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Title	New Butterflies from Japan, Korea and Formosa
Author(s)	Matsumura, S.
Citation	Insecta matsumurana, 3(2-3), 87-107
Issue Date	1929-03
Doc URL	https://hdl.handle.net/2115/9168
Type	departmental bulletin paper
File Information	3(2-3)_p87-107.pdf



NEW BUTTERFLIES FROM JAPAN, KOREA AND FORMOSA

By

PROF. DR. S. MATSUMURA

(With Plate IV)

The present material of the butterflies has been collected by Messrs. T. SHIRAKI, I. SUGITANI, T. TAKAMUKU, S. ISSHIKI, J. SONAN, T. KÔNO, K. KIKUCHI, K. TAKEUCHI and T. ÔKUNI, for whom my cordial thanks must be expressed. Although the mountainous regions of Formosa, especially those of the eastern coast of Formosa, are not yet fully investigated owing to the savage dwellers, but some valuable butterflies were collected by T. SHIRAKI, J. SONAN, T. OKUNI, etc. and put at my disposal. Mt. Niitaka, the highest peak of which being about 13075 ft high, may be a good collecting ground in future, for it hides yet many interesting palaeartic butterflies. Last year, in April and May, I was in Formosa myself with Mr. S. HIRAYAMA, escorted by Mr. J. SONAN, Government entomologist, and brought many interesting insects to home, among which the butterflies were not few.

Hori (Horisha) in Formosa is the best collecting ground for the Lepidopterogists and its neighboring places as Baibara, Musha, Tattaka, Kyuhabon, Sankakuho, etc, may easily be visited from there. Koshun is also a good resort for the collection, but if any one is not acquainted with the topography of there, it is quite difficult to obtain good specimens. The "Tropical Botanical Garden" of Koshun is the best ground for the Lepidopterogists, but at this time we were quite unsuccessful. From Kusukusu in the Prov. Koshun, where the savage are still numerous, to Shijukei is also a good place. In the year 1927, Prof. I. SUGITANI went to Korea and brought many interesting butterflies to home, some of which are described in this paper.

Descriptions of new Species and Forms:

Papilio memnon taihokuana n. form.

♀. Near the form *agenor* L., but differs from the latter in having a cream yellowish outer half to the secondaries, lacking the discoidal patch; in one specimen with some reddish suffusion around each black admarginal patch, and

in another with quite a broad blackish margin which does not extend beyond the admarginal spot-series.

Hab.—Formosa; two female specimens were collected in September and November at Taihoku by T. SHIRAKI and another female at Hori by T. TAKAMUKU.

***P. doson hankuronis* n. ab.**

♂. All the greenish markings become mostly white, only the central series being pale green, the three spots in the discoidal cell reduced into 2 and each is represented by a very narrow transverse line.

Hab.—Formosa; one male specimen was collected at Hori on the 26th of April, 1919, by T. TAKAMUKU.

***P. doson kuronis* n. ab.**

♂. Allied somewhat to ab. *hankuronis* MATS., but differs from the latter in lacking the central spots-series to primaries and the discoidal spot to secondaries.

Hab.—Formosa; one male specimen was collected at Hori on the 4th of June, 1919, by T. TAKAMUKU.

***Papilio doson akanashii* n. ab.**

♂. Underside of the secondaries lacks the scarlet markings in the costa and at the base of the 2nd, 3rd and 4th interspaces.

Hab.—Formosa; one male specimen was collected at Hori on the 4th of June, 1919, by T. TAKAMUKU.

***Papilio sarpedon takamukuana* n. ab.**

Differs from the typical subsp. *connectens* FRUHS. in having a pale greenish central series of small roundish spots to the primaries.

Hab.—Formosa; one male specimen was collected at Hori by T. TAKAMUKU.

***Papilio sarpedon lunula* n. ab.**

Differs from the *connectens* FRUHS. in having a pale greenish admarginal series of lunular spots; the admarginal lunular spots to the secondaries are less curved than in the *connectens* FRUHS.

Hab.—Formosa; one male specimens was collected at Hori on the 15th of April, 1919, by T. TAKAMUKU.

***Papilio sarpedon hirayamae* n. ab.**

At the apex of the primaries evidently truncated, the central series of spots

becoming very broad towards the dorsum; the tail to secondaries much elongated and narrower, the lunular spots being less curved.

Hab.—Honshu; one male specimen was collected on the 12th of May, 1915, at Komaba (Tokyo) by S. HIRAYAMA and now preserved in the cabinet of T. TAKAMUKU.

***Papilio epycides uwakurona* n. form.** (Pl. IV, fig. 6)

♂. Differs from subsp. *melanoleucus* NEV. especially in lacking any longitudinal white stripes to both wings, having only the admarginal series of whitish spots to primaries and both the admarginal and marginal series to secondaries; a short whitish bar before the apex of cell to the primaries.

In the secondaries with the admarginal series of much larger spots than those of the marginal series; the cell black, with a few whitish scales, so that the 3 longitudinal black stripes being obsoletely seen; an obscure medial series of whitish spots, one spot of which at the base of interspace V being only conspicuous.

Hab.—Formosa; one male specimen was collected on the 14th of April, 1919, at Hori by TAKAMUKU.

***Papilio epycides shitakurona* n. form.**

Closely allied to the *uwakurona* MATS., but differs in having only admarginal series of whitish spots to the secondaries, the yellowish anal spot being much smaller.

Hab.—Formosa; one male specimen was collected on the 10th of April, 1919, by T. TAKAMUKU at Hori.

Luehdorfia japonica formosana* ROTHSCILD

♂. Closely allied to the typical specimen, but may be distinguished in the following characters:

Primaries with much broader submarginal and antemedial yellow bands; secondaries with the marginal series of much larger ochre yellowish patches.

