

# ZOOLOGISCHE MEDEDELINGEN

UITGEGEVEN DOOR HET

RIJKSMUSEUM VAN NATUURLIJKE HISTORIE TE LEIDEN  
(MINISTERIE VAN WELZIJN, VOLKSGEZONDHEID EN CULTUUR)

Deel 61 no. 26

9 oktober 1987

ISSN 0024-0672

---

## CUTTING THE NOMENCLATURAL GORDIAN KNOT AROUND *PYRGUS CARTHAMI* (HÜBNER) (LEPIDOPTERA: HESPERIIDAE)

by

**R. DE JONG**

De Jong, R.: Cutting the nomenclatural Gordian knot around *Pyrgus carthami* (Hübner) (Lepidoptera: HesperIIDae).

Zool. Med. Leiden 61 (26), 9-x-1987: 371-385, figs. 1-13, — ISSN 0024-0672.

The name *Papilio fritillarius* Poda, 1761, is shown to be a nomen dubium. It has caused much confusion and has been applied to five or six different species since the first publication and to three different species in the last 40 years. To put an end to the confusion a neotype is designated. For the neotype a specimen has been selected of the species currently known as *Pyrgus malvae* (Linnaeus), thus making *Papilio fritillarius* Poda, 1761, a junior subjective synonym of *Papilio malvae* Linnaeus, 1758. Consequently, Poda's name can no longer be used for the species named *Papilio carthami* by Hübner, [1813] and now currently placed in the genus *Pyrgus*. The same species was named *Papilio malvae maior* by Fabricius (1787) and for reasons of priority Hübner's name should fall for it. However, *maior* Fabricius has never been used as the valid name for the species and in this century has only been mentioned three times in synonymy. Therefore, a request will be submitted to the International Commission of Zoological Nomenclature to suppress the name, thus not only saving *Papilio carthami* Hübner (now placed in *Pyrgus*) but also *Syrichthus serratulae maior* Staudinger, 1878 (currently considered a subspecies of *Pyrgus serratulae* (Ramburs)), which would be in need of another name if *Pyrgus maior* (Fabricius) would remain the senior synonym of *Pyrgus carthami* (Hübner).

Keywords: nomenclature; neotype; suppression; HesperIIDae; *Pyrgus*; *fritillarius*; *carthami*; *maior*; *malvae*.

R. de Jong, Rijksmuseum van Natuurlijke Historie, Postbus 9517, 2300 RA Leiden, The Netherlands.

## INTRODUCTION

All biologists, be they systematists, ecologists or applied biologists, will agree that stability in the scientific names is of utmost importance for communication. Therefore, systematists who are the first to describe and name the diversity of the animal world, often go through much pain to assure that the nomenclatural rules are applied even though the rules themselves have nothing to do with biology and the systematist would probably rather have

liked to spend his precious time studying animals than applying dry rules. Even so, stability is not guaranteed; it also depends on general acceptance by colleagues. In the present case stability has not yet been attained. It concerns a European species currently known under the names *Pyrgus fritillarius* (Poda, 1761) and *Pyrgus carthami* (Hübner, [1813]). The aim of this note is (a) to demonstrate that Poda's name is a nomen dubium and that attempts to identify it by reference to works not mentioned by Poda are unjustified, (b) to show that Hübner's name is not the oldest available name for the species, (c) to examine which influence the application of the correct name has on the nomenclature of this species as well as of a related species, and (d) to propose a solution.

The confusion around Poda's name is in the first place due to the difficulty of interpreting the original description. About Hübner's name, based on a good figure, there has never been any misunderstanding or confusion. As if the difficult interpretation of the description of *Papilio fritillarius* was not yet enough, Hemming (1943) added to the confusion by referring to a figure by Roesel (1746) that was not mentioned by Poda. As a consequence since 1943 the names *Pyrgus fritillarius* (Poda, 1761) and *Pyrgus carthami* (Hübner, [1831]) are in use for the same species. Authors applying Poda's name after 1943 are Evans (1949), Gomez-Bustillo & Varela (1981), Hemming (1943, 1947), Higgins (1966, 1975), Higgins & Riley (1970), Leraut (1980) and Picard (1947). Since 1943, Hübner's name has been used by, e.g., Alberti (1952, 1953), De Jong (1972), Forster & Wohlfahrt (1955), Higgins & Riley (1980), Lempke (1953, 1976), and Whalley (1981). Before 1943, *carthami* was the name generally used for the species.

It will be seen that in unraveling the history of these names one has to deal with a number of other species that were all mixed up in the early days of systematics.

