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THE *GYRINIDÆ* OF JAPAN

By

MOTOMU TAKIZAWA

About 50 years ago D. SHARP published his paper about the water-beetles of Japan in the *Trans. Ent. Soc. Lond.*, 1873 and 1884, recording seven species which belong to the *Gyrinidæ*. During these long days several members of the *Gyrinid*-species have been added to our faunal region, and also a considerable number of the material has been captured from hitherto un-investigated localities. Therefore, in the following paper I intended to reexamine the *Gyrinid*-fauna of this country. To enable me to do this Prof. Dr. S. MATSUMURA entrusted me the whole of the material belonging to this family which are preserved in the Entomological Museum of the Hokkaido Imperial University, and under his kind guidance I pursued this work, and to whom I must express my grateful acknowledgment in this occasion. Also to Mr. S. KUWAYAMA of the Hokkaido Agricultural Experiment Station, I must tender my cordial thanks for his kind suggestion and constant encouragement during the course of my study.

Historical Sketch

1866. For the first record of our *Gyrinid*-fauna V. DE MOTSCHULSKY described one new species in the *Bull. Soc. Nat. Mosc.*: *Gyrinus curtus* MOTSCHULSKY.

1873. D. SHARP in his paper "The Water Beetles of Japan" published in the *Trans. Ent. Soc. Lond.*, recorded two new species from Japan under the names of *Dineutes marginatus* and *Gyrinus japonicus* by the materials collected by G. LEWIS.

1879. G. LEWIS enumerated three *Gyrinid*-species in the *Cat. Col. Jap. Archipel*, namely *Dineutes marginatus* SHARP, *Gyrinus curtus* MOTSCHULSKY and *G. japonicus* SHARP.

1882. The fundamental work of the regarding family was published by M. RÉGIMBART under the title of "Essai Monographique de la Famille des *Gyrinidæ*" in the *Ann. Soc. Ent. Fr.*, 1882-1907. He described three new species, *Dineutes Mellyi* (1882), *Gyrinus curtus* and *G. Gestroi* (1883) together with the redescription of already known species from Japan.

1884. In this year D. SHARP again published "The Water-beetles of Japan" in the Trans. Ent. Soc. Lond., in this paper he described three new *Orectochilus*-species, under the names of *Orectochilus agilis*, *O. punctipennis* and *O. regimbarti*, and he regarded *G. curtus* RÉGIMBART as a synonym of *G. japonicus* SHARP.

1887. H. J. KOLBE recorded in the Archiv. f. Naturg. that the *Gyrinus japonicus* SHARP was captured in Korea.

In the same year "Cat. Col. Jap." was published by SCHÖNFELDT. In this paper he enumerated seven *Gyrinid*-species as occurring in our faunal region: *Dineutes marginatus* SHARP, *Gyrinus curtus* MOTSCHULSKY, *G. Gestroi* RÉGIMBART, *G. japonicus* SHARP, *Orectochilus agilis* SHARP, *O. punctipennis* SHARP and *O. regimbarti* SHARP.

1905. In his well known work "Thousand Insects of Japan, Vol. III", S. MATSUMURA dealt with four *Gyrinid*-species, namely *Dineutes indicus* AUBÉ, *D. marginatus* SHARP, *Gyrinus curtus* MOTSCHULSKY and *G. japonicus* SHARP; among these the record of the *D. indicus* AUBÉ seems to be the first from our faunal region, but as I discuss later again, it may have been a mis-identification of *D. mellyi* RÉGIMBART.

1911. S. MATSUMURA recorded *Gyrinus curtus* MOTSCHULSKY from Saghalien in the Jour. Agr. Tohoku, Imp. Univ. IV for the first time.

1916. The same author published "Catalogus Insectorum Japonicum Vol. II, Coleoptera". In this, he enumerated all of the hitherto known species.

In the same year A. ZIMMERMANN newly recorded three *Gyrinid*-species from Formosa by the collection of H. SAUTER in the Archiv f. Naturg., A, 5: *Dineutes australis* FABRICIUS, *D. Mellyi* RÉGIMBART and *D. marginatus* SHARP.

