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THE TYPE SPECIMENS OF THE ODONATA IN THE ENTOMOLOGICAL INSTITUTE, HOKKAIDO UNIVERSITY

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The collection of the Odonata in the Entomological Institute of Hokkaido University is the most important base for the study of this group of insects of this country. It is the historical material of our pioneer entomologists, Dr. Shonen Matsumura and Dr. Kan Oguma, and contains the type specimens of no less than forty species of the Far Eastern Odonata described by these authors.

In 1935 I had the opportunity to study the collection in some detail, and was enabled to check nearly all the label-records of these specimens. On that occasion I found so many of the type-specimens without any exact type labels.

Just before the War II most of the dragonfly specimens including many types were brought to Tokyo by T. Okumura and Y. Sugihara, and most unfortunately, while preserved in Okumura's residence in Tokyo, the specimens have suffered considerable damage and a number of them have gone astray.

During past few years an attempt to enlist the biological type-specimens preserved in Japan was made by the Subcommittee for Scientific Objects, Science Encouragement Council, Minister of Education. On that occasion I found that, as stated above, the collection in question has suffered unfavourable influence. Recently under the suggestion of Prof. Toichi Uchida and Prof. Chihisa Watanabe of Hokkaido University I have had the opportunity to rearrange the specimens in proper position. In the course of this work I have been strongly impressed the necessity to select and designate the lectotypes from the remaining specimens. In the following pages, therefore, I give the designation of lectotypes together with some comments on the synonymies related to them. All the specimens are now in the Entomological Institute, Hokkaido University, Sapporo.

ZYGOPTERA

I. Lestidae

1. *Orolestes selysi* MacLachlan, 1895
= *Megalestes mirabilis* Matsumura, 1913

Megalestes mirabilis Matsumura, 1913, p. 50, ♂, "Taiwan" (**syn. nov.**).

From the venation it is clear that this insect does not belong to the Synlestid genus *Megalestes* but to *Orolestes* in the true Lestidae. Chen (1950) recognized "*Orolestes*

mirabilis Mats.” as a good species, but I am of opinion that the Formosan species, both the clear-winged *O. koxingai* Chen (1950) and the dark-winged *O. mirabilis*, perhaps are identical with *O. selysi* MacLachlan known from Assam.

There are three male cotype specimens in H.U. collection: the one bearing the label “*Megalestes paradoxa* Og.; *Megalestes mirabilis* Og.; Horisha, iv, 1908” should be chosen as lectotype.

II. Megapodagrionidae

2. *Rhipidolestes okinawana* Asahina, 1951

= *Argia apicalis* Matsumura (nec Say, 1839), 1913

Argia apicalis Matsumura (nec Say, 1893), 1913, p. 50, ♂, “Okinawa (Riukiu, K. Kuroiwa)”.

Argia apicalis Matsumura is a homonym of the North American true *Argia apicalis* Say. There are five male cotypes: the male with the labels “iv. 1906, Okinawa; 275 Kuroiwa; *Argia* n. sp. *apicalis*” is selected as lectotype.

III. Libellaginidae

3. *Rhinocypha ogasawarensis* Oguma, 1913

Rhinocypha ogasawarensis Oguma, 1913 a, p. 319, “Ogasawara”; Oguma, 1913 b, p. 161, “Bonin Islands”.

There are 4♂2♀ cotypes: the male labelled “Ogasawara, 1911” is selected as lectotype.

4. *Rhinocypha perforata* Percheron, 1835

= *Rhinocypha 14-maculata* Oguma, 1913

Rhinocypha 14-maculata Oguma, 1913 a, p. 319, “Taiwan”; Oguma, 1913 b, p. 159, “Formosa”.

The single type specimen bearing the label “Kanshirei, 21. v. 1908” is a teneral specimen referable to South Asiatic *Rh. perforata*. Most probably this belongs to the nominate form, *Rh. perforata perforata*.

5. *Rhinocypha fenestrella* Rambur, 1842

= *Rhinocypha baibarana* Matsumura, 1931

Rhinocypha baibarana Matsumura, 1931, p. 1458, “Baibara, Formosa” (**syn. nov.**).

There is a single male specimen representing the holotype. *Rh. fenestrella* Rambur has been known to occur in Malaya and Siam; this is, therefore, the first and the only record of this species from Formosa.

