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A REVISION OF THE GENUS PSYLLIODES LATREILLE IN JAPAN (CHRYSOMELIDAE: ALTICINAE)

By HARUO TAKIZAWA

Abstract

TAKIZAWA, H. 2005. A revision of the genus *Psylliodes* Latreille in Japan (Chrysomelidae: Alticinae). *Ins. matsum. n. s.* 62: 175–185, 11 Figs.

Eight species of the genus *Psylliodes* Latreille in Japan are keyed, and their habitus and male aedeagus are figured. *Psylliodes* (*Semicnema*) *reitteri parallela* Weise is recorded from Japan for the first time.

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Introduction

The genus *Psylliodes* Latreille is a large cosmopolitan group of the subfamily Alticinae and is now represented by about 200 species (Konstantinov & Vandenberg, 1996). They attack plants of some 30 families (Jolivet & Hawkeswood, 1995) but prefer Astenaceae, Chenopodiaceae, Solanaceae, Brassicaceae, Cannabaceae and Poaceae. As a consequence of this wide preference, a lot of species are known as agricultural pests. In Japan, too, *P. punctifrons*, *P. attenuata* and *P. angusticollis* attack crops of *Brassica*, *Cannabis* and *Solanum*, respectively. Adults are found feeding on host leaves nearby hervaceous and crop fields throughout from early spring to late autumn. Sometimes they are found on leaves of non-host trees, such as *Quercus*, *Vibrunum* etc. They hibernate in the adult stage among leaf litters. They are supposed to be uni- to multi-voltine, whose larvae are generally leaf-miners, stem-borers or rootlet feeders. The pupation takes place in the soil. Larvae of *P. angusticollis*, *P. attenuata* and *P. punctifrons* were described (Takizawa, 1994).

This genus is well characterized morphologically by 10-segmented antennae. The Japanese species were revised by Chûjô (1935) and Kimoto (1965, 1994), they recognizing 7 species in Japan. Recently an additional species, *P*. (*Semicnema*) *reitteri*, was collected in northern Japan. On this occasion I revised these eight species of the genus in Japan.

The specimens used will be deposited in the collection of the Laboratory of Systematic Entomology, Hokkaido University (SEHU), Sapporo.

Before going further I wish to acknowledge Mr. K. Ijima in Hokkaido, Dr. Y. Komiya in Tokyo, Dr. S. Ohmomo in Ibaraki and to Mr. A. Suzuki in Aomori for offering specimens of *P. reitteri*, and also Dr. A. Konstantinov in the U. S. National Museum of Natural History, Washington for the loan of specimens of *Semicnema* (loan No. 2029892), Dr. K. Yasuda in the Institute for Agro-Environmental Research, Tsukuba for the loan of Japanese *Psylliodes* specimens.

Genus Psylliodes Latreille, 1825

Fam. Nat. Regue Anim., p. 405 (type species: *Chrysomela chrysocephala* Linnaeus, 1758)–Chûjô, 1935, Trans. Nat. Hist. Soc. Formosa, 25 (145): 362–369–Kimoto, 1965, Jour. Fac. Agr., Kyushu Univ., 13: 362–369; 1994, Leaf beetles of Japan, vol. Adult, pp. 162–164, 244, 318–Konstantinov & Vandenberg, 1996, Handbook of Palearctic flea beetles, pp. 373–374.

Diagnosis. Body small and subcylindrical, narrowed to both ends, but almost subparallel-sided in the subgenus *Semicnema*; brownish to blue black with metallic luster; antennae filiform and 10-segmented; pronotum convex without impressions; procoxal cavity almost closed behind; elytra regularly punctate-striate; hind tibia with first tarsal segment joined to tibia subapically (subgenus *Psylliodes*), or almost medially (subgenus *Semicnema*). Male with first tarsal segment of fore leg more or less dilated; last abdominal sternite with subquadrate lobe at apex.

Key to Japanese species of the genus Psylliodes

1. Hind leg with first tarsal segment joined to tibia medially (Fig. 1:1e); labrum transverse and in

shape of inverted trapezoid (Fig. 1:1d) (subgenus *Semicnema* Weise); body narrow and elongate, subparallel-sided, flattened dorso-ventrally; pale reddish brown to yellowish brown, with head and hind femora apically dark brownish. ……..…. *P. reitteri parallela* Weise

– Hind leg with first tarsal segment joined to tibia much distally (Fig. 1:2e); labrum narrowed anteriorly as usual (Fig. 1:2d: subgenus *Psylliodes* Latreille). ……..…… 2

2 Head with distinct supra-frontal furrow behind obscure frontal tubercles (Fig. 1:2d): body small (2.2–2.5 mm) and narrow, dark cupreous with weak metallic greenish luster; aedeagus acutely produced at apex as in Fig. 1:2c. ….....…… *P. attenuata* Koch

