

ANNOTATIONES ZOOLOGICAE JAPONENSES

Volume 45, No. 1—March 1972

Published by the Zoological Society of Japan

New Dytiscid Beetles from Japan*

With 14 Text-figures

Masataka SATÔ

Biological Laboratory, Nagoya Women's University, Nagoya 467, Japan

ABSTRACT In the present paper, seven dytiscid species are reported from Japan (including the Ryukyus). Four of them are described as new species: *Microdytes* (*Microdytes*) *uenoi* sp. nov., *Microdytes* (*Nipponhydrus*) *bimaculatus* sp. nov., *Uvarus* *tokarensis* sp. nov. and *Laccophilus* *chibi* sp. nov. Two others are described as new subspecies: *Coelambus impressopunctatus hiurai* subsp. nov. and *Hygrotus inaequalis hokkaidensis* subsp. nov. *Japanolaccophilus* gen. nov. is erected for receiving the remaining species, *Neptosternus niponensis* Kamiya.

Since the basic study was made by Sharp (1873, '84) on the Japanese species of water beetles, the dytiscid fauna of Japan has been re-examined and amplified by Takizawa (1932, '33), Kamiya (1938), Nakane (1959-'65) and others. A thorough revision of the family is, however, necessary for the inclusion of new knowledge obtained through recent collectings and progress in dytiscid taxonomy. I am therefore going to give the latest results of my studies on the family. The materials used in the present paper were taken at various localities in the mainland of Japan and in the Ryukyus. One of the new species was discovered by Dr. S.-I. Uéno in the Island of Iriomote-jima during the field survey of the U.S.-Japan Co-operative Science Program.

Microdytes (*Microdytes*) *uenoi* M. Satô, sp. nov.

Body hemispherical, well convex, polished. Colour reddish brown; basal portions of elytra transversely, mouth-parts, antennae, front and middle legs, prosternum and propleura yellowish brown; metasternum, metacoxae and abdomen blackish brown.

Head about 2.2 times as broad as long; surface obsoletely microreticulated and with minute scattered punctures; clypeus rounded in front. Pronotum about 3.1 times as broad as long, broadest at the base which is about 1.4 times as broad

* This study was supported in part by a Grant from the Tōkai Gakujutsu Shoreikai in 1970.

as anterior breadth; sides rounded and narrowed anteriorly; surface smooth, mostly with fine scattered punctures which are a little more distinct than those on head, provided with a series of punctures along the anterior margin and with a group of punctures along the posterior margin, which are somewhat close and distinct. Elytra about 1.2 times as broad as pronotum, nearly as long as broad, broadest at the basal third; sides rounded; surface smooth, with minute scattered punctures which are nearly the same as those on head.

Ventral surface polished, with minute punctures which are finer than those on elytra; abdomen provided with fine reticulation, second and third segments bearing some setiferous punctures at the middle, hairs on the third being long. Prosternal process conspicuously swollen apically, with rounded tip. Claws of hind leg unequal, simple, longer one about as long as the fifth joint of tarsi.

Male genitalia: median lobe slender, converted Y-shaped in dorsal aspect; apex provided with fine pubescence, basal portion somewhat large, apical portion slender; parameres larger than median lobe, elongate, pubescent all over, their apices triangularly pointed.

Length: 1.43–1.57 mm; breadth: 1.00–1.07 mm.

Holotype: ♂, Shirahama, Iriomote-jima Is., Oct. 10, 1963, S.-I. Uéno leg. (in coll. Natn. Sci. Mus. Tokyo); paratypes: 7♂, 6♀, same data as the holotype (in coll. Natn. Sci. Mus. Tokyo, Ent. Lab. Ehime Univ. and M. Satô); 1♀, same locality as the holotype, July 27, 1965, M. Yasui leg. (in coll. T. Shibata).

Distribution: Ryukyus (Iriomote-jima Is. of the Yayeyama-guntô).

This new species can easily be distinguished from *M. (M.) maculatus* (Motschulsky) by the smaller body, the inconspicuously punctate elytra having no markings, and the impunctate metasternum and metacoxae.

