

TYPE SPECIMENS OF BUTTERFLIES DESCRIBED BY N. KARDAKOFF IN HIS  
 “ZUR KENNTNIS DER LEPIDOPTEREN DES USSURI-GEbietES” PRESERVED IN  
 THE MUSEUM FÜR NATURKUNDE LEIBNIZ-INSTITUT FÜR EVOLUTIONS- UND  
 BIODIVERSITÄTSFORSCHUNG

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ТИПОВЫЕ ЭКЗЕМПЛЯРЫ БУЛАВОУСЫХ ЧЕШУЕКРЫЛЫХ, ОПИСАННЫХ  
 Н. КАРДАКОВЫМ В СТАТЬЕ “ZUR KENNTNIS DER LEPIDOPTEREN DES USSURI-  
 GEBIETES”, ХРАНЯЩИЕСЯ В МУЗЕЕ ЕСТЕСТВЕННОЙ ИСТОРИИ ИНСТИТУТА  
 ЭВОЛЮЦИИ И ИССЛЕДОВАНИЯ БИОРАЗНООБРАЗИЯ ИМ. ЛЕЙБНИЦА

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**Summary.** In the present message the list of type specimens of butterflies described by N. Kardakoff in his paper “Zur Kenntnis der Lepidopteren des Ussuri-Gebietes” preserved in the the Museum für Naturkunde Leibniz-Institut für Evolutions- und Biodiversitätsforschung is provided. The lectotypes of the following species-group taxa are designated: *Araschnia levana borgesti* Kardakoff, 1928, *A. levana wladimiri* Kardakoff, 1928, *Argynnis aglaja graeseri* Kardakoff, 1928, *A. frigga maritima* Kardakoff, 1928, *A. thore meridionalis* Kardakoff, 1928, *A. anadiomene obliterated* Kardakoff, 1928, *A. laodice ussurica* Kardakoff, 1928, *Deudorix arata juliae* Kardakoff, 1928.

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**Ключевые слова:** булавоусые чешуекрылые, типовые экземпляры, обозначения лектотипов, Н. Кардаков

**Резюме.** В настоящей работе приводится список типовых экземпляров булавоусых чешуекрылых, описанных Н. Кардаковым в статье “Zur Kenntnis der Lepidopteren des Ussuri-Gebietes”, хранящихся в Музее естественной истории Института эволюции и исследования биоразнообразия им. Лейбница. Обозначены лектотипы следующих таксонов видовой группы: *Araschnia levana borgesti* Kardakoff, 1928, *A. levana wladimiri* Kardakoff, 1928, *Argynnis aglaja graeseri* Kardakoff, 1928, *A. frigga maritima* Kardakoff, 1928, *A. thore meridionalis* Kardakoff, 1928, *A. anadiomene obliterated* Kardakoff, 1928, *A. laodice ussurica* Kardakoff, 1928, *Deudorix arata juliae* Kardakoff, 1928.

## INTRODUCTION

N. Kardakoff in his famous paper “Zur Kenntnis der Lepidopteren des Ussuri-Gebietes” [Kardakoff, 1928] described the following taxa of butterflies (original spelling and generic combinations): *Papilio maacki* Mén. ab. *viridissima* Kardakoff, 1928 (original status: clearly infrasubspecific; type series: several males); *P. maacki* Mén. ab. *minima* Kardakoff, 1928 (original status: clearly infrasubspecific; type series: two specimens); *P. xuthus* L. ab. *unipunctata* Kardakoff, 1928 (original status: clearly infrasubspecific; type species: several males); *P. xuthus* L. ab. *caeca*

Kardakoff, 1928 (original status: clearly infrasubspecific; type series: single specimen); *Luehdorfia puziloi* Ersch. ab. *kurentzovi* Kardakoff, 1928 (original status: clearly infrasubspecific; type series: single male); *L. puziloi* Ersch. ab. *laqueigera* Kardakoff, 1928 (original status: clearly infrasubspecific; type series: single female); *Parnassius stubbendorfi* Mén. ab. *narvensis* Kardakoff, 1928 (original status: clearly infrasubspecific; type series: single male); *P. stubbendorfi* Mén. ab. *horniana* Kardakoff, 1928 (original status: clearly infrasubspecific; type series: several specimens); *P. eversmanni* Mén. ab. *monocula* Kardakoff,