– Head without such supra-frontal furrow..... 3

3 Elytral epipleuron finely granulate with fine hairs; body 2.2–3.2mm in length, dull bluish green with weak metallic luster; head and pronotum strongly punctate and granulate; elytra weakly granulate on interstices; aedeagus broadly triangular at apex as in Fig. 3:7c. ……..... ....…. *P. punctifrons* Baly

– Elytral epipleuron glabrous. ……..…. 4

4 Body 2.0–3.0 mm in length; pronotum rather rounded on lateral margins; disc much convex, densely punctate with interstices granulate; last abdominal sternite distinctly and broadly depressed before apex in male, longitudinally depressed along center in female; male with first tarsal segment of fore and middle legs strongly swollen; aedeagus curved down at apex as in Fig. 3:6c. ….....… *P. chujoe* Madar

– Pronotum more or less straight on lateral margins; last abdominal sternite simply convex, but in male *subrugosa* largely depressed as in male *chujoe*. ….....……. 5

5. Vertex impunctate; body smaller (2.2–2.8 mm); cupreous with slight greenish metallic luster; aedeagus acutely produced at apex as in Fig. 2:3c. ….....… *P. angusticollis* Baly

– Vertex distinctly punctate..... 6

6. Pronotum rather flat; disc usually much weakly punctate; interstices weakly granulate or sometimes smooth; blackish blue with metallic luster; aedeagus broadly truncate at apex with weak median notch as in Fig. 3:8c.....…*P. subrugosa* Jacoby

– Pronotum much convex; interstices always smooth; greenish blue to dark blue with strong metallic luster, sometimes cupreous. ……..…… 7

7. Pronotum more or less concave on lateral margins (Fig. 2:5a); venter and legs usually blackish blue with metallic luster, sometimes light brownish; aedeagus widened behind middle as in Fig. 2:5c. ……..…… *P. brettinghami* Baly

– Pronotum rather straightly narrowed anteriorly on lateral margins (Fig. 2:4a); venter and legs usually light reddish brown; aedeagus subparallel-sided medially as in Fig. 2:4c. ……..…… *P. balyi* Jacoby

Psylliodes (*Semicnema*) *reitteri parallela* Weise
(Figs. 1 & 4)

Psylliodes reitteri Weise, 1888, Naturgesch. Ins. Deutsch. Col. VI (Chrysom.): 784, 792–
Heikertinger, 1934, Kol. Rundschau, 20: 129 (Biology).

Psylliodes parallela Weise, 1890, Deutsch. Ent. Zeitschr., 1890: 366.

Psylliodes reitteri parallela: Lopatin, 1984, Leaf beetles of Central Asia and Kazakhstan (English version): 367–368.

Diagnosis. Body elongate and subparallel-sided, almost 2.5 times as long as wide, 2.8–3.1 mm in length; lustrous yellowish brown; head, antennae on apical segments and hind femur on apical half dark brown; male with first tarsal segment of fore and middle legs distinctly dilated; male aedeagus as in Fig. 1:1c; female with last abdominal segment flat and simply produced posteriorly.

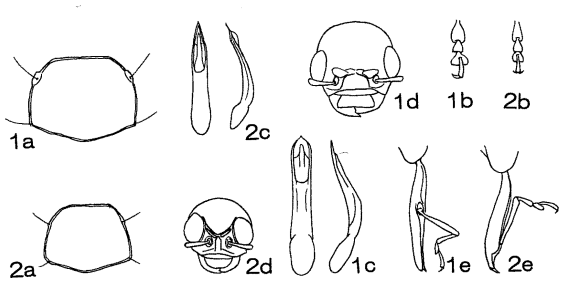


Fig. 1. *Psylliodes reitteri parallela* (1) and *P. attenuata* (2): a, pronotum; b, male fore tarsus; c, male aedeagus (right: dorsal view, left: lateral view); d, head; e, hind tarsus.

Distribution: Japan (Hokkaido); Turkestan, Kazakhstan, Uzbekistan, Kirgizia, Mongolia and Southern Russia.

Specimens examined. Hokkaido–1 ex., Nakaosobetu, Sibetya, Kusiro, 12.VIII.2000, I. Nagama leg.; 1 ex., Toyoti-ohasi, Kitami, 8.VII.1989, K. Ijima leg.; 1 ex., Riv. Yubetu, Engaru, 19.VII.1988, S. Ohmomo leg.; 15 exs., Sizukawa, Tomakomai, 27.VII.2001, A. Suzuki leg. Mongolia–3 exs., data unavailable.