#### ORIGINAL DESCRIPTION OF *PAPILIO FRITILLARIUS* PODA, 1761

The original description has been copied in fig. 1. *Fritillarius* was the only species of Hesperidae listed by Poda under *Plebeji Urbicolae*, the name under which older authors united the Hesperidae. Poda did list another hesperiid species, viz., *sylvestris*, but placed it in the *Plebeji Rurales* among butterflies now considered to belong to the family Lycaenidae (see De Jong, 1984).

The original description can be translated as follows:

“P[lebeji] Urbicolae. With wings more often with transparent spots. \*Fritillarius. 53. P[apiliones] P[lebeji] with entire, brownish wings, with quadrate,

white, separate and contiguous spots. White spots subhyaline.”

Poda described the insects from the surroundings of Graz. His description applies to the five *Pyrgus* species as well as the only species of *Spialia* (*sertorius*) occurring there, and possibly also to the species of the genus *Carcharodus* (although in that case he would probably not have written that the wings were entire). In these early days of systematics authors very often applied a single name to what we now recognize as a number of hesperiid species that are not even very closely related (see also next chapter). Since Poda did not give a reference to any other description or figure of the insect the best we can conclude about his *fritillarius* is that it is a *nomen dubium*. This is not a new conclusion. Already Ochsenheimer (1808: 203) wrote “. . . Fritillarius des Poda, S. 79. n. 53., welcher kaum zu deuten ist . . .” Similarly Reverdin (1911: 59) wrote about this name: “. . . d’apres sa description il n’est pas possible de préciser davantage.” Verity (1940: 11) could not decide whether the name applied to *Carcharodus alceae* (Esper) or *Carcharodus floccifer* (Zeller), Picard (1948: 335) decided that it was a *nomen dubium* (though one year later he decided that it was a junior synonym of *Pyrgus malvae* (Linnaeus)), and Lempke (1953: 249) came to the same conclusion.

#### INTERPRETATION OF *PAPILIO FRITILLARIUS* PODA, 1761

Not only the authors mentioned above but almost all other authors had problems in interpreting Poda’s name, but instead of concluding that it was a *nomen dubium* they often tried to assign it to a particular species by reference to descriptions or figures published elsewhere. The annexed survey is certainly not complete but it gives an impression of the confused state of knowledge about the *Pyrgus* species and their relatives until far into the present century. Remarkably Poda’s name was not mentioned in important works like Fabricius (1775, 1793), Heinemann (1859), Herrich-Schäffer (1843), Hübner (1816-1826), Rühl (1895), Speyer & Speyer (1858), and Staudinger & Rebel (1901). We can only guess at the reason for this omission.

The name *Papilio fritillarius* Poda has been synonymized with the following names (see also figs. 2-5, 8-11):

*Papilio fritillum* Denis & Schiffermüller, 1775. — While creating this name the authors referred to “*P. Fritillarius*. Poda” and “Le plein-chant. Geoffr.”. It is not clear why Denis & Schiffermüller gave a new name to a species that already had been named by Poda. Whatever their intention, it did not help much to clarify the situation. To the contrary, Ochsenheimer (1808) who knew the Schiffermüller collection, reported that four species were united under this

name in the collection.

The reference to Geoffroi (1762) is explained by Denis & Schiffermüller in a footnote. They supposed that Geoffroi described the species that was figured by Roesel (1746: Cl. 2 Pap. Diurn. pl. 10 fig. 7). This figure clearly represents *Pyrgus (carlinea) cirsii* (Rambur) as will be explained below. However, this does not restrict the name *fritillum* to this species as from the rest of the footnote it is clear that Denis & Schiffermüller even included *Spialia sertorius* (Hoffmansegg) in their *fritillum*. It is also clear that they excluded *Carcharodus alceae* (Esper), which they listed under the name *Papilio malvae* Linnaeus (for this name, see below). As they stated expressly the latter differs from their *fritillum* (and thus from *fritillarius*) in having the margin of the hindwing dentate.

As a consequence of the obscure meaning of the name, *fritillum* has been applied to *Pyrgus (malvae) malvae* (Linnaeus), *P. (malvae) malvoides* (Elwes & Edwards), *P. carthami* (Hübner), *P. (carlineae) cirsii* (Rambur) and *P. alveus* (Hübner). Since it is impossible to determine a particular species to which the name applies, *Papilio fritillum* Denis & Schiffermüller is generally regarded a nomen dubium nowadays.

The synonymy with *Papilio fritillarius* Poda was further stated by Borkhausen (1788), Denis & Schiffermüller (1801), Evans (1949) and Leraut (1980). The synonymy is correct insofar as both names are nomina dubia.

