

## Three New Species of *Proteinus* (Coleoptera: Staphylinidae) from Shikoku, Japan

Yasuhiko HAYASHI

Suimeidai 3-1-73, Kawanishi C., Hyôgo, 666-0116 Japan

**Abstract** Three new species of *Proteinus* are described from Shikoku, Japan under the names *Proteinus taichii*, *P. nitiduloides* and *P. awanus*.

The genus *Proteinus* LATREILLE is a medium-sized genus including about 40 species worldwide (HERMAN, 2001) and seven species in Japan.

The species of this genus are very small in size and similar in general appearance to one another; especially in their females, the general appearance is much more similar among congeners than in male, it is therefore rather difficult to identify exactly each species by female specimens alone.

Recently I received many specimens of the genus *Proteinus* LATREILLE from Shikoku through the courtesy of Mr. Masataka YOSHIDA. After careful examination of these specimens I found three new species. In this paper, I am going to describe them under the names *Proteinus taichii* sp. nov., *P. nitiduloides* sp. nov. and *P. awanus* sp. nov.

My work on the Japanese Staphylinidae was initiated by the descriptions of new species in the genus *Proteinus* in 1986 under guidance of the late Mr. Taichi SHIBATA. He was a great coleopterologist out of office. Besides his eager collecting and taxonomic works on beetles, he always showed young people the pleasure of collecting and watching beetles, and then he organized the Osaka Coleopterological Society in Osaka. From this society, many specialists have grown up not only by his appropriate guidance and encouragement but also by his helpful support for collecting in the field and for examination of his rich collection of beetles and literature in his laboratory. As a member of the society, I also received his strict guidance in the course of my study on the Staphylinidae. I pray for the repose of his soul and dedicate this paper to him with all my heart.

I am very glad to Mr. Masataka YOSHIDA, Tokushima City, for his kindly offering many interesting materials. I also much indebted to Dr. Katsura MORIMOTO, Emeritus Professor of Kyushu University, for his critically reading this manuscript. I also thank Dr. Kiyoshi

ANDO for his taking clear photographs of the new species.

All the holotypes to be designated in this paper are preserved in the collection of the Osaka Museum of Natural History (OMNH), Osaka. A part of the paratypes is preserved in the collection of Tokushima Museum of Natural Science (TMNS), Tokushima.

*Proteinus taichii* sp. nov.

(Figs. 1, 4-9)

Body suboval, widest at about posterior third, moderately convex above and shiny; head and abdomen nearly black; pronotum nearly blackish brown, with lateral and basal margins narrowly dark yellowish brown; elytra dark yellowish brown but a little lighter in epipleura; mouth organs yellowish brown, antennae dark yellowish brown, with basal three segments pale yellow as well as legs; 7th tergite of abdomen narrowly brownish at apical margin.