1928 (original status: clearly infrasubspecific; type series: several specimens); *P. bremeri* Feld. & Brem. *mongugaica* Kardakoff, 1928 (original status: subspecies; type series: several specimens); *P. bremeri* Feld. & Brem. ab. *lunigera* Kardakoff, 1928 (original status: clearly infrasubspecific; type series: not stated, at least one specimen); *P. bremeri* Feld. & Brem. ab. *brykiana* Kardakoff, 1928 (original status: clearly infrasubspecific; type series: single male); *P. bremeri* Feld. & Brem. *olgensis* Kardakoff, 1928 (original status: subspecies; type series: several specimens); *P. nomion* F. d. W. ab. *bipupilata* Kardakoff, 1928 (original status: clearly infrasubspecific; type series: several females); *P. nomion* F. d. W. ab. *bipicta* Kardakoff, 1928 (original status: clearly infrasubspecific; type series: several females); *P. nomion* F. d. W. ab. *octoginta* Kardakoff, 1928 (original status: clearly infrasubspecific; type series: single male); *P. nomion* F. d. W. *ternejana* Kardakoff, 1928 (original status: subspecies; type series: several specimens); *Aporia crataegi* L. *ussurica* Kardakoff, 1928 (original status: subspecies; type series: several specimens); *A. crataegi* L. ab. *sordida* Kardakoff, 1928 (original status: clearly infrasubspecific; type series: several females); *Pieris rapae* L. (g. v.) *wladiwostokensis* Kardakoff, 1928 (original status: clearly infrasubspecific; type series: several females); *Leucochloe daplidice* L. *orientalis* Kardakoff, 1928 (original status: subspecies; type series: several specimens); *Colias aurora* Esp. ab. *lambda* Kardakoff, 1928 (original status: clearly infrasubspecific; type series: several females); *Erebia edda* Men. ab. *menetriesi* Kardakoff, 1928 (original status: clearly infrasubspecific; type series: several specimens); *E. edda* Men. ab. *semicaeca* Kardakoff, 1928 (original status: clearly infrasubspecific; type series: several males); *Liminitis doerriesi* Stgr. ab. *schaljapini* Kardakoff, 1928 (original status: clearly infrasubspecific; type series: single female); *L. moltrechti* Kardakoff, 1928 (original status: species; type series: 3 males, 4 females); *Araschnia levana* L. *borgesti* Kardakoff, 1928 (original status: subspecies; type series: several specimens); *A. levana wladimiri* Kardakoff, 1928 (original status: subspecies; type series: several specimens); *A. levana* L. ab. *separata* Kardakoff, 1928 (original status: clearly infrasubspecific; type series: single male); *Melitaea didyma* O. ab. *kalugini* Kardakoff, 1928 (original status:

clearly infrasubspecific; type series: several specimens); *M. didyma* ab. *robiginosa* Kardakoff, 1928 (original status: clearly infrasubspecific; type series: several specimens); *Argynnis frigga* Thnbg. *maritima* Kardakoff, 1928 (original status: subspecies; type series: several specimens); *A. thore* Hbn. *meridionalis* Kardakoff, 1928 (original status: subspecies; type series: several specimens); *A. ino* Rott. ab. *atra* Kardakoff, 1928 (original status: clearly infrasubspecific; type series: several specimens); *A. aglaja* L. *graeseri* Kardakoff, 1928 (original status: subspecies; type series: several specimens); *A. laodice* Pall. *ussurica* Kardakoff, 1928 (original status: subspecies; type series: several specimens); *A. anadyomene* Fldr. *obliterata* Kardakoff, 1928 (original status: subspecies; type series: several specimens); *Deudorix arata* Brem. *juliae* Kardakoff, 1928 (original status: subspecies; type series: several specimens); *Zephyrus taxila* f. ♀ *unicolor* Kardakoff, 1928 (original status: clearly infrasubspecific; type series: several females); *Z. taxila* f. ♀ *bellus* Kardakoff, 1928 (original status: clearly infrasubspecific; type series: several females); *Z. taxila* f. ♀ *quercus* Kardakoff, 1928 (original status: clearly infrasubspecific; type series: several females); *Z. taxila* Brem. ab. *sidemina* Kardakoff, 1928 (original status: clearly infrasubspecific; type series: single male); *Lycaena orion* Pall. ab. *schmidti* Kardakoff, 1928 (original status: clearly infrasubspecific; type series: several males); *L. arionides* Stgr. ab. *arionidula* Kardakoff, 1928 (original status: clearly infrasubspecific; type series: several specimens); *Cyaniris argiolus* L. *heringi* (gen. aest. nov.) (original status: clearly infrasubspecific; type series: several specimens).