IV. Euphaeidae

6. *Euphaea yayeyamana* Oguma, 1913

Euphaea yayeyamana Oguma, 1913 a, p. 318, “Ryukyu”; Oguma, 1913 b, p. 158, “Loochoo (=Yayeyama)”.

There are 8♂1♀ cotypes, among which one of the three male specimens bearing the label “Yayeyama, VIII, 1907” is selected as lectotype.

V. Calopterygidae

7. *Psolodesmus mandarinus kuroiwae* Oguma, 1913

Psolodesmus dorothea kuroiwae Oguma, 1913 a, p. 313, "Ryukyu"; Oguma, 1913 b, p. 153, "Loochoo".

The cotypes are represented by 3♂ 3♀: the male specimen bearing the label "Yayeyama, VIII. 1907" is selected as lectotype.

According to Chen (1950) the Formosan *P. dorothea* Williamson (1904) should be treated as a local race of *P. mandarinus* MacLachlan which is found in South China and northern Formosa. It seems, therefore, to be reasonable to place *kuroiwae* Oguma as another subspecies of *mandarinus* as Chen supposed.

8. *Mnais tenuis* Oguma, 1913

Mnais tenuis Oguma, 1913 a, p. 315, "Taiwan"; Oguma, 1913 b, p. 156, "Formosa".

Among the syntypes (3♂ 1♀) the male specimen labelled "Taipin, 5/8, Formosa, Matsumura" is selected as lectotype.

ANISOPTERA

VI. Gomphidae

9. *Gomphus yayeyamensis* Oguma, 1926

Gomphus yayeyamensis Oguma, 1926, p. 94, "Riukiu (Yayeyama)", ♀.

The single female specimen labelled "Yayeyama, Apr. 1908" represents the holotype.

10. *Trigomphus melampus* (Selys, 1869)

= *Gomphus unifasciatus* Oguma, 1926

Gomphus unifasciatus Oguma, 1926, p. 92, ♂, "Hokkaido (Nayoro, Komura)" (*syn. nov.*).

This species was originally described from three specimens (1♂ Nayoro, Hokkaido; 1♂ Komaba, Tokyo; 1♀ Kagoshima, Kyusyu), but at present there is the single specimen (lectotype) in the collection. This and the Komaba-specimen which I examined in 1935 are actually the same with *G. melampus* Selys (1869), hence *unifasciatus* Oguma should be suppressed as a synonym of it. I also ascertained in 1935 that the female of *unifasciatus* Oguma is an entirely different species, which is now treated as *Trigomphus citimus tabei* Asahina (1949).

11. *Davidius moiwanus* (Okumura, 1935)

Gomphus moiwanus Okumura, 1935, p. 64, "Moiwa near Sapporo; Jozankei near Sapporo; Ishiyama near Sapporo; Kutcharo near Kushiro", ♂♀.

The holotype specimen (Moiwa, 7. 1905) was originally designated by Okumura (1935).

12. *Davidius nanus* (Selys, 1869)

= *Gomphus hakiensis* Oguma, 1926

Gomphus hakiensis Oguma, 1926, p. 93, "Kiushiu (Haki)", ♀.

This species was originally described from a single female specimen which is badly

damaged now.

13. *Stylogomphus suzukii* (Oguma, 1926)

Gomphus suzukii Oguma, 1926, p. 93, "Honshu (Tokio, Kioto)", ♂♀.

The male specimen (Kyoto, Suzuki) and the female specimen (Tokyo, Uchida, 18/VIII) represent the holotype and the allotype, respectively.

14. *Sinogomphus flavolimbatus* (Oguma, 1926)

Gomphus flavolimbatus Oguma, 1926, p. 94, "Honshiu (Tokio)", ♀.

In 1935 I found 2♂ 1♀ specimens of this in the collection, but judging from the original description the single female bearing the label "Tokyo, 18/VI" should be the holotype specimen.

15. *Leptogomphus yayeyamensis* Oguma, 1926

Leptogomphus yayeyamensis Oguma, 1926, p. 91, "Riukiu (Yayeyama)", ♂♀.

In 1935 there were 4♂ 2♀ specimens which represent the cotypes, but in 1955 I found only 2♂ 1♀ from Yayeyama and 1♂ from Okinawa. One male specimen from Yayeyama is selected as lectotype.

16. *Leptogomphus sauteri* Ris, 1912, **subsp.** (?)