Dr. Uéno's specimens of the present species are said to have been found among

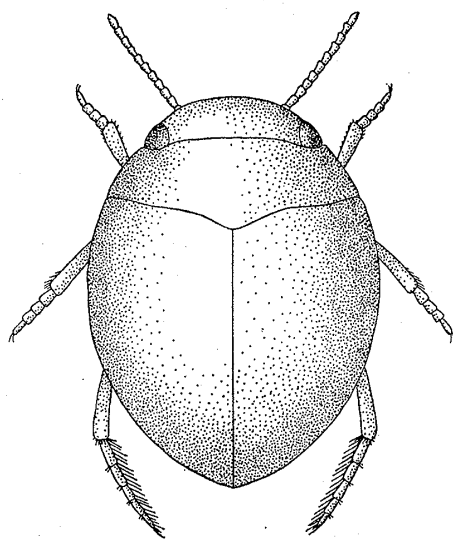


Fig. 1. *Microdytes (Microdytes) uenoi* M. Satô, sp. nov.

dead leaves at the bottom of shallow, nearly stagnant water near the head of a very narrow stream.

Microdytes (Nipponhydrus) bimaculatus M. Satô, sp. nov.

Microdytes sp.: M. Satô, 1961, Akitu, Kyoto, 10: 7 (Amami-Ôshima Is.).

Body oval, moderately convex at the sides, but more or less flattened on the disk, shining; dorsal surface black, ventral surface dark brown to black; head, lateral sides of pronotum narrowly and subquadrate marking of elytra brown to yellowish brown; antennae, mouth-parts and legs brown to dark brown.

Head about 1.9 times as broad as long; surface finely microreticulated on the anterior half, but smooth on the posterior half, which is obsoletely and very sparsely punctate, provided with a series of punctures along the inner side of each eye. Antennae slightly biserrate. Pronotum about 2.7 times as broad as long, broadest at the base which is about 1.3 times as broad as anterior breadth; sides rounded and narrowed anteriorly; surface distinctly and sparsely punctate on the central area, somewhat closely so on the anterior and posterior areas along the margins, the punctures at the posterior corner more or less longitudinally rugose; integument smooth. Elytra about 1.2 times as broad as pronotum, about 1.1 times as long as broad, broadest at basal two-fifths; sides rebordered and gently rounded; surface uniformly scattered with very fine punctures; each elytron with a subquadrate marking at the base near shoulder; integument smooth.

Prosternal process distinctly dilated towards apex, with bluntly pointed tip, its surface rugosely punctate. Metasternum strongly and sparsely punctate, but

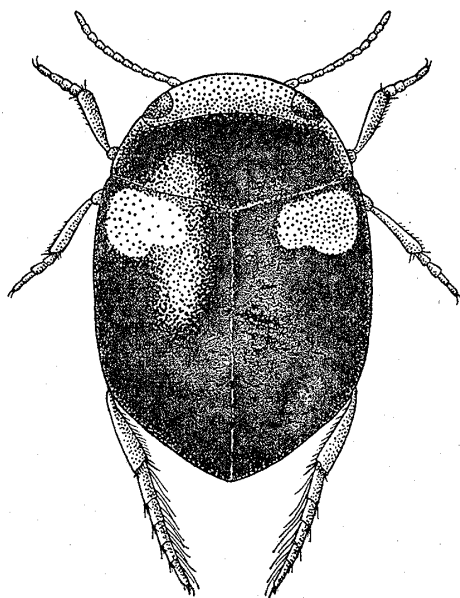
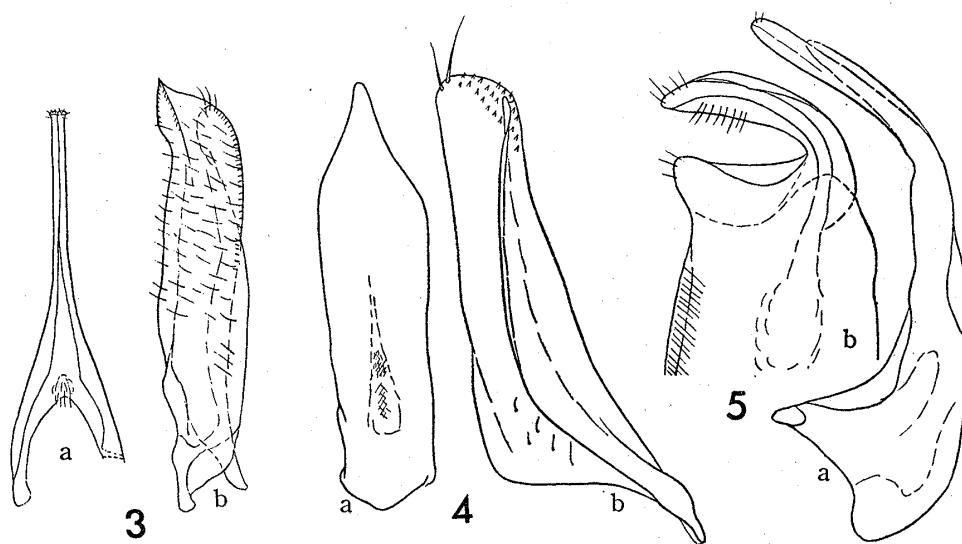