Remarks. Among Japanese congeners, this species is easily distinguished by yellowish brown coloration and body shape. This species has been recorded from Southern Russia, Central Asia and Mongolia, and is recorded from Japan for the first time. So far this was collected in somewhat moist grassy field in lowland Hokkaido and at Sizukawa was associated with *Solidago altissima* community. Lopatin (1984) reported its host as *Phragmites* sp. The subspecies *reitteri* Weise from east Europe is characterized by blackish blue coloration. While *P. macella* Weise from Southern Siberia is smaller and blackish blue, with first antennal segment much longer than either 2nd or 3rd.

Psylliodes (*Psylliodes*) *angusticollis* Baly
(Figs. 2 & 5)

Psylliodes angusticollis Baly, 1874, Trans. Ent. Soc. Lond., 1874: 209 (Japan: Nagasaki)–Kimoto, 1994, Leaf beetles of Japan, vol. Adult, pp. 163–164, 244, 318.

Psylliodes angusticollis rishirensis Chûjô, 1959, Mem. Fac. Lib. Arts and Educ., Kagawa Univ., 2 (81): 15 (Japan: Risiri Is.)–Kimoto, 1965, Jour. Fac. Agr., Kyushu Univ., 13 (3): 410 (synonymized).

Psylliodes angusticollis loochooana Chûjô, 1961, Pub. Ent. Lab., Univ. Osaka Pref., 6: 90 (Amami-osima: Naze)–Kimoto, 1965, ibid., 13 (3): 410 (synonymized).

Diagnosis. Body smaller (2.2–2.8 mm); dark cupreous with weak metallic greenish luster, sometimes with greenish blue luster; antennae, tibiae and tarsi brown; head without distinct furrow behind obscure frontal tubercles; vertex impunctate and finely granulate; pronotum sparsely to moderately punctate, with interstices smooth or finely granulate. Male with last abdominal sternite simple with subquadrate lobe at apex; first tarsal segment of fore and middle legs weakly dilated; aedeagus broadly produced at apex as in Fig. 2:3c.

Distribution. Japan (Hokkaido, Risiri Is., Honsyu, Sado Is., Hatizyo Is., Sikoku,

Kyusyu, Tusima Is., Yakusima Is., Tokara Is., Amami-osima Is., Okinawa Is., Ogasawara Is.); Taiwan, Korea and Sakhalin.

Host plants. *Solanum nigrum*, *S. tuberosum*, *S. meritensis*, *S. maximowiczii*, *Lycopersicon esculentum* and *Nicotiana tabaccum*.

Remarks. This species is widely distributed and is known as a minor pest of *Solanum tuberosum* and *S. meritensis* in Japan. Its biology was reported by Akiyama (1982). Larvae are roots-borer of *S. meritensis*. Specimens from the following localities were examined: Hokkaido–Mt. Daisetusan, Hamatonbetu, Kitami, Memuro, Nukabira, Siriuti in Osima. Honsyu–Totigi (Itaga, Motegi, Nanma, Nasu Takaku, Nisinasuno, Mt. Tyausu, Yokokawa), Gunma (Kawahuru-onsen), Ibaraki (Isohara, Moriya, Mt. Tukuba, Yatabe), Saitama (Edogawa in Syowa-mati, Mt. Izugatake, Komagawa, Ogose, Mt. Takekawa), Tokyo (Goten-yama, Komaba, Kori in Okutama, Nippara, Suginami, Sugo, Tyohu, Zinba-san), Tiba (Inage), Kanagawa (Aobadai, Enkai-san, Hatano, Minami-Asigara, Nagara in Hayama, Narasawa, Ogino, Mt. Oyama, Mt. Sekiro-yama), Sizuoka (Mt. Amagi-san, Izu Iruma), Yamanasi (Masutomi), Nagano (Simosuwa), Simane (Muika-mati), Okayama (Kagamino-mati). Kyusyu–Hukuoka (Mt. Hiko-san, Mt. Hiraodai, Mt. Korasan), Oita (Nakatu), Nagasaki (Mt. Yahirodake), Kagosima (Mt. Ebosi, Sata-misaki). Ryukyu Is.–Amami-osima Is. (Sumiyo-son, Yamato-son), Okinoerabu Is. (Tina), Okinawa Is. (Hyakuna, Naha); Taiwan (Chitou, Sungkang, Tongpu, Tsuifeng).

Psylliodes (*Psylliodes*) *attenuata* (Koch)
(Figs. 1 & 6)

Haltica attenuata Koch, 1803, Ent. Heft, 2: 34, pl. 2, Fig. 10 (Europe).

Psylliodes japonica Jacoby, 1885, Proc. Zool. Soc. Lond., 1885: 740 (Japan: Sapporo)–Kimoto, 1965, Jour. Fac. Agr., Kyushu Univ., 13 (3): 410 (synonymized).