= *Leptogomphus formosanus* Oguma, 1926

Leptogomphus formosanus Oguma, 1926, p. 91, "Formosa", ♀.

Leptogomphus formosanus was originally described by Oguma from a female insect only (lectotype: Kagi, 8. '23). Chao (1954), giving a description of the male insect, synonymized *formosanus* Oguma (1926) with *sauteri* Ris (1912). But there are some differences between the specimens from southern coastal area and the inland area of Formosa, the former perhaps representing true *sauteri* Ris.

17. *Nihonogomphus viridis* Oguma, 1926

Nihonogomphus viridis Oguma, 1926, p. 98, "Honshu (Shinano; Hiroshima; Kioto)", ♂.

Three male specimens are remaining, the one labelled "Kioto, Suzuki" is chosen as lectotype.

18. *Onychogomphus viridicostus* (Oguma, 1926)

Lindenia viridicosta Oguma, 1926, p. 96, "Honshu (Tokyo, Horoshima)", ♂♀.

In 1935 I found two males labelled as "Tokyo, Uchida" and "Kamiishi-gun (Hiroshima), Urakami", and a female specimen labelled only "27. VII. '91". But now remains the Tokyo-specimen which should be designated as the lectotype.

19. *Onychogomphus formosanus* (Oguma, 1926)

Lindenia formosana Oguma, 1926, p. 97, "Formosa", ♂.

Three male specimens were used for the original description by Oguma, but there are only two at present, the one bearing the label "Hoppo, 8/7" is designated as lectotype.

VII. *Aeschnidae*20. *Anax nigrofasciatus* Oguma, 1915

Anax nigrofasciatus Oguma, 1915 b, p. 121, "Okayama; Kyoto, Totomi; Tokyo"; Oguma, 1926, p. 78, "Honshu (Tokyo; Okayama)".

In 1935 I found only one male from Tokyo and 2♂ 1♀ from Okayama, all of them probably belonging to the syntypes. Now I select the male specimen bearing the label "May, 8. 1907, Okayama" as lectotype.

21. "*Aeschna juncea angustistyla* Oguma", 1915

Aeschna juncea angustistyla Oguma, 1915 b, p. 124 (Karafuto); Oguma, 1926, p. 80, "Sachalin".

Two male specimens labelled, "Otsan, 1. VIII." and "Niitōi, 11. VIII. '14" may be the types, the latter is chosen as lectotype. As the "*juncea*" in the Far East needs a careful review, I now tentatively use Oguma's "*angustistyla*."

VIII. *Cordulegasteridae*22. *Chlorogomphus suzukii* (Oguma, 1926)

Orogomphus suzukii Oguma, 1926, p. 88, "Honshu (Kyoto)".

A male specimen bearing the label "Kyoto, Suzuki" was described by Oguma, but apart from an extremely accidental case the occurrence of a *Chlorogomphus* in Kyoto area is hardly conceivable. Mr. Suzuki who lived in Kyoto was a professional collector of insects, and there were found a number of dragonfly specimens in the Hokkaido University bearing quite the same label "Kyoto, Suzuki" without any definite locality designation. These are:

1. *Chlorogomphus suzukii* Oguma 1♂
2. *Oligoaeschna pryori* Martin 1♂ 1♀
3. *Planaeschna milnei* Selys 1♂
4. *Stylogomphus suzukii* Oguma 1♂
5. *Epithea marginata* Selys 1♂ 1♀
6. *Somatochlora uchidai* Foerster 1♀
7. *Macromia amphigena* Selys 1♀
8. *Trithemis festiva* Rambur 1♂

I suppose that *Chlorogomphus suzukii* must originally have been brought from Formosa. The reason is, firstly, that the last named species, *Trithemis festiva*, is another definite Formosan species, and secondly, that all the other known specimens of *Ch. suzukii* were found exclusively in subtropical area, in Formosa (1♂ 1♀ in coll. Takarazuka Museum; 3♂ 1♀ recorded by Chen, 1950) and in southeast China (1♂ Tien-Mu-Shan, Asahina, 1956).

23. *Chlorogomphus brunneus brunneus* Oguma, 1926

Chlorogomphus brunneus Oguma, 1926, p. 87, "Formosa", ♀.

