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Revision of the Subfamily Piestinae (Coleoptera: Staphylinidae) from Japan, I

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Abstract. This is the first part on the series of the taxonomic studies of the subfamily Piestinae from Japan, and the groups of *Siagonium vittatum* and *S. nobile* are treated. A new species, *Siagonium nakanei* Naomi is described from Hokkaido as a member of *nobile*-group. *S. haroldi* is revalidated as a good species, although it was considered as a synonym of *S. vittatum*. The lectotype is designated for *S. nobile* Sharp. Key to the genera, key to the species group of *Siagonium*, and keys to the species are provided. The aedeagi are illustrated for comparison.

Key words: Coleoptera, Staphylinidae, Piestinae, *Siagonium*, Japan.

The Piestinae (or tribe Piestini in earlier period) was a moderate-sized subfamily of varied structure and appearance, which has been found to be difficult to define (Blackwelder, 1943). At the time when Bernhauer and Schubert (1910) and Scheerpeltz (1933) published their *Coleopterorum Catalogus*, they recongized tribe Piestini within subfamily Oxytelinae. They included the following 6 subtribes Trigonuri, Piesti, Eleusii, Leptochiri, Lispini and Thoracophori in the Piestini. Cameron (1930), on the other hand, divided subfamily Oxytelinae into 8 tribes, of which Piestini, Eleusiini and Leptochirini are corre sponding tribes to the tribe Piestini (sensu Bernhauer and Schubert, 1910). When Blackwelder (1942) studied the subfamilies Osoriinae and Piestinae, he noticed that Lispinini, Leptochirini, Thoracophorini, Eleusii and Osoriini form a relatively homogeneous group immediately recognizable by the complete absence of abdominal paratergites. As the former 4 tribes have been considered as the members belonging to Piestinae (or related to Piestini), he transferred them to the subfamily Osoriinae to make each of Piestinae and Osoriinae homogeneous. Although the genera *Apatetica* and *Nodynus* were sometimes placed in the family Silphy dae by their similar appearance, they were classified into the subtribe Trigonuri of the tribe Piestini in Bernhauer and Schubert (1910), and directly into the tribe Piestini in Cameron (1930). Recently, however, Newton and Thayer (1992) treated them as the genera in an independent subfamily Apateticinae in the family Staphylinidae. Such treatment is also true of the subtribe Trigonuri itself, and the subtribe was treated as a subfamily Trigonuriinae of the Staphylinidae. Consequently, the Piestinae now became a small but homogeneous subfamily, and it is diagnosed by the flat to almost flat (sometimes moderately convex) body, the anterior coxae small and globose, the anterior trochantin exposed, and the distinct and developed paratergites.

In Japan, coleopterologists traditionally followed Bernhauer and Scheerpeltz (1910) concerning the members and their arrangement of Piestinae (Matsumura, 1931; Yokoyama, 1932; Yokoyama and Adachi, 1951; Sakaguchi and Sawada, 1955; Adachi, 1957; Nakane, 1963; Shibata, 1976; Watanabe, 1985; Naomi, 1985) so that their Piestinae was basically heterogeneous, and varied genera such as *Apatetica*, *Nodynus*, *Thoracophorus*, etc. were included. As I followed here Blackwelder (1942) and Newton and Thayer (1992), the Piestinae of Japan consists only of two genera *Siagonium* and *Piestoneus*. In this series of papers I intend to revise these two genera from the viewpoint of current staphylinid taxonomy. In this paper, the groups of *Siagonium vittatum* and *S. nobile*

are revised, and a new species, *S. nakanei* Naomi is described from Hokkaido. The aedeagi are illustrated for comparison.

Materials and Methods

This studies were mainly based on dried material from Naomi- and Nakane-collections in addition to specimens deposited in the Natural History Museum, London (UK) and in the Entomological Laboratory, Kyushu University, Fukuoka (JPN).

In order to classify species among Piestinae I mainly used characters in the aedeagus, for example, general shape of aedeagus, apical structure of median lobe, length of parameres, structures of internal armatures, etc. When an unstable condition of key character mentioned above was examined, for example, in *Siagonium gracile*, I considered it as infraspecific variation. Therefore, when I found that aedeagus in a local population is more or less characteristic but the condition is not enough to evaluate as distinction for independent subspecies or species, I hesitated to describe new subspecies or new species on the basis of specimens in such local population.

When the abdomen was dissected for examination of aedeagus, the aedeagus was mounted in the Hoyer's solution on the celluloid pasteboard, together with related organs, and the pasteboard was placed just under staphylinid specimen.

Measurement for proportion was made basically on the basis of holotype- and paratype-specimens. If it was made on the other specimens, the specimens measured were mentioned in "remarks". The following abbreviations were used for relative measurements: HL (head length); HW (head width); PL (pronotum length); PW (pronotum width); EL (elytral length); EW (elytral width); ALP (proportions in length of antennomeres from base to apex).

The following abbreviations were used in the text when referring to the material studied: NHML (The Natural History Museum, London); CBM-ZI (Natural History Museum and Institute, Chiba-Zoology Insecta); KY (Entomological Laboratory, Kyushu University); NSC (Naomi collection); NTC (Dr. Takehiko Nakane collection).