1924. H. OKAMOTO in the Bull. Agr. Exp. Sta., Chosen, Vol. I, No. 2, recorded *Dineutes marginatus* SHARP as occurring in Querpart Island as well as in Korea.

1931. K. KAMIYA in the Mushi no Kai Kenkyu-hokoku No. 1, redescribed three *Orectochilus*-species and recorded *O. punctipennis* SHARP as occurring also in Formosa.

Family GYRINIDAE

Key to the Subfamilies

- 1'' Mesothoracic episternum reaching to the epipleura of the wing-case. *Orectochilinae*
 1' Mesothoracic episternum not reaching to the epipleura of the wing-case.
 2'' The longest part of the hind coxa situated nearer to the mesial line of the body. ... *Enhydrinae*

- 2' The longest part of the hind coxa situated nearer to the epipleura of the wing-case than to the mesial line of the body. *Gyrininae*

Subfamily **Enhydrinae**

Genus ***Dineutes*** M'LEAY

Dineutes M'LEAY, Ann. Jav. ed. I, p. 30 (1825).

Key to the Species

- 1'' Body long oval; wing-case (♂) with a short denticle at the outer apical angle.
 2'' Upper surface of the body black, with a greenish luster; wing-case truncated at the apex, (♂) with a short denticle at the outer apical angle. 7.5-9.5 mm. *australis* FABRICIUS
 2' Upper surface metallic black, with a marginal yellow stripe; wing-case (♀♂) with two denticles at the apex. 8-9.5 mm. *marginatus* SHARP
 1' Body round oval; upper surface iridescent greenish black; wing-case without any denticle at the outer apical angle. 9-11 mm. *mellyi* RÉGIMBART

1. ***Dineutes australis*** FABRICIUS

Gyrinus australis FABRICIUS, Syst. Ent., p. 235 (1775).

Gyrinus rufipes FABRICIUS, Syst. El., I, p. 276 (1801).

Dineutes limbatus M'LEAY, Ann. Jav., ed. I, p. 30 (1825).

Hab.—Loochoo (Miyako-jima, 3 ex., V. 1909, S. MATSUMURA; 3 ex., S. SAKAGUCHI; 1 ex., S. OGASAWARA) Formosa (Taichu, 1 ex., 27/VI. 1906, S. MATSUMURA; Koshun, 15 ex., 7/VII. S. MATSUMURA; Kanshirei, 24 ex., 14/IV. 1907, S. MATSUMURA; Kanshirei, 6 ex., 15/IV. 1907, S. MATSUMURA; Kanshirei, 1 ex., 11/V. 1908, I. NITOBÉ; 3 ex., XII. 1911, S. MATSUMURA).

Distribution—Australia, Japan, Malay Archipelago, New Caledonia, New Zealand, Philippines.

Japanese Name: *Shirikire-o-mizusumashi*.

2. ***Dineutes marginatus*** SHARP

Dineutes marginatus SHARP, Trans. Ent. Soc. Lond., p. 56 (1873).

Dineutes quadripina FAIRMAIRE, Ann. Soc. Ent. Fr., (5) VIII, p. 88 (1878).

Hab.—Saghalien (after T, YOKOYAMA, Nippon no Kochu, p. 138, 1930) Hokkaido (Sapporo, 2 ex., 16/VI. 1904, S. MATSUMURA; Sapporo, 2 ex., 12/X. 1904, S. MATSUMURA; Sapporo, 3 ex., 10/VI. 1931, M. TAKIZAWA) Honshu (Tokyo, 1 ex., VII. 1903, S. MATSUMURA; Maiko, 3 ex., VII. 1903, S. MATSUMURA; Shizuoka, 1 ex., 24/VIII. 1912, H. TAKABAYASHI; 2 ex., 1916, C. TERANISHI; Shizuoka, 2 ex., 17/VII. 1917, H. TAKABAYASHI; Naoetsu, 1 ex., 27/VII. 1927, M. TAKIZAWA; Nagano, 2 ex., VII. 1928, M. TAKIZAWA; Nagano, 3 ex., 2/VIII. 1928, M. TAKIZAWA; Niigata, 3 ex., M. NAKAMURA; Takasago, 6 ex., S. MATSUMURA; Aomori, 2 ex., S. MATSUMURA; 3 ex., S. KUWAYAMA; Tokyo 3