When I examined the type material in 1935 there were three female specimens:

1♀ Formosa; 1♀ Okinawa, 17. V. 1912; 1♀ Okinawa, Sakaguchi. Judging from Oguma's description (1926) which is apparently based on a single specimen his type seems to be the last one, this assumption can also be proved by the figures of the measurements of the specimen. But here is a big discrepancy that Oguma stated the locality of it to be "Formosa (Uchida)". The Formosan specimen, one of the three and the first one as noted above, very unfortunately does not belong to true *brunneus* but to *risi* Chen (1950). However I decided to fix the lectotype upon the Okinawa-Sakaguchi specimen.

24. *Chlorogomphus brevistigma* Oguma, 1926

Chlorogomphus brevistigma Oguma, 1926, p. 87, "Formosa", ♀.

The single specimen labelled "Hoppon, 8. VIII." represents the holotype.

IX. Corduliidae

25. *Hemicordulia ogasawarensis* Oguma, 1913

Hemicordulia ogasawarensis Oguma, 1913 c, p. 443, "Ogasawara-jima"; Oguma, 1922, p. 103, "Bonin Islands".

Two male [cotype] specimens were used by Oguma. One of them labelled "Haha-jima, 7/9" is selected as lectotype.

26. *Somatochlora clavata* Oguma, 1913

Somatochlora clavata Oguma, 1913 c, p. 449, "Hokkaido (Sapporo)", ♂; Oguma, 1922, p. 105, "Hokkaido".

This species was originally described from two males: the one labelled "Sapporo, 10. VIII. 1906" is selected as lectotype.

27. *Somatochlora japonica* Matsumura, 1911

Somatochlora japonica Matsumura, 1911, p. 8, "Sachalin (Krestoi; Tonnaicha; Todoroki)".

Three males and two females were used as cotype by Matsumura: the male labelled "Krestoi, Sachalin, 29. VII" is selected as lectotype.

28. *Somatochlora viridiaenea atrovirens* Selys, 1883

= *Somatochlora viridiaenea magna* Oguma, 1913

Somatochlora viridiaenea magna Oguma, 1913 c, p. 451 [Honshu (northern part)].

Judging from the original description the cotypes seem to be one male and several females. I found, in 1935, one male and three females as cotype of this subspecies in the collection. The single male specimen labelled "Dokan-yama, 1. VIII. 1901" is now selected as lectotype.

Somatochlora viridiaenea was described by Uhler (1858) based on a single female specimen taken from Hakodate, Hokkaido. Later, Selys (1883) described *S. atrovirens* based on several male specimens from "Japon". The possibility that both the species are identical has been suggested by the later authors, Foerster (1909) and Oguma (1913 c); Foerster mentioned the other possibility that *atrovirens* would represent the

Honshu-race ["Hondorasse"] of *viridiaenea* which is bigger than the Hokkaido race. But Oguma named the Honshu race as *magna*. On examining the Selysian types of *atrovirens* I found that the type label is given to a large-sized specimen, therefore *atrovirens* Selys may have priority over *magna* Oguma.

29. *Somatochlora graeseri aureola* Oguma, 1913

Somatochlora borealis aureola Oguma, 1913 c, p. 446, "Hokkaido"; Oguma, 1922, p. 104, "Hokkaido".

The cotypes are represented by six specimens (3♂ 3♀): the male labelled "Sapporo, 23. VIII. 1907" is selected as the lectotype.

X. Libellulidae

30. *Boninthemis insularis* (Matsumura, 1913)

Neothemis insularis Matsumura, 1913, p. 53, (Ogasawara-jima); Oguma, 1922, p. 102, "Bonin Islands".

There are ten males and four females, all of which undoubtedly represent the cotypes. One male specimen labelled "Ogasawara, 20. VIII. 1905" is selected as holotype. Cowley (1934) and Liefstinck (in litt.) are of opinion that *Boninthemis* should be amalgamated in *Lyrithemis*.

31. *Lyrithemis tricolor* Ris, 1916

= *Lyrithemis flava* Oguma, 1922

Lyrithemis flava Oguma, 1922, p. 101, "Formosa" (**syn. nov.**).

The male labelled "Gyochi, 1. X. 1908" and the female labelled "Formosa" were used by Oguma for the original description, consequently these specimens represent the holotype and the allotype respectively. *L. flava* is, however, clearly a synonym of *L. tricolor* Ris (1916, p. 1063, Type: 1♂ 1♀ Sokotsu, Formosa, V. 1912, H. Sauter).