Subfamily Piestinae Erichson

The Piestinae of Japan now consists of two genera *Siagonium* and *Piestoneus* from the viewpoint of current staphylinid taxonomy. The genus *Siagonium* was studied by Weise (1879), Sharp (1889) and Takai and Nakane (1985), while the genus *Piestoneus* was studied by Sharp (1889). The Japanese members of Piestinae are diagnosed by the following combination of characters: body constantly elongate, flat to moderately convex, and subparallel- to parallel-sided, antennae long especially in male, sometimes longer than length of body, anterior coxae small and globose, anterior trochantin exposed, paratergites of abdomen usually erect and well-developed. The members of subfamily are usually collected under barks of dead or decayed trees or in litters, together with such staphylinids as Osoriinae, Staphylininae and Aleocharinae.

Key to the Genera of Japanese Piestinae

1(2) Mandible divided into ventral and dorsal teeth or not divided, if divided, dorsal tooth with or without small and pointed dorsal process, if not divided, mandible simple, without dorsal process; anterior coxae exserted; 4th tergite of abdomen with a pair of wing-holding spicule patches ..... *Siagonium*

2(1) Mandible not divided into ventral and dorsal teeth, but each mandible constantly provided with a robust and curved dorsal process; anterior coxae not exserted; 4th tergite of abdomen without wing-holding spicule patches .. .. *Piestoneus*

Genus *Siagonium* Kirby et Spence

Siagonium Kirby et Spence, 1815, Introduct. Ent., I, t: 1.

Type species: *Siagonium quadricorne* Kirby et Spence, 1815 (by monotypy).

The genus *Siagonium* shows sexual dimorphism in the structure of head and antennae, but the secondary sexual characters are not developed in the sternites of abdomen in male. The 4th abdominal tergite is provided with a pair of wind-folding spicule patches.

Key to Species Group of *Siagonium*

1(4) Pronotum flatter and almost smooth, with or without a very thin longitudinal line on the middle; midlateral depressions vague or absent.

2(3) Body almost glabrous except for very sparsely pubescent abdomen; elytra bicolous; aedeagus with L-shaped internal armature ..... *vittatum* group

3(2) Body sparsely pubescent throughout; elytra unicolous; aedeagus without L-shaped internal armature.. *gracile* group

4(1) Pronotum more convex, with a distinct longitudinal depression or groove at the middle; midlateral depressions usually developed (except for *S. nakanei*).

5(6) Body larger (3.3–5.2 mm); punctures sparser on head and pronotum; elytra usually unicolous ..... *nobile* group

6(5) Body smaller (2.5–3.3 mm); punctures denser on head and pronotum; elytra usually bicolous ..... *debile* group

The Group of *S. vittatum*

This group is composed of two species, *S. vittatum* and *S. haroldi* from Japan. The members of this group usually possess a dorsal process on the dorsal tooth of mandible (probably only in male) and a pair of reddish markings on the elytra. This group is also characterized by the shape of aedeagus: apical triangular or pentagonal area of median lobe is narrowed and clearly distinguished by distinct constriction from the broader median part of median lobe, and by the presence of L-shaped internal armature.

Key to Species of *S. vittatum* Group

1(2) Antennae shorter; aedeagus with apical part of median lobe broader and almost triangular (or tongue-shaped), its side uniformly and weakly arcuate .... *S. vittatum* Fauvel

2(1) Antennae longer; aedeagus with apical part of median lobe narrower and pentagonal ..... *S. haroldi* Weise

Siagonium vittatum Fauvel

Siagonium vittatum Fauvel, 1875, Cat. Syst. Staph., p. 1; Bernhauer et Schubert, 1910, Coleopt. Cat., (19): 9; Matsumura, 1932, 6000 Illust. Ins. Jpn., p. 128; Yokoyama and Adachi (Adachi), 1951, Icon. Ins. Japon. 2nd ed., p. 986; Adachi, 1957, J. Toyo Univ., (11): 198; Nakane, 1963, Icon. Ins. Japon. Col. nat ed., II: 81; Shibata, 1976, Ann. Bull. Nichidai Sanko, (19): 80; Watanabe, 1985, Coleopt. Jpn. Color, II: 262.

Male and female. Body 3.2–5.1 mm in length, flat, parallel-sided and shining.

Coloration. Head, pronotum and abdomen black through dark brown to reddish brown; elytra black to dark brown, with a pair of reddish yellow markings along lateral margins; antennae and legs dark brown to reddish brown.

Male. Relative measurement: HL: 35; HW: 46; PL: 33; PW: 47; EL: 59; EW: 50; ALP: 13:10:12:10:12:12:13:13:14:13:18.

Head quadrate, antennal tubercles developed, with a pair of horns at anterior parts, the horns weakly convergent, and weakly curved downward at apices, anterior part of vertex between antennal tubercles concave, partially separated from clypeofrontal area by a pair of shallow grooves which are separated at midline, posteromedian part of vertex very weakly concave; punctures round to elliptical, various in size, interstice broader or narrower than diameter of puncture, smooth and very shining; 5 to 8 setae of various length along dorsal margin of eye. Eyes small and prominent, about as long as postocular areas. Antennae long, reaching the middle of 4th abdominal tergite. Mandibles each composed of a short and robust ventral tooth and a dorsal tooth protruding anteriorly, the latter sometimes provided with a small pointed dorsal process near the middle.