*Papilio malvae* Linnaeus, 1758. — This is certainly the best known *Pyrgus* species. It is the type-species of *Pyrgus*, which in its turn is the type-genus of the Pyrginae. At present there is no disagreement on application of the name, but this has not always been so due to the deficient description and the references given by Linnaeus. The original description (1758: 485) reads: “P[apilio] (P[lebejus] alis denticulatis divaricatis nigris albo maculatis.” (“Papilio Plebejus with toothed, divergent, black, white spotted wings.”) The references do not help much. For instance, Linnaeus referred to Roesel (1746: Cl. 2 Pap. Diurn. pl. 10), where two species of HesperIIDae are figured which are currently known as *Carcharodus alceae* (Esper) and *Pyrgus (carlinea) cirsii* (Rambur) (see below). Apparently because of Linnaeus’ mentioning of the dentate wings the name was often supposed to apply to the first of the two species just mentioned, e.g. by Borkhausen (1788), Denis & Schiffermüller (1775: 160, where the dentate wing is explicitly mentioned\*), Esper (1779) and Werneburg (1864).

\* It is interesting to note here that Geoffroi’s (1762) description of “Le plein-chant” reads: “Pap. alis divaricatis denticulatis nigris, albo punctatis.”, i.e. almost an exact copy of Linnaeus’ description of *malvae*. Nevertheless, Denis & Schiffermüller (1775) considered *malvae* and “Le plein-chant” two different species.

In 1746 in the first edition of the *Fauna Suecica*, Linnaeus gave almost the same description for *malvae*, but in further describing the insect he stated that the wings were with ‘*margin quasi dentato, interjacentibus maculis albis.*’ (“margin quasi-dentate, with alternating white spots.”). Thus, the wings are not really dentate but only seem to be so by the chequered fringes. That excludes *Carcharodus alceae* (Esper). This was apparently overlooked by most authors except Ochsenheimer (1808) who stated that the description of *Papilio malvae* Linnaeus could apply to four different species but certainly not to *Papilio malvarum* Hoffmannsegg, which is a synonym, of *Papilio alceae* Esper.

The case was extensively dealt with by Hemming (1947) who convincingly argued that Linnaeus’ name referred to the species known in England as the “Grizzled Skipper”. Actually it has been used as such at least since Staudinger & Wocke (1861, 1871). Before then the species was often known under the name *alveolus* Hübner.

While synonymizing *Papilio fritillarius* Poda and *Papilio malvae* Linnaeus, Esper (1779) clearly used the latter name in the sense of *Carcharodus alceae* (Esper). Warren (1926) and Picard (1949) on the other hand, while stating the same synonymy, used Linnaeus’ name in the correct sense. As far as I could ascertain they were the only ones synonymizing the two names in this sense.

*Papilio alceae* Esper, [1780]. — While Esper (1779) synonymized this name with *Papilio fritillarius* Poda indirectly (see above), some recent authors did so directly: Hemming (1932, 1934a) and Verity (1947; although in 1940 Verity was still in doubt about the correct identity of *fritillarius*). It is not clear to me on which grounds they based this synonymy.

*Papilio morio* var. 2 Scopoli, 1763. — Borkhausen (1788) and Esper (1779) synonymized this name with *Papilio fritillarius* Poda. Scopoli certainly described the same species as Linnaeus’ *malvae* (or rather (*malvae*) *malvoides* Elwes & Edwards, but this problem does not need to bother us here), as already stated by Ochsenheimer (1808). Esper, however, mistook it for *Carcharodus alceae* (Esper), which he described a few years later. What Borkhausen exactly meant is not clear.

*Papilio carthami* Hübner, [1813]. — The synonymy dealt with so far can be found in the literature from Denis & Schiffermüller (1775) onward. The synonymy of *Papilio fritillarius* Poda with *Papilio carthami* Hübner, however, dates from Hemming (1943). This author was of the opinion that Poda described the same species as figured by Roesel (1746: Cl. 2 Pap. Diurn. pl. 10 fig. 7), although Poda never gave such a reference. Moreover, Hemming interpreted Roesel’s figure as representing the same species as the one figured by Hübner as *Papilio carthami*. This opinion can already be found in Ochsenheimer (1808), but it is at variance with Verity (1940) and clearly

shown to be incorrect by Alberti (1952), see below. Since Poda did not mention Roesel or any other author at all when describing *fritillarius*, this was a strange action for a man like Hemming who was so well acquainted with nomenclature. He was followed by Picard (1947; one year later, however, Picard had changed his mind and considered *fritillarius* a nomen dubium, and again one year later he considered it a synonym of *malvae* Linnaeus!), Evans (1949), Higgins (1975), Leraut (1980), Gomez-Bustillo & Varela (1981), and others.

