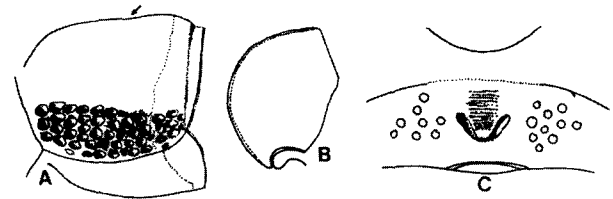


Fig. 5. *Stenodynerus kalinowskii*. A, Metasomal segment 2 with punctures illustrated partially, in profile. B, Tegula and pretegula. C, Anterior vertical face of pronotum with median fovea and fine short striae.

Geoje-gun, GN, 25-IX-1983, M. L. Kim; 1 ♂, Geomun Is., Yecheon, JN, 13-VII-1984, K. S. Jang; 1 ♀, Mt. Mani, Ganghwa Is., 25-VII-1984, M. L. Kim; 1 ♀, Mt. Myeongji, Gapyeong-gun, KG, 23-VI-1989, E. M. Ryu; 1 ♀, Mt. Cheonggye, Wonji-dong, Secho-gu, SL, 26-VIII-1989, J. E. Im; 1 ♂, Mt. Duryun, JN, 26-VII-1990, J. W. Lee; 1 ♂, Bukhansanseong, KG, 21-VIII-1991, K. Y. Yoon; 1 ♀, Mt. Mugap, Kwangju-gun, KG, 15-IX-1991, J. I. Kim; Il-dong, Cheolweon, GW, 21-VIII-1992, M. K. Kim; 1 ♀ 1 ♂, Gubok-ri, Gusan-myeon, Changwon, GN, 10-VIII-1992, J.-k. Kim; 1 ♀, Gun temple, Mt. Sobaek, 3-VIII-1994, S.M.Ryu; 1 ♀, Jukgyegyegok, Mt. Sobaek, CB, 4-VIII-1994, K.I.Shu; 1 ♀, Cheongdonggyegok, Mt. Sobaek, 15-VIII-1997, Y. J. Jang.

Distribution: Endemic to Korea.

Remark: This species is very similar to *S. chinensis simillimus*. They have been mainly distinguished by the shape of metasomal tergum 2 as shown in the key. However it is sometimes difficult to distinguish both species, in case of the form with poorly concave dorsal margin and less depressed apical border of metasomal tergum 2 in *S. kalinowskii*. In addition to those characters in the key, there are subtle differences in puncture state on metasomal tergum 2 (Figs. 5A and 6B) and some measurements as follows. The punctures of *S. kalinowskii* are larger, denser and deeper than those of *S. chinensis simillimus* (This characteristics is more clear in lateral face). The punctures are closer in the former than in the latter species. The inter-spaces between punctures in *S. kalinowskii* is less than the half of puncture diameter, but more than half of the puncture diameter (partly same as puncture diameter) in *S. chinensis simillimus*, which means irregularity in puncture distribution in the latter species. Apical emar-

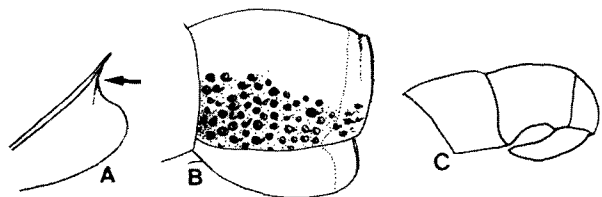


Fig. 6. *Stenodynerus chinensis simillimus*. A, Propodeal valvula. B, Metasomal segment 2, in profile. C, Male antennal segments 10-13.