Pronotum weakly convex and marginate, very weakly bi-emarginate at anterior margin, broadest at anterolateral corner, weakly narrowed posteriorly in anterior 2/3, then moderately constricted in posterior 1/3, distinclty pointed at posterolateral corners, posterior margin almost straight; surface smooth, with median longitudinal line very thin or obsolete; punctures similar in condition to those on head; several setae of various length found at

marginal area. Mesoscutellum exposed and tongue-shaped, with posterior part very smooth, central part covered with microsculptures.

Elytra elongate-trapeziform and weakly convex, weakly broadened posteriorly, each posterior margin arcuate; surface with 7 rows of striate punctues on each elytron, interstice smooth and shining.

Legs moderate in length; tibiae with small setae and spines.

Abdomen parallel-sided; paratergites developed, with setae various in length and very sparse; surface covered with reticulate microsculptures; punctures extremely small and sparse; pubescence short and very sparse. Aedeagus (Fig. 1B) broad, median lobe with base weakly bulbous, apical triangular (or tongue-shaped) area distinguished from median area by small but abrupt constriction, apicolateral margin gently arcuate, internal armatures composed of two pieces: basal one L-shaped and apical one small and baculiform; parameres reaching apex of median lobe, gently curved inward.

Female. Relative measurements: HL: 28; HW: 41; PL: 31; PW: 41; EL: 59; EW: 49; ALP: 10:7:9:9:10:10:10:10:10:11:13.

Head smaller than in male, antennal tubercles less developed than in male, with internal sides distinctly and abruptly concave to form a low but very weakly convex median area between the tubercles, a pair of shallow and straight grooves running obliquely on posterointernal sides of antennal tubercles, broadly separated to each other, horns shorter than in male. Antennae shorter than in male, reaching posterior margins of elytra. Mandibles similar in strucutre of male, but dorsal tooth without additional dorsal process.

Specimens examined. 1 male and 1 female, Sibir. or. Ussuri, Vladivostok, Dr. Jurecek, 1919/M. Cameron. Bequest. B.M. 1955-147. (NHML); 1 ex., Fuatun (2300 m) 27, 40n. Br.,117, 40oe. L. J. Klapperich, 27. 3. 1938 (Fukien) (NHML); 2 exs., Kamishihoro, Hokkaido, 7–13. iv. 1990, K. Haga (NSC); 1 ex., Maruyama, Sapporo, Hokkaido, 28. v. 1977, N. Nishikawa (NSC).

Distribution. Japan (Hokkaido); East Siberia.

Remarks. *Siagonium vittatum* is separable from *S. haroldi* by the shape of aedeagus: the apical part of median lobe is almost triangular (or tongue–shaped), and broader than that in *S. haroldi*, and its anterolateral margin is gently arcuate.

Specimens measured are as follows: male and female (Sibir. or. Ussuri, Vladivostok, Dr. Jurecek, 1919/M. Cameron. Bequest. B.M. 1955-147.; NHML).

Siagonium haroldi Weise

Siagonium haroldi Weise, 1879, Deut. ent. Z., 23: 148; Sharp, 1889, Ann. Mag. nat. Hist., ser. 6, 3: 464; Yokoyama, 1932, Icon. Insect. Japon., p. 763.

Male and female. Body 3.2–5.1 mm in length, flat, parallel-sided and very shining.

Coloration. Head and abdomen dark brown; pronotum brown to reddish brown; elytra black to dark brown, usually with a pair of reddish yellow markings, the markings elongate and placed along lateral margins, sometimes becoming very small but not disappeared; antennae reddish in 1st and 2nd segments, dark brown in 3rd to 11th; legs yellowish brown to reddish brown.

Male. Relative measurement: HL: 35; HW: 50; PL: 36; PW: 50; EL: 69; EW: 53; ALP: 18:10:16:14:16:16:16:15:15:15:20.

Head almost quadrate, clypeofrontal area moderately convex and almost smooth, antennal tubercles well-developed, with a pair of horns which protrude anteriorly and are slightly convergent, anterior part of vertex between antennal tubercles concave, separated from declivous clypeofrontal area by a pair of transverse grooves which are separated in midline, posteromedian part of vertex very shallowly concave; punctures on head usually large but sometimes very small, round to elliptical, interstice narrower than diameter of puncture, very shining; 5 to 8 long to moderately long setae along upper margin of eye. Eyes small, round and prominent. Antennae very long and slender, reaching posterior margin of 6th abdominal tergite, 2nd segment smallest, 3rd to 11th equal in breadth to one another. Mandibles each composed of a short and robust ventral tooth, and a dorsal tooth which strongly protrude anteriorly, curves inward, and is acutely

pointed, the latter provided with small dorsal process which turns upward and is pointed.

Pronotum very weaky convex and distinctly marginate, very weakly narrowed posteriorly in anterior 3/5, then moderately constricted in posterior 2/5, anterior margin very weakly bisinuate, posterior margin straight; surface almost smooth, with median longitudinal groove very thin and shallow, but distinct, running in posterior 1/2 or 2/3; punctures round to elliptical, various in size and irregular so that interstice is broader in some place or narrower in another place than diameter of puncture, interstice smooth and very shining in central part, covered with fingerprint-like microsculptures in outer part; some setae of various length along marginal area of pronotum. Mesoscutellum with its posterior part exposed, and covered with finger print-like microsculptures.