Fig. 2. *Microdytes (Nipponhydrus) bimaculatus* M. Satô, sp. nov.

closely punctate on the wings. Metacoxae sparsely and somewhat distinctly punctate; lamina closely punctate; coxal line well defined. Abdomen finely and very sparsely punctate; visible second, third and fourth segments each provided with a group of punctures at the middle, those on the second bearing short hairs and those on the third and fourth bearing long hairs, third and fourth segments each provided with a transverse stria along the posterior margin. Legs finely microreticulated. Claws of hind leg unequal, inner claw about 1.4 times as long as the outer, fifth metatarsal joint about 1.6 times as long as the longer claw.

Male genitalia: median lobe stout, abruptly narrowed near the apex in dorsal aspect; parameres larger than median lobe, each bearing two long setae and some small stylets at the apical portion.

Length: 2.47–2.50 mm; breadth: 1.67–1.70 mm.



Figs. 3–5. Male genitalia: median lobe (a) and paramere (b).—3. *Microdytes (Microdytes) uenoi* M. Satô, sp. nov.—4. *Microdytes (Nipponhydrus) bimaculatus* M. Satô, sp. nov.—5. *Uvarus tokarensis* M. Satô, sp. nov.

Holotype: ♂, Mt. Ohyama, Okino-erabu-shima Is., Aug. 7, 1958, S.-I. Uéno and Y. Morimoto leg. (in coll. Natn. Sci. Mus. Tokyo); paratypes: 16♂, 12♀, same data as the holotype (in coll. Natn. Sci. Mus. Tokyo, Ent. Lab. Ehime Univ. and M. Satô).

Further specimens examined: 1♂, 1♀, Yona, Okinawa-Hontô Is., Aug. 12, 1969, Y. Hori leg.; 1♂, 3♀, Nishi-Agina, Tokuno-shima Is., July 26, 1963, M. Satô and N. Ohbayashi leg.; 3♂, 1♀, Mikyo, Tokuno-shima Is., April 10, 1968, K. Ioki leg.; 1♂, 3♀, Asado, Nabemata-gawa, Amami-Ôshima Is., July 18, 1959, S. Ishida leg.

Distribution: Ryukyus (Okinawa-Hontô Is. of the Okinawa-guntô, Okino-erabu-shima Is., Tokuno-shima Is. and Amami-Ôshima Is. of the Amami-guntô).

The present species resembles *M. (N.) flavomaculatus* (Kamiya), f. *narusei*

M. Satô, but is evidently different from that species in the maculation, body form and the structure of male genitalia.

Uvarus tokarensis M. Satô, sp. nov.

Form oblong-oval, moderately convex. Colour entirely brown, but elytra and abdomen somewhat darker than the others.