Apart from the fact that from the nomenclatural point of view it is uninteresting which species was depicted by Roesel, this species was certainly not the same as the one figured by Hübner under the name *carthami*. Already Verity (1940) stated that Roesel's figure actually represented "*fritillum* Schiff." (= *Pyrgus (carlinae) cirsii* (Rambur)). Alberti (1952) clearly demonstrated that Verity was correct, but his paper was apparently overlooked or neglected and it may be useful to repeat his arguments here.

(a). Roesel collected the insects near Nürnberg. Here *cirsii* is quite plentiful, while *carthami* is rare.

(b). The large white spots on the upperside of the forewing are typical of *cirsii*, and very rarely developed in such a way in *carthami*; only in *cirsii* is the small, rather elongate spot over the middle of the forewing dorsum almost always accompanied by a small dot over it as in Roesel's figure. In the figure there is an obvious grey-yellowish suffusion in the basal part of the forewing and condensed into spots between the median spots and the termen well contrasting with the deep-black groundcolour. This suffusion is also emphasized in the text. It is typical of fresh specimens of *cirsii*. In *carthami* the suffusion is much more greyish and much less contrasting.

(c). None of the German *Pyrgus* species has the spots on the upperside of the hindwing as large as in Roesel's figure except *cirsii*. In *carthami* the spots are finer and more striate. Moreover, in the figure, and also mentioned in the text, these spots are not clear white but ivory-coloured. This is very typical for *cirsii*.

Everybody acquainted with both *cirsii* and *carthami* can but agree with Alberti. It does not change the fact that *fritillarius* is a nomen dubium, but it makes the more clear that even reference to Roesel's figure does not give any ground for using Poda's name for *Papilio carthami* Hübner.

#### PAPILIO MALVAE MAIOR FABRICIUS, 1787

Fabricius used the name *malvae* for the species now commonly known as

*Carcharodus alceae* (Esper). For our present *Pyrgus malvae* (Linnaeus) he used the name *fritillum*. In 1787 (: 91, nr. 824) he described a variety of *fritillum* occurring in South Russia under the name “*Papilio Maluae maior*”. This may seem rather strange (and actually it is) but probably he wanted to contrast it with “*Papilio Maluae minor*” Esper which he listed as synonym of *fritillum*. The entry in Fabricius (1787) reads as follows (fig. 1): “Variat maior maculis alarum pluribus vix tamen distinctus in Russia meridionali *Papilio Maluae maior*. Esp. pa. tab. 23. fig. 2.” (translation: “Varies, larger, with spots of wings more numerous though hardly different in South Russia”). Three species occurring in South Russia come into consideration: *Pyrgus sidae* (Esper), *P. carthami* (Hübner) and *P. cinarae* (Rambur)\*. Other *Pyrgus* species in South Russia are not conspicuously better marked than *Pyrgus malvae* (Linnaeus) though they may be a bit larger. Fabricius knew *sidae* (listed as species nr. 823) This leaves *carthami* and *cinarae* as candidates for *maior*. The reference to Esper’s figure makes clear that *maior* Fabricius is the same as *carthami* Hübner. Esper’s figure (1777: pl. 23 fig. 2) is not particularly good but the following characters are decisive:

(a) On the upperside of the hindwing the submarginal spots are often strongly developed in *carthami* (particularly in South Russia) as in the figure; in *cinarae* the median spots are much more strongly developed than the submarginal spots.

(b) On the underside *carthami* has the wings white-edged along termen as in Esper’s figure, while in *cinarae* the groundcolour reaches the termen.

(c) On the underside of the forewing there are more or less conspicuous submarginal spots at least in spaces 2 and 3 in *carthami*, as in Esper’s figure. Such spots do not occur in *cinarae*.

(d) On the underside of the hindwing *carthami* has a conspicuous submarginal spot in space 6, as in Esper’s figure. This spot occurs in *cinarae* but is very small, often no more than a pin-point.

The situation is so clear that there really can be no doubt about the synonymy of *Papilio carthami* Hübner, [1813] and *Papilio malvae maior* Fabricius, 1787. This was already observed by Ochsenheimer (1808) who, however, used the name *Papilio tessellum* Hübner for *carthami*, and attributed the name “*P. Maluae maior*” to Esper.