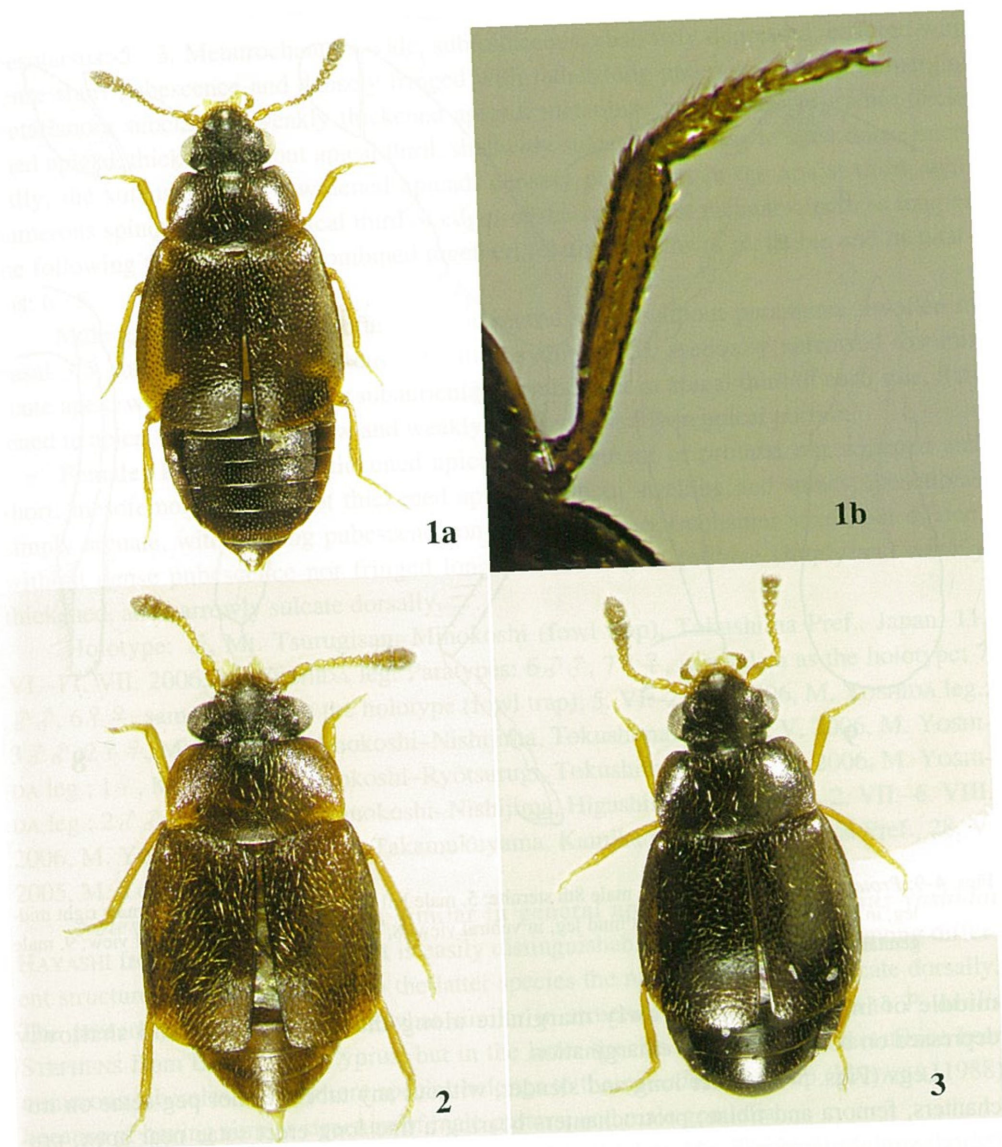
Length: 2.0-2.9 mm. Width: 0.8-1.2 mm.

Male. Head transverse, nearly 7/10 as wide as pronotum, weakly convex medially, with a pair of vague foveae besides the convexity in occipital area, and the fovea with a peculiar pit at the center. Upper surface very sparsely and minutely punctured (only visible under hi-magnification), with strongly reticulate microsculpture. Postgenae curved conjointly from eyes. Antennae rather long, extending near to base of pronotum and markedly clavate in apical four segments; basal three and terminal segments a little longer than wide, 4th about as long as wide, 5th slightly wider than long, 6th to 10th very transverse, last four segments rather strongly clubbed; 1st segment a little longer than 2nd; 3rd a little shorter than 2nd and much longer than 4th, which is a little shorter than 5th; 6th the shortest; 7th nearly as long as 5th and slightly longer than 8th; 8th to 11th segments longer and thicker than each preceding one, and 11th a little longer than the preceding two segments combined together. Fourth segment of maxillary palpi elongate-subconical, distinctly tapered to sub-acute apex.

Pronotum much wider than long (37 : 21), nearly 2/3 as wide as and much shorter (3 : 8) than elytra, widest a little behind the middle, gently arcuate at sides, gradually narrowed anteriorly from the widest point but slightly so posteriorly; front margin gently emarginate, and basal one considerably arcuate and weakly emarginate in each lateral half; front angles widely rounded, and basal ones obtusely angular; disc rather strongly convex, finely but distinctly bordered at all margins, shallowly impressed medially, finely but distinctly punctured, with strong microsculpture as on head.

Mesosternum bearing a short median carina at base of mesosternal process.