Psylliodes attenuata: Weise, 1888, Ins. Deutschl. Col. VI (Chrysom.): 787, 801–Kimoto, 1994, Leaf beetles of Japan, vol. Adult, pp. 163, 244, 318.

Diagnosis. Body smaller (2.2–2.5 mm); dull cupreous with weak metallic greenish luster; antennae, tibiae and tarsi brown; vertex impunctate and finely granulate; frontal tubercles distinctly delimited behind by sharp narrow furrow; pronotum densely punctate with interstices granulate. Male with last abdominal sternite simply convex; first tarsal segment of fore and middle legs weakly dilated; aedeagus triangularly produced at apex as in Fig. 1:2c.

Distribution. Japan (Hokkaido, Honsyu, Sado Is., Hekura Is., Sikoku, Kyusyu); Korea, Siberia and Europe.

Host plants. *Cannabis sativa*, *Humulus japonicus* and *H. lupulus* var. *cordifolius*.

Remarks. This species is widely and commonly distributed in Japan and feeds on *Humulus japonicus*. Its biology and larvae were reported by Takizawa (1994). Specimens from the following localities were examined: Hokkaido (Sapporo, Kunneppu). Honsyu –Aomori (Oirase), Miyagi (Sitigasyuku), Hukusima (Takikawa Dam), Totigi (Itaga, Hazama, Kohukabori, Matuda, Nakusa-gawa, Nanma, Nasu Takaku, Nasu Toyohara, Oyama, Mt. Takadate-yama, Watarase-yusuiti, Yokokawa, Zyomin-yukari), Gunma (Itakura-mati, Karasu-gawa), Ibaraki (Aso-mati, Hanazono-yama, Hokota-mati, Niihari-mura, Kitaura-mura, Riv. Kokaigawa in Mooka and Simodate, Takahagi, Toride),

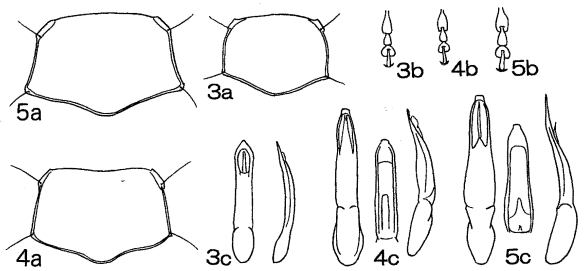


Fig. 2. *Psylliodes angusticollis* (3), *P. balyi* (4) and *P. brettinghami* (5): a, pronotum; b, male fore tarsus; c, male aedeagus (right: dorsal view, left: lateral view).

Saitama (Mt. Kasayama, Kita-adati, Komagawa, Siki, Syowa-mati), Tokyo (Aihara, Riv. Arakawa, Komaba, Nisigahara, Koremasa, Meziro, Mt. Mito-san, Onita in Ome, Mt. Takao-san, Riv. Tamagawa in Akiruno, Tyohu), Kanagawa (Aobadai, Atugi, Bukka-san, Bodai, Enkai-san, Hatano, Mt. Kyogatake, Nakai, Narasawa, Ogino, Mt. Oyama, Mt. Sekiro-yama, Seya, Sitikoku-toge), Tiba (Inage, Noda), Yamanasi (Akeno-mura), Sizuoka (Mt. Asitaka-yama, Huzinomiya, Kannami), Okayama (Kagamino-mati).

Psylliodes (*Psylliodes*) *balyi* Jacoby
(Figs. 2 & 7)

Psylliodes balyi Jacoby, 1884, Notes Leyden Mus., 6: 30 (Sumatra)–Scherer, 1969, Pacif. Ins. Monogr. 22: 237–Kimoto, 1994, Leaf beetles of Japan, vol. Adult, pp. 163, 244, 318.

Psylliodes brettinghami: Kimoto, 1965, Jour. Fac. Agr., Kyushu Univ., 13 (3): 408 (Amami Osima, Okinawa, Isigaki).

Diagnosis. Body 2.8–3.2 mm in length; metallic blue with strong greenish luster; antennae blackish with 3 basal segments yellow; venter and legs light reddish brown; vertex finely punctate; pronotum straightly narrowed anteriorly on lateral margins (Fig. 2:4a); disc densely punctate, with smooth interstices. Male with last abdominal sternite rather flat at the base of round median lobe; aedeagus subparallel-sided, produced subquadrately at apex as in Fig. 2:4c.

Distribution. Ryukyu Is. (Tokara Is., Amami-osima Is., Okinoerabu Is., Okinawa Is., Miyako Is., Isigaki Is., Iriomote Is., Yonaguni Is., Senkaku Is.); Taiwan, S. China, Vietnam, Philippines, Sumatra, Bali Is.