Strangely enough, Fabricius’ name was overlooked or neglected by most

\* Spelling and authorship of the name depend on the publication date of Rambur’s plate 8 on which the name was given. A description never appeared. The text about skippers only appeared in 1842 (see Hemming, 1934a, Heppner, 1982). If this was also the date of the plate, spelling and authorship should be *cynarae* Boisduval, 1840, but the plate could as well have appeared in 1839. Here, I follow Evans (1949).

later authors. Fabricius himself copied the description in 1793. It was mentioned by Ochsenheimer (1808). The only references I could find thereafter are Evans (1949), De Jong (1972) and Leraut (1980). Evans and Leraut considered *fritillarius* to be the correct name for the species, they placed *maior* (or *major* as they spelled it) Fabricius as a junior synonym. I myself mentioned the case without taking action, not being concerned with nomenclatural matters at the time.

#### SECONDARY HOMONYMS OF *PAPILIO MALVAE MAIOR* FABRICIUS

(1) *Syrichthus serratulae major* Staudinger, 1878 (figs. 6, 12). The nominal species *Hesperia serratulae* Rambur is currently placed in the genus *Pyrgus*, thus making Staudinger's *major* a secondary junior homonym of *maior* Fabricius. Staudinger described his *major* from Asia Minor but it is more widespread occurring from Bulgaria to Syria and Armenia (De Jong, 1972). In Greece it blends into ssp. *balcanicus* Warren, in Hungary it is mostly replaced by ssp. *serratulae* Rambur. Ssp. *major* Staudinger forms part of a group of six described subspecies that together occupy the eastern part of the range of the species (possibly without Siberia). Since Staudinger's name is the oldest one of all names used for subspecies of the eastern group, lumping of the subspecies of this group into a single subspecies would not cause the name *major* Staudinger to sink into synonymy.

(2) *Hesperia carthami major* Mabille, 1904. Fortunately this name has been overlooked completely so far, thus not adding to the existing confusion. It is undoubtedly based on a typographical error. The description has been copied in fig. 1. Because "var. *major*" is printed in italics like the other varieties, one could get the impression that it is a new name. From the context, however, it is clear that it is just a part of the description that was by mistake printed in italics. Even if one wants to consider it a species group name in the sense of the International Code of Zoological Nomenclature, it has no nomenclatural consequences since the name is younger than both *Papilio malvae maior* Fabricius and *Syrichthus serratulae major* Staudinger.

(3) *Hesperia carthami major* Rebel, 1909. Rebel gave this name to the large form occurring in South Tirol. Since the name is a subjective junior synonym of *Pyrgus carthami valesiacus* (Mabille, 1875) (figs. 7, 13), the fact that it is a secondary junior homonym of *Papilio Malvae maior* Fabricius has no nomenclatural effect.



## SUMMARY AND CONCLUSIONS

Four names are nomenclaturally interconnected in such a way that the use of any of these names influences the use of at least one of the other names. These names are:

1. *Papilio fritillarius* Poda, 1761. This name is a nomen dubium: the description is insufficient, there are no references to other descriptions or figures, and the type is lost. The name has been applied to or synonymized with the following currently recognized species (or semispecies): *Carcharodus alceae* (Esper), *Pyrgus (malvae) malvae* (Linnaeus), *P. (malvae) malvoides* (Elwes & Edwards), *P. alveus* (Hübner), *P. (carlinae) cirsii* (Rambur) and *P. carthami* (Hübner). In the last 50 years the name has mainly been applied to *C. alceae* and *P. carthami*. In the latter sense it was not used before Hemming (1943).

2. *Papilio carthami* Hübner, [1813]. Since Hübner gave a good figure of the species the meaning of this name has never been dubious. The name has been in use ever since the original publication, but since Hemming (1943) several authors thought it to be a junior synonym of *Papilio fritillarius* Poda. Both names have been applied to the same species about equally frequently since 1943.

3. *Papilio malvae maior* Fabricius, 1787. There can be no doubt that this represents the same species as *Papilio carthami* Hübner. The name was not mentioned in the literature after Ochsenheimer (1808) until Evans (1949) listed it in synonymy with the older name *fritillarius*. It was further only mentioned by De Jong (1972) and Leraut (1980). It has never been used in the combination *Pyrgus maior* as the supposedly correct combination for the same species as *Pyrgus carthami*.

4. *Syrichthus serratulae major* Staudinger, 1878. There is no confusion about this name. Since *serratulae* Rambur and *maior* Fabricius are currently considered congeneric, Staudinger's *major* becomes a junior homonym of Fabricius' *maior*.

In short, two names have never caused any trouble: *Papilio carthami* Hübner and *Syrichthus serratulae major* Staudinger; one name has hardly ever been mentioned in the literature: *Papilio malvae maior* Fabricius; and the meaning of one name, *Papilio fritillarius* Poda, has always been dubious and has led to much confusion in literature. The obvious conclusion is that stability is best served if the last name receives a definite meaning and Fabricius' name is suppressed.