Head about twice as broad as long; surface smooth on the central area and obsolete microreticulated on the lateral areas. Pronotum about 2.5 times as broad as long, broadest at the base which is about 1.5 times as broad as anterior breadth; sides rounded and narrowed anteriorly; surface smooth with fine and obsolete punctures scattered at the lateral areas; a conspicuous longitudinal plica present on each side, the plica being about a half the pronotal length. Elytra nearly of the same breadth as pronotum, about 1.7 times as long as broad, broadest at three-fifths, thence gently narrowed both anteriorly and posteriorly; surface coarsely and sparsely punctate, the punctures separated from one another by about twice their diameter and disappearing laterally, plicae conspicuous and about twice as long as the pronotal ones. Ventral surface finely aciculate, base of first abdominal sternite distinctly reticulate.

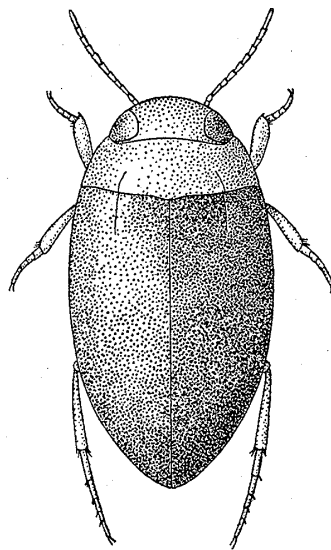


Fig. 6. *Uvarus tokarensis* M. Satô, sp. nov.

Male genitalia: median lobe evenly bent ventrally, basal portion stout, apical portion slender, the apex bluntly rounded and provided with two fine hairs; parameres fairly large, their apical portions hook-shaped and provided with some pubescence.

Length: 2.00–2.18 mm; breadth: 1.00–1.09 mm.

Holotype: ♂, Nakano-shima Is., May 29, 1962, M. Satô leg. (in coll. M. Satô);

paratypes: 2♀, same data as the holotype (in coll. Ent. Lab., Ehime Univ. and M. Satô).

Distribution: Ryukyus (Nakano-shima Is. of the Tokara-guntô).

This is a peculiar species and is the first to be recorded of the genus *Uvarus* Guignot from our faunal region. It differs from *U. genitilis* (Sharp) in the pronotum and head lacking in the distinct punctures and in the sparser elytral punctures.

Coelambus impressopunctatus hiurai M. Satô, subsp. nov.

Body elongate-oval, strongly convex, shining, dark brown above, black beneath; posterior area of head, anterior and posterior areas along the margins and five longitudinal stripes of elytra blackened; mouth-parts, legs, antennae and ventral sides of head and prothorax brown to dark brown.

Head provided with irregular punctures, which are fine and somewhat sparse on the large parts, close and rather distinct on the posterior area where the punctures are separated by 1 to 1.5 times their diameter, but absent in a transverse area along the anterior margin of pronotum; integument obsoletely microreticulated on the anterior half but smooth on the posterior half. Pronotum distinctly and sparsely punctate on the central area, closely so at the median part along the anterior margin and strongly so on the posterior area along the margin; integument mostly smooth, narrowly microreticulated along the anterior margin. Elytra strongly and closely punctate though sparsely intermixed with fine punctures, the coarser punctures being well defined and becoming smaller and closer terminally and sparser laterally, the distance between them separated by about a half the diameter in the large part but nearly as large as the diameter on the lateral areas; each elytron provided with four longitudinal rows of distinct punctures which vanish apically. Ventral surface strongly and somewhat sparsely punctate, but the abdominal punctures are transversely rugose.

Male genitalia: median lobe gradually tapering towards the tip which is sharply rounded, basal portion large, apical portion slender; parameres relatively large, nearly oval, provided with thick pubescence at the inner side.

Length: 4.82 mm; breadth: 2.36 mm.

Holotype: ♂ and paratype: 1♀, Kushiro, Otanoshi-ike Coast, Kushiro-shi, Hokkaido, June 23, 1967, I. Hiura leg. (in coll. Osaka Mus. Nat. Hist.).

Distribution: Japan (Hokkaido).

This new subspecies differs from the nominate one in the following points: punctures fine on the head, less irregular on the posterior area of pronotum, and oval and well defined on elytra; median lobe of male genitalia relatively slender.

Hygrotus inaequalis hokkaidensis M. Satô, subsp. nov.