Underside of the secondaries with the marginal series of much larger ochre yellowish patches; a black patch at the base of interspace II always smaller, being somewhat larger than that in the interspace III; a series of bluish spots at the submarginal region being much smaller.

Hab.—Formosa; two male specimens were collected at Bokusekkaku, in the Prov. Daito by K. ASAKURA and now preserved in the cabinet of T. TAKAMUKU.

* Nov. Zool., XXV. p. 65 (1918)

***Betaporia moltrechti nigriscens* n. form. (Pl. IV, fig. 4, ♂)**

♂. Primaries differs from the typical form in having much smaller pale yellowish spots and 2 longitudinal stripes each in the cell and under the median vein. Each yellowish stripe to the secondaries in interspaces II-V divided into 2 small patches, the innermost stripe in interspace I near the end being interrupted and the outer 3 almost whitish in colour.

Underside nearly the same with the typical specimen, but the maculation to primaries being somewhat smaller.

Hab.—Formosa; one male specimen was collected at Chipon, eastern coast of Formosa, on the 4th of July, 1927, by Prof. S. ISSHIKI.

***Colias hyale suzukii* n. ab.**

Colias hyale ab. SUZUKI—Ent. Mag. Kyoto, Vol. II, p. 120, pl. V, fig. 8, (1908).

♂. Both wings entirely fuscous brown, the discoidal spot being darker; the costal margin narrowly and the fringes pinkish; the basal part to secondaries somewhat darker.

Underside in the primaries fuscous, at the costa narrowly and at the apex broadly dark yellow; in the secondaries dark yellow, at the base infuscated, the discoidal spot being whitish.

Hab.—Kyoto; one male specimen was collected on the 4th of October, 1908, by M. SUZUKI and the type specimen is now in the cabinet of T. TAKAMUKU.

***Anthocaris cardamines isschikii* MATS.**

As I have described the female specimen of this subspecies* in 1925, so I will mention now only the important points of the male.

♂. Primaries—The apical fuscous patch, upperside, much narrower than in the typical specimen, which is produced tooth-like at the innerside of each vein; at the termen with a row of 4 fuscous spots, each being nearly in the same size; the discocellular spot much smaller; the costal margin fuscous, the fuscous scales in it becoming scarcer beyond the middle. Secondaries more creamy yellow in colour, and the blackish part at the base more largely extended.

At the apex and termen to primaries, underside, fuscous, being interrupted by whitish lines in the interspaces, which becomes broader towards the apex; the discocellular spot near the middle with a whitish speck outwardly; the greenish part to both wings more predominating, so that the white markings

*Jour. Coll. Agr. Hok. Imp. Univ. Sapporo, Vol. XV, p. 91, pl. X, fig. 19, ♀ (1925)

becoming much smaller.

Hab.—Numerous male and female specimens were collected in June, 1928, at Kamikochi, in the Prov. Shinano, by Prof. I. SUGITANI and one male of these specimens was sent to me for identification.

Danais chrysippus limbata n. form. (Pl. IV, fig. 3, ♂)

♂. Differs from the typical form in having a broad dark brownish band at the margin to secondaries, lacking any whitish spot in it.

Hab.—Formosa; one male specimen was collected on the 4th of July, 1915, at Hori by T. TAKAMUKU.

Danais chrysippus subpurpurea n. form. (Pl. IV, fig. 2, ♀)

♀. Both wings whitish, with a purplish luster in a certain light.

Primaries at the base and dorsum reddish brown, the termen being infuscated, with a double series of white spots, except those in the interspace I, which are not double; at the apex broadly infuscated, with 2 white spots in the interspace VII.

Secondaries at the basal $\frac{1}{3}$ and the admarginal region reddish brown; at the margin fuscous, with a single series of white spots in it.

Hab.—Formosa; one female specimen was collected at Hori by Prof. T. SHIRAKI.

Danais ismare kotoshonis n. subsp. (Pl. IV, fig. 1, ♀)

♀. Somewhat allied to subsp. *fulva* FRUHS., but differs from it especially in having a purplish luster in a certain light.

Both wings fuscous, with white markings which reflect a purplish luster especially in the primaries; along the termen with a series of white spots except in the interspaces V and VI; the subapical series of spots much larger. Secondaries with larger white streaks and spots, having a double series of white spots along the termen.

Hab.—Formosa; one female specimen was collected on the 23rd of September, 1923, at Kotosho by T. OKUNI.

Danais luzonensis formosana n. subsp. (Pl. VI fig. 14, ♂)

Closely allied to subsp. *praemacaristus* FRUHS., but differs from the latter in having much larger spots and longer streaks.

Primaries—The marking in interspace V much shorter, being double so long as in the *praemacaristus*.

Secondaries—The discoidal cell in the middle lacking the longitudinal black stripe.

Hab.—Formosa; one male specimen was collected by T. TAKAMUKU at Hori (?)

Euploea dufresne okinawensis (Pl. VI, fig. 13, ♀)

♀. Upperside closely allied to subsp. *laetifica* BUTL., but differs from the latter in having much larger subapical series of whitish blue patches, lacking it entirely in the interspace I^b.

At the discocellulars a very small bluish patch and at the submarginal region with a series of white patches.

Underside—Primaries with 4 larger white patches at the subapical region, respectively in the interspaces V, VI, VII and VIII.

Hab.—Okinawa (Riukiu); one female specimen was collected in 1921 by T. TAKAMUKU.

Doleschallia bisaltide iwasakii n. subsp. (Pl. IV, fig. 8, ♀)

Doleschallia bisaltide philippinensis MATS. THOUS Ins. Jap. Add. Vol. III, p. 555, pl. IXI, fig. 3. (1919) *Doleschallia polibete* NAGANO, Insect-world, Vol. XV, p. 368, pl. XIX, (1911).