Suppression of a name is a matter for the International Commission of Zoological Nomenclature. A request will be submitted to the Commission. The meaning of a nomen dubium can be fixed by designation of a neotype

(International Code of Zoological Nomenclature, ed. 1985, Recomm. 75E). Any of the species to which *Papilio fritillarius* has been applied would in principle come into consideration, but the most elegant way to promote stability is to select as neotype a specimen of a species that has a valid older name, so that Poda's name will be sunk into the synonymy of that species. The obvious candidate is *Pyrgus malvae* (Linnaeus), the names of the other species to which the description of *fritillarius* applies being younger than *fritillarius*. Thus I herewith designate as **neotype** of *Papilio fritillarius* Poda a male specimen of the species known as *Pyrgus malvae* (Linnaeus), with the following labels:

“Österreich, Steierm.; Gleisdorf/Raad; Anf. Juni 1952; H. W.S.’ (handwritten), “Museum Leiden; verzameling; S.G. Kiriakoff; 1971” (printed), „Neotype; *Papilio fritillarius* Poda, 1761” (red label, handwritten).

The locality is about 20 km east of Graz. The specimen agrees entirely with the description and figures of “*Hesperia malvae*, Linnaeus” by Warren (1926) as regards the external characters as well as the genitalia. Its depository is the Rijksmuseum van Natuurlijke Historie, Leiden.

As a result of these actions the names *Pyrgus carthami* (Hübner) and *Pyrgus serratulae major* (Staudinger) are valid names. In practice the only change is the exclusion of *Pyrgus fritillarius* (Poda) as senior synonym of *Pyrgus carthami* (Hübner).

#### ACKNOWLEDGEMENTS

It is a pleasure to express my gratitude to Dr. P. S. Wagener (Bocholt, West-Germany) for fruitful discussion of the subject. Although we do not fully agree on Fabricius' meaning of “*Papilio Malvae maior*”, we do agree on the actions taken here to ensure stability in nomenclature.

#### REFERENCES

- Alberti, B., 1952. Die Deutung der Rösel'schen Pyrgus-Figur von 1746. — Nachrichtenblatt der Bayerischen Entomologen 1: 65-67.
- Alberti, B., 1953. Die Deutung der Urabbildungen von *Pyrgus carthami* Hübner (Lep. Hesperidae). — Nachrichtenblatt der Bayerischen Entomologen 2: 37-40.
- Borkhausen, M.B., 1788. Naturgeschichte der Europäischen Schmetterlinge nach systematischer Ordnung. I. Tagsschmetterlinge. Frankfurt: I-XXXVI, 1-288, 1 pl.
- De Jong, R., 1972. Systematics and geographic history of the genus *Pyrgus* in the Palaearctic Region (Lepidoptera, Hesperidae). — Tijdschrift voor Entomologie 115: 1-121, pl. 1-6.
- De Jong, R., 1984. Notes on the genus *Thymelicus* Hübner (Lepidoptera, Hesperidae). — Nota lepidopterologica 7: 148-163.
- Denis, M., & I. Schiffermüller, 1775. Systematisches Verzeichniss der Schmetterlinge der Wiener Gegend: 1-322, 2 pl. Wien.