Most of them are just the infrasubspecific forms so they do not affect the zoological nomenclature, but some described as subspecies or even species. The type material of N. Kardakoff was splitted between several museums and institutions: Zoological Institute of the Russian Academy of Sciences (St.-Petersburg, Russia), Senckenberg German Entomological Institute (Müncheberg, Germany) and Museum für Naturkunde Leibniz-Institut für Evolutions- und Biodiversitätsforschung (Berlin, Germany).

In 2010–2016 I studied the butterfly collections of the Museum für Naturkunde Leibniz-Institut für Evolutions- und Biodiversitätsforschung and found all types of N. Kardakoff at present pre-

served in this museum. A list of these types, their pictures and lectotype designations in necessary cases are provided within this paper.

In total 45 species-group taxa have been erected within the cited paper of N. Kardakoff; types of 19 of them are listed and figured here. The following of these described by N. Kardakoff taxa are at present in use: *Limenitis moltrechti*, *Argynnis laodice ussurica*, *Boloria frigga maritima* [Korb, Bolshakov, 2016]; all other valid taxa considered as synonyms.

## RESULTS

### List of type specimens and lectotype designations

‡ *atra*. *Argynnis ino* ab. *atra* Kardakoff, 1928

Male syntype (fig. 1). Red paper, rectangular, printed: "Typus"; white paper, rectangular, handwritten: "Argynnis ino Rott. | ab. atra Kardakoff"; white paper, rectangular, printed, date handwritten: "Narva, S. Ussurigebiet | 10.7.21 N.Kardakoff".

*borgesti*. *Araschnia levana borgesti* Kardakoff, 1928

Male lectotype (fig. 2), designated here. Red paper, rectangular, printed: "Typus"; white paper, rectangular, handwritten: "Araschnia levana L. | v. borgesti Kardakoff"; white paper, rectangular, printed, date handwritten: "Russ. Inseln | S. Ussurigebiet | 14.7.1920, N.Kardakoff"; white paper, rectangular, printed in first side, handwritten in second side: "det. M.Gaede" (first side), "borgesti" (second side).

Female paralectotype. Red paper, rectangular, printed: "Typus"; white paper, rectangular, handwritten: "Araschnia levana L. | v. borgesti Kardakoff"; white paper, rectangular, printed, date handwritten: "Narva, S Ussurigebiet | 24.7.21, N.Kardakoff".

‡ *caeca*. *Papilio xuthus* gen. vern. *xuthulus* ab. *caeca* Kardakoff, 1928

Male holotype (by monotypy) (fig. 3). Red paper, rectangular, printed: "Typus"; white paper, rectangular, handwritten: "Papilio xuthus L. | g.v. xuthulus Brem. | ab. caeca Kardakoff"; white paper, rectangular, printed, date handwritten: "Wladiwostok | S.Ussurigebiet | 21.V.21 N.Kardakoff".

*graeseri*. *Argynnis aglaja graeseri* Kardakoff, 1928  
Male lectotype (fig. 4), designated here. Red

paper, rectangular, printed: "Typus"; white paper, rectangular, printed: "Nachträgl. der | Coll. Püngeler | hinzugefügt."; white paper, rectangular, handwritten: "Argynnis aglaja L. | v. graeseri Kardakoff"; white paper, rectangular, printed, date handwritten: "Narva, S. Ussurigebiet | 28.VI.21 N.Kardakoff".

