

The Steninae of Oki Islands, Shimane Prefecture, Western Japan, with Descriptions of Two New *Stenus* Species (Insecta : Coleoptera : Staphylinidae) *

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Abstract A list of the Steninae of Oki Islands, Shimane Prefecture, western Japan, composed of nine *Stenus* species, is presented. Of these nine species, four (*S. alienus*, *S. macies*, *S. puberulus* and *S. cicindeloides*) are new to Oki Islands, and two are new to science. The two new species are described under the names of *Stenus corrugatus* and *S. okiensis*.

Key words: Coleoptera, Staphylinidae, Steninae, *Stenus*, Oki Islands, Japan, new species.

Oki Islands consist of two main Islands (Dogo and Dozen), and are located about 60 km off Matsue City of Shimane Prefecture, western Japan. Watanabe (1977) recorded a *Hypostenus* species under the name of *Stenus rufescens* Sharp, 1874 from Oki-Islands (see also Shimada, 2006). Watanabe (1995) added two species, *S. kobensis* and *S. velox*. These three species are all of the known *Stenus* species from there. T. Shimada and Y. Notsu collected a series of Steninae in Oki Islands in 2003 to 2004. After a close examination made by S. Naomi, it was revealed that they belong to seven *Stenus* species. Namely, four belong to the subgenus *Stenus* and three to the subgenus *Hypostenus*. Of these, four species (*S. alienus*, *S. macies*, *S. puberulus* and *S. cicindeloides*) are new to Oki-Islands, and two species are new to science. The new species are described under the names of *Stenus corrugatus* and *S. okiensis*.

This study is based on 36 *Stenus* specimens collected by T. Shimada and Y. Notsu. In this paper, following abbreviations are used: HL (head length); HW (head width); PL (pronotum length); PW (pronotum width); EL (elytral length); and EW (elytral width). In order just to compare the length and width of the head, pronotum and elytra for identification of species, the numerical values of the above-mentioned abbreviated portions are needed to describe. Based on the holotype specimen, these portions are measured under

the fixed magnification ($\times 35$), using the binocular Olympus SZH with ocular mesh. The numerical values are described in the "Relative measurements" of the description of species. Holotypes of the new species described here are deposited in the Natural History Museum and Institute, Chiba (CBM-ZI).

Taxonomic Account

1. *Stenus (Stenus) alienus* Sharp, 1874

Specimens examined. Dogo Island: 3 ♀♀, Saigo-cho, Kabura-sugi, 17.vii.2003, T. Shimada leg.; 1 ♂, 3 ♀♀, Fuse-mura, Minam-dani (200 m alt.), pitfall trap, 18-25.v.2004, T. Shimada leg.; 1 ♂, Saigo-cho, Mt. Tokibari-san, 12.vi.2003, T. Shimada leg.

Remarks. This species is common; it is usually found in lowland paddy fields and riverbanks. It is new to Oki Islands.

2. *Stenus (Stenus) macies* Sharp, 1874

Specimens examined. Dogo Island: 1 ♂, 1 ♀, Saigo-cho, Kabura-sugi, 17.vii.2003, T. Shimada leg.; 1 ♀, Fuse-mura, Mt. Daimanji-san (430 m alt.), 18-25.v.2004, T. Shimada leg.

Remarks. This species is common from lowland to mountainous regions in Japan, but it is new to Oki Islands.