- Denis, M., & I. Schiffermüller, 1801. Systematisches Verzeichniss von den Schmetterlingen der Wiener Gegend [new edition of the 1775 work], 1: 1-XVII, 1-482; 2: 1-284. Braunschweig.
- Esper, E.J.C. 1777-1779. Die Schmetterlinge in Abbildungen nach der Natur mit Beschreibungen. 1. Theil, Europäische Gattungen: 1-384, pl. 1-48. Erlangen.
- Evans, W. H., 1949. A Catalogue of the Hesperiidæ from Europe, Asia and Australia in the British Museum (Natural History): I-XIX, 1-502. London.
- Fabricius, J.C., 1775. Systema Entomologiae: 1-832. Flensburg & Lipsia.
- Fabricius, J.C., 1787. Mantissa insectorum. 2: 1-382. C.G. Proft, Hafniae.
- Fabricius, J.C., 1793. Entomologia systemetica. III, 1: 1-487. Hafniae.
- Forster, W., & T.A. Wohlfahrt, 1955. Die Schmetterlinge Mitteleuropas. Band II, Tagfalter: 1-126, pl. 1-28. Stuttgart.
- Geoffroi, E.L., 1762. Histoire abrégée des Insectes qui se trouvent aux environs de Paris; dans laquelle ces Animaux sont rangés suivant un ordre methodique. II: 1-690. Paris.
- Gomez Bustillo, M.R., & M. Arroyo Varela, 1981. Catalogo sistematico de los Lepidopteros Ibericos: 1-498. Madrid.
- Heinemann, H. von, 1859. Die Schmetterlinge Deutschlands und der Schweiz: I-XXIII, 1-848. Braunschweig.
- Hemming, F., 1932. The butterflies of Transjordan. — Transactions of the entomological Society of London 80: 269-299.
- Hemming, F., 1934a. The generic names of the Holarctic Butterflies. 1, 1758-1863: I-VIII, 1-184. London.
- Hemming, F., 1934b. Revisional notes on certain species of Rhopalocera (Lepidoptera). — Stylops 3: 193-200.
- Hemming, F., 1943. On certain minor corrections made in the report submitted by the International Commission on Zoological Nomenclature to the Twelfth International Congress of Zoology, Lisbon, September 1935. — Bulletin of Zoological Nomenclature 1: 64-69.
- Hemming, F., 1947. Opinion 181. On the type of the genus *Carcharodus* Hübner, [1819], and its synonym *Spilothyrus* Duponchel, 1835 (Class Insecta, Order Lepidoptera), genera based upon an erroneously determined species. — Opinions and Declarations ICZN 2: 591-610.
- Heppner, J.B., 1982. Dates of selected Lepidoptera literature for the Western Hemisphere fauna. — Journal of the Lepidopterists' Society 36: 87-111.
- Herrich-Schäffer, G.A.W., 1843. Systematische Bearbeitung der Schmetterlinge von Europa: 1-164. Regensburg.
- Higgins, L.G., 1966. Check-list of Turkish butterflies. — The Entomologist 99: 209-222.
- Higgins, L.G., 1975. The classification of European butterflies: 1-320. London.
- Higgins, L.G., & N.D. Riley, 1970. A field guide to the butterflies of Britain and Europe: 1-380, pl. 1-60. London.
- Higgins, L.G., & N.D. Riley, 1980. A field guide to the butterflies of Britain and Europe, 4th ed.: 1-384, pl. 1-63. London.
- Hübner, J., [1808-1813]. Sammlung europäischer Schmetterlinge: pl. 129-144. Augsburg.
- Hübner, J., 1816-1826. Verzeichniss bekannter Schmettlinge [sic]: 1-431. Augsburg.
- Lempke, B.J., 1949. Rebel's edition of Berge's "Schmetterlingsbuch". — Journal of the Society for Bibliography of natural History 2: 171-172.
- Lempke, B.J., 1953. Catalogus der Nederlandse Macrolepidoptera (eerste supplement). — Tijdschrift voor Entomologie 96: 239-305.
- Lempke, B.J., 1976. Naamlijst van de Nederlandse Lepidoptera: 1-99.
- Leraut, P., 1980. Liste systématique et synonymique des Lépidoptères de France, Belgique et Corse. — Alexonor, suppl.: 1-334.
- Linnaeus, C., 1758. Systems Naturae. Ed. X: 1-823. Stockholm.
- Mabille, P., 1904. Fam. Hesperidae. In: P. Wytzman (ed.), Genera Insectorum. 17: 1-210, pl. 1-4. Bruxelles.
- Ochsenheimer, F., 1808. Die Schmetterlinge von Europa. I(2): I-XXX, 1-240. Leipzig.
- Picard, J., 1947. Notes sur les Hesperiidæ Pyrginae des régions paléarctiques. Tribus des