ex.) Shikoku (Iyo, 2 ex., 28/VII. 1916, S. MATSUMURA; Iyo, 1 ex., S. MATSUMURA) Loochoo (1 ex., VIII. 1904, MIYAGI; Miyako-jima, 4 ex., V. 1909, S. MATSUMURA; Miyako-jima, 6 ex., S. SAKAGUCHI; 7 ex., S. SAKAGUCHI) Formosa (Tansui, 2 ex., 24/VII. 1906, S. MATSUMURA; Tainan, 2 ex., 9/XII. 1909, M. ISHIDA; 4 ex., I/II. 1912, S. MATSUMURA; Toen, 1 ex., X. 1914, INAMURA; Koshun, 1 ex., 25/IV-25/V. 1918, J. SONAN, K. MIYAKE and M. YOSHINO; Kotosho, 1 ex., 10/III-14/IV. 1920, T. OKUNI) Korea (Suigen, 4 ex., 5-15/VII. 1922, T. UCHIDA and S. TAKANO; Kaishu, 1 ex., 28/III. 1923, YUUKI; Taiyudong, 4 ex., 1925, E. GALLOIS; Shorinri, 1 ex.).

Distr.—China, East Indies, India, Japan, Java, Manchuria.

J. N.: *O-mizusumashi*.

3. *Dineutes mellyi* RÉGIMBART

Dineutes Mellyi RÉGIMBART, Ann. Soc. Ent. Fr., (6), II, p. 399 (1882).

Dineutes indicus MATSUMURA (nec AUBÉ), Thous. Ins. Jap., Vol. III, p. 23 (1906).

Dineutes insularis RÉGIMBART, Ann. Soc. Ent. Fr., LXXVI, p. 140 (1907).

Remarks: *Dineutes insularis* was described by A. RÉGIMBART (1907) by the specimens from Loochoo, while *D. mellyi* RÉGIMBART was recorded by A. ZIMMERMANN (1916) as occurring in Formosa by the specimens collected by H. SAUTER. For the comparison of these two species here I may quote a RÉGIMBART's description concerning to the former species; he writes that "Cet insecte n'est peut-être qu'une forme insulaire de *D. Mellyi* RÉG.; il en diffère par la taille in general plus petite, par la forme un peu moins dilatée au milieu, moins gibbeuse á la région scutellaire, avec la sinuation externe des élytres encore plus effacée, par l'aspect plus opaque, la réticulation beaucoup plus imprimée et la ponctuation moins effacée et par la dent des fémurs antérieurs ♂ plus obtuse et moins saillante; les traces des sillons aux élytres sont beaucoup plus indiquées lateralment."

After my careful observations by the individuals from Formosa and Loochoo, I am unable to distinguish *D. mellyi* RÉGIMBART from *D. insularis* RÉGIMBART, and I consider that they may be but one species, varying considerably in individual respects.

D. indicus AUBÉ that is known as a species, which has distinctly striated wing-case, has been recorded by S. MATSUMURA from Formosa and Loochoo, but I could not found no such specimens in the collection of the Entomological Museum of the Hokkaido Imperial University. According to my opinion it may perhaps be a misidentification of *D. mellyi* RÉGIMBART.

Hab.—Loochoo (2 ex., VI. 1905, H. KUROIWA; Yonakuni, 1 ex., S. SAKAGUCHI) Formosa (Hoppo, 37 ex., 7/VIII. 1905, S. MATSUMURA; Otsubo, 2 ex., 2/V. 1907, S. MATSUMURA; Taipu, 1 ex., IX. 1910, T. SHIRAKI; Horisha, 1

ex., V-VIII. 1918, H. KAWAMURA; Baibara, 1 ex., 20/VII. 1925, H. KÔNO; Rimogan, 1 ex., 21/VII. 1929, S. MINOWA and C. WATANABE).

Distr.—China, India, Japan.

J. N.: *Okinawa-o-mizusumashi*.

Subfamily Gyrininae

Genus *Gyrinus*

Gyrinus GEOFFROY, *Ins. Par. I*, p. 193 (1762).