3. *Stenus (Stenus) kobensis* Cameron, 1930

Remarks. This species was recorded by Watanabe

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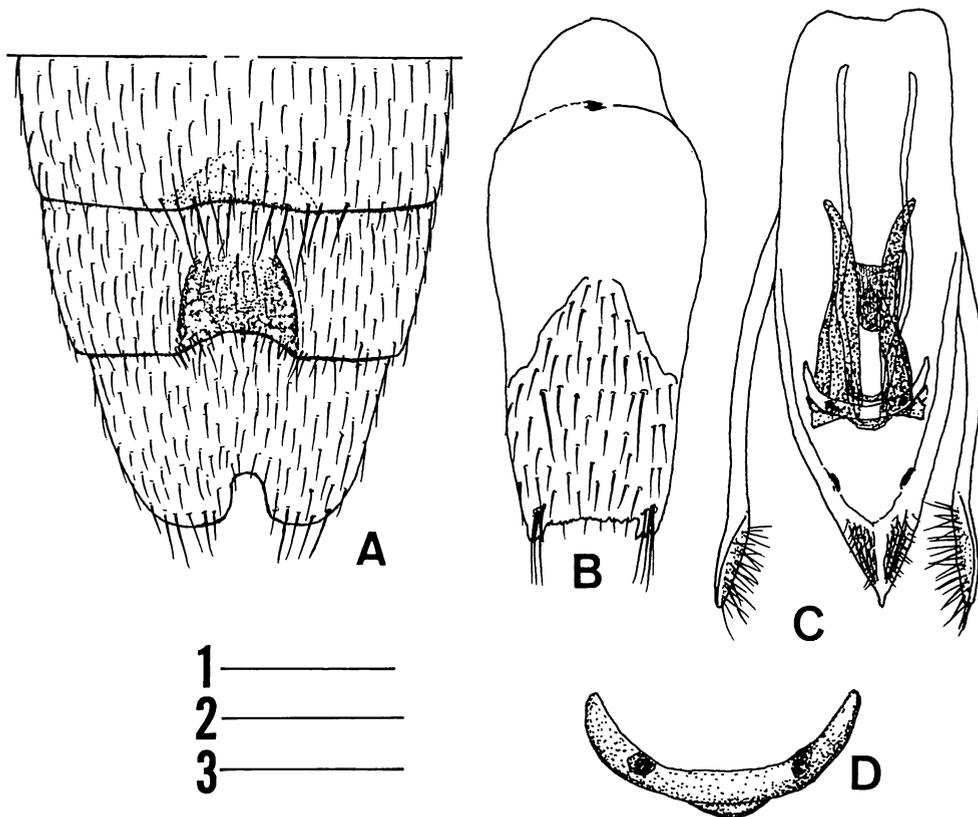


Fig. 1. *Stenus corrugatus* sp. nov. Holotype, male (CBM-ZI 122973). A, Sixth to eighth abdominal sternites of male; B, ninth sternite of male; C, aedeagus in ventral view; D, clasp (= fused median hooks) of endophallus. Scales: 1, 0.25 mm for A; 2, 0.2 mm for B, C; 3, 0.1 mm for D.

(1995) based on two specimens collected from Minami-dani, Kasuga Rv., Fuse-mura, Dogo-Island.

4. *Stenus* (*Stenus*) *puberulus* Sharp, 1874

Specimen examined. Dogo Island: 1 ♀, Saigo-cho, Kabura-sugi, 17.vii.2003, T. Shimada leg.

Remarks. This species is not common; it is occasionally found in habitats near rivers. This is also new to Oki Islands.

5. *Stenus* (*Stenus*) *corrugatus* Naomi et Shimada, sp. nov. (Fig. 1A-D)

Description. Male. Body elongate, subcylindrical, 2.8-3.2 mm in length, moderately shining, brachypterous. Body black to dark red; labrum including anterior margin black to dark brown; antennae dark brown to dark red; legs reddish brown to yellowish brown, with anterior parts of femora and basal parts of tibiae more or less infusate.

Relative measurements: HL: 32; HW: 56; PL: 43; PW: 46; EL: 42; EW: 58.

Head transverse, interocular area with a pair of depressions distinctly convergent anteriorly, median part between the depressions elongate-triangular in shape, distinctly convex; surface with punctures dense to very dense, round, various in size, interstices shining, obsolete microsculptured. Pronotum strongly convex, rounded laterally; surface slightly uneven, with shallow and vague transverse depression behind anterior margin, median longitudinal depression very vague in outline; punctures dense to very dense, round to almost round, subrugose especially at basal part, interstices almost distinctly microsculptured, shining. Elytra weakly convex, gently broadened posteriorly; surface uneven, with punctures round to almost round, rough, strong, and distinctly larger than those on pronotum, interstices shining, indistinctly microsculptured. Abdomen subcylindrical, weakly to moderately convex above, with 3 short basi-longitudinal keels at each of third to sixth tergites, the keels becoming smaller from third to sixth tergites; third segment with anterolateral fovea almost ovoidal in shape,

becoming shallower posteriorly, open behind, and punctate; third tergite with punctures large, round and distinct on basal part, becoming smaller toward posterior margin, interstices strongly shining, without microsculptures on basal part, while moderately shining, distinctly microsculptured on posterior part; punctures becoming smaller from third to seventh tergites; punctures on seventh tergite small, elliptical to elongate-elliptical, regular, interstices finely regularly microsculptured.