♀. Closely allied to subsp. *philippinensis* FRUHS., but differs from it as follows:

The ground colour darker brown. Primaries with a much broader yellowish patch at the middle of costa, which is not interrupted by the longitudinal veins; the yellowish spot in interspace IV smaller, lacking the same spots in V entirely.

Secondaries with no ocellar speck in the interspace V, that of II becoming merely a black speck which is not ocellated.

The medial band to primaries, underside, above vein 5 obsolete, being strongly wavy; in the secondaries with a small bluish ocellated speck each in the interspaces II and V, which is provided with a large obsolete fuscous ring around it.

Hab.—Okinawa; one female specimen was collected in 1921 by T. TAKAMUKU, and the type is now in his cabinet.

This species was first reported by K. NAGANO in the "Insect World" Vol. XV, p. 369, pl. XIX (1911), which was collected by T. Iwasaki at Ishikakijima.

Cyrestis thyodamas kumamotensis n. form.

♀. Differs from the typical specimen in having the ground colour pale testaceous, all the lines brownish and very narrow, no leaden coloured postmedial band to the secondaries.

Hab.—Kiushu (Kumamoto); one female specimen was collected on the 9th

of August, 1911, by the author at Gokanosho.

***Cyrestis thyodamas tappana* n. form.**

♀. Closely resembles the form *kumamotoensis* MATS., but differs from it in having the ground colour more whity, the brownish lines being somewhat broader, the leaden coloured postmedial band distinct from vein 4 to 2.

Hab.—Formosa; one female specimen was collected on the 11th of October, 1906, by the author at Tappan.

***Cyrestis thyodamas ishigakina* n. form.**

♂. Also resembles the foregoing form, but the ground colour white with a light pinkish shade; the leaden coloured postmedial band broad, which is distinct from vein 2 to the costa.

Hab.—Okinawa; one male specimen was collected on the 5th of August, 1906, at Ishigakijima by T. IWASAKI.

***Apatula ilia kamonis* n. form. (Pl. IV, fig. 15, ♂)**

♂. Both wings dark brown, with a purplish luster as in the *substituta* BUTL. Primaries with an obsolete, orange yellow postmedial line from vein 4 to before the dorsum. Secondaries in the cell somewhat yellowish, with an admarginal series of orange yellow patches and a marginal series of pale yellowish spots; a black ocellar spot in the interspace II encircled with orange yellow, at the anal region being orange yellow. Underside yellowish as in the *substituta* BUTL.

Hab.—Kyoto; one male specimen was collected at Kamo by M. SUZUKI and now in the cabinet of T. TAKAMUKU.

***Sephisia chandra horishana* n. form. (Pl. IV, fig. 11, ♂)**

♂. Both wings velvety black. Primaries at the margin with a series of 4 obsolete whitish spots; near the middle with 4 orange yellow patches, respectively in the middle of cell, at the base of interspace IV, and each in the middle of 1^a and 1^b, being arranged somewhat in a semicircle; a speck each in the middle of interspace III, near the base of IV, in the middle of VI and VII. Secondaries with a white speck in the middle of interspace II; near the anal angle with a series of 3 bluish spots, respectively in the interspace I, II and III; along the vein 1 with long yellowish gray hairs.

Underside of each wing with a series of whitish blue patches along the margin, the other markings as on the upperside.

Hab.—Formosa; one male was collected at Hori on the 23rd of April, 1919, by H. KAWAMURA and now in the cabinet of T. TAKAMUKU.

Limenitis dudu isschikii n. ab. (Pl. IV, fig. 5, ♀)

♀. Differs from the *jimanitra* FRUHS. in having a very broad white central band to both wings, its breadth being nearly $1\frac{1}{2}$ times so broad as in the typical specimens, leaving a much narrower fuscous marginal portion.

Hab.—Formosa: one female specimen was collected on the 13th of March, 1926, at Mt. Rantai by Prof. S. ISSHIKI.

Neptis karenkonis n. sp. (Pl. IV, fig. 9, ♀)

Near *N. ananta* FELD., but differs from the latter as follows:

♀. Primaries—The middle stripe, upperside, running from the base to the basal $\frac{1}{3}$ in interspace IV, instead being incised anteriorly at the discocellulars and is somewhat expanded anteriorly and posteriorly; the white patches in interspaces I, II, V and VI much larger.

Secondaries—The medial band much broader, the veins of that place being not black as in the *ananta* FELD.

Underside differs entirely from that of the *ananta* FELD.

Primaries pale brownish, with the whitish markings as on the upperside, but much larger and broader; at the inner side along the white submarginal band with a brownish band which is gently excurved at the upper $\frac{1}{3}$.

Secondaries with a broad white antemedial band which is expanded towards the costa, defined by a brownish band on both sides; near the middle with a series of triangular brownish spots, each of which is capped with a yellowish line internally; a brownish submarginal line somewhat scalloped, at each side with a pale bluish white scalloped band, that of the inner being very broad.

Exp.—♀ 60 mm.

Hab.—Formosa; one female specimen was collected in July at Karenko in the Prov. of Daito by T. OKUNI and J. SONAN.

Limenitis formosicola n. subsp.

♂. Closely allied to *L. amphylissa* MÉN., but differs from the latter as follows:

Upperside:—Primaries near the apex no reddish brown patch; the white spots in the medial series distinctly smaller arranged in a much gentler curve; the white patch in the middle of cell oblique, its hind end nearly touching the median vein and broader; the admarginal series of black spots distinct, the spots in interspace I very large and the lower 4 spots each defined outwardly by a white lunule.