Elytra elongate-rectangular, parallel-sided, each posterior margin very weakly rounded; surface flat, each elytron with 6 or 7 rows of striate punctures, interstice smooth and moderately shining.

Legs similar in structure to *S. vittatum*.

Abdomen parallel-sided; paratergites well-developed and almost vertical in position, each with a few long setae; surface covered uniformly with very sparse and fine punctures and reticulate microsculptures.

Aedeagus (Fig. 1, A) with median lobe weakly bulbous at base, very weakly constricted near the middle, then abruptly and very strongly constricted to form apical pentagonal area which is pointed at apex, median lobe modified also with a pair of membraneous boards at apico-ventral part, internal armature robust and almost L-shaped; parameres reaching almost apex of median lobe, gently curved inward.

Female. Relative measurements: HL: 30; HW: 44; PL: 31; PW: 43; EL: 63; EW: 51; ALP: 14:8:10:9:11:11:11:11:11:11:13.

Head smaller than in male, its structure similar to that in female of *S. vittatum*; antennae shorter than in male, reaching the base of 4th abdominal tergite; mandibles each bifurcate at apex.

Specimens examined. 1 ex., Aizu, Kamimiyori, 16. iv. 1950, K. Nagayama (NTC); 2 exs., Tokorozawa, Saitama Pref., 21. iii. 1987, M. Tao (NSC); 48 exs., Japan, G. Lewis (NHML); 1 ex., Rokkoku Pass, Kanagawa Pref., 10. v. 1977, K. Yamamoto (NSC); 3 exs., Yokohama, Japan, 1. i.–9. ii. 1881, G. Lewis (NHML); 2 exs., Miyanoshita, Japan, G. Lewis (NHML); 5 exs., Miyanoshita, Japan, 20. xii.–23. xii. 1880, G. Lewis (NHML); 2 exs., Subashiri, Japan, 4. v.–10. v. 1880, G. Lewis (NHML); 2 exs., Hakone, Japan, 17. iv.–19. iv. 1880, G. Lewis (NHML); 2 exs., Tokyo, Japan, 20. ii. 31., L. Gressit (NHML); 13 exs., Japan, Tottenham collection, B.M. 1974-587 (NHML); 1 ex., Daibosatu, Yamanashi Pref., 5. vii. 1982, S. Ohmomo (NSC); 1ex., Hino-san, Fukui Pref., 5. v. 1975, H. Sasaji (NSC); 1 ex., Minomo, Osaka, 20. v. 1939, K. Sakaguchi (NTC); 1 ex., Minoo, Osaka, 30. v. 1937, K. Sakaguchi (NTC); 3 exs., Yatuse-mura, Kyoto, 15. ii. 1964, Y. Kishi (NTC); 1 ex., Umenoki-otsu, Shiga Pref., 6. vii. 1980, T. Ogata (NSC); 2 exs., Kasuga, Nara, 9. iv. 1950, S. Ueno (NTC); 1 ex., Sasayama, Tanba, ii. 1953, Kawabata (NTC); 11 exs., Mt. Daisen, Tottori Pref., 26. iv. 1942, K. Sakaguchi (NTC); 2 exs., Kurashiki-shi, Okayama Pref., 31. v. 1977, K. Kaneda (NSC); 5 exs., Mt. Tsurugi, Tokushima Pref., 24–28. iii. 1962, MT. Chujo (KY); 1 ex., Mt. Shiroyama, Fukuoka Pref., 8. iii. 1986, S. Nomura (NSC); 1 ex., Mt. Hiko, Fukuoka Pref., 12. iii. 1971, MT. Chujo (KY); 1 ex., Mt. Seburi, Saga Pref., 12. iii. 1989, Y. Sawada (NSC); 1 ex., Okuhiratani, Saga Pref., 16. xii. 1979, S. Nomura (NSC); 1 ex., same locality, 15. ii. 1981, S. Nomura (NSC); 1 ex., Ohtaniguchi, Ohmachi, 7. iv. 1968, Y. Eguchi (NSC); 1 ex., Nigo, Gokanosho, Kumamoto Pref., 3. v. 1973, SY. Naomi (NSC); 2 exs., Cape Sata, Kagoshima Pref., 20. i. 1985, M. Ohara (NSC); 5 exs., Miike, Miyazaki Pref., 3. ii. 1985, M. Ohara (NSC); 1 ex., Shibisan, Kagoshima Pref., 24. iii. 1985, M. Ohara (NSC); 1 ex., Kurino, Kagoshima Pref., 3. ii. 1985, M. Ohara (NSC).

Distribution. Japan (Honshu, Shikoku, Kyushu, Mikura Is., Miyake Is., Yaku Is.); Taiwan.

Remarks. In *Siagonium haroldi* the apical part of median lobe of aedeagus is distinctly narrower and pentagonal in shape, while in *S. vittatum* it is broader and almost triangular (or tongue-shaped). The condition mentioned above is constant in each species. Therefore, *S.*

haroldi is here removed from synonymy with *S. vittatum*. At the present stage, these two species are allopatrically distributed in the Japanese Archipelago. Namely, *S. haroldi* is distributed in Honshu, Shikoku, Kyushu and neighbouring islands, while *S. vittatum* is in Hokkaido.