Sixth sternite (Fig. 1A) with a triangular flat area at posteromedial part, and a very weakly arcuate emargination at the middle of posterior margin; seventh sternite (Fig. 1A) posteromedially with a moderately shallow, semicircular depression, its lateral margin weakly ridged, and its posterior margin gently arcuately emarginate; eighth sternite with a medium-sized U-shaped emargination at the posteromedial part; ninth sternite (Fig. 1B) moderately setose behind oblique edges, apicolateral projections each short, bi- or tricupidate.

Aedeagus (Fig. 1C) with median lobe relatively slender, becoming almost uniformly narrowed apically behind the middle, acutely pointed at apex; apicolateral corner absent; apical sclerotized area relatively small, with numerous longitudinal lines running subparallel to one another and short setae, except for median longitudinal area which is almost smooth; a pair of small humps at latero-internal edges a little before apical sclerotized area; median hooks modified and fused into a posterior transverse clasp (Fig. 1D), the clasp located just behind the posterior margin of median longitudinal bands, crescent in shape but posteromedially with a broad low and round hump-like projection; median longitudinal bands relatively broad and long, each narrowed anteriorly; lateral longitudinal bands almost overlapping with median longitudinal bands when seen from ventral side, but their posterior corners reaching behind the crescent clasp, and well angulate; temple-bell-shaped structure found between median longitudinal bands; basal tube very large, composed of a pair of thin rods; parameres extending posteriorly near the apex of median lobe, each thin, weakly curved; apical part hardly swollen toward the middle, with apico-internal corner obscure, tip weakly pointed, and its apico-internal area with setae short in usual, 20-25 in number.

Female. Unknown.

Type-series. Holotype: ♂ (CBM-ZI 122973), Oki Islands, Dogo Island, Okinoshima-cho, Ooku (75 m alt), 7.x.2004, T. Shimada leg. Paratypes: 1 ♂, same data as holotype; 1 ♂, Dogo Island, Saigo-cho, Mt. Tokibari-

san, 12.vi.2003, T. Shimada leg.

Distribution. So far known only from Dogo Island, Oki Islands, Shimane Prefecture.

Remarks. *Stenus (Stenus) corrugatus* sp. nov. is very similar in the external structure and the appendages such as antennae and legs to *S. (Stenus) zimmermanni* Puthz, 1968 from Honshu, Japan, but these species are clearly separable based on the characters found in the external structure of the aedeagus and its endophallus. Namely, this new species can be distinguished from the latter as follows: the median lobe of the aedeagus is broader in the posterior one-third, without any constriction behind the middle (while in *S. zimmermanni* it is narrower in the posterior one-third, with a moderate to strong constriction behind the middle); the apical sclerotized area of the median lobe is broader, and the clasp (= fused median hooks) of endophallus is crescent in shape, provided with a broad round hump-like projection posteromedially (while in *S. zimmermanni* it is [-shaped, without any hump-like projection at the posteromedial part).

Etymology. The specific epithet of this new species is derived from the Latin adjective "*corrugatus*" that means "ridged".

6. *Stenus (Hypostenus) cicindeloides* (Schaller, 1783)

Specimen examined. Dogo Island: 1 ♀, Saigo-cho, Araki, 7.viii.2003, Y. Notsu leg.

Remarks. This is a common species; it is usually found in marshes, meadows, and riverbanks. It is new to Oki Islands.

7. *Stenus (Hypostenus) velox* Sharp, 1889

Remarks. This species was recorded by Watanabe (1995) based on 1 male collected from Mt. Daimanji-san, Saigo-cho, Dogo-Island.