Female paralectotype. Red paper, rectangular, printed: "Typus"; white paper, rectangular, printed: "Nachträgl. der | Coll. Püngeler | hinzugefügt."; white paper, rectangular, handwritten: "Argynnis aglaja L. | v. graeseri Kardakoff"; white paper, rectangular, printed, date handwritten: "Russ. Inseln | S.Ussurigebiet | 5.7.1920. N.Kardakoff".

‡ *heringi*. *Cyaniris argiolus* gen. aest. *heringi* Kardakoff, 1928

Female syntype (fig. 5). Red paper, rectangular, printed: "Typus"; white paper, rectangular, handwritten: "Cyaniris argiolus L. | v. heringi Kardakoff"; white paper, rectangular, printed, date handwritten: "Wladiwostok | S Ussurigebiet | 15.V.1921 N.Kardakoff"; white paper, rectangular, printed, numbers handwritten: "ex coll. 2/4 | Püngeler".

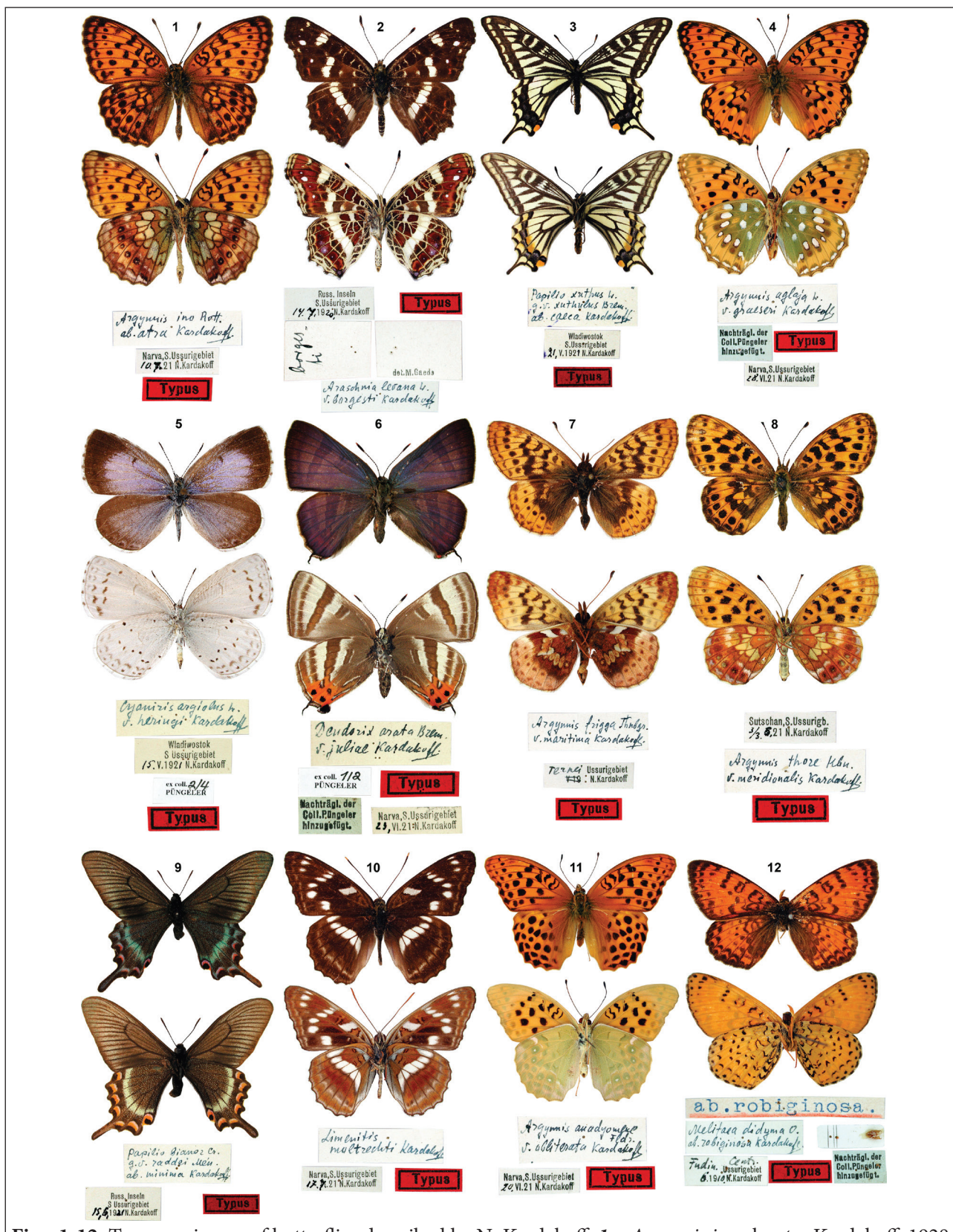
*juliae*. *Deudorix arata juliae* Kardakoff, 1928