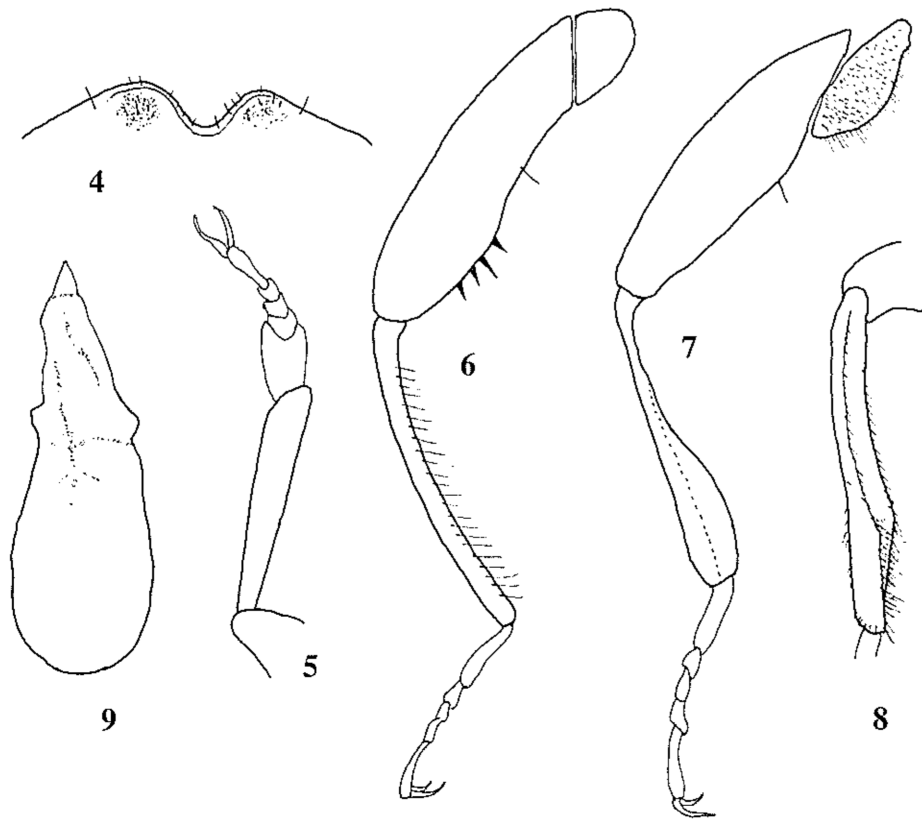
Elytra somewhat barrel-shaped, gently arcuate at sides, almost as long as wide, vaguely depressed along suture and minutely denticulate at lateral margins; latero-apical angles widely rounded, and sutural angles obtusely rounded; surface rather coarsely and sparsely punctured, seemingly imbricate by combination of punctures and pubescence,



Figs. 1-3. *Proteinus* spp.— 1, *Proteinus taichii* sp. nov.: a, habitus and b, male right fore leg; 2, *P. nitiduloides* sp. nov.; 3, *P. awanus* sp. nov.

interstices flat, without microsculpture. Wings well developed, functional.

Abdomen very minutely and sparsely punctured, with fine reticulate microsculpture, and the punctures finer than those on pronotum, with very fine and sparse short pubescence; punctures on sternites a little larger than those on tergites; microsculpture on 7th tergite obsolete in posterior third; 8th sternite (Fig. 4) deeply and rather widely emarginate at the



Figs. 4–9: *Proteinus taichii* sp. nov. — 4, male 8th sternite; 5, male left fore leg, in dorsal view; 6, male right mid-leg, in ventral view; 7, male right hind leg, in ventral view; 8, male left metatibia, in dorsal view; 9, male genitalia, in ventral view.

middle of hind margin, narrowly marginate along the emargination and shallowly depressed on both sides of the emargination.

Legs (Figs. 5–8) rather long and slender, without any tubercles nor peg-setae on trochanters, femora and tibiae; pro-trochanters bearing a fine long erect setae near apex; pro-femora straight, gradually narrowed apicad; protibiae straight, gently thickened apicad and edged longitudinally at latero-inferior margin; protarsi with 1st segment markedly wide, oblong, much longer than wide, nearly 0.4 times as long as protarsal length, and relative lengths of protibiae and protarsi: 15 : 11. Mesotrochanters triangular; mesofemora nearly straight, weakly arcuate at anterior margin, distinctly tumid posteriad about apical third, with four or five fine spines on the swelling; mesotibiae weakly arcuate, somewhat sinuate in dorsal view, flattened on under face, edged at lateral margins of the face, and longitudinally arranged with sparing long setae on inner face; relative lengths of mesotibia and

mesotarsus: 5 : 3. Metatrochanters wide, subfoliaceous, shallowly depressed, covered with dense short pubescence and densely fringed with rather long pubescence on hind margin; metafemora subclavate, weakly thickened apicad; metatibiae nearly straight, rather thickened apicad, thickest at about apical third, shallowly sulcate from base to apex dorso-internally, the sulcus gradually widened apicad, densely pubescent in the apical third, with numerous spinous setae in apical third of edges of the sulcus; 1st metatarsomere as long as the following three segments combined together; relative lengths of metatibia and metatarsus: 6 : 5.