Specimens measured are as follows: male (Miyanoshita, 20. xii.–23. xii. 1880/ Japan, G. Lewis, 1910-320; NHML) and female (Subashiri, 4. v.–10. v. 1880/ Japan, G. Lewis, 1910-320; NHML).

The Group of *S. nobile*

This group is composed of three species, *S. nobile* Sharp, *S. incertum* Takai et Nakane, and *S. nakanei* sp. nov. This group is diagnosed by combination of the following characters: body large to medium in size (3.3–5.2 mm), moderately to weakly convex; head and pronotum with punctures sparse to moderately dense; pronotum moderately convex, with a moderately deep or deep groove on midline.

Key to Species of *S. nobile* Group

1(2) Head and pronotum more sparsely punctured; head without horns in male. .....*incertum* Takai et Nakane

2(1) Head and pronotum more densely punctured; head with developed horns in male.

3(4) Pronotum with midlateral depressions deep and distinct; median lobe of aedeagus pointed at apex .....*nobile* Sharp

4(3) Pronotum without midlateral depressions; median lobe of aedeagus rounded at apex .....*nakanei* sp. nov.

Siagonium nobile Sharp

Siagonium nobile Sharp, 1889, Ann. Mag. nat. Hist., 6, 3: 463; Bernhauer and Schubert, 1910, Coleopt. Cat., (19): 9; Yokoyama and Adachi (Adachi), 1951, Icon. Ins. Japan. 2nd ed., p. 986;Adachi, 1957, J. Toyo Univ., (11): 198; Nakane, 1963, Icon. Ins. Japon. Col. nat. ed., II: 81; Shibata, 1976, Annl. Bull. Nichidai Sanko, (19): 79; Watanabe, 1985, Coleopt. Jpn. Col., II: 262.

Male and female. Body 4.2–5.2 mm in length, moderately convex, subparallel-sided and moderately shining.

Coloration. Head, pronotum and abdomen black to reddish brown; elytra dark brown to reddish brown; antennae with 1st to 3rd segments reddish brown, 4th to 11th dark brown; legs reddish brown to yellowish brown.

Male. Relative measurements: HL: 35; HW: 48; PL: 36; PW: 49; EL: 58; EW: 51; ALP: 18:8: 12:9:10:10:10:10:10:10:15.

Head with vertex transverse, clypeofrontal area declivous and narrowed anteriorly, antennal tubercles well-developed and protuberant, with a pair of horns at anterior margins, the horns robust and weakly convergent anteriorly, median area between antennal tubercles deeply concave, neck distinct and separated from vertex by suture; surface on clypeofrontal area with fingerprint-like microsculptures; punctures on vertex small, round, regular and moderately dense, interstice usually broader than diameter of puncture, with obsolete fingerprint-like microsculptures; two long setae at side of vertex, several short setae also found along dorsal margin of eye. Eyes small, round and moderately prominent, about as long as postocular areas. Antennae elongate, reaching posterior margins of elytra, hardly broadened apically. Mandibles each with a ventral tooth very small, and a dorsal tooth bent upward, then curved inward at apical part, and acutely pointed.

Pronotum well convex and marginate, very weakly bi-emarginate at anterior margin, subparallel-sided or very weakly rounded laterally in anterior half, then strongly narrowed posteriorly to form basal constriction, posterior margin straight; surface with a median longitudinal groove large and moderately deep, and also the deep depression located continuously from midlateral part to posterolateral corner in one side; punctures small, a little irregular, and moderately dense, interstice obscurely sculptured, about as long in anterior part as or narrower in posterior part than diameter of puncture; several short setae along marginal area. Mesoscutellum tongue-shaped, very smooth and shining, with sparse and minute punctures on outer part, covered with microsculptures on central part.

Elytra elongate-rectangular, side margins

very weaky arcuate, hind margins together forming a very weak emargination near sutural area; surface uneven, with two or more very vague longitudinal depressions on each elytron; elytron with 5 or 6 rows of irregular punctures on inner part, but moderately covered with punctures on posterior part, interstice smooth and very shining.

Legs moderate in length; tibiae with minute spines and setae at apico-external sides.

Abdomen parallel-sided, convex above; paratergites well-developed, with several setae of various length; surface with reticulate microsculptures; punctures fine, sparse, obsolete or shallow, becoming smaller posteriorly from 4th to 7th tergites. Aedeagus robust (Fig. 1C), with median lobe bulbous at base, then gradually narrowed apically before apicolateral corners which are distinctly angulate and weakly prominent laterally, apicolateral margin almost straight, apex moderately pointed, internal armatures composed of two very thin string-like structures in addition to a vaguely sclerotized structure found in apical part of median lobe; parameres reaching apex of median lobe, gently curved internally at apices.

Female. Relative measurements: HL: 24; HW: 37; PL: 30; PW: 40; EL: 52; EW: 44; ALP: 10:5:7:5:6:6:6:6:6:11.

Head smaller than in male, almost pentagonal in shape before eyes, namely, subparallel-sided at genal area, then narrowed anteriorly, with anterior margin very weakly arcuate, antennal tubercles less developed than in male, without horns, a pair of longitudinal grooves between antennal tubercles, median area between the grooves moderately elevated. Antennae reaching the middle of elytra. Mandibles each short and bifurcate at apex.