Male lectotype (fig. 6), designated here. White paper, rectangular, printed, numbers handwritten: "ex coll. 1/2 | Staudinger"; red paper, rectangular, printed: "Typus"; white paper, rectangular, printed: "Nachträgl. der | Coll. Püngeler | hinzugefügt."; white paper, rectangular, handwritten: "Deudorix arata Brem. | v. juliae Kardakoff"; white paper, rectangular, printed, date handwritten: "Narva, S. Ussurigebiet | 23.VI.21 N.Kardakoff".

Female paralectotype. White paper, rectangular, printed, numbers handwritten: "ex coll. 2/2 | Staudinger"; red paper, rectangular, printed: "Typus"; white paper, rectangular, printed: "Nachträgl. der | Coll. Püngeler | hinzugefügt."; white paper, rectangular, handwritten: "Deudorix arata Brem. | v. juliae Kardakoff"; white paper, rectangular, printed, date handwritten: "Sutschan, S. Ussurigb. | 3.6.21 N.Kardakoff".

*maritima*. *Argynnis frigga maritima* Kardakoff, 1928

Male lectotype (fig. 7), designated here. Red paper, rectangular, printed: "Typus"; white paper, rectangular, handwritten: "Argynnis frigga Thn-bgr. | v. maritima Kardakoff"; white paper, rect-



**Figs. 1-12.** Type specimens of butterflies described by N. Kardakoff: 1 – *Argynnis ino* ab. *atra* Kardakoff, 1928, syntype; 2 – *Araschnia levana borgesti* Kardakoff, 1928, lectotype; 3 – *Papilio xuthus* gen. vern. *xuthulus* ab. *caeca* Kardakoff, 1928, holotype; 4 – *Argynnis aglaja graeseri* Kardakoff, 1928, lectotype; 5 – *Cyaniris argiolus* gen. aest. *heringi* Kardakoff, 1928, syntype; 6 – *Deudorix arata juliae* Kardakoff, 1928, lectotype; 7 – *Argynnis frigga maritima* Kardakoff, 1928, lectotype; 8 – *Argynnis thore meridionalis* Kardakoff, 1928; 9 – *Papilio maacki* ab. *minima* Kardakoff, 1928, syntype; 10 – *Limenitis moltrechti* Kardakoff, 1928, lectotype; 11 – *Argynnis anadiomene oblitterata* Kardakoff, 1928, lectotype; 12 – *Melitaea didyma* ab. *robinosa* Kardakoff, 1928, syntype

angular, printed, 'Ternei' handwritten: "Ternei Ussurigebiet | V-19 N.Kardakoff".

*meridionalis*. *Argynnis thore meridionalis* Kardakoff, 1928

Male lectotype (fig. 8), designated here. Red paper, rectangular, printed: "Typus"; white paper, rectangular, handwritten: "Argynnis thore Hbn. | v. meridionalis Kardakoff"; white paper, rectangular, printed, numbers handwritten: "Sutschan, S.Ussurigb. | 3/3.6.21 N.Kardakoff".