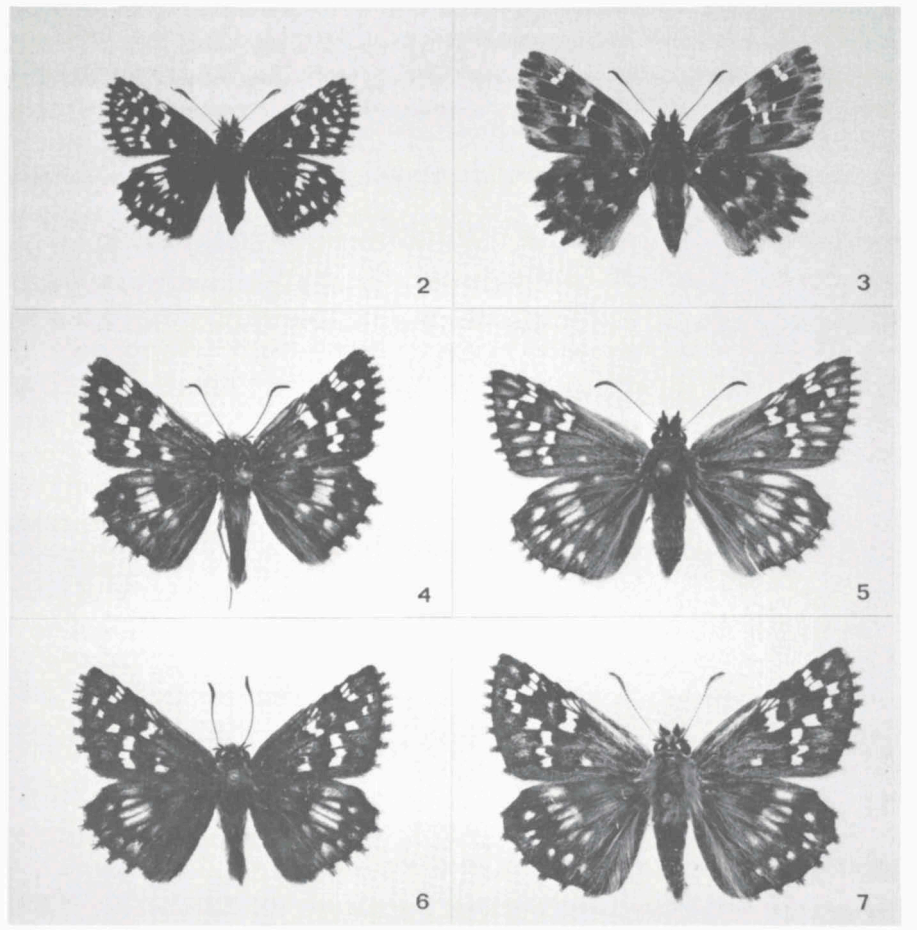
- Erynnidi, Carcharodidi et Pyrgidi. — Bulletin de la Société entomologique de France 52: 129-134.
- Picard, J., 1948. Nouvelles races d'Hesperiidae françaises. — Revue française de Lépidopterologie 11: 324-328.
- Picard, J., 1949. Note sur les Hesperiidae françaises. — Revue française de Lépidopterologie 12: 23-31.
- Poda, N., 1761. Insecta Musei Graecensis: 1-139. Graz.
- Rebel, H., 1909-1910. Berge's Schmetterlingsbuch. Neunte Auflage: I-VI, A1-A114, 1-509. Stuttgart (for publication dates, see Lempke, 1949).
- Reverdin, J.-L., 1911. *Hesperia malvae* L., *Hesperia fritillum* Rbr., *Hesperia melotis* Dup. — Bulletin de la Société lépidoptérologique de Genève 2: 59-77.
- Roesel, A. J., 1746. Insecten-Belustigung. I: 688 p. 78 pl. Nürnberg.
- Rühl, F., 1895. Die palaearktischen Grossschmetterlinge und ihre Naturgeschichte. 1. Tagfalter: 1-857. Leipzig.
- Speyer, A., & A. Speyer, 1858. Die geographische Verbreitung der Schmetterlinge Deutschlands und der Schweiz. I: I-XIV, 1-478. Leipzig.
- Staudinger, O., 1878. Lepidopteren-Fauna Kleinasien's. — Horae Societatis entomologicae rossicae 14: 176-320.
- Staudinger, O., & H. Rebel, 1901. Catalog der Lepidopteren des Palaearctischen Faunengebietes. I. Theil: Famil. Papilionidae-Hepialidae: I-XXX, 1-411. Berlin.
- Staudinger, O., & M. Wocke, 1861. Catalog der Lepidopteren Europa's und der angrenzenden Länder: I-XVI, 1-192. Dresden.
- Staudinger, O., & M. Wocke, 1871. Catalog der Lepidopteren des europaeischen Faunengebiets: I-XXXVIII, 1-426. Dresden.
- Verity, R., 1940. Le farfalle diurne d'Italia. I: I-XXXIV, 1-131, 8 pl. Firenze.
- Verity, R., 1947. Les variations géographiques et saisonnières des Papillons diurnes en France. — Revue française de Lépidopterologie, 1947 suppl.: 1-49.
- Warren, B.C.S., 1926. Monograph of the tribe Hesperii (European species) with revised classification of the subfamily Hesperinae (Palaearctic species) based on the genital armature of the males. — Transactions of the entomological Society of London 74: 1-170, pl. 1-60.
- Werneburg, A., 1864. Beiträge zur Schmetterlingskunde. I: I-VIII, 1-595. Erfurt.
- Whalley, P., 1981. The Mitchell Beazley pocket guide to Butterflies: 1-168. London.

**P. Urbicolæ.** *Alis sæpius maculis pellucidis.*  
**\*Fritillarius.** 53. **P. P.** alis integerrimis  
 subfuscis, areolis quadratis albis  
 solitariis & contiguis.  
*Areolæ albæ subdiaphanæ.*