Type material. I was able to study 6 specimens deposited in the NHML. The label of Nos. 1 and 2 specimens are as follows: *Siagonium nobile* Types D. S. Japan. Lewis./ Sharp Coll 1905-313./ Japan. Lewis./ "Type" (round label with red margn). These specimens were mounted on the same pasteboard. I dissected one of these specimens for examination of aedeagus. After that I mounted the dissected specimen on the new board, and the aedeagus was mounted on celluloid board. The specimen with red label is here designated as the lectotype of *S. nobile*; the label "Lectotype *Siagonium nobile* Sharp Naomi des. 1994" was attached to it. The label of No. 3 is: Kiga./ Japan. G. Lewis./ Sharp Coll. 1905-313. Although the label of type is not attached to this specimen, this is probably a type specimen of *S. nobile* because it belongs to Sharp collection. The label of No. 4 is: Nikko./ Japan. G. Lewis. 1910-320./ "SYNTYPE" (round label with blue margin). The label of No. 5 is: Miyanoshita./ Japan. G. Lewis. 1910-320./ *Siagonium nobile*/ "SYNTYPE" (round label with blue margin). The label of No. 6 is: Japan G. Lewis. 1910-320./ "SYNTYPE" (round label with blue margin)/ *Siagonium nobile* Shp. co-type. As the 6th specimen is distinctly smaller than typical body size of *S. nobile*, I examined the aedeagus. As a result it was found that this is not *S. nobile* but *S. debile*. Therefore I attached the label "*Siagonium debile* Sharp Det S. Naomi 1994" to it.

Further specimens examined. 1 ex., Yunomata, Oohata-machi, Shimokita Penin., Aomori Pref., 25. vii. 1956, K. Morimoto (KY); 1 ex., Sanno-toge, Okunikko, Tochigi Pref., 6. vii. 1961, T. Nakane (NTC); 2 exs., Fujimidai, Shinano, 11. vi. 1944, S. Osawa (NTC); 1 ex., Tokugo, Nagano Pref., 29. vii. 1955, T. Nakane (NTC); 1 ex., Shimajimadani, Nagano Pref., 17. vii. 1939, K. Taniguchi (NTC); 2 exs., Kakumatoge between Gunma and Nagano Prefs., 6. vii. 1939, K. Sakaguchi (NTC); 1 ex., Kisokomagadake, 21. vii. 1939, K. Sakaguchi (NTC); 1 ex., Amagi-san, Izu, Shizuoka Pref., 5. i. 1940, K. Sakaguchi (NTC); 1 ex., Hirogawara, Mt. Shirane, Yamanashi Pref., 9–13. vii. 1982, S. Naomi (NSC); 1 ex., Ohdaigahara, Nara Pref., 29. v. 1985, S. Nomura (SNC); 2 exs., same locality, 25–26. vi. 1981, S. Naomi (NSC); 1 ex., Hataganaru, Hyogo Pref., 25. v. 1955, T. Nakane (NTC); 1 ex., Daisen, Tottori Pref., 26. iv. 1942, K. Sakaguchi (NTC); 4 exs., Wakasugi Pass, Okayama Pref., 8. v. 1977, A. Watanabe (NSC); 1 ex., Mt. Tsurugi, Tokushima Pref., 26. vii. 1970, Y. Yamaji (NSC); 4 exs., same locality, 24–28. iii. 1962, MT. Chujo (KY); 1 ex., same locality, 15–17. x. 1980, S. Naomi (NSC); 1 ex., Mt. Hiko, Bungo, 12. v. 1953, Y. Hirashima (KY); 1 ex., Mt. Sobo, Oita Pref., 16. vii. 1976, H. Oishi (NSC).

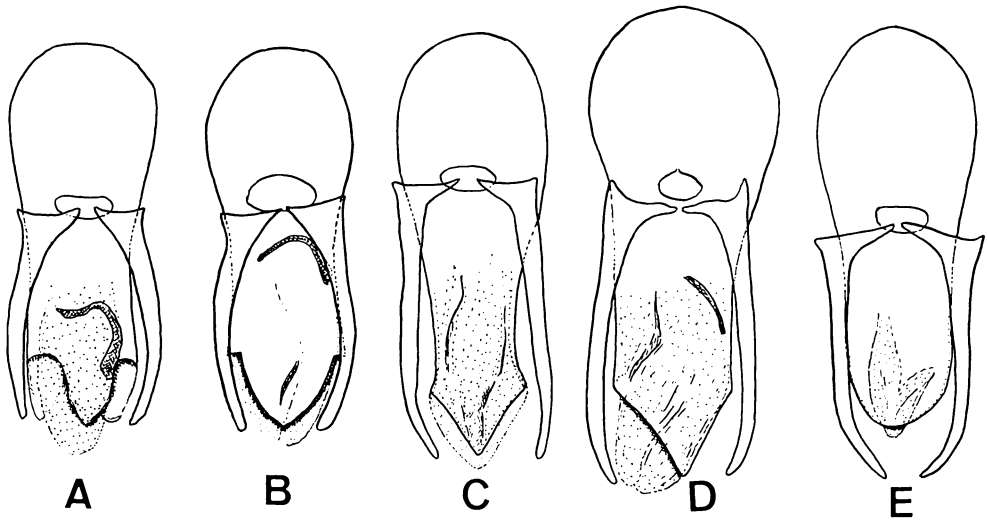

Fig. 1. A, *Siagonium harold*; B, *S. vittatum*; C, *S. nobile*; D, *S. incertum*; E, *S. nakanei* sp. nov. A–E, Aedeagus in dorsal view.