Male paralectotype. Red paper, rectangular,

printed: "Typus"; white paper, rectangular, handwritten: "Argynnis thore Hbn. | v. meridionalis Kardakoff"; white paper, rectangular, printed, date handwritten: "Narva, S Ussurigebiet | 20. VI.21 N Kardakoff".

‡*minima*. *Papilio maacki* ab. *minima* Kardakoff, 1928

Male syntype (fig. 9). Red paper, rectangular, printed: "Typus"; white paper, rectangular, handwritten: "Papilio bianor Cr. | g.v. raddei Mén. | ab. minima Kardakoff"; white paper, rectangular,



**Figs. 13-19.** Type specimens of butterflies described by N. Kardakoff: 13 – *Limenitis doerrisi* ab. *schaljapini* Kardakoff, 1928, holotype; 14 – *Lycaena orion* ab. *schmidti* Kardakoff, 1928, syntype; 15 – *Araschnia levana* ab. *separata* Kardakoff, 1928, holotype; 16 – *Papilio xuthus* ab. *unipunctata* Kardakoff, 1928, syntype; 17 – *Argynnis laodice* *ussurica* Kardakoff, 1928, lectotype; 18 – *Papilio bianor* ab. *viridissima* Kordakoff, 1928, syntype; 19 – *Araschnia levana* *wladimiri* Kardakoff, 1928, lectotype

printed, numbers handwritten: "Russ. Inseln | S.Ussurigebiet | 15.6.1921 N.Kardakoff".

Female syntype. Red paper, rectangular, printed: "Typus"; white paper, rectangular, handwritten: "Papilio bianor Cr. | g.v. raddei Mén. | ab. minima Kardakoff"; white paper, rectangular, printed, 'ex larva' handwritten: "ex larva. | Wladiwostok | S.Ussurigebiet | 7.1928 N.Kardakoff".

***moltrechti***. *Limnitis moltrechti* Kardakoff, 1928

Male lectotype (fig. 10). Red paper, rectangular, printed: "Typus"; white paper, rectangular, handwritten: "Limnitis | moltrechti Kardakoff"; white paper, rectangular, printed, date handwritten: "Narva, S.Ussurigebiet | 17.7.21 N.Kardakoff".

Female paralectotype. Red paper, rectangular, printed: "Typus"; white paper, rectangular, handwritten: "Limnitis | moltrechti Kardakoff"; white paper, rectangular, printed, date handwritten: "Narva, S.Ussurigebiet | 24.7.21 N.Kardakoff".

***obliterata***. *Argynnis anadiomene obliterata* Kardakoff, 1928

Male lectotype (fig. 11), designated here. Red paper, rectangular, printed: "Typus"; white paper, rectangular, handwritten: "Argynnis anadyomene | Fldr. | v. obliterata Kardakoff"; white paper, rectangular, printed, date handwritten: "Narva, S.Ussurigebiet | 20.VI.21 N.Kardakoff".

Female paralectotype. Red paper, rectangular, printed: "Typus"; white paper, rectangular, handwritten: "Argynnis anadyomene | Fldr. | v. obliterata Kardakoff"; white paper, rectangular, printed, date and 'Sidemi' handwritten: "Sidemi. Ussurigebiet | 30.6.1921. N.Kardakoff".

***robiginosa***. *Melitaea didyma* ab. *robiginosa* Kardakoff, 1928

Male syntype (fig. 12). Red paper, rectangular, printed: "Typus"; white paper, rectangular, handwritten: "Melitaea didyma O. | ab. robiginosa Kardakoff"; white paper, rectangular, printed, date and 'Fudin. Cemtr.' handwritten: "Fudin. Centr. | Ussurigebiet | 6.1910. N.Kardakoff"; white paper, rectangular, printed: "Nachträgl. der | Coll. Püngeler | hinzugefügt."; white paper, rectangular, with genitalia in sugar drop; white paper, rectangular, printed: "ab. robiginosa."