Key to the Species

- 1'' Epipleurae of the prothorax and wing-case black with a metallic luster.
- 2'' Body much convex; mesosternum with a deep and broad longitudinal groove; the punctures on the wing-case being more distinct and larger. 4.4-5.6 mm. *gestroi* RÉGIMBART
- 2' Body less convex; mesosternum with a longitudinal groove which only deeply dented at its apical end; the punctation on the wing-case much smaller and indistinct. 5.2-7.4 mm.
- *japonicus* SHARP
- 1'' Epipleurae of the prothorax and wing-case reddish brown or dark brown, without a metallic luster; mesosternum brown or pitchy brown, with a shallow linear median groove. 5-6.8 mm.
- *curtus* MOTSCHULSKY
- a) Under surface of the body entirely pitchy brown. var. *fulvescens* TAKIZAWA

4. *Gyrinus curtus* MOTSCHULSKY

Gyrinus curtus MOTSCHULSKY, *Bull. Mosc.*, XXXIX, I, p. 165 (1866).

Hab.—Kurile (Sashiusu, 2 ex., 30/VII. 1927, K. DOI) Saghalien (Ikusagawa, 1 ex., 25/VIII. 1914, J. ADACHI and S. ISSHIKI; Toyohara, 1 ex., 24/VIII. 1914, J. ADACHI and S. ISSHIKI; Toyohara, 5 ex., 29/VIII. 1914, J. ADACHI and S. ISSHIKI; Toyohara, 2 ex., 24/IX. 1914, J. ADACHI and S. ISSHIKI; Kawakami, 2 ex., 30/VII. 1924, S. MATSUMURA) Hokkaido (Kotoni, 4 ex., 21/IV. 1904; Jyozankei, 5 ex., 23/V. 1904, M. ISHIDA; Sapporo, 5 ex., 11/VI. 1904, S. MATSUMURA; Misumae, 3 ex., 15/V. 1910, S. MATSUMURA; Sapporo, 1 ex., 28/V. 1931) Honshu (Nikko, 9 ex., 6-31/VI. 1911, S. MATSUMURA; Ono, 4 ex., 10/VI. 1911, S. MATSUMURA; Misaki, 4 ex., 18-21/VI. 1911, S. MATSUMURA; Gumma, 1 ex., 21/III. 1914, S. MATSUMURA; Hakkoda-san, 1 ex., 30/VIII. 1927, H. KÔNO) Shikoku (after S. MATSUMURA, *Thous. Ins. Jap.*, Vol. III. p. 19, 1906; T. YOKOYAMA, *Nippon no Kochu*, p. 137, 1930) Kyushu (after S. MATSUMURA, l. c.; T. YOKOYAMA, l. c.).

Distr.—Japan.

J. N.: *Nami-mizusumashi*.

4a. *Gyrinus curtus* MOTSCHULSKY var. *fulvescens* nov.

Distinguished from the typical specimen by the entirely reddish brown ven-

tral surface.

Hab.—Honshu (Suwa, 1 ex., 1911, S. MATSUMURA; Nagano, 1 ex., VIII. 1929, M. TAKIZAWA; Aomori, 2 ex.) (Type in the Ent. Mus. Hokk. Imp. Univ.).

5. *Gyrinus gestroi* RÉGIMBART

Gyrinus Gestroi RÉGIMBART, Ann. Soc. Ent. Fr., (6) III, p. 165 (1883).

Hab.—Honshu (Osaka, 4 ex., IV. 1917, C. TERANISHI; Takasago, 3 ex., S. MATSUMURA; Tokyo, 1 ex., IV. 1918, C. TERANISHI; Nagano, 2 ex., 10/IV. 1928, M. TAKIZAWA) Shikoku (Iyo, 4 ex., 21/VI. 1911, S. MATSUMURA).

Distr.—Japan.

J. N.: *Ko-mizusumashi*.

6. *Gyrinus japonicus* SHARP

Gyrinus japonicus SHARP, Trans. Ent. Soc. Lond., p. 55 (1873).

Gyrinus curtus RÉGIMBART, Ann. Soc. Ent. Fr., (6) III, p. 168 (1883).