Male genitalia (Fig. 9) subfusiform in ventral view, without parameres, swollen in basal 3/5, membranous on dorsum, slightly asymmetrical, gradually narrowed towards acute apex, with subtriangular or subauricular protuberance at apical third of each side, flattened in apical 2/5 in lateral view and weakly reflexed dorsally in apical portion.

Female. Protibiae not thickened apicad; 1st segment of protarsi not widened and short; mesofemora simple, not thickened apicad, without swelling and spines; mesotibiae simply arcuate, without long pubescence on inner face; metatrochanter small, not dilated, without dense pubescence nor fringed long pubescence; metatibiae simply and weakly thickened, and narrowly sulcate dorsally.

Holotype: ♂, Mt. Tsurugisan: Minokoshi (fowl trap), Tokushima Pref., Japan, 11. VI.–17. VII. 2006, M. YOSHIDA leg. Paratypes: 6 ♂♂, 7 ♀♀, same data as the holotype; 7 ♂♂, 6 ♀♀, same locality as the holotype (fowl trap), 5. VI.–2. VII. 2006, M. YOSHIDA leg.; 3 ♂♂, 2 ♀♀, Mt. Tsurugi: Minokoshi–Nishijima, Tokushima, 4. V.–5. V. 2006, M. YOSHIDA leg.; 1 ♀, Mt. Tsurugi: Minokoshi–Ryôtsurugi, Tokushima, 4. V.–5. V. 2006, M. YOSHIDA leg.; 2 ♂♂, Mt. Tsurugi: Minokoshi–Nishijima, Higashiiya, Tokushima, 2. VII.–6. VIII. 2006, M. YOSHIDA leg.; 1 ♂, Mt. Takamukuyama, Kamikatsu-chô, Tokushima Pref., 28. V. 2005, M. YOSHIDA leg.

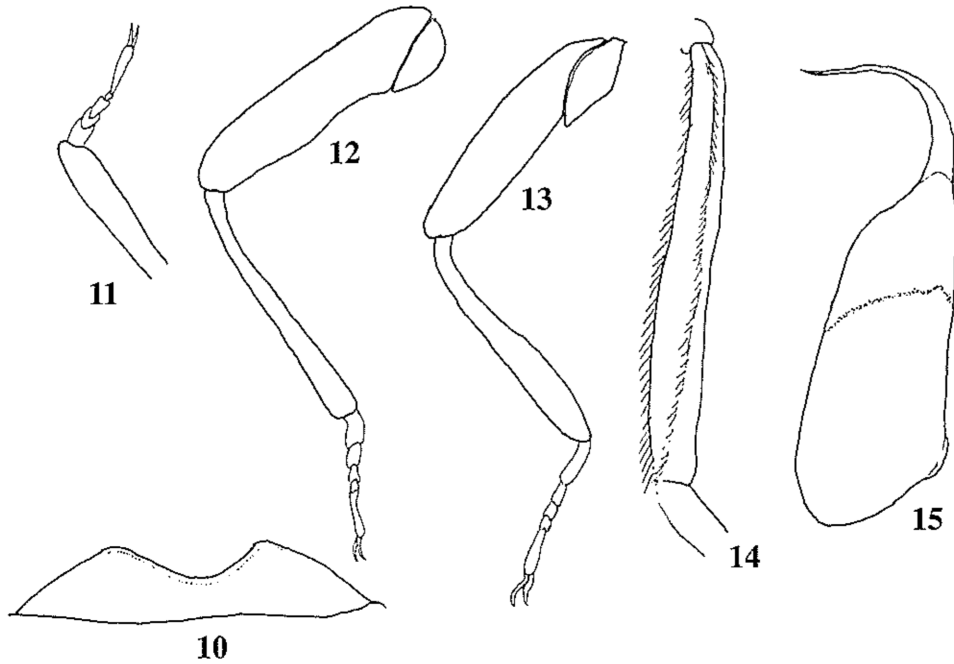
*Notes.* This new species is similar in general appearance to *Proteinus yoshidai* HAYASHI from Shikoku, Japan, but is easily distinguishable from the latter in having different structure of metatibiae, viz., in the latter species the metatibiae are not sulcate dorsally. The present species is also somewhat similar in structure of male genitalia to *P. ovalis* STEPHENS from Europe and Cyprus, but in the latter species the meso- and metatibiae bear numerous tubercles. The present species belongs to the *sawadai* subgroup (HAYASHI, 1988) because of having similar structure of male protarsi and male genitalia.