Secondaries at the postmedial region with a double row of fuscous spots,

the outer spots being smaller and each ringed by a paler colour, the inner spots larger and each being somewhat quadrate in form; the medial white patches nearly in a straight line, one patch in the interspace IV being placed somewhat internally, the spots becoming somewhat larger towards the dorsal margin.

Underside:—Primaries in the middle of cell with 2 dark brown transverse lines, that of the inner somewhat excurved in the middle, and no fuscous patch at the innerside of it; the white patch in the middle of interspace II being not near the termen as in the *amphyssa*, while the patch in III being nearer to the base; a double series of blackish spots at the admarginal region, the inner spots in interspaces I and II being obsolete, the lower 4 spots in the outer series each defined by a white lunule which is widely apart from the marginal white patches; no white spot in the interspaces IV and V.

Secondaries at the base of cell with 3 fuscous spots, and at the base of interspace V with 2 concolorous spots; the outer margin broadly reddish brown, occupying nearly one third the length, in the middle of which with 2 series of fuscous spots, those of the interspaces II, III and IV each being bordered outwardly with a white lunule; at the marginal region a series of white lunules, each lunule gradually decreasing its size towards the apex; a reddish brown subbasal band from the costa to vein I^b; the white medial band gently excurved and not incurved towards the lower end as in the *amphyssa*; at the base no bluish luster, in a certain light with some purplish shade.

Exp.—♀ 62 mm.

Hab.—Formosa, one female specimen was collected at Hokuto by the late I. NITOBE.

Neptis shirakiana n. sp. (Pl. IV, fig. 10, ♂)

Closely allied to *N. ananta* FELD., but differ from it as follows:

♂. Primaries—The central stripe, upperside, much broader towards the apex, being more deeply incised anteriorly; a white spot in each interspace forming a gentle excurved series all together; an obsolete whitish submarginal line on each side defined by a black line, being gently excurved towards the costa.

Secondaries—The praediscal white band distinctly broader; the postmedial band concolorous with the praediscal band, being interrupted by the black longitudinal veins.

The white markings, underside, nearly the same with those of the upperside; near the middle with a wavy brownish band which is defined anteriorly by an obsolete pale bluish white line and posteriorly by a whitish band; near the margin with 2 brownish bands, that of the outer being narrower and the

interspace filled in with a pale bluish white colour.

Exp.—♂ 70 mm.

Hab.—Formosa; one male specimen was collected on the 22nd of June, 1920, at Hori by Prof. T. SHIRAKI.

Cirrochroa fasciata formosana n. subsp. (Pl. IV, fig. 12, ♂)

Closely allied to subsp. *ortopla* FRUHS., but differs from the latter as follows:

♂. Primaries—The yellowish medial band much broader, which is conical at the apex, being not produced at the base of vein 3; the yellowish spots respectively in the interspaces IV and V much smaller.

Secondaries—The yellowish medial band more acuminate at the inner-margin; the same coloured postmedial band distinctly narrower, so that the outer fuscous band becoming much broader; the black spot-series before the postmedial band smaller especially towards the tornus.

Hab.—Formosa; one male specimen was collected by T. TAKAMUKU at Daito, eastern coast of Formosa.

Cupha erymanthis takamukai n. form. (Pl. IV, fig. 7, ♂)

♂. Both wings pale yellowish brown. Primaries from the middle of costa towards the tornus with a double series of obsolete black patches; at the apex and termen broadly fuscous, the latter becoming narrower towards the tornus. Secondaries in the middle with a very broad fuscous band, being interrupted by the yellowish brown longitudinal veins, leaving a narrow band of the ground colour at the submarginal region.

Ground colour on the underside nearly the same with the typical specimen, but the markings obsolete, only the postmedial series of black spots being distinct. This differs from ab. *decolorata* SONAN in having a pale yellowish ground colour.

Hab.—Formosa; one male specimen was collected in 1911 at Hori by K. ASAKURA and is now in the cabinet of T. TAKAMUKU.

Rapala takasagonis n. sp.

Closely allied to *R. hirayamana* MATS.*, but differs from it as follows:

♀. Colour of both wings, upperside, deeper in blue, rather resembling more that of *R. arata* BREM. et GREY.

Primaries at the outer margin between veins 4 and 5 distinctly amplified. Secondaries with much longer cauda, being about 3 times as long as that of *R. hirayamana*, black, not mingling brownish scales; the caudal lobe distinctly larger.

*Ins. Mats., Vol. I, p. 23, pl. II, fig. 6, ♀ (1926)

Primaries with the white postmedial line, underside, wavy, broader, that of the interspace 4 being placed somewhat more outwardly than that of 3; the white postmedial line to secondaries wavy, being interrupted at the veins; a black patch at the termen in interspace II oval, being much larger; the caudal patch above defined by white.

Exp.—♀ 42 mm.

Hab.—Formosa; one female specimen was collected by the author at Hori, the exact habitat being not known.

Rapala coreacola n. sp.

Closely allied to *R. micans betuloides* BUTL.,* but differs from it as follows:

♂. The reddish patch beyond the cell to primaries, upperside, smaller. Underside resembles rather that of *R. arata* BREM. et GREY, but the submarginal bands to both wings not interrupted by the paler veins; 3 black patches, including a patch of the caudal lobe, at the margin nearly the same with those of the *arata*, but the innerly situated patches each in interspaces 1^b and II being white, angularly, and enclosed by black.

♀. Primaries with no reddish patch beyond the cell, upperside; secondaries at the inner margin with a series of large reddish patches.

Exp.—♂, ♀ 36 mm.

Hab.—Korea; 4 (3 ♂, 1 ♀) specimens were collected in the following places by G. TAKAGI.

1 ♂, 27. VIII, 1920, Mt. Daijōzan (Keijo)

1 ♂, 28. IV, 1922, Mt. Hokkan (Keijo)

1 ♂, no date and no locality.