Host plants. *Solanum nigrum.*

Remarks. The population occurring in Ryukyu Is. is characterized by metallic greenish body with light reddish brown venter and legs. Some local populations of *P. brettinghami* have similar color form characterized by metallic blue, or greenish dorsum with bright reddish brown venter and legs. But the difference in the shape of male aedeagus and of intercoxal process of the first abdominal segment, and smaller body size are sufficient to distinguish both the species. Specimens of Taiwan referred to *P. balyi* by myself (Takizawa, 1979) belongs to an undetermined species. So the figure of male aedeagus in my paper which was subsequently quoted by Kimoto (1994) is not corresponding to *P. balyi*. Specimens from Amami-osima Is. (Gusuku, Nisinakama, Sinmura), Isigaki Is. (Banna-dake, Kabira), and Iriomote Is. (Komi, Sirahama–Sonae) of

Ryukyu Is. were examined.

Psylliodes (*Psylliodes*) *brettinghami* Baly
(Figs. 2 & 8)

Psylliodes brettinghami Baly, 1862, Jour. Ent., 1: 457 (India)–Kimoto, 1994, Leaf beetles of Japan, vol. Adult, pp. 163, 244, 318.

Psylliodes difficilis Baly, 1874, Trans. Ent. Soc. Lond., 1874: 210 (Japan: Nagasaki)–Scherer, 1969, Pacif. Ins. Monogr. 22: 238 (synonymized).

Psylliodes cucurbitae Gressitt, 1955, Ins. Micronesia, 17 (1): 42, Fig. 14 (Bonin Is.: Titi-zima, Volcano Is.)–Kimoto 1965, Jour. Fac. Agr., Kyushu Univ., 13 (1): 409 (synonymized).

Diagnosis. Body larger, 2.8–4.0 mm in length; coloration variable from blackish blue to dark cupreous, with metallic blue or greenish luster, to blackish brown; legs dark brown to blackish brown except for dark metallic femora; antennae dark brown except for 3 basal segments yellowish brown; venter and legs sometimes bright reddish brown; vertex shallowly but densely punctate; pronotum more or less concave on lateral margins (Fig. 2:5a); disc densely punctate with smooth interstices. Male with last abdominal sternite somewhat convex at the base of round median lobe; first tarsal segment of fore and middle legs distinctly dilated; aedeagus widened behind middle, produced subquadrately at apex as in Fig. 2:5c.

Distribution. Japan (Honsyu, Sado Is., Sikoku, Kyusyu, Tusima Is., Ryukyu Is.: Tokara Is., Amami-osima Is., Okinoerabu Is., Okinawa Is., Miyako Is., Isigaki Is., Iriomote Is., Yonaguni Is., Senkaku Is., Ogasawara Is.: Titi-zima, Haha-zima, Iwo-zima; Southern China, Taiwan, Indo-China, Malaya, Indonesia, Philippines, Burma, India, Nepal, Australia, Oceania.

Host plants. *Solanum nigrum*, *S. meritensis*, *S. tuberosum* and *Physaliastrum japonicum*.

Remarks. This species is widely distributed and shows considerable color variation. The population of Ogasawara Is. are generally dark cupreous with slight metallic luster. Specimens from the following localities were examined: Honsyu–Ibaraki (Kitaura-mura, Niihari-mura), Saitama (Hasuda-si, Syowa-mati), Tokyo (Akabane, Komaba, Ueno), Tiba (Heguri-gawa, Kanaya), Kanagawa (Daiyu-zan, Enkai-san, Hatano, Mt. Myozyo-dake, Ogino, Mt. Oyama, Sagamihara, Sitikoku-toge), Gunma (Akagi-zinzya), Sizuoka (Mt. Amagi-san, Izu Iruma, Izu Okawa), Gihu (Takayama), Tottori (Akamatu in Daisen-tyo), Okayama (Kagamino-mati, Okutu-mati), Yamaguti (Aoyama in Simonoseki). Kyusyu–Hukuoka (Mt. Hiko-san, Mt. Inunaki-yama, Mt. Kora-san), Oita (Nakatu), Kagosima (Mt. Ebosi, Sata-misaki, Siroyama in Kagosima, Mt. Takatiho). Ryukyu Is.–Amami-osima Is. (Sumiyo-son), Okinawa Is. (Yona), Iriomote Is. (Sirahama–Sonae). Ogasawara Is. –Titi-zima (Ogamiyama-park), Iwo-zima; Taiwan (Chitou, Kuangyinshan, Tongpu, Yangmingshan), Indonesia (Bali Is., Sumatra: Brastagi, Dolok Balus, Mt. Sibuatang).