32. *Brachydiplax chalybea flavovittata* Ris, 1911

= *Planiplax okinavensis* Oguma, 1922

Planiplax okinavensis Oguma, 1922, p. 100, "Okinawa (Loochoo)", ♂. (**syn. nov.**).

The single male specimen labelled "Okinawa, VIII. '02" is supposed as the type material. Today *B. chalybea flavovittata* is, in our limit, only exclusively known from two small islands, Minami-o-agari-jima (South Borodino Island) and Kita-o-agari-jima (North Borodino Island) near Okinawa Island. In Asiatic continent this subspecies is known as north as the river Yantzekiang.

33. *Deilia phaon* (Selys, 1883)

= *Deilia phaon brevistigma* Oguma, 1915

Deilia phaon brevistigma Oguma, 1915 a, p. 50 (Formosa); Oguma, 1922, p. 100, "Formosa".

Oguma separated the Formosan form as a distinct subspecies from the type form mainly by the smaller body-size. Until a more comprehensive investigation would be made I treat it as *D. phaon*.

The syntypes of *brevistigma* are represented by three males and one heterochromatic female: the male bearing the label "Shirin, 31. VII." is selected as lectotype.

34. *Sympetrum danae* (Sulzer, 1776)

= *Sympetrum arcticum* Matsumura, 1911

Sympetrum arcticum Matsumura, 1911, p. 7, "Sachalin (Otsan); Hokkaido (Kushiro)".

The single female specimen taken from Otsan, Sachalin, on which apparently Matsumura's description has been made, was lost. Of 2♂4♀ from Kushiro three females were remaining, therefore the lectotype is selected from them.

35. *Sympetrum parvulum* Bartenef, 1912

= *Sympetrum eroticoides* Oguma, 1915

Sympetrum eroticoides Oguma, 1915 a, p. 49, ♂♀; Oguma, 1922, p. 99, ♀.

Oguma stated that he examined three (cotype) specimens, but even in 1935 there were only two females referable to his type material. One of the females labelled "Nishinomiya, 12. X. 1913" is now fixed as lectotype.

36. *Sympetrum gracile* Oguma, 1915

Sympetrum gracile Oguma, 1915 a, p. 50; Oguma, 1922, p. 97, "Furumachi; Wakayama; Osaka".

In 1935 I recognized the cotype series of 8♂1♀, but there is now only one broken female, which should be designated as the lectotype (Nishinomiya, Osaka, 29. IX. 1915).

37. *Sympetrum maculatum* Oguma, 1915

Sympetrum maculatum Oguma, 1915 a, p. 50; Oguma, 1922, p. 98, "Kii (Honshu)".

The single male type specimen taken in Kii, in 1907, has already been lost when I first examined the collection in 1935.

38. *Sympetrum speciosum speciosum* Oguma, 1915

Sympetrum speciosum Oguma, 1915 c, p. 142, "Kirishima-yama; Mt. Ontake, Shinano; Minoo near Osaka", ♂.

Originally described from three male specimens, but only one specimen labelled "Nishi-Kirishima-yama, 19. VIII. 1907" was found when I examined in 1935. This is selected as lectotype.

39. *Sympetrum croceolum* Selys, 1883

= *Leucorrhinia fujisana* Matsumura, 1898

Leucorrhinia fujisana Matsumura, 1898, p. 123 (Mt. Fuji).

In 1935 I found 2♂2♀ (23. VII. 1898) in the collection, but now there is only one badly damaged specimen, which represents one of the cotypes and now the lectotype.

40. *Orthetrum triangulare melania* Selys, 1883

= *Pseudothemis nigrifrons* Matsumura, 1898

Pseudothemis nigrifrons Matsumura, 1898, p. 123 (Mt. Fuji) (**syn. nov.**).

A single teneral male specimen of *O. t. melania* Selys was erroneously described as a new species by Matsumura.

41. *Rhyothemis variegata imperatrix* Selys, 1887
 = *Rhyothemis nebulosa* Oguma, 1922

Rhyothemis nebulosa Oguma, 1922, p. 97, "Loochoo", ♂ (**syn. nov.**).

The type of *R. nebulosa* Oguma is a single male specimen, and there is no doubt that this is a rather aberrant, dark-winged male specimen of *Rh. v. imperatrix* Selys.

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