Hab.—Hokkaido (after S. MATSUMURA, Thous. Ins. Jap., Vol. III, p. 21, 1906; T. YOKOYAMA, Nippon no Kochu, p. 137, 1930) Honshu (Iwakisan, 5 ex., 10/VII. 1913, T. ISSHIKI; Nagano, 3 ex., 6/IV. 1928, M. TAKIZAWA) Shikoku (Ehime, 4 ex., 29/XII. 1916, T. KATO) Kyushu (Jono, 2 ex., S. MATSUMURA) Korea (Saishuto, 1 ex., K. ICHIKAWA).

Distr.—Japan.

J. N.: *Hime-mizusumashi*.

Subfamily **Orectochilinae**

Genus **Orectochilus**

Orectochilus LACORDAIRE, Fn. Ent. Paris, I, p. 344 (1835).

Patrus AUBÉ, Icon. Col., V, p. 397 (1836-1838).

Key to the Species

- 1'' Outer apical angle of the fore tibia acute.
 2'' Upper surface jet-black; wing-case only pubescent at the lateral and posterior portions. 5.5 mm.
 *formosanus* TAKIZAWA
 2' Upper surface dark sepia; wing-case densely pubescent. 5.3-6.1 mm. ... *punctipennis* SHARP
 1' Outer apical angle of the fore tibia blunt.
 3'' Labrum broad and semicircular. 6.25-7 mm. *agilis* SHARP
 3' Labrum narrow and rather elongated. 8-9 mm. *regimbarti* SHARP

7. *Orectochilus agilis* SHARP

Orectochilus agilis SHARP, Trans. Ent. Soc. Lond., p. 449 (1884).

Hab.—Honshu (Fuji, 1 ex., 23/VI. 1911, S. MATSUMURA; Tamagawa, 3 ex., 1/VI. 1913, H. TAKABAYASHI; Tamagawa, 6 ex., 1/VI. 1913, E. GALLOIS;

Tokyo, 1 ex.; Nakano, 2 ex., S. MATSUMURA; Shizuoka, 1 ex., 24/VII. 1928, C. WATANABE) Kyushu (after K. KAMIYA, Mushi no Kai Kenkyu-hokoku, No. 1. p. 14, 1931).

Distr.—Japan.

J. N.: *Tsumakiri-onaga-mizusumashi*.

8. *Orectochilus formosanus* sp. nov.

♂. Upper surface black; under surface largely pitchy black. Mouth-part, basal and terminal three joints of the antennae and the fore legs reddish brown; the middle and hind legs (except their coxae) more or less yellowish; abdomen dark brown, gradually changing to a light colour towards the extremity.

Head: highly shining, almost entirely devoid of pubescence except at the gena, nearly impunctate, but some quite fine punctures being recognizable at the apical and lateral parts; labrum broad, semicircular, not so producing forwards.

Thorax: pronotum scantily pubescent, shining, in the posterior part with regularly disposed, distinct punctations, anteriorly with the punctures closer and finer, at the discal part with very sparse and minute punctures and nearly devoid of pubescence. Wing-case pubescent excepting the discal part, seen from the sides obliquely truncated at the outer apical angle, the punctation more or less distinct than that of the pronotum. Scutellum smooth and shining, without puncture nor pubescence. Fore leg with the claws nearly in equal length with each other; the outer apical angle of the tibia being acute. Length 5.5; width 2.3 mm.

This species is very close to *O. punctipennis* SHARP; the difference in the colour of the body, however, are sufficient to separate these two species, and the density of the pubescence on the upper surface, together with the shape of the wing-case may be cited in substantiation of the differences. The comparison of these different points between these two species may be written as follows:

<i>O. formosanus</i>	<i>O. punctipennis</i>
1. Colour: Upper surface jet-black; under surface pitchy black.	1. Colour: Upper surface sepian black; under surface reddish brown.
2. Head: Pubescence nearly lacking.	2. Head: Pubescent except at the vertex.
3. Pronotum: Punctures distinct and rather larger, quite sparingly pubescent.	3. Pronotum: Punctures much finer, densely pubescent.

4. Wing-case: More tapering at the apical end; pubescence more sparse, lacking at the discal portion; punctures larger.
4. Wing-case: Not so tapering at the apical end; more uniformly and densely pubescent; punctures finer.

Hab.—Formosa (Daitonzan, 1 ♂, 8/XI. 1925, T. KANO) (Type in the Ent. Mus. Hokk. Imp. Univ.).