Distribution. Japan (Honshu, Shikoku, Kyushu).

Remarks. *Siagonium nobile* is allied to *S. incertum*, but is separable from the latter by the larger body (4.2–5.2 mm) and the head with horns in male. The shape of aedeagus is also different, namely, in *S. nobile* the median lobe is more strongly constricted before angulate anterolateral corners.

The specimens measured are as follows: male (Miyanoshita/ G. Lewis. 1910-320; NHML) and female (Kakuma-toge, Gunma-Nagano, 6. viii. 1939, K. Sakaguchi; NTC).

Siagonium incertum Takai et Nakane

Siagonium incertum Takai et Nakane, 1985, Rep. Fac. Sci. Kagoshima Univ. (Earth Sci. & Biol.), (18): 101.

Male and female. Body 3.3–3.5 mm in length, subparallel-sided, and weakly convex.

Coloration. Head, pronotum and abdomen black to dark brown; 8th abdominal segments reddish brown; elytra dark brown in anterior to central part, reddish brown in marginal part, but contrast of the color very vague; antennae and legs reddish brown.

Male. Relative measurements: HL: 35; HW: 48; PL: 35; PW: 47; EL: 60; EW: 53; ALP: 16:9: 10:9:10:10:10:10:10:10:15.

Head transverse, pentagonal in shape before eyes, without horns, postocular areas very weakly prominent, vertex shallowly depressed, with a pair of shallow longitudinal grooves at insides of antennal tubercles, neck separated from vertex by transverse suture; punctures small, round and relatively sparse, interstice very shining, without sculptures; several setae along dorsal margin of eye. Eyes small, round and prominent, a little shorter than postocular areas. Antennae slender, reaching the median part of 4th abdominal tergite. Mandibles each short and simply pointed.

Pronotum moderately convex and moderately marginate, almost straight or very weakly bi-emarginate at anterior margin, moderately rounded laterally in anterior 2/3, then moderately constricted at base, distinctly pointed at posterolateral corners, almost straight at posterior margin; surface with depressions similar in structure to those of *S. nobile*, but a little shallower; punctures sparse, round to elliptical, a little irregular, interstice smooth and shining, a little broader in some place but a little narrower in another place than diameter of puncture. Mesoscutellum tongue-shaped, smooth, with 5 to 6 punctures on posterior half, minutely sculptured on anterior half.

Elytra weakly convex above, subparallel-sided or weakly arcuately rounded at sides, hind margins togerther forming a shallow and wide emargination; surface on each elytron

with 5 or 6 rows of striate punctures which are irregular in arrangement and size, interstice smooth and very shining.

Legs moderate in size; tibiae with small setae and spines at apical 2/3.

Abdomen very weakly broadened posteriorly, broadest at posterior margin of 5th tergite; paratergites well-developed and erect, with several setae; surface covered with fine reticulate sculptures; punctures fine, very sparse, sometimes obsoletely umbilicate. Aedeagus (Fig. 1D) robust, with median lobe strongly bulbous at base, subparallel-sided near the middle, apicolateral corner distinctly angulate, but not protruding laterally, apicolateral margin almost straight, apex moderately pointed, internal armatures composed of 2 string-like structures; parameres reaching apex of median lobe, gently curved inward at apical parts.

Female. Relative measurements: HL: 34; HW: 44; PL: 32; PW: 45; EL: 58; EW: 54; ALP: 10:7:8:5:6:6:6:7:7:11.

Head similar in structure to that of male, but a little narrower than in male, antennal tubercles less prominent. Antennae shorter than in male, reaching the middle of elytra, 4th to 7th segments almost moniliform. Mandibles each short and simply pointed.

Type material. *Siagonium incertum* was described on the base of 1 female. The holotype is labelled as follows: Sanno-Toge, Oku-Nikko, 21. vi. 1960, T. Nakane/ *incertum*, holotype. The left elytron was separated and has been mounted on the paste board.

Further specimens examined. 1 ex., Konsei Pass, Nikko, Tochigi Pref., 30. vi. 1982, S. Naomi (NSC); 1 ex., Kisokomaga-dake, 21. vii. 1939, K. Sakaguchi (NTC); 1 ex., Tokugo, Nagano, 30. vii. 1955, T. Nakane (NTC).

Distribution. Japan (Honshu: Chubu and Kanto districts).

Remarks. *Siagonium incertum* is allied to *S. nobile*, but the former is separable from the latter by the head without horns in male. The shape of aedeagus is also different, namely, in *S. incertum* the median lobe is subparallel-sided at the middle and is not constricted before the apicolateral corners which do not protrude laterally.

Specimens measured are as follows: male (Tokugo, Nagano, 30. vii. 1955, T. Nakane; NTC) and female (Konsei Pass, Nikko, Tochigi Pref., 30. vi. 1982, S. Naomi; NSC).

Siagonium nakanei Naomi sp. nov.

Male and female. Body 3.4–3.6 mm in length, subparallel-sided, shining, and moderately convex.

Coloration. Head black, sometimes with clypeofrontal area dark reddish brown; pronotum and abdomen black to dark brown; elytra dark reddish brown to reddish brown; antennae and legs reddish brown.