***schaljapini***. *Limnitis doerriesi* ab. *schaljapini* Kardakoff, 1928

Female holotype (by monotypy) (fig. 13). Red paper, rectangular, printed: "Typus"; white paper, rectangular, handwritten: "Limnitis doerriesi

Stgr. | ab. schaljapini Kardakoff"; white paper, rectangular, printed, date handwritten: "Narva, S.Ussurigebiet | 18.7.21 N.Kardakoff".

***schmidti***. *Lycaena orion* ab. *schmidti* Kardakoff, 1928

Male syntype (fig. 14). Red paper, rectangular, printed: "Typus"; white paper, rectangular, handwritten: "Lycaena orion Pall. | ab. schmidti Kardakoff"; white paper, rectangular, printed, date handwritten: "Wladiwostok | S.Ussurigebiet | 9.V.1921. N.Kardakoff"; white paper, rectangular, printed, numbers handwritten: "ex coll. 1/1 | PÜNGELER".

***separata***. *Araschnia levana* ab. *separata* Kardakoff, 1928

Male holotype (by monotypy) (fig. 15). Red paper, rectangular, printed: "Typus"; white paper, rectangular, handwritten: "Araschnia levana L. | ab. separata Kardakoff"; white paper, rectangular, printed, date and 'Sidemi' handwritten: "Sidemi Ussurigebiet | 6.19 N.Kardakoff"; white paper, rectangular, printed: "Nachträgl. der | Coll. Püngeler | hinzugefügt."

***unipunctata***. *Papilio xuthus* ab. *unipunctata* Kardakoff, 1928

Male syntype (fig. 16). Red paper, rectangular, printed: "Typus"; white paper, rectangular, handwritten: "Papilio xuthus L. | g.v. xuthulus Brem. | ab. unipunctata Kardakoff"; white paper, rectangular, printed, date handwritten: "Wladiwostok | S.Ussurigebiet | 22.V.1921 N.Kardakoff".

***ussurica***. *Argynnis laodice ussurica* Kardakoff, 1928

Male lectotype (fig. 17), designated here. Red paper, rectangular, printed: "Typus"; white paper, rectangular, handwritten: "Argynnis laodice Pall. | v. ussurica Kardakoff"; white paper, rectangular, printed, date handwritten: "Narva, S.Ussurigebiet | 19.7.21 N.Kardakoff"; white paper, rectangular, printed: "Nachträgl. der | Coll. Püngeler | hinzugefügt."

Female paralectotype. Red paper, rectangular, printed: "Typus"; white paper, rectangular, handwritten: "Argynnis laodice Pall. | v. ussurica Kardakoff"; white paper, rectangular, printed, date handwritten: "Russ. Inseln | S.Ussurigebiet | 14.8.1920. N.Kardakoff"; white paper, rectangular, printed: "Nachträgl. der | Coll. Püngeler | hinzugefügt."

‡*viridissima*. *Papilio bianor* ab. *viridissima* Kardakoff, 1928

Male syntype (fig. 18). Red paper, rectangular, printed: "Typus"; white paper, rectangular, handwritten: "Papilio bianor Cr. | g.v. raddei Mén. | ab. viridissima Kardakoff"; white paper, rectangular, printed, date handwritten: "Wladiwostok | S.Ussurigebiet | 22.V.1921 N.Kardakoff."

*wladimiri*. *Araschnia levana wladimiri* Kardakoff, 1928

Male lectotype (fig. 19), designated here. Red paper, rectangular, printed: "Typus"; white paper, rectangular, handwritten: "Araschnia levana L. | g.v. wladimiri Kardakoff"; white paper, rectangular, printed, date handwritten: "Wladiwostok | S.Ussurigebiet | 15.V.1921. N.Kardakoff."; white

paper, rectangular, printed: "Nachträgl. der | Coll. Püngeler | hinzugefügt."

Female paralectotype. Red paper, rectangular, printed: "Typus"; white paper, rectangular, handwritten: "Araschnia levana L. | g.v. wladimiri Kardakoff"; white paper, rectangular, printed, date handwritten: "Wladiwostok | S Ussurigebiet | 15.V.1921. N.Kardakoff."; white paper, rectangular, printed: "Nachträgl. der | Coll. Püngeler | hinzugefügt."

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