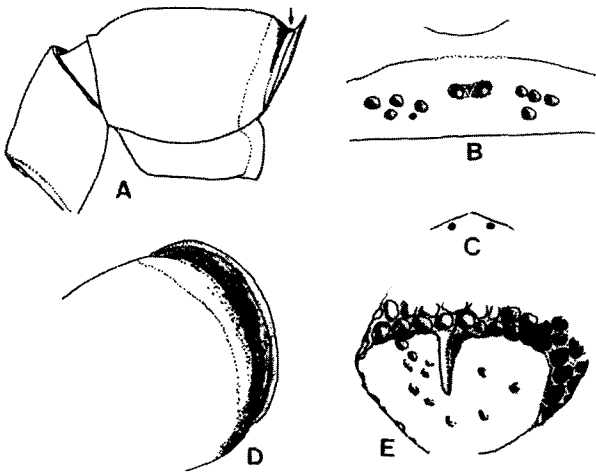


Fig. 7. *Stenodynerus pappi*. A, Metasomal segments 1 and 2, in profile. B, Anterior vertical face of pronotum with median foveae. C, Cephalic foveae and posterior carina. D, Apical border of metasomal tergum 2. E, Anterior vertical face of metasomal tergum 1 with a median carina.

gination of clypeus in this species is narrower and deeper. The ratio of emargination width/clypeus width is 0.3 (less than one-third), but one-fourth in *S. chinensis simillimus*. The metasomal tergum 2, seen from above, of this species is clearly wider than long (the ratio of width/length 1.2), but almost as long as wide or slightly wider than long (the ratio of width/length less than 1.1) in *S. chinensis simillimus*.

Stenodynerus pappi Giordani Soika

Stenodynerus pappi Giordani Soika, 1976: 290-291; Gusenleitner, 1981: 219 (in key), 298, Figs. 74-76; Kruzenko, 1995: 302; Kim and Yoon, 1996: 204.

Material Examined: 1 ♀, Cheolweon, GW, 2-X-1972, C. W. Kim; 1 ♀, Mt. Najang, 3-VIII-1974, J. I. Kim; 1 ♀, Deokjeok Is., Ongjin-gun, KG, 6-VII-1982, K. S. Jang; 1 ♀, Songpa-gu, SL, 9-IX-1988, H. Y. Kim; 1 ♀, Mt. Dobong, Dobong-gu, SL, 29-VIII-1992, S. H. Lee; 1 ♀, Korea Univ. campus, Seongbuk-gu, SL, 17-IX-1992, J.-k. Kim; 1 ♀, Heuibang temple, Mt. Sobaek, CB, 2-VIII-1994, H. D. Yeo; 1 ♀, Mt. Pohyeon, 19-IX-1998, S. J. Suh. 2 ♀ ♀, 2 ♂ ♂, Mt. Chungryeong, Namyangju-shi, KG, 24-VII-1999, J. D. Yeo.

Distribution: Endemic to Korean Peninsula.

Remark: Although this species was originally found in North Korea (Pyeongyang, Pyeongannam-do), it seems to be distributed in almost the entire region of the Korean Peninsula except the southernmost part. Of the Korean species, the character combination as in the key is unique, i.e. the shape of metasomal tergum 1 and apical border of metasomal tergum 2.

The male of this species had not been found. Two male specimens were examined herein for the first time. Almost entire structural characteristics is the

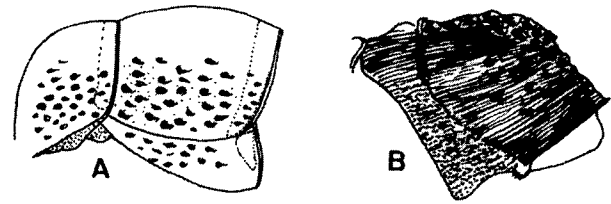


Fig. 8. *Stenodynerus pullus*. A, Metasomal segments 1 and 2, in profile. B, Metapleuron and lateral face of propodeum covered with fine striae.

same as in female. Especially diagnostic characters in the key is applicable to both sexes except sexual dimorphic ones like antenna and cephalic fovea. Terminal segment of male antenna is tapered of which the end almost reaches the apex of the segment 10. There are slight differences in coloration. Addition to the female maculation, clypeus except margin, labrum, mandible largely and outer faces of all tibiae have yellow maculations. Inner faces of antennal segments 10 and 11 and segments 12 and 13 wholly are yellowish brown.