*Etymology.* The specific name is dedicated to the late Mr. Taichi SHIBATA, who left his great marks on the coleopterological world of Japan.

*Proteinus nitiduloides* sp. nov.

(Figs. 2, 10–15)

Body somewhat similar to a nitidulid species, suboval, widest at about posterior third, moderately convex above and shiny; head dark brown; pronotum nearly yellowish brown,



Figs. 10–15. *Proteinus nitidulooides* sp. nov. — 10, Male 8th sternite; 11, male left fore leg, in dorsal view; 12, male right mid-leg, in ventral view; 13, male right hind leg, in ventral view; 14, male right metatibia, in dorsal view; 15, male genitalia, in lateral view.

widely darkened in middle; elytra yellowish brown; mouth organs pale yellowish brown, antennae pale yellow and a little darkened in apical three or four segments, legs pale yellow, and 7th tergite of abdomen narrowly brownish at apical margin.

Length: 1.2–1.5 mm. Width: ca. 0.7 mm.

Male. Head transverse, nearly seven-tenths as wide as pronotum, gently convex, with a pair of rather deep foveae in occipital area, and the fovea with a peculiar pit at the center. Upper surface very sparsely and minutely punctured (only visible under hi-magnification), with strong reticulate microsculpture. Postgenae curved conjointly with eyes. Antennae moderately long, reaching near the middle of pronotum and remarkably clubbed in apical four segments; basal three and terminal segments a little longer than wide, 4th about as long as wide, 5th slightly wider than long, 6th to 10th very transverse; 1st segment nearly as long as 2nd; 3rd much shorter than 2nd, nearly half as long as it and nearly twice as long as 4th, which is slightly longer than 5th; 6th the shortest and nearly equal in length to 8th; 8th to 11th segments longer and thicker than each preceding, and 11th a little longer than the preceding two segments combined together. Fourth segment of maxillary palpi subcylindrical.

Pronotum much wider than long (9 : 5), nearly 0.8 times as wide as and much shorter

(5 : 12) than elytra, widest near base, gently arcuate at sides, gradually narrowed anteriorly from the widest point but slightly so posteriorly; front margin nearly straight, and basal one considerably arcuate and weakly emarginate in each lateral half; front angles widely rounded, and basal ones obtusely angular; disc rather strongly convex, finely but distinctly bordered at margins except basal one, shallowly impressed medially, very minutely punctured as on head, with strong microsculpture as well as on head.

Mesososternum bearing a Y-shaped carina.

Elytra somewhat barrel-shaped, gently arcuate at sides, almost as long as wide, vaguely depressed behind scutellum along suture; latero-apical angles widely rounded, and sutural angles obtusely rounded; surface rather coarsely and sparsely asperate-punctate, and interstices flat, without microsculpture. Wings well developed, functional.

Abdomen very finely and sparsely punctured, with coarse but obsolete reticulate microsculpture, and the punctures slightly larger than those on pronotum, with fine short pubescence; punctures on sternites a little larger than those on tergites; 8th sternite (Fig. 10) deeply, widely and roundly emarginate at the middle of hind margin.

Legs (Figs. 11–14) rather slender and long, without any tubercles nor peg-setae on trochanters, femora and tibiae; profemora straight, gradually narrowed apicad; protibiae straight, gently thickened apicad and edged longitudinally at latero-inferior margin; protarsi with 1st segment short, much shorter than the following four segments together, very weakly dilated, and relative length of protibiae and protarsi: 19 : 10. Mesotrochanters triangular; mesofemora weakly curved, not thickened apicad; mesotibiae weakly and uniformly curved with several fine spines in apical third of the dorsum; relative lengths of mesotibia and mesotarsus: 25 : 13. Metatrochanters small and subfoliaceous; metafemora slightly thickened apicad; metatibiae nearly straight, slightly thickened apicad, shallowly sulcate from base to apex internally; 1st metatarsomere shorter than the following three combined together; relative lengths of metatibia and metatarsus: 11 : 6.