1 ♀, 15. V, 1925, Keijo.

Rapala shakojiana n. sp.

Somewhat resembles *R. arata tyrianthina* BUTL., but differs from it as follows:

♀. Upperside purplish blue, being deeper in colour.

The short discoidal bands to both wings, underside, not tapering towards the dorsum, being situated close by the postmedial band, especially in that of the secondaries; the postmedial band to secondaries at the lower $\frac{1}{3}$ filled in with fulvous and defined by fuscous on both sides; the submarginal bands not interrupted by the paler veins. Anal fulvous patch smaller, much resembling that of *R. coreacola* MATS. This is easily distinguished from *R. coreacola* MATS. in lacking reddish patches at the inner margin on the upperside.

Exp. ♀, 32 mm.

* Ann. Mag. N. H. (5) VII, p. 34, pl. IV, fig. 2 (1887)

Hab.—Korea; one female specimen was collected on the 10th of August, 1921, at Shakoji by Y. HASEGAWA.

Rapala micans suzukii n. subsp.

Differs from the typical specimen as follows:

♂. Wings fuscous brown, upperside, the lower one third (dorsal part) to primaries and the larger part to secondaries bluish, changing its density according to the light. Beyond the discoidal cell to primaries with a small reddish patch. Secondaries with a small reddish patch at the end of interspace II, in 1^b with only a trace of a reddish spot, the reddish patch in the anal lobe being as large as that of II.

Underside greyish with a golden tinge. The postmedial band to primaries broader, gradually becoming narrower towards the tornus, near the end on the outside distinctly excurved, the submarginal bands to both wings narrower, on the primaries nearly $\frac{1}{4}$ and on the secondaries nearly $\frac{1}{3}$ breadth of the postmedial band at the costa.

At the inrespaces 1^b and II with each a black patch, that of the former providing a few white scales.

Hab.—Korea; one male specimen was collected on the 9th of August, 1916, by M. SUZUKI in Korea, the exact locality being not known.

Rapala micans formosicola n. subsp.

Closely allied to the typical *micans* BREM. et GREY, but differs from it in the following points:

♀. Secondaries at the interspace 1^b and II, upperside, each with a reddish patch, so that with the anal one presenting a transverse series of 3 reddish patches.

Brownish bands to both wings, underside, more conspicuous, the discocellular patch being broader; the postmedial band to primaries broader, becoming narrower towards the tornus and somewhat excurved at the outside below; the submarginal band nearly $\frac{1}{2}$ breadth of the postmedial band; all the bands to secondaries nearly the same breadth with each other; a much smaller velvety black patch at the interspace II to secondaries.

Hab.—Formosa; one female specimen was collected in July, 1919, at Musha by T. OKUNI and J. SONAN.

ab. ***tatakkana*** n. ab.

Upperside with no reddish patch in each interspace of 1^b and II to the secondaries.

Underside more brownish, the postmedial bands being broader especially

at the costa.

Hab.—Formosa; one female was collected on the 19th of July, 1925, at Tattaka by S. ISSHIKI and S. AKASAKA.

Tajuria karenkonis n. sp.

♀. Closely allied to *T. coerulea* NIR.*, but differs from it in the following points:

Primaries deeper blue, upperside, this colouring extending further to the tornus; secondaries with a much narrower fuscous termen, the caudal lobe being much smaller.

Underside silvery greyish white, each wing being traversed by an oblique fuscous band which becomes narrower and wavy towards the dorsum; the submarginal band greyish, obsolete, somewhat wavy and incurved; at the interspace II to secondaries at the termen with a small orange patch, pupillated with fuscous near the outer margin; the caudal lobe black, defined by orange above. Margin narrowly fuscous brown, 2 tails black, at the tips being white, the inner tail broader, with 2 white longitudinal stripes along the margin.

Exp.—♀ 38 mm.

Hab.—Formosa; one female specimen was collected in July, 1920, at Karenko by T. OKUNI and J. SONAN.

Lehera eryx horiella n. subsp.

Differs from the subsp. *okinawana* MATS. as follows:

The white patches to secondaries, upperside, much larger, lacking a black patch in the interspace II, which is very conspicuous in the *okinawana* MATS.; the submarginal fuscous band much broader.

The white patches to both wings, underside, larger, lacking the black spot in interspace 1^c.

Hab.—Formosa; one female specimen was collected on the 10th of May, 1917, by K. ASAKURA at Hori.

I have one more female specimen from Kwashoto (the northern most isle of Formosa) collected on the 2nd of October, 1920, by J. SONAN, which does not differ practically from that of *okinawana* MATS., which was collected in Riukiu Islands.

Zephyrus comes wilemaniella n. subsp.

Zephyrus comes WILEM., Ann. Zool. Jap., p. 93 (1909).

♀. Closely allied to *Z. comes* LEECH, but differs from the latter as follows: Upperside not differs practically, the fuscous patch to primaries being some-

*Zool. Mag. Tokyo, No. 386, p. 375 (1926).

what larger.

Underside paler, rather resembling that of *Z. minerva* LEECH; in the primaries with an obsolete narrower white admarginal band, not defined internally by a black line; only a few fuscous scales along the outside of the band in interspace II and a short white submarginal band which ends in the interspace II, nearly parallel with the admarginal band.

Secondaries also resembles more the *minerva*, the admarginal band being straight from the costa to vein 4, in the interspace III scarcely, and in II and I strongly, incurved; near the apex with the black spot smaller, but which is larger than that in the interspace II, resembling to that of the *comes*.

Hab.—One female specimen was collected in May, 1917, at Musha by T. OKUNI and J. SONAN.