Psylliodes (*Psylliodes*) *chujoe* Madar
(Figs. 3 & 9)

Psylliodes chujoe Madar, 1960, Mushi, Fukuoka, 33 (7): 48, Fig. (Japan: Mt. Hikosan)–Kimoto, 1994, Leaf beetles of Japan, vol. Adult, pp. 163, 244, 318.

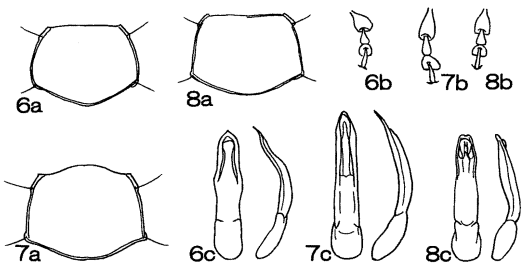


Fig. 3. *Psylliodes chujoe* (6), *P. punctifrons* (7) and *P. subrugosa* (8): a, pronotum; b, male fore tarsus; c, male aedeagus (right: dorsal view, left: lateral view).

Diagnosis. Body smaller, 2.0–3.0 mm in length; blackish blue with dull metallic luster; antennae and legs dark brownish; tarsi contrastingly light brownish against dark tibia; pronotum convex, densely punctate on disc, with interstices strongly granulate. Male with last abdominal sternite broadly depressed medially; aedeagus gently narrowed to apex as in Fig. 3:6c; female with last abdominal sternite longitudinally depressed along center.

Distribution. Japan (Hokkaido, Honsyu, Sikoku, Kyusyu, Tusima Is.).

Host plants. *Cardamine anemonoides*.

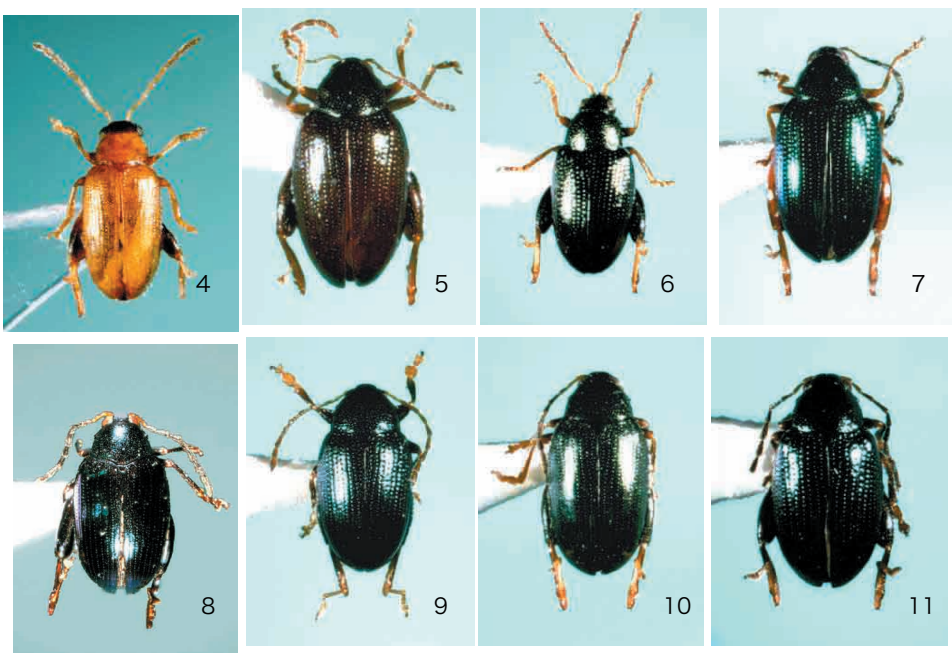
Remarks. This species is recorded from Hokkaido for the first time. One specimen collected at Bihuka-tyo, northern Hokkaido is characteristic in dull blackish coloration. A lot of adults were observed feeding on *Cardamine anemonoides* at Kagamino-mati, Okayama. Specimens from the following localities were examined: Hokkaido (Atuma-dam, Bihuka-tyo, Sapporo, Sibetu, Mt. Soranuma-dake, Kitami, Zenibako-toge). Honsyu–Miyagi (Sitigasyuku), Hukusima (Takikawa Dam), Totigi (Dorobu, Nanma, Nasu Toyohara, Syozin-zawa, Mt. Sukai-san, Yunisikawa), Tokyo (Mt. Mitake, Okutama-ko, Takao-san), Kanagawa (Ogino), Nagano (Mt. Moriya-san, Simosuwa), Kyoto (Kibune), Toyama (Nozumi-gawa), Okayama (Kagamino-mati). Kyusyu–Hukuoka (Mt. Hiko-san).