Body oval, distinctly convex, closely and conspicuously punctate above, closely and evidently punctate beneath. Whole surface reddish brown, anterior and

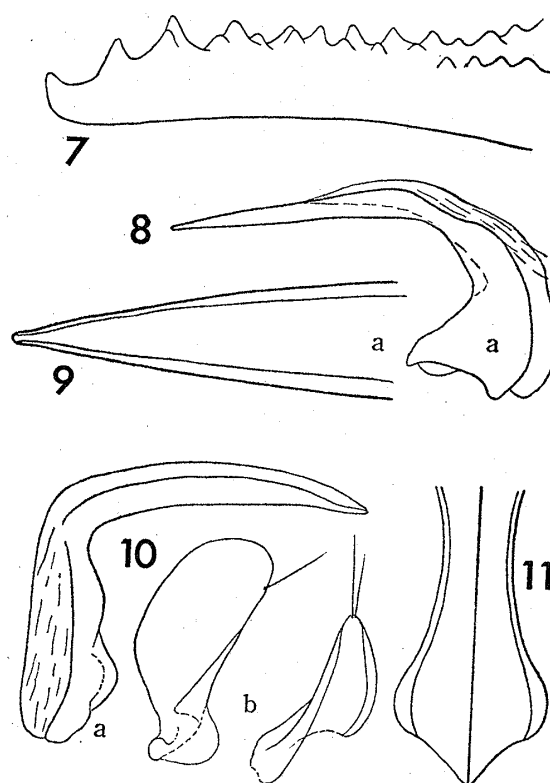


Fig. 7. Ovipositor of *Laccophilus chibi* M. Satô, sp. nov.

Figs. 8–10. Male genitalia: median lobe (a) and paramere (b).—8. *Coelambus impressopunctatus hiurai* M. Satô, subsp. nov.—9. *Hygrotus inaequalis hokkaidensis* M. Satô, subsp. nov.—10. *Japanolaccophilus niponensis* (Kamiya).

Fig. 11. Prosternal process of *Japanolaccophilus niponensis* (Kamiya).

posterior margins of pronotum and elytral margins narrowly black. Punctures on elytra separated from one another by nearly the diameter. Male genitalia: median lobe slightly arcuate, gradually narrowed anteriorly with rather sharply pointed apex; parameres relatively small, elongate, their apices bluntly rounded.

Length: 2.82 mm; breadth: 1.72 mm.

Holotype: ♂ and paratype: 1♀, Futatsuyama, Shibecha-chô, Hokkaido, June 22, 1967, I. Hiura leg. (in coll. Osaka Mus. Nat. Hist.).

Distribution: Japan (Hokkaido).

This new subspecies can be separated from the nominate one by the punctures on elytra somewhat smaller and sparser than those in the latter and the punctures on pronotum more or less longitudinally wrinkled.

The species of the genus *Hygrotus* Stephens has not been recorded from Japan up to the present.

Laccophilus chibi M. Satô, sp. nov.

Form oval, moderately convex. Elytra and ventral surface black, excepting the markings of elytra; head, pronotum, elytral markings, hind leg, metacoxal lamina, metasternum and apical portion of terminal sternite brown; prosternum, mouth-parts, front and middle legs, antennae and epipleura yellowish brown.

Head about 2.8 times as broad as long, distinctly microreticulated throughout. Pronotum about 2.6 times as broad as long, broadest at the base which is about 1.3 times as broad as anterior breadth; sides rounded and narrowed anteriorly; microsculpture coarser and finer than those of head. Elytra about 1.2 times as broad as pronotum, about 1.5 times as long as broad, broadest a little before the middle; sides gently rounded; surface microreticulated as on the head. Each elytron with four markings as given below: a distinct subbasal band, which is transverse but does not reach the suture, a small lateral spot situated at the basal third, which is oval and contiguous to the basal band along the side margin, a large subquadrate spot situated at the apical third and apically extending along the side margin, and a small terminal spot contiguous to the subquadrate one. Metasternum and metacoxae obsoletely microreticulated; abdomen finely and rather transversely microreticulated.