Stenodynerus pullus Gusenleitner

Stenodynerus pullus Gusenleitner, 1981: 220 (in key), 246-248; Kurzenko, 1995: 303.

Material Examined: 1 ♀, Andong Dosanseoweon, KB, 17-V-1988, S. M. Ryu; ♀, 2nd Fall, Mt. Juwang, 4-V-1989, E. M. Park. No male specimen examined.

Distribution: USSR (Amur, Primorie, Ulanude, Chita), Korea (new record).

Remark: Of the Korean species, only this species has weak and sparse punctures on metasomal terga 1 and 2 as shown in the key. Although Gusenleitner (1981) described the body maculation as ferruginous ("rötlich"), the materials from Korea herein and the Primorski, Russia have pale yellow maculation. Conclusive remarks on the maculation in this species should be retained until sufficient data are collected.

Stenodynerus tergitus sp. nov.

Holotype: ♂, Yeongpyeong-ri, Pocheon, Kyeonggi-do, 20-VII-96, J. I. Kim et al. (written in Korean and Chinese characters with collection locality and collector)

Paratypes: ♀, Kwangneung, 13-IX-1957, C. W. K. (written in Chinese characters with collection locality, metasoma is glued on paper point and the other part pinned, left wing is being lost); ♂, Mt. Cheonma, Korea, 25-VI-1968 (without collector, mounted on a round cork with tiny pin). All the types will be deposited in Korean Entomological Institute, Korea University, Korea.

Description: Male. Entire body with dense and distinct punctures except tegula and metasomal terga 3-7. Particularly, the punctures on propodeum and metasomal tergum 1 almost as large as the anterior ocel-

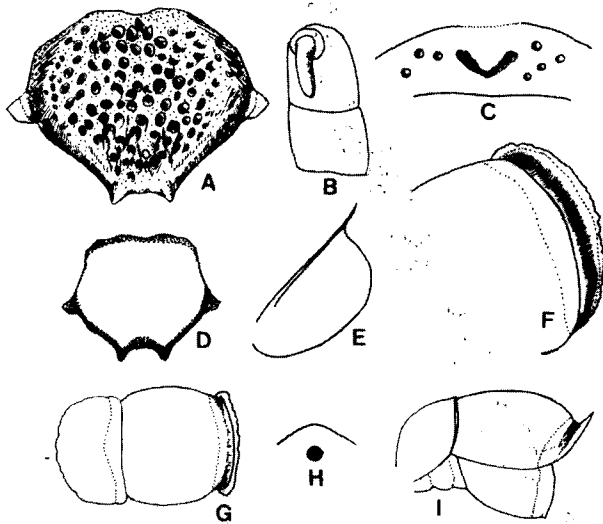


Fig. 9. *Stenodynerus tergitus* sp. nov. A, Clypeus (♀). B, Male antennal segments 10-13. C, Anterior vertical face of pronotum and median fovea. D, Clypeus (♂). E, Propodeal valvula. F, Apical border of metasomal segment 2. G, Metasomal terga 1 and 2, dorsal view. H, Cephalic fovea and posterior carina. I, Metasomal segments 1 and 2, in profile.

lus, and forming the strong and compact reticulum between punctures (but weakly or simply carinate on lateral below face of propodeum). Clypeus slightly wider than long (the width/the height is 0.79/0.74 mm in Holotype), and its shape as shown in Fig. 9D. Pronotal carina weak but completely developed through the whole length except the dorsal median short interruption (approximately one fourth of the dorsal width). Anterior lateral margin of pronotum, seen from above, weakly angled. Anterior vertical face of pronotum with a V-shaped median fovea composed of a pair of long oval foveae which are touching at the bottom (Fig. 9C). Propodeal shelf long, slightly shorter than the length of metanotum in mid line. The median fovea of propodeal shelf amorphous with assemblage of several deeper punctures. Propodeal concavity bordered by ill-defined submedian carinae (which is intermittently connected) somewhat excavated, and inner medial longitudinal carina developed only on lower half. Metasomal tergum 1 wider than high, of which width almost same as the length of tergum 2 (Fig. 9G). Metasomal sternum 2 swollen, its height, in profile, more than half of the tergum 2 in the mid line (tergum 2/sternum 2 0.9/0.5 mm in Holotype). Apical border of tergum 2 as shown in the key, and its outermost margin dully dentate (Fig. 9F). Terminal segment of male antenna not reaching segment 10 as shown in the key.