Male genitalia (Fig. 15) somewhat asymmetrical, elongate-subreniform in lateral view, with strongly curved process and without parameres, membranous on dorsum.

Female. Eighth sternite of abdomen a little protuberant in middle of apical margin and rounded at the top of protuberance; protibiae not thickened apicad; 1st segment of protarsi short, not dilated.

Holotype: ♂, Mt. Tsurugisan: Minokoshi (fowl trap), Tokushima Pref., Japan, 11. VI.—17. VII. 2006, M. YOSHIDA leg. Paratypes: 30 ♂♂, 18 ♀♀, same data as the holotype; 14 ♂♂, 11 ♀♀, same locality as the holotype (fowl trap), 5. VI.—2. VII. 2006, M. YOSHIDA leg.; 1 ♂, 2 ♀♀, Mt. Tsurugi: Minokoshi—Nishijima, Tokushima, 26–29. VII. 2006, M. YOSHIDA leg.; 1 ♂, 2 ♀♀, Mt. Tsurugi: Minokoshi, Tokushima, 2. VII.—30. X. 2006, M. YOSHIDA leg.; 2 ♂♂, Mt. Tsurugi: Nishijima—Ôtsurugi, Tokushima Pref., 2–29. VII. 2006, M. YOSHIDA leg.; 1 ♂, 1 ♀, Okuyarito nr. Mt. Shinkurô, Kisawa, Tokushima Pref., 18. VI.—11. X. 2004, M. YOSHIDA leg.; 1 ♂, 2 ♀♀, Okuyarito (alt. 1,570 m, fowl trap), Kisawa, Tokushima Pref., 3–10. VIII. 2002, M. YOSHIDA leg.; 1 ♂, 1 ♀, Mt. Tsurugi, Minokoshi

(Fowl tap), 3. V.–5. VI. 2006, M. YOSHIDA leg.; 1 ♂, Mt. Takashiro, Kisawa-son, Tokushima Pref., 29. V.–19. VII. 2004, M. YOSHIDA leg.

*Notes.* This new species is similar in general appearance and male genitalia to *Proteinus shibatai* HAYASHI from Japan, but is easily distinguishable from the latter by having different structure of metatibiae, viz., in the latter species the metatibiae are rather strongly dilated apically and the male genitalia of the latter species are semilunate in the basal swelling. The present new species belongs to the *crassicornis* subgroup (HAYASHI, 1988) because of similar structure of male protarsi and male genitalia.

*Etymology.* The specific name is derived from its appearance somewhat similar to a nitidulid species.

*Proteinus awanus* sp. nov.

(Figs. 3, 16–21)

Body suboval, widest at about posterior third, moderately convex above, nearly black and shiny; pronotum with lateral and basal margins finely yellowish brown; mouth organs dark yellowish brown, antennae pale yellow in basal five or six segments and brownish in apical five or six ones; legs pale yellow. Length: 1.6–2.2 mm. Width: 0.8–0.9 mm.