8. *Stenus (Hypostenus) okiensis* Naomi et Shimada sp. nov. (Fig. 2A-F)

Description. Male and female. Body elongate, cylindrical, 3.8 - 4.1 mm in length, moderately shining, brachypterous. Head black; pronotum and elytra dark red; abdomen black to dark red; labrum reddish brown; antennae and legs reddish brown to yellowish brown.

Relative measurements: HL: 37; HW: 61; PL: 48; PW: 46; EL: 50; EW: 53.

Head transverse; eyes very large, well-convex; interocular area with a pair of longitudinal depressions relatively deep, distinctly convergent anteriorly, median part between the depressions moderately convex, almost elongate-triangular in shape; surface almost

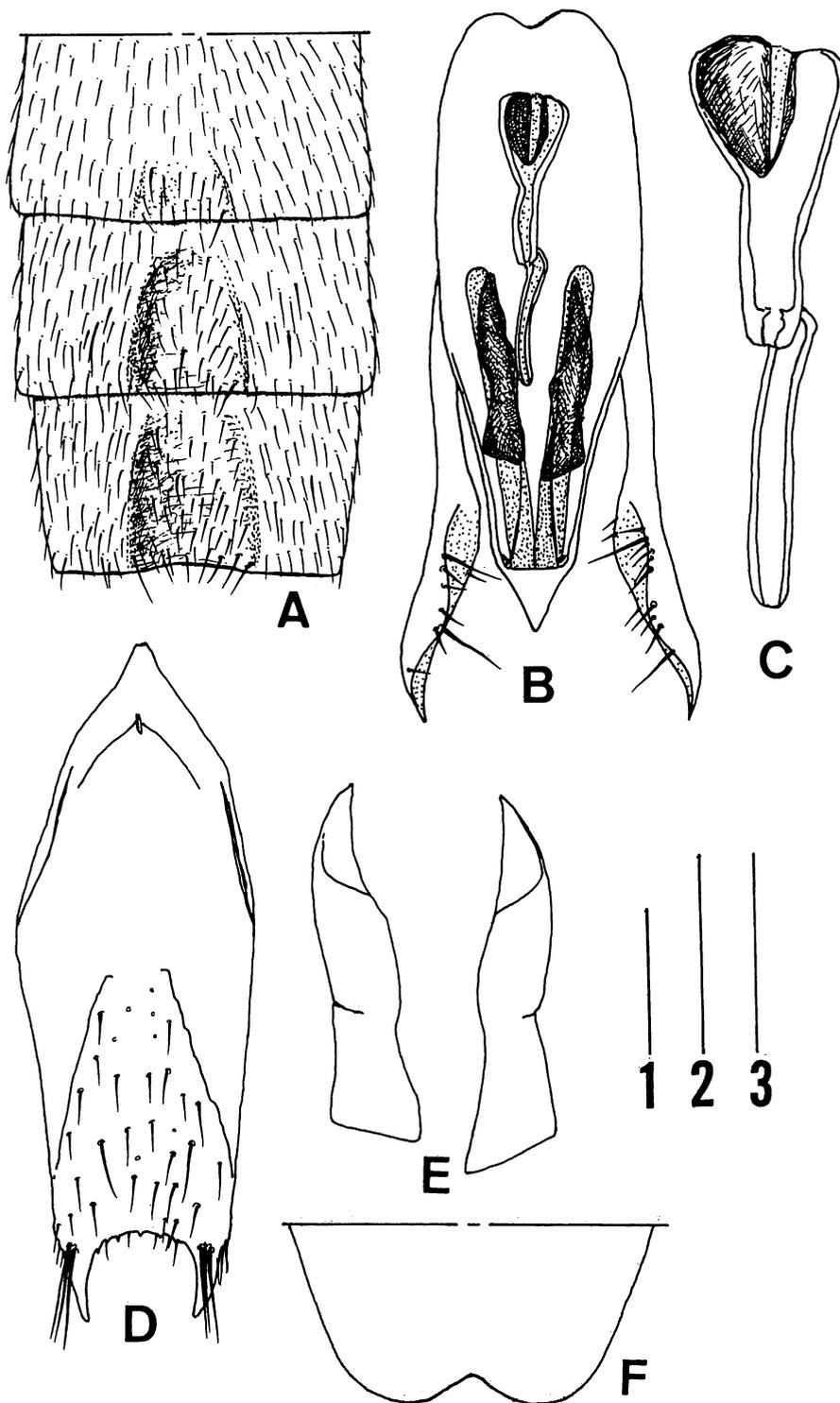


Fig. 2. *Stenus okiensis* sp. nov. Holotype, male (CBM-ZI 122287). A, Sixth to eighth abdominal sternites of male; B, aedeagus in ventral view; C, basal tube of endophallus; D, ninth sternite of male; E, median hooks of endophallus; F, eighth sternite of male. Scales: 1, 0.25mm for A; 2, 0.2 mm for B, D, F; 3, 0.1 mm for C, E.

uniformly covered with punctures small, distinct, round, moderately dense, interstices shining, almost distinctly microsculptured. Pronotum well-convex above, rounded laterally; surface slightly uneven, median longitudinal depression shallow, obscure in outline; punctures round, distinct, dense, a little various in size, interstices shining, distinctly uniformly and minutely faceted. Elytra moderately convex, but somewhat flat along suture; surface uneven, with punctures rough, large, round and very dense, interstices narrow to very narrow, shining, indistinctly microsculptured. Abdomen strongly cylindrical; third segment with anterolateral fovea large, distinct, about half the length of third segment, and with remnant of paratergites very thin; punctures on third tergite distinct, regular, round and moderately dense, interstices distinctly or indistinctly microsculptured, moderately shining, punctures becoming smaller from third to seventh tergites, punctures on seventh tergite very fine, interstices obscurely microsculptured, weakly shining.