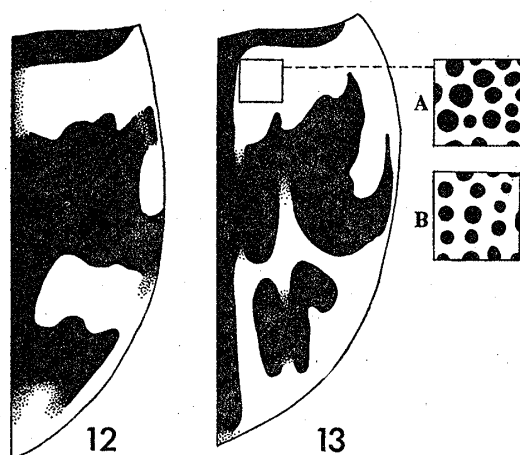
Female genitalia: ovipositor stout and distinctly dentate at the apical portion.

Length: 2.64 mm; breadth: 1.45 mm.

Holotype: ♀, Mitara, Iriomote-jima Is., Aug. 8, 1962, M. Satô and Y. Arita leg. (in coll. M. Satô).

Distribution: Ryukyus (Iriomote-jima Is. of the Yayeyama-guntô).

This new species is somewhat allied to *L. medialis* Sharp, but is readily recognized from that species by the fairly small body, not dentate basal marking of elytra and blackened ventral surface.



Figs. 12-13. Right elytron.—12. *Laccophilus chibi* M. Satô, sp. nov.—13. *Hygrotus inaequalis inaequalis* (Fabricius) [A] and *H. inaequalis hokkaidensis* M. Satô, subsp. nov. [B].

Genus *Japanolaccophilus* M. Satô, nov.

Type-species: *Neptosternus niponensis* Kamiya, 1939.

Body oval, distinctly attenuated posteriorly, well convex, obsoletely and polygonally microreticulated above, finely and transversely so beneath. Posterior margin of pronotum slightly produced backwards at the middle; hind angles obtuse. Elytra not striate, having some yellowish markings. Prosternal process enlarged behind, carinate at the middle, rebordered at the sides, its apical portion triangularly produced. Metasternal process dilated and tongue-shaped. Internal laminae of hind coxae well defined, their suture subparallel-sided and ridged. Spurs of hind tibiae simple. Front and middle femora and tibiae minutely and densely punctate. Hind femur finely and transversely microreticulated.

Male genitalia: median lobe strongly bent ventrally a little behind the middle; basal portion stout, apical portion slender, apex sharply pointed; left paramere suboval, provided with a long seta near the tip, right paramere subtriangular, provided with two long setae at the tip.

Range: Endemic to Japan.

This genus differs from the genus *Laccodytes* Régimbart in having tongue-shaped metasternal process, and from the genus *Philaccolus* Guignot in carinated prosternal process, produced posterior margin of pronotum and simply curved median lobe of male genitalia.

Japanolaccophilus niponensis (Kamiya), comb. nov.

Neptosternus niponensis Kamiya, 1939, Nippon no Kôchû, Tokyo, 3: 32, figs. 1-2 (Tokyo: Tama-

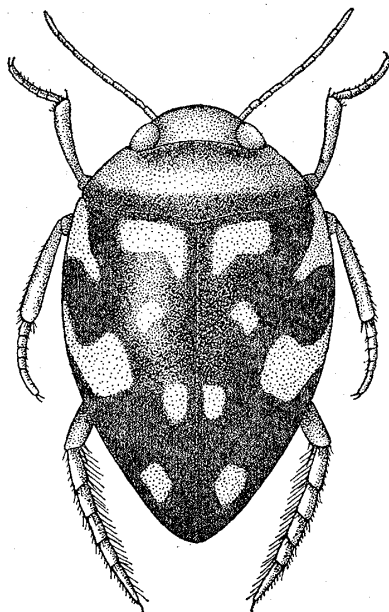


Fig. 14. *Japanolaccophilus niponensis* (Kamiya).

gawa, Asakawa); Nakane, 1959, *Shin Konchû*, Tokyo, **12** (7/8): 49, fig. (Honshu, Kyushu).