Male. Relative measurements: HL: 35; HW: 56; PL: 39; PW: 51; EL: 71; EW: 60; ALP: 20:10:14:12:15:15:15:15:15:15:22.

Head with clypeofrontal area declivous and narrowed anteriorly, with anterior margin of head straight, antennal tubercles protuberant, with horns at anterior margins of the tubercles, the horns a little slenderer than those of *S. nobile*, convergent anteriorly, then turned downward at tips, median area between antennal tubercles deeply concave, vertex transverse, neck separated from vertex by transverse suture; surface on clypeofrontal area smooth, with fine and sparse punctures, vertex with punctures round, moderately dense and somewhat irregular, interstice obscurely microsculptured, neck with punctures smaller than those on vertex; a pair of long setae at posterolateral parts of vertex, several short setae also found along dorsal margin of eye. Eyes small, round and moderately prominent, a little longer than postocular areas. Antennae long and slender, reaching the middle of 5th abdominal tergite. Mandibles each with a ventral tooth very short and invisible from above, and a dorsal tooth long, acutely pointed, turned upward, and then curved inward at apex, with 2 additional small denticles on inner side of dorsal tooth.

Pronotum moderately convex and marginate, very weakly bi-emarginate at anterior margin, uniformly rounded at sides, distinctly angulate at posterolateral corners, constricted at base and almost straight at posterior margin; surface with a median longitudinal groove distinct, but shallower than that in *S.*

nobile, midlateral depressions absent; punctures round, moderately dense and somewhat irregular, interstice obscurely to distinctly microsculptured, and strongly shining; some short setae at anterolateral corners of pronotum. Mesoscutellum almost triangular, with a few punctures on posterior part, reticulate sculptures on anterior half.

Elytra elongate-rectangular or elongate-trapezoidal, subparallel-sided, posterolateral corners rounded, hind margins together forming an extremely shallow emargination near sutural area; surface almost flat, but a little andulate, each elytron with 5 or 6 rows of irregular punctures, interstice almost smooth, shining, and distinctly narrower than diameter of puncture.

Legs moderate in length, similar in structure to those of *S. nobile*.

Abdomen moderately convex above, parallel-sided in 4th to 6th segments, then weakly narrowed posteriorly; paratergites developed; dorsal surface coverd with fine reticulate microsculptures and with fine and very sparse punctures, upper marginal areas of sternites with several setae of different length. Aedeagus (Fig. 1E) with median lobe moderately bulbous at base, gently and uniformly narrowed posteriorly to the rounded apex, without apicolateral corners, internal organs without sclerotized armatures; parameres extending posteriorly much beyond apex of median lobe, curved inward at apical parts.

Female. Relative measurements: HL: 35; HW: 52; PL: 38; PW: 53; EL: 74; EW: 63; ALP: 18:8:9:8:9:10:10:10:10 (10th and 11th segments absent).

Head smaller than in male, almost pentagonal in shape before eyes as in female of *S. nobile*, without horns. Mandibles each short and simply pointed.

Holotype, male, Rausu, Shiretoko, Hokkaido, 8. vii. 1958, T. Nakane (NTC); 1 male and 1 female, same data as holotype (NTC and NSC).

Distribution. Japan (Hokkaido).

Remarks. Siagonium nakanei sp. nov. is distinctly separable from *S. nobile* and *S. incertum* by the rounded apex of median lobe of aedeagus and by the absence of midlateral depressions on pronotum. This new species is similar to *S. nobile* in that these two species have similar horns on head, but in *S. nakanei* the horns are slenderer and the antennae are longer. The females of *S. nakanei* and *S. incertum* are similar in outline, but the 4th to 6th segments of antennae are filiform in *S. nakanei*, while in *S. incertum* they are almost moniliform.

Specimens measured are the male and female of paratypes.

Etymology. This species is named in honour of an eminent coleopterologist, Dr. Takehiko Nakane who collected the new species.

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日本産ヒラタハネカクシ亜科（甲虫目，ハネカクシ科）の分類学的再検討，I

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本論文は日本産ヒラタハネカクシ亜科に関する研究の第1報である．日本産ヒラタハネカクシ亜科は，ヒラタハネカクシ属(*Siagonium*)とオオヒラタハネカクシ属(*Piestoneus*)より構成される．ヒラタハネカクシ属には4種群（ヒラタハネカクシ種群，セミゾヒラタハネカクシ種群，ヒメヒラタハネカクシ種群，ホソヒラタハネカクシ種群）が認められるが，本論文ではヒラタハネカクシ種群とセミゾヒラタハネカクシ種群の分類学的再検討を行った．セミゾヒラタハネカクシ種群に属する1新種，*Siagonium nakanei* Naomi（新称：ナカネセミゾヒラタハネカクシ）を北海道から記載した．*S. haroldi*（新称：ニセヒラタハネカクシ）はヒラタハネカクシ(*S. vittatum*)のシノニムと考えられていたが，雄交尾器を比較検討した結果，それは独立の種であることが判明できた．セミゾヒラタハネカクシ(*S. nobile*)の後模式標本を指定した．ヒラタハネカクシ亜科の属，ヒラタハネカクシ属の種群，およびヒラタハネカクシ種群とセミゾヒラタハネカクシ種群の種への検索表を作成し，加えて，各種の雄交尾器の背面図を示した．