Male. Fifth sternite (Fig. 2A) simply flat at the posteromedian part; sixth sternite (Fig. 2A) with a weakly concave temple-bell-shaped area at the posteromedian part; seventh sternite (Fig. 2A) with a median longitudinal area weakly concave, its lateral margin weakly ridged, its posterior margin weakly arcuately emarginate; eighth sternite (Fig. 2F) with a triangular emargination at the posteromedian part; ninth sternite (Fig. 2D) with apicolateral projections long and acutely pointed.

Aedeagus (Fig. 2B) robust; median lobe bulbous at base, distinctly narrowed posteriorly behind the middle; apicolateral corner present; apical sclerotized area triangular, relatively small; median longitudinal bands developed, divergent anteriorly; median hooks (Fig. 2E) robust, posterior and anterior plates partially fused, posterior plate broadest at posterior part, well angulate, anterior plate narrowed anteriorly, acutely pointed; basal tube (Fig. 2C) with sperm sac very large, basal constriction vague but present, distal tube rod-like, straight, about as long as the sperm sac and proximal tube taken together, clearly separated from proximal tube because distal tube is connected with proximal tube at the apico-dorsal side of proximal tube, and their connected portion is distinctly constricted; parameres (Fig. 2B) well developed, robust, extending posteriorly much beyond the apex of median lobe; apical part of paramere very large, acutely pointed at tip, with apico-internal corner round, large, ventral margin of apical part bi-sinuate as in *S. tsurusakii*, with 2 long and several short setae, dorsal margin of apical part with small number of setae.

Female. Eighth sternite bluntly pointed at apicomedian margin; tenth tergite entire.

Type-series. Holotype: ♂ (CBM-ZI 122287), Washigamine (550 m alt.), Fuse-mura, Dogo Island, 25.iii.2004, T. Shimada leg. Paratypes (all from Dogo Island): 5 ♂♂, 5 ♀♀, same data as holotype; 1 ♂, 1 ♀, same locality, 10.xi.2003, T. Shimada leg.; 2 ♂♂, 1 ♀, Saigo-cho, Ooku, 31.x.2003, T. Shimada leg.; 1 ♀, Fuse-mura, Mt. Daimanji-san (450 m alt.), 18.ix.2003, T. Shimada leg.; 1 ♂, 1 ♀, Saigo-cho, Mt. Koshikibarayama (500 m alt.), 10.v.2003, T. Shimada leg.

Distribution. So far known only from Dogo Island, Oki Islands, Shimane Prefecture.