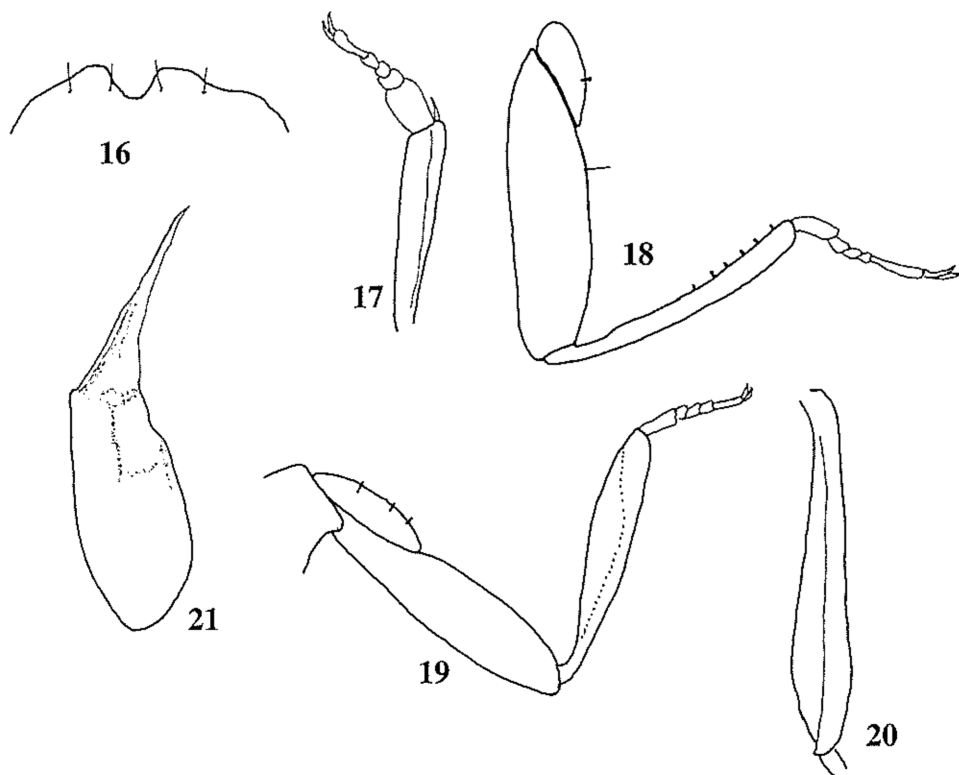
Male. Head transverse, nearly 7/10 as wide as pronotum, weakly convex above, with a pair of vague foveae besides vertex in occipital area, and the fovea with a peculiar pit at the center. Upper surface very sparsely and minutely punctured (only visible under hi-magnification), with strong reticulate microsculpture. Postgenae curved conjointly with eyes. Antennae rather long, extending near base of pronotum and markedly clavate in apical four segments; basal three and terminal segments a little longer than wide, 4th to 10th more or less transverse; 1st segment nearly as long as 2nd and twice as long as 3rd, which is much longer than 4th; 4th the shortest and slightly shorter than 6th; 5th slightly longer than 6th; 7th nearly as long as 5th and slightly longer than 8th; 8th to 11th segments longer and thicker than each preceding, and 11th a little longer than the preceding two segments combined together. Fourth segment of maxillary palpi subcylindrical.

Pronotum much wider than long (9 : 5), nearly 0.7 times as wide as and much shorter (5 : 13) than elytra, widest a little behind the middle; sides gently arcuate, gradually narrowed anteriorly from the widest point but slightly so posteriorly; front margin nearly straight, and basal one considerably arcuate and weakly emarginate in each lateral half; front angles widely rounded, and basal ones obtusely rounded; disc rather strongly convex, finely but distinctly bordered at all margins except for lateral parts of basal margin, very minutely and sparsely punctured, with strong microsculpture as on head, the punctures indiscernible by hi-magnification ( $\times 160$ ).

Mesosternum weakly convex subpentagonally in middle.

Elytra somewhat barrel-shaped, gently arcuate at sides, almost as long as wide, vaguely depressed behind scutellum along suture; latero-apical angles widely rounded, and





Figs. 16-21: *Proteinus awanus* sp. nov. — 16, Male 8th sternite; 17, male left fore leg, in dorsal view; 18, male right mid-leg, in ventral view; 19, male right hind leg, in ventral view; 20, male right metatibia, in dorsal view; 21, male genitalia, in lateral view.

sutural angles rather widely rounded; surface rather coarsely, sparsely and somewhat asperate-punctate, and interstices flat, without microsculpture. Wings well developed, functional.

Abdomen very minutely and sparsely punctured, with fine reticulate microsculpture, and the punctures finer than those on pronotum, with fine short pubescence; punctures on sternites a little larger than those on tergites; 7th tergite with whitish palisade seam at apical margin; 8th sternite (Fig. 16) shallowly and rather narrowly emarginate at the middle of hind margin.

Legs (Figs. 17-20) slender and rather short; prothorchanters small; profemora straight, gradually narrowed apicad; protibiae straight, gently thickened apicad and edged at latero-inferior margin; protarsi with 1st segment dilated, oblong, slightly longer than wide, nearly 1/4 as long as protarsal length, and relative lengths of protibiae and protarsi: 18 : 11. Mesothorchanters small, triangular, with one peg-seta; mesofemora weakly curved, not thickened

apicad; mesotibiae slender, gently arcuate, flattened on under face, edged at lateral margins of the face, and bearing about six peg-setae; relative lengths of mesotibia and mesotarsus: 13 : 6. Metatrochanters subfusiform, with three peg-setae; metafemora rather slender, straight; metatibiae nearly straight, considerably thickened apicad, thickest at about apical third, shallowly sulcate from base to apex internally, the sulcus gradually widened apicad; 1st metatarsomere as long as the following three segments combined together; relative lengths of metatibia and metatarsus: 23 : 15.