Specimens examined: 2♂, Kumozu-gawa, Mie Pref., July 23, 1957, S. Ishida leg.; 2♀, same locality, July 23 and Nov. 3, 1957, Z. Naruse leg.; 1♀, Yunoyama, Mie Pref., Aug. 21, 1960, Z. Naruse leg.; 1♀, Horado, Gifu Pref., May 13, 1962, Z. Naruse leg.; 2♀, Murakami, Niigata Pref., Aug. 8, 1961, M. Satô leg.

Distribution: Japan (Honshu, Kyushu).

The type-series of this interesting species was unfortunately destroyed during the Second World War, though no doubt remains about its identity. It is rather a rare species, usually occurring in running waters of brooks and rivers.

ACKNOWLEDGEMENTS

I am deeply indebted to Dr. S.-I. Uéno who kindly gave me the opportunity of examining some materials and read through the manuscript. Sincere thanks are also due to Dr. A. Takahashi, Messrs. Y. Arita, I. Hiura, Z. Naruse, N. Ohbayashi and T. Shibata for their kind help in the course of this study.

REFERENCES

- Balfour-Browne, J., 1946. *Microdytes* gen. nov. Dytiscidarum (Hyphyrini). *J. Bombay nat. Hist. Soc.*, **46**: 106-108.
- Guignot, F., 1939. Contribution à l'étude des *Bidessus*. *Bull. Soc. Ét. Sci. nat. Vaculuse*, **4**: 51-61.
- 1947. Coléoptères Hydrocanthares. *Faune de France*, **48**: i+1-287. Lechevalier, Paris.
- 1954. Quarante et unième note sur les Hydrocanthares. *Rev. fr. Ent.*, **21**: 195-202.
- Kamiya, K., 1938a. A systematic study of the Japanese Dytiscidae. *J. Tokyo Nogyo Daigaku*, **5**: 1-68, pls. 1-7.
- 1938b. Family Dytiscidae. In OKADA *et al.*, *Fauna Nipponica*, **10** (8-11): i+1-8+1-137. Sansei-dô, Tokyo. (In Japanese.)
- 1939. A new species of Dytiscidae from Japan. *Nippon no Kôchû*, Tokyo, **3**: 32-33. (In Japanese.)
- Nakane, T., 1959a. The Coleoptera of Japan [45]. *Shin Konchû*, Tokyo, **12** (1): 56-62. (In Japanese.)
- 1959b. The Coleoptera of Japan [47]. *Shin Konchû*, Tokyo, **12** (7/8): 47-52. (In Japanese.)
- Satô, M., 1958. On the distribution of *Hyphydrus* (*Nipponhydrus*) *flavomaculatus* Kamiya, with the description of two new forms (Col. Dytiscidae). *Ent. Rev. Japan*, **9**: 13-14. (In Japanese, with English summary.)
- 1961. Aquatic Coleoptera from Amami-Ôshima of the Ryukyu Islands (II). *Akitu*, Kyoto, **10**: 7-10.
- Sharp, D., 1882. On aquatic carnivorous Coleoptera or Dytiscidae. *Sci. Trans. R. Dublin Soc.*, **2**: 179-1003, pls. 7-18.
- 1890. On some aquatic Coleoptera from Ceylon. *Trans. ent. Soc. London*, **1890**: 339-359.

- Takizawa, M., 1933. The Dytiscidae from Japan (Part II) (Hydroporinae). *Ins. Mats.*, 7: 165-179.
- Zaitzev, P., 1953. Dytiscoidea. *Fauna USSR*, 4 (58): 1-377. USSR Science Academy, Moscow. (In Russian.)
- Zimmermann, A., 1930. Monographie der paläarktischen Dytisciden, I. Noterinae, Laccophilinae, Hydroporinae. *Kol. Rdsch.*, 16: 35-118.
- Vazirani, T. G., 1968. Contribution to the study of aquatic beetles (Coleoptera). 2. A review of the subfamilies Noterinae, Laccophilinae, Dytiscinae and Hydroporinae (in part) from India. *Orient. Ins.*, 2: 221-341.