Remarks. *Stenus (Hypostenus) okiensis* sp. nov. is considered to be the sister species of *S. (H.) tsurusakii* Naomi, 1998, known from Tottori Prefecture, based on the shared basic structures of the paramere and the basal tube of the endophallus of the aedeagus. This new species is, however, distinctly separable from the latter by the following points: the body is darker in the color; the secondary sexual characters on the abdominal sternites are less developed (namely, the posteromedian area on each of the sixth and seventh sternites are more shallowly convex and the eighth sternite is more shallowly emarginate at the posteromedian margin in the new species than in *S. (H.) tsurusakii*); the paratergites on the third abdominal segment is less developed in the new species than in *S. (H.) tsurusakii*; the posterior plate of the median hook of the endophallus is larger and well-angulate; and the sperm sac of the basal tube of the endophallus is larger and its distal tube is thicker in the new species than in *S. (H.) tsurusakii*.

Etymology. The specific epithet of this new species is derived from the name of the type locality "Oki Islands" of Shimane Prefecture.

9. *Stenus (Hypostenus)* sp.

Specimen examined. Dogo Island: 1 ♀, Fuse-mura, Mt. Daimanji-san (450 m alt.) (Tul.), 18.ix.2003, T. Shimada leg.

Remarks. Based on the external structures and the body color, this species is very similar to *Stenus (Hypostenus) rufescens* Sharp, 1874, but the peculiarities of the female abdominal structures of the present specimen suggest that it represents a species new to science. Watanabe (1977) reported *S. rufescens* from Oki Islands. However, in his detailed taxonomic study on the *S. rufescens* species group, Naomi (2006) showed that *S. rufescens* s.s. is restricted to Mt. Maya of Hyogo Prefecture, western Japan. Thus, the specimen that Watanabe recorded from Oki Islands

probably does not belong to *S. rufescens* but to this species. Because only a single female specimen is available at present, we postpone to formally describe a new species until male specimens are collected.

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隠岐諸島 (島根県) のメダカハネカクシ相 (甲虫目: ハネカクシ科)

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島根県の隠岐諸島からこれまでに記録されたメダカハネカクシ亜科ハネカクシは、*Stenus (Stenus) kobensis*, *S. (Stenus) velox*, *S. (Hypostenus) rufescens* の3種だけであった(渡辺, 1977; 1995)。今回、島田孝らの調査によって、9種の *Stenus* が分布していることが明らかになったので、この論文において、隠岐諸島産のメダカハネカクシ亜科ハネカクシのリストを作成した。これらの9種のうち、4種 *S. (Stenus) alienus*, *S. (Stenus) macies*, *S. (Stenus) puberulus*, *S. (Hypostenus) cicindeloides* は、隠岐諸島から初めて記録される種である。渡辺(1977)によって隠岐諸島から記録された *S. rufescens* は、新種であることがわかった。しかし、現時点では1雌しか採集されていないので、このリストでは、*Stenus (Hypostenus) sp.*として記録した。残りの2種は、新種であるので、*S. (Stenus) corrugatus* および *S. (Hypostenus) okiensis* として記載した。*S. corrugatus* は、本州に分布する *S. (Hypostenus) zimmermanni* に近縁な種である。しかし、雄交尾器中央片は後方1/3において幅広く、後半部ではくびれず、中央片の先端硬化部はより幅広く、雄交尾器内袋の後方留め金部は三日月型をしていて、後方中央部に幅広い瘤状の張り出し部がある点で、後者から容易に区別される。他方、*S. okiensis* は、鳥取県に分布する *S. (Hypostenus) tsurusakii* に最も近縁な種である。しかし、この新種は後者から、体色(とりわけ、前胸背と上翅)がより暗色であり、腹部第6-8腹板における雄の2次性徴の発達は弱く(つまり、第6および第7腹板のそれぞれにおける後方中央部にある窪みはより浅く、第8腹板の後縁部の中央に位置する切れ込みは浅い)、腹部第3節の腹側板の発達は弱く、雄交尾器中央片の中央ホックの後方板は大きく、強く角張り、中央片内袋の基部管の精袋サックは大きく、先端管はより太い点で区別される。