Distr.—Japan.

J. N.: *Taiwan-onaga-mizusumashi*.

9. *Orectochilus punctipennis* SHARP

Orectochilus punctipennis SHARP, Trans. Ent. Soc. Lond., p. 449 (1884).

Hab.—Honshu (Nakano, 7 ex., VIII. 1906, S. MATSUMURA; Fuji, 4 ex., 23/VI. 1911, S. MATSUMURA; Iwate, 1 ex., T. OGASAWARA) Kyushu (after K. KAMIYA, Mushi no Kai Kenkyu-hokoku, No. 1, p. 16, 1931) Formosa (To-roen, 2 ex., 19/IV. 1907, S. MATSUMURA; 2 ex., 20/V. 1911).

Distr.—Japan.

J. N.: *Ko-onaga-mizusumashi*.

10. *Orectochilus regimbarti* SHARP

Orectochilus regimbarti SHARP, Trans. Ent. Soc. Lond., p. 448 (1884).

Hab.—Honshu (Tamagawa, 1 ex., 11/IX. 1915, E. GALLOIS; Iwate, 2 ex., 1/VIII. 1920, T. OGASAWARA).

Distr.—Japan.

J. N.: *Onaga-mizusumashi*.

Table of Geographical Distribution

Species	Localities							Other localities
	Saghalien	Kurile	Hokkaido	Honshu	Shikoku	Kyushu	Formosa Korea	
1. <i>Dineutes australis</i> FABRICIUS							x x	Australia, Malay Archipelago, New Caledonia, New Zealand, Philippines
2. <i>D. marginatus</i> SHARP	x		x	x	x		x x x	China, East Indies, India, Java, Manchuria
3. <i>D. mellyi</i> RÉGIMBART							x x	China, India
4. <i>Gyrinus curtus</i> MOTSCHULSKY	x	x	x	x	x	x		
a) var. <i>fulvescens</i> TAKIZAWA				x				
5. <i>G. gestroi</i> RÉGIMBART				x	x			
6. <i>G. japonicus</i> SHARP			x	x	x			x

Species	Localities							Other localities
	Saghalien	Kurile	Hokkaido	Honshu	Shikoku	Kyushu	Loochoo	
7. <i>Orectochilus agilis</i> SHARP				X		X		
8. <i>O. formosanus</i> TAKIZAWA							X	
9. <i>O. punctipennis</i> SHARP				X		X	X	
10. <i>O. regimbarti</i> SHARP				X				

摘 要

著者は北海道帝國大學昆虫學教室に保管せらるる所の標本により、日本産鼓豆科の甲虫を研究し、十種一變種を發見したれば、之れを茲に發表せり。其の中一種並に一變種は新種及び新變種と見做し、之れを本文中に記載せり。

本邦産鼓豆の和名を記さば次の如し。

- | | |
|---|-------------------|
| 1. <i>Dineutes australis</i> FABRICIUS | シリキレオホミヅスマシ (新稱) |
| 2. <i>D. marginatus</i> SHARP | オホミヅスマシ |
| 3. <i>D. mellyi</i> RÉGIMBART | オキナハオホミヅスマシ |
| 4. <i>Gyrinus curtus</i> MOTSCHULSKY | ナミミヅスマシ |
| a). var. <i>fulvoscens</i> TAKIZAWA (var. nov.) | |
| 5. <i>G. gestroi</i> RÉGIMBART | コミヅスマシ |
| 6. <i>G. japonicus</i> SHARP | ヒメミヅスマシ |
| 7. <i>Orectochilus agilis</i> SHARP | ツマキリヲナガミヅスマシ |
| 8. <i>O. formosanus</i> TAKIZAWA (sp. nov.) | タイワンヲナガミヅスマシ (新稱) |
| 9. <i>O. punctipennis</i> SHARP | コヲナガミヅスマシ |
| 10. <i>O. regimbarti</i> SHARP | ヲナガミヅスマシ |

尙、從來沖繩群島より知られたる *Dineutes insularis* RÉGIMBART 又同群島並に臺灣より知られたる *D. indicus* MATSUMURA (nec AUBÉ) を *D. mellyi* RÉGIMBART の異名となせり。