I have seen this species myself along the track road from Hori to Musha, but could not catch it. Prof. I. SUGITANI captured one female specimen in August, 1927, at Musha also.

This may be a new species resembling rather *Z. minerva* LEECH than *Z. comes*, on account of the submarginal band to the primaries.

***Zephyrus hecale shirakiana* n. subsp.**

Closely allied to the typical specimen, but differs from it in the following points:

♀. The fulvous spots in the primaries, upperside, smaller, especially that of the interspace III.

The white bands on the underside broader, the medial band to secondaries becoming much narrower towards the tornus; the discocellular bands conspicuous, the outer white line to primaries more broader, that of the secondaries being nearly the same breadth with that of the inner; a broad black submarginal band which becomes paler towards the costa, defined outwardly by a white line and internally by an obsolete grayish line; the white submarginal line double, scarcely undulated, that of the outer being much stronger.

Hab.—One female specimen was collected on the 14th of April, 1924, at Daisuikutsu by Prof. T. SHIRAKI.

***Zephyrus hecale niitakana* n. form.**

Differs from the subspecies *shirakiana* MATS., in lacking any fulvous marking to the primaries.

Hab.—Formosa; one female specimen was collected on the 11th of October, 1926, at the top of Mt. Niitaka by T. KANO.

***Zephyrus kanonis* n. sp.**

Closely allied to *Z. taiwanus* LEECH, but differ from the latter as follows:

♂. Upperside with more yellowish golden shade, the black terminal band to secondaries becoming much narrower from vein II to V.

Underside greyish white with fuscous bands.

Primaries with the discocellulars fuscous, defined at each side by white, which becomes narrower towards the lower angle; the postmedial band scarcely oblique, ending at vein 2, defined by white outwardly; the subterminal band narrower towards the costa, defined at each side by a white line; the termen fuscous, which colour is narrower towards the tornus, at the lower half of termen with a narrow white line outwardly; the fringe fuscous, below vein II being white.

Secondaries with somewhat paler ground colour than that of the primaries; in the interspace VII with a short fuscous band defined by white internally; the discocellulars nearly the same with that of the primaries, but somewhat narrower; the postmedial band much nearer to the middle than that of the primaries, being tail-like narrowed towards the tornus; the submarginal band somewhat broader towards the costa, followed by a narrow wavy concolourous line internally; the terminal region somewhat infuscated, with a narrow white line beyond it followed by a fuscous line outwardly; an orange patch each at the anal angle and near the end of interspace II, the latter being ocellated with black. The fringe white.

♀. Primaries, upperside, with the bluish patch distinctly larger, its outer end reaching near the tornus; beyond the cell with a quadrate bluish white patch and a paler one in the middle of interspace III; the fringe nearly the same with that of the male.

Secondaries paler than the primaries, with few scales of bluish colour in the cell; the bluish line before the tail not differs practically.

Underside—Nearly the same with that of the male, but the fuscous bands to both wings being more broader.

Exp. ♂, ♀. 38–40 mm.

Hab.—Formosa; 3 (2 ♂, 1 ♀) specimens were collected in August, 1926–28, at Niitaka, Tattaka and Karenko by T. KANO, K. KIKUCHI, J. SONAN and OKUNI. This female was captured at the summit of Niitaka (c. 13075 ft) by Kano.

***Zephyrus tattakana* n. sp.**

Closely allied to *Z. corruscans* LEECH, but differs from it in the following points:

♂. Primaries with the black part at the apex distinctly broader, so that

the golden green colour near the apex obliquely truncated.

Secondaries with the black part of termen somewhat narrower than that of the *corruscans*.

Primaries, underside, with the discocellular line scarcely darker, in the middle being very narrowly paler; towards the tornus with 2 black patches respectively in the interspaces I and II.

The termen to secondaries broadly bluish white as we see in *Z. taiwanus* WILEM., but which is more broader; in the interspace I^b at the margin with no reddish patch, being scaled only with bluish white.

♀. Primaries with the bluish patch, underside, somewhat resembling that of *Z. taiwanus* WILEM., but larger in size; in one specimen it has a fulvous patch in the interspace III beyond the bluish patch; the veins in the bluish patch black.

Secondaries with some bluish scales in the cell and at the bases of interspaces II and III; before the tail with a narrow bluish line as in the *taiwanus*.

Underside nearly the same with that of the male, but the white lines somewhat narrower.

Exp.—♂, ♀ 40–44 mm.

Hab.—Formosa; 4 (1 ♂, 3 ♀) specimens were collected at Tamaho, Sankakuho and Tattaka by I. SUGITANI, S. ISSHIKI and K. KIKUCHI in August, 1925–1928.

Thecla eximia kanonis n. subsp.

Closely allied to subsp. *watari* MATS. from Hori, but differs from it as follows:

♀. Upperside—Primaries with a broader reddish patch which is rounded at the outside and distinctly extended towards the termen, the veins on it being fuscous. Secondaries with a short reddish band, being not interrupted as in the *watari*.

Underside—White lines to both wings narrower, distinctly interrupted by the veins. Primaries with no reddish scales at the submarginal spot-series. Secondaries with a narrower reddish submarginal band which ends in the interspace IV.

Hab.—Formosa; one female specimen was collected on the 22nd of November, 1927, by T. KANO at Sankakuho.

Thecla mushana n. subsp.

Closely allied to *T. eximia* BREM. et GREY, but differs from it as follows:

♂. Underside pale greyish. Primaries with a more wavy narrower post-marginal band, which in each interspace is somewhat excurved and scalloped,

at the inner side being narrowly infuscated; the submarginal spot-series composed of 3 obsolete longitudinal fuscous patches, each being defined on the sides by whity grey.