Psylliodes (*Psylliodes*) *punctifrons* Baly
(Figs. 3 & 10)

Psylliodes punctifrons Baly, 1874, Trans. Ent. Soc. Lond., 1874: 209 (Japan: Nagasaki)–Kimoto, 1994, Leaf beetles of Japan, vol. Adult, pp. 163, 244, 318.

Diagnosis. Body 2.2–3.2 mm in length; dark cupreous with slight greenish to blackish blue luster; antennae and legs brownish, except for hind femora largely dark cupreous ; antennae sometimes dark brownish except for 2 or 3 basal segments; vertex densely punctate with interstices granulate; pronotum subquadrate and weakly narrowed anteriorly; disc densely punctate with interstices granulate; elytra finely but distinctly granulate; elytral epipleuron finely granulate with fine hairs. Male with last abdominal segment distinctly tri-lobed; first tarsal segment of fore and middle legs strongly dilated; aedeagus gently curved in lateral view as in Fig. 3:7c.

Distribution. Japan (Hokkaido, Honsyu, Awa-sima Is., Miyake Is., Hatizyo Is.,



Figs 4–11. (4) *Psylliodes reitteri parallela* (male from Sizukawa, Hokkaido); (5) *Psylliodes angusticollis* (male from Tina, Okinoerabu Is.); (6) *Psylliodes attenuata* (male from Ogino, Kanagawa); (7) *Psylliodes balyi* (male from Banna-dake, Isigaki Is.); (8) *Psylliodes brettinghami* (male from Sinmura, Amami-osima Is.); (9) *Psylliodes chujoe* (male from Kagamino-mati, Okayama); (10) *Psylliodes punctifrons* (male from Riv. Hayakawa, Kanagawa); (11) *Psylliodes subrugosa* (male from Nasu Toyohara, Totigi)

Kanmuri-zima Is., Sikoku, Kyusyu, Tusima Is., Danzyo Is., Kosiki-zima Is.); China, Korea, Taiwan.

Host plants. *Cardamine anemonoides*, *Brassica chinensis*, *B. napus* and Cruciferous crops.

Remarks. Biology of this species was reported by Yanagi & Sekiya (1954) and its larva was described by Takizawa (1994). Specimens from the following localities were examined: Hokkaiko (Kitami, Memuro, Nukabira, Oketo-mati, Sapporo, Simamatu, Tesio). Honsyu–Aomori (Rokkasyo-mura, Towada-ko), Niigata (Hakka-toge), Gunma (Riv. Agatuma-gawa, Miyagi-mura), Totigi (Itaga, Kirihuri, Motegi, Nanma, Nasu Takaku, Nasu Toyohara, Oyama, Mt. Tyausu, Watarase-yusuiti), Ibaraki (Aso-mati, Kitaura-mura, Toride, Mt. Tukuba), Saitama (Hasuda-si, Mt. Kasayama, Syowa-mati), Tokyo (Akabane, Inagi-si, Kori in Okutama, Ome, Setagaya, Takao-san), Kanagawa (Bodai, Enkai-san, Hatano, Riv. Hayakawa, Mimasu-toge, Minami-Asigara, Nakai, Ogino, Mt. Sekiro-yama, Yamakita, Zusi), Sizuoka (Kozu, Okabe-mati, Susono-si), Tiba (Nagareyama, Tikura), Siga (Yokkaiti-si), Okayama (Kagamino-mati, Okutu-mati, Tuyama-si). Sikoku–Kagawa (Mt. Otaki-san, Mt. Ryuo-san), Tokusima (Yamakawa-tyo). Kyusyu–Hukuoka (Mt. Hiko-san, Mt. Kora-san, Yosii-mati), Miyazaki (Mt. Takatiho), Kagosima (Mt. Ebosi-dake, Mt. Takatiho).

Psylliodes (*Psylliodes*) *subrugosa* Jacoby
(Figs. 3 & 11)

Psylliodes subrugosa Jacoby, 1885, Proc. Zool. Soc. Lond., 1885: 739 (Japan: Hakodate)–Kimoto, 1994, Leaf beetles of Japan, vol. Adult, pp. 163, 244, 319.

Psylliodes intermedia Jacoby, 1885, ibid.: 739 (Japan: Otu)–Chûjô & Kimoto, 1961, Pacif. Ins. 3 (1): 191 (synonymized).

Psylliodes mitchyi Chûjô, 1951, Trans. Shikoku Ent. Soc. 2 (3): 44, Fig. 4 (Japan: Mt. Turugi-san in Tokusima Pref.)–Chûjô & Kimoto, 1961, Pacif. Ins. 3 (1): 191 (synonymized).