Male genitalia (Fig. 21) subfusiform in ventral view, weakly curved ventrad, without parameres, membranous on dorsum, nearly symmetrical, swollen in basal half, subconical in apical half and sharply pointed at the apex.

Female. Protibiae not thickened apicad; 1st segment of protarsi not dilated, short; meso- and metatrochanters without peg setae.

Holotype: ♂, Mt. Tsurugisan: Nishijima-Ôtsurugi, Tokushima Pref., Japan, 4. V.-5. VI. 2006, M. YOSHIDA leg. Paratypes: 6 ♂♂, 1 ♀, same data as the holotype; 1 ♂, same locality as the holotype, 2.-29.VII. 2006, M. YOSHIDA leg.; 1 ♂, Mt. Tsurugi: Ôtsurugi-Higashiiya, Tokushima Pref., 4. V.-5. VI. 2006, M. YOSHIDA leg.; 1 ♂, 2 ♀♀, Mt. Tsurugi: Ôtsurugi-Higashiiya 5. VI.-2. VII, 2006, Y. YOSHIDA leg.; 3 ♂♂, 1 ♀, Mt. Tsurugi: Mino-koshi-Nishijima, Tokushima, 4. V.-5. VI. 2006, M. YOSHIDA leg.; 1 ♀, Mt. Tsurugi: Mino-koshi, Tokushima Pref., 2. VII.-30. X. 2006, M. YOSHIDA leg.; 2 ♂♂, 1 ♀, Mt. Takamaruyama (fowl trap), Kamikatsu-chô, Tokushima Pref., 28. VIII.-25. X. 2006, M. YOSHIDA leg.; 1 ♂, Mt. Takashiro, Kisawa-son, Tokushima Pref., 25. V.-19. VII. 2004, M. YOSHIDA leg.; 3 ♂♂, 3 ♀♀, Okuyarito, nr. Mt. Shinkô, Kisawa, Tokushima Pref., 18. VII.-11. X. 2004, M. YOSHIDA leg.; 1 ♂, Mt. Jirôgyû, Kitô Naka-chô (1,560 m), Tokushima Pref., 25. X.-3. XI. 2006, M. YOSHIDA leg.

*Notes.* The new species is well similar in general appearance and male genitalia to *Proteinus ezoensis* HAYASHI from Japan, but easily distinguishable from the latter by having peg-setae on male meso- and metatrochanters, viz., in male of the latter species the meso- and metatrochanters do not bear peg-setae. The present species is also somewhat similar in structure of male genitalia to *P. laevigatus* HOCHHUTH from Europe, Russia and Turkmenistan, but in the latter species the meso- and metatibiae bear numerous tubercles. The present species belongs to the *ezoensis* subgroup (HAYASHI, 1988) because of having similar structure of male protarsi and male genitalia.

*Etymology.* The specific name is derived from the old name of its distributional area, Awa.

## 要 約

林 靖彦：四国産チビハバピロハネカクシの3新種。—— 日本産チビハバピロハネカクシはすでに7種が知られているが、今回3新種を報告する。本属の種はいずれも微小で、同定は非常に困難である。とくに雌はたがいにきわめてよく似ていて、さらに同定が

難しく、おもに雄の二次性徴で確実に同定しうる。

*Proteinus taichii* sp. nov. ツルギチビハバピロハネカクシ (新称) は、本属では大型の方で、*P. yoshidai* HAYASHI ヨシダチビハバピロハネカクシ (新称) に色彩、外部形態などがよく似ているが、後肢の特徴によって容易に区別できる。種名は、在野の研究者でありながら、自らの研究活動とともに、多くの若手研究者を育て上げられた故芝田太一氏の功績を偲んで献名した。

*P. nitiduloides* sp. nov. コゲチャチビハバピロハネカクシ (新称) の外部形態などは *P. shibatai* HAYASHI シバタチビハバピロハネカクシ (新称) によく似ているが、雄後肢、交尾器の形態によって区別できる。

*P. awanus* sp. nov. アワチビハバピロハネカクシ (新称) は *P. ezoensis* HAYASHI によく似ているが雄中脛節に数個の、後転節に3個の微棘のあることなどで区別できる。

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