Whole body with goldish short hairs. Ground color black. Following parts yellow: A round interantennal spot, clypeus except margin, almost entire mandible except the apical and lower margins, labrum, a pair of spots on temple, antennal scape below, a pair of round spots on pronotum in the middle, an anterior triangular spot on tegula, a wide band (covering two-

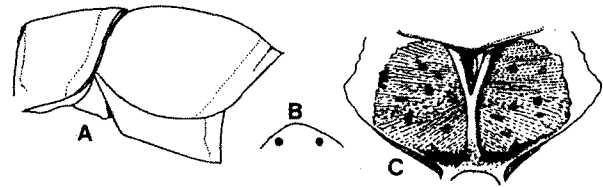


Fig. 10. *Stenodynerus tokyanus*. A, Metasomal segments 1 and 2, in profile. B, Cephalic foveae and posterior carina. C, Propodeal concavity with Y-shaped median ridge.

thirds of the metanotum and separated by a narrow line in the middle) on metanotum, apical parts of all femora (more extensive in mid femora), entire tibiae of all legs except blackish brown inner line on fore tibia, apical bands on metasomal terga 1-2 and sternum 2. Whole tarsi yellow, but tinged with reddish yellow and blackish brown toward the apex.

Female. Vertex with one cephalic fovea separated distantly from the posterior carina. Structural characteristics almost same as in the male except followings. Clypeus slightly wider than high, in Paratype the width/the height 1.10/0.93. Colored maculation diminished. Clypeus, labrum and mandible are entirely black. In legs, only the outer face of fore tibia and the small basal parts of the rest tibiae with yellow maculation.

Body length from head to metasomal tergum 2: 6.0-6.5 mm (♂), 7.5 mm (♀).

Remark: This species is very similar to *S. funebris*. However this species can be easily distinguished from the latter by the shape of clypeus and apical border of metasomal tergum 2 etc. as shown in the key. Additionally the height of the metasomal sternum 2 compared with that of tergum 2, in profile, seems to be the reliable character. In *S. funebris*, the height of sternum 2 is approximately one-third of that of tergum 2 (more than half in this new species). The shape of apical border of metasomal tergum 2 is the same as *S. pappi*. However this species is dully dentate on outermost margin (But in *S. pappi*, the margin smooth).

Distribution : Middle part of Korean Peninsula (Kyeonggi-do).

Stenodynerus tokyanus (Kostylev)

Odynerus tokyanus Kostylev, 1940: 28.

Material Examined: 1 ♂, Seooneung, SL, 12-V-1974, H. Y. Moon; 1 ♀, Mt. Chiak, Keundae-ri, KW, 6-VI-1974, I. H. Lee; 1 ♂, Heuibang temple, Mt. Sobaek, 7-VI-1974, J. H. Shin; 1 ♀ 1 ♂, Naiseolak, Yongdae-ri, GW, 28-V-1983, K. S. Jang; 1 ♀, Mt. Wangbang, Pocheon, KG, 29-V-1983, C. G. Im; 1 ♀, Mt. Duryun, JN, 23-VI-1993, P. J. J.

Remark: This species is sharing several diagnostic characters with *S. pappi* as shown in the key. However

they are easily distinguished by the shape of apical border of metasomal tergum 1. Other characters for this species were fully provided by Gusenleitner (1981), Yamane and Gusenleitner (1982) and Yamane (1990).

Distribution: Korea (new record), Japan (refer Yamane, 1990 for detailed localities)

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