Diagnosis. Body 2.4–3.0 mm in length; blackish blue with metallic luster; antennae and legs dark brown with femora blackish blue; basal segments of antennae and tarsi lighter brown; vertex densely punctate with interstices finely granulate; pronotum subquadrate, slightly narrowed anteriorly; disc rather flat compared to *P. chujoe*, densely punctate with interstices distinctly granulate; sometimes interstices almost smooth. Male with last abdominal sternite broadly depressed medially; first tarsal segment of fore and middle legs strongly dilated; aedeagus broadly truncate with a small notch apically as in Fig. 3:8c.

Distribution. Japan (Hokkaido, Risiri Is., Honsyu, Hatizyo Is., Sikoku, Kyusyu, Tusima Is., Yakusima Is., Ryukyu Is.: Amami-osima Is., Kume-zima Is., Miyako Is., Yonaguni Is.); China.

Host plants. *Rorippa indica*, *R. islandica* and Cruciferae weeds.

Remarks. This species is widely and commonly distributed in lowland Japan, feeding on *Rorippa islandica* nearby paddy-rice fields. The coloration of the dorsum seems somewhat variable. Two specimens collected at Itomuka, northeastern Hokkaido are characteristic in blackish body without metallic luster. Specimens from the following localities were examined: Hokkaido (Mt. Daisetu-san, Itomuka, Sapporo, Tesio). Honsyu –Aomori (Nurukawa, Sasanai), Akita (Karinome, Omagari), Hukusima (Mt. Arakai, Inawasiro, Takikawa Dam, Tateiwa-mura), Gunma (Mt. Haruna, Miyagi-mura, Numata), Totigi (Kita-onsen, Kohukabori, Nanma, Nasu Takaku, Ohira-mati, Mt. Takadate-yama, Tanuma, Tyuzenzi, Watarase-yusuiti, Yokokawa, Zyomin-yukari), Saitama (Mt. Kasayama, Komagawa, Mt. Omoti-san, Syowa-mati, Yorii), Tokyo (Akabane, Akiruno, Hatiozi, Hiramizo-gawa and Onita in Ome, Inada-noborito, Inagi-si, Katusika, Kobotoke, Komaba, Mikawa-zima, Mt. Mitake, Nerima, Siromaru, Takao-san, Usigome), Kanagawa (Hatano, Ogino, Zusi), Sizuoka (Mt. Asitaka-yama, Huzinomiya, Izu Okawa, Naka-izu, Okabe-mati), Nagano (Simasima, Simosuwa, Sirakaba-ko, Torii-gawa), Hukui (Mt. Hoonzi), Gihu (Osato-gawa, Takayama), Siga (Mt. Ibuki-yama), Kyoto (Kyoto-si), Okayama (Kagamino-mati, Okutu-mati), Yamaguti (Outi-mura). Sikoku–Kagawa (Kagawa-mati, Mt. Otaki-san, Zentuzi). Kyusyu–Hukuoka (Mt. Hiko-san, Mt. Hiraodai, Mt. Korasan, Obase-mati), Oita (Mt. Kuzyu-san, Nakatu), Saga (Haruda), Miyazaki (Mt. Sobo-san), Kagosima (Mt. Ebosi-dake, Mt. Takatiho).

References

Akiyama, Y. 1982. [Injuries on potatoes caused by *Psylliodes angusticollis*]. Kongetsu-no-noyaku, 26: 2–7 (in Japanese).

Chûjô, M. 1935. Studies on the Chrysomelidae in the Japanese Empire VIII. Trans. Nat.

Hist. Soc. Formosa, 25 (145): 354–369.
Jolivet, P. & T. J. Hawkeswood. 1995. Host plants of Chrysomelidae of the world. Backhuys Publ., London, 281 pp.
Kimoto, S. 1965. The Chrysomelidae of Japan and the Ryukyu Islands. VIII. Subfamily Alticinae I. Jour. Fac. Agr., Kyushu Univ., 13: 402–429.
Kimoto, S. 1994. Leaf beetles of Japan. vol. Adult, 364 pp., Tokai Univ. Press, Tokyo.
Konstantinov, A. S. & N. J. Vandenberg. 1996. Handbook of Palearctic flea beetles (Coleoptera: Chrysomelidae: Alticinae). Associated Publ., Gainesville, 439 pp.
Lopatin, I. K. 1984. Leaf beetles of Central Asia and Kazakhstan (English version). 416 pp., Oxonian Press, New Delhi.
Takizawa, H. 1979. Notes on Taiwanese Chrysomelidae, III. Kontyu, Tokyo, 47: 340–351.
Takizawa, H. 1994. Leaf beetles (Chrysomelidae) of Japan. vol. Larva. pp. 368–539, Tokai Univ. Press, Tokyo.
Yanagi, T. & I. Sekiya. 1954. [Studies on biology and control of *Psylliodes punctifrons*]. Oyo-kontyu, 9: 151–156 (in Japanese).