Secondaries with the double submarginal white band much narrower, becoming narrower towards the tornus; in the interspace II with a roundish reddish patch, pupillated with a conical black patch; a reddish patch crossing the vein 1^b; no reddish patch at the interspace 1^c; both tails very short, that of the 2nd vein being most probably broken.

Exp.—♂ 30 mm.

Hab.—Formosa; one male specimen was collected in June, 1910, by T. OKUNI and J. SONAN at Musha.

Niphanda fusca formosensis n. form.

♀. Differs from the typical specimen in the following points:

Upperside—Primaries in the middle with a large paler patch, the discocellular spot and postmedial series of spots being distinct.

Secondaries with some fuscous spots especially at the discocellulars, in the middle of interspace 1^a and near the end of II; an obsolete wavy darker admarginal line, which broadly excurves at the veins 3,4 and 5, visible.

Underside—White, so that the fuscous spots being conspicuous; the wavy admarginal line, defined outwardly by white, the termen being broadly fuscous, leaving a white portion only at the tornus.

Hab.—Formosa; one female specimen was collected on the 3rd of July, 1921, at Mt. Kohagi by Shirai.

Niphanda fusca nipponica n. form.

♀. Closely allied to the *formosensis* MATS., but differs in having the paler wings, upperside; the postmedial series of fuscous spots which becomes smaller towards the costa on the primaries, underside; a large spot in the interspace VII to the secondaries, underside, that of VIII being very small.

Hab.—Honshu; one female specimen was collected in July, 1909, at Takasago, in the Prov. Harima, by the author.

Callophrys rubi sachalinensis n. form.

Callophrys rubi sibirica MATS., Jour. Agr. Hok. Imp. Univ., Sapporo, XV, p. 103 (1925).

In 1925, when my assistants caught this butterfly in Saghalien, I identified it as the *sibirica* RÜHL, but after studying it further, I found that it should be a new form.

In my present specimen the sexual mark in the male much longer, being

at least thrice as long as the breadth. The green colouration on the underside nearly the same with the typical specimen, rather resembling that of the *immaculata* FUCHS; in the secondaries with only 2 whitish specks, respectively in the interspaces 7 and 3, that of the latter being very small.

Hab.—Saghalien; one male specimen was collected on the 10th of July, 1924, at Ichinosawa by S. TAKANO and K. TAMANUKI.

***Cyaniris ishigakiana* n. sp.**

♀. Wings fuscous. Primaries in the middle with a pale bluish patch which extends from vein 1 to the lower part of cell; the discocellulars black, being nearly straight.

The fringe fuscous, tipped with white. Secondaries with a few bluish scales in the cell and below it; a submarginal series of black spots, each spot of the interspaces II, III and IV being capped with a pale bluish lunule; the fringe white.

Underside somewhat resembles that of *C. puspa* HORSF. but differs in having the postdiscal series of spots nearly in a straight line, being provided with a submarginal series of roundish black spots. Secondaries with submarginal series of roundish spots, but the spots being much larger than those on the primaries.

Exp.—♀ 27 mm.

Hab.—Okinawa; one female specimen was collected in June, 1927, by Prof. I. SUGITANI and is now preserved in his cabinet.

***Cyaniris postimacula* n. sp.**

♂. Closely allied to *C. puspa* HORSF., but differs from it in having an oblong white patch in the interspace VI to secondaries:

Primaries—No paler discal patch; the longitudinal veins towards the apices fuscous; the fringe black, towards the tornus somewhat tipped with white.

Secondaries—Veins mostly fuscous, that of 5 being concolorous with the ground colour except at the apex; a submarginal series of fuscous spots, one spot in the interspace VI being the largest, and which is encircled with a white ring.

The markings on the underside smaller. Primaries with very obsolete submarginal series of fuscous spots. Secondaries with the costal spot very small, the submarginal series obsolete, the spot in the interspace VI being not distinct, at the base with a bluish shade.

Exp.—♂ 24 mm.

Hab.—Formosa; one male specimen was collected on the 16th of January, 1927, at Baibara by K. KIKUCHI.

Cyaniris latimargo n. sp.

Somewhat allied to *C. transpectus* MOOR., but with no white discal patch.

♂. Upperside deep blue, at the costa and termen broadly black.

Primaries—The black colour at the costa, upperside, not extends beyond the cell, at the apex the black part being distinctly broader than at the termen; the longitudinal veins black.

Secondaries—The black margin distinctly broader than that of the primaries; the longitudinal veins except that of 5 black. The fringe black, tipped with white.

Underside white with a very light shade of blue.

Primaries—The discocellular streak straight, the postdiscal series of fuscous spots, except that of the interspace VI, nearly in a straight line, that of II being incurved; the marginal line as broad as the subterminal lunules.

Secondaries—Beyond the middle below the costa with a large conspicuous roundish spot, the spots in the interspaces III–VI obsolete; the admarginal series of lunular fuscous markings nearly the same with that of the primaries, the subterminal spot-series black, the spot in the interspace II being the largest; the marginal black line as broad as that of the primaries, becoming narrower towards the apex; the fringe white.

Exp.—♂ 25 mm.

Hab.—Formosa; one male specimen was collected on the 12th of July, 1925, at Kanko, by T. UCHIDA, H. KÔNO and Y. MIWA, and another male on the 2nd of August, 1928, at Baibara, by Prof. I. SUGITANI.

Zizera maha okinawana n. form.

Closely allied to subsp. *argia* MÉN., but it differs chiefly from the latter in having paler wings, a series of fuscous spots at the submarginal regions to both wings, at the apex and termen being scarcely infuscated; on the underside to both wings are much paler.

Hab.—Okinawa; 2 male specimens were collected by T. TAKAMUKU.

Zizera ishigakiana n. sp.

Near *Z. maha* KOLL., but differs in the following points:

♂. Upperside—Purplish blue, in a certain light dark brown, at the termen not being distinctly darker; the fringe dark, at the apex paler, in the secondaries being whity.

Underside—Primaries pale grey, all the black spots except that of the middle of cell and of the interspace VIII oblong, the latter spot being just above the discocellular spot; 3 spots each in the interspaces I, II and III nearly in a straight line, that of I being placed outwardly than that of II; 3 spots each

in IV, V and VI in an oblique straight line; the submarginal line double, both being defined on each side by a white line.

Secondaries with the discocellular spot obsolete; 3 spots each in the interspaces 1^a , 1^b and II in a straight line, the spot in III being the longest; 2 spots in the middle of VII, that of the apex being obsolete; the submarginal line nearly the same with that of the primaries.

Exp.—♂ 20 mm.

Hab.—Okinawa; one male specimen was collected by T. TAKAMUKU at Ishigakijima.

***Zizera labradus riukuensis* n. form.**

Closely allied to subsp. *sangra* MOOR., but differs from the latter in having more fuscous colour on the underside to both wings, so that the ocellar marking being not very distinct, while the submarginal band much broader, reaching nearly the costa.

Hab.—Okinawa; one male specimen was collected by T. TAKAMUKU.

The subspecies *sangra* MOOR., which comes also in Okinawa, was caught by T. TAKAMUKU, and it does not differ practically from the typical specimen from Formosa.

***Satarupa sugitanii* n. sp. (Pl. IV, fig. 16, ♂)**

♂. This may be a subspecies of *S. nymphalis* SPEY., but differs from the typical specimen in the following characters:

Upperside: Primaries—The spot near the end of cell triangular, somewhat incurved at the apex, having the base at the subcosta and the apex at a little beyond the midway between the subcostal and medial veins; the apical 5 patches arranged in a more distinct curve, the inner end of the spot in interspace VII nearly in a straight line with the same end of the spot in IV.

Secondaries—A conspicuous black patch in the interspace VII on outside of the white patch, at the outside being somewhat paler in colour.

Upperside—Secondaries at the basal $\frac{1}{3}$ fuscous, with long white hairs mingling some concolorous scales; in the middle with a broad white central band which becomes narrower towards the dorsum; with one black patch in the interspace VII near the outer margin of the white band; no virescent piles at the base as described by SPEYER.*

The figure of *S. nymphalis* SPEY. in the SEITZ's Work (pl. 85, fig. d, Bd. I, Tagfalter) is not good, but it is better pictured in the Rom. Mémoires Lép. pl. VIII, fig. 4 (1887).

Exp.—♂ 60 mm.

*Stett. ent. Zeit. XL, p. 384 (1879)

Hab.—Korea; one male specimen was collected in the first part of August, 1927, at Mt. Kongo by Prof. I. SUGITANI.

Ampittia takeuchii n. sp.

Closely allied to *A. miyakei* MATS., but differs from the later in the following points:

♂. Primaries—Upperside unicolorously dark fuscous, with paler yellowish spots, at the upper angle of cell with a L-shaped spot; the yellowish spot in interspace II much smaller than that of III. No sexual mark below the cell.

Secondaries with only 2 yellowish spots, respectively in the interspaces II and III, that of II being very small, lacking any yellowish suffusion at the middle.

Underside with the blackish part at the dorsum to primaries smaller, not extending beyond the cell and interspace II, and not reaching the termen.

Secondaries with only 2 spots as on the upperside.

Exp. ♂ 40 mm.

Hab.—Formosa; three male specimens were collected on the 9th of May, 1922, by K. TAKEUCHI at Arisan; the one specimen was kindly set at my disposal.

Parnara baibarana n. sp.

Closely allied to *P. bromus* LEECH, but differs from it as follows:

♀. Primaries—The inner spot in interspace I, upperside, triangular, the spot in II larger, its lower part being produced into an acute angle.

Secondaries—In the interspaces II, III, IV, V and VI each with a small white spot, arranged in an excurved line; in the interspace IV with an extra white speck.

Underside with nearly the same maculation as on the upperside, but in the secondaries with 2 white specks in the interspace IV, and a white speck near the apex of cell at the innerside of the upper discocellular.

Exp.—50 mm.

Had.—Formosa; one female specimens was collected on the 16th of October, 1926, at Baibara by K. KIKUCHI and another female by M. SUZUKI at Horisha.

Parnara baibarana mumon n. form.

Differs from the typical specimen in having no spot to the secondaries, upperside.

Hab.—Formosa; one female specimen was collected on the 8th of September, 1926, at Baibara by K. KIKUCHI.

Explanation of Plate IV

1. *Danais ismare kotoshoensis* MATS. (n. subsp.)
2. *Danais chrysippus subpurpurea* MATS. (n. form.)
3. *Danais chrysippus limbata* MATS. (n. form.)
4. *Betaporia moltrechti nigriscens* MATS. (n. form.)
5. *Limenitis dudu issaikii* MATS. (n. form.)
6. *Papilio epycides uwakuronis* MATS. (n. form.)
7. *Cupha crymathis takamukai* MATS. (n. form.)
8. *Doleschalia bisaltide izwasakii* MATS. (n. subsp.)
9. *Neptis karenkonis* MATS. (n. sp.)
10. *Neptis shirakiana* MATS. (n. sp.)
11. *Sephisia chandra horishana* MATS. (n. form.)
12. *Cirrhochroa fasciata formosana* MATS. (n. subsp.)
13. *Euploea dufresne okinawana* MATS. (n. subsp.)
14. *Danais luzonensis formosana* MATS. (n. subsp.)
15. *Apatura ilia kamonis* MATS. (n. form.)
16. *Satarupa sugitanii* MATS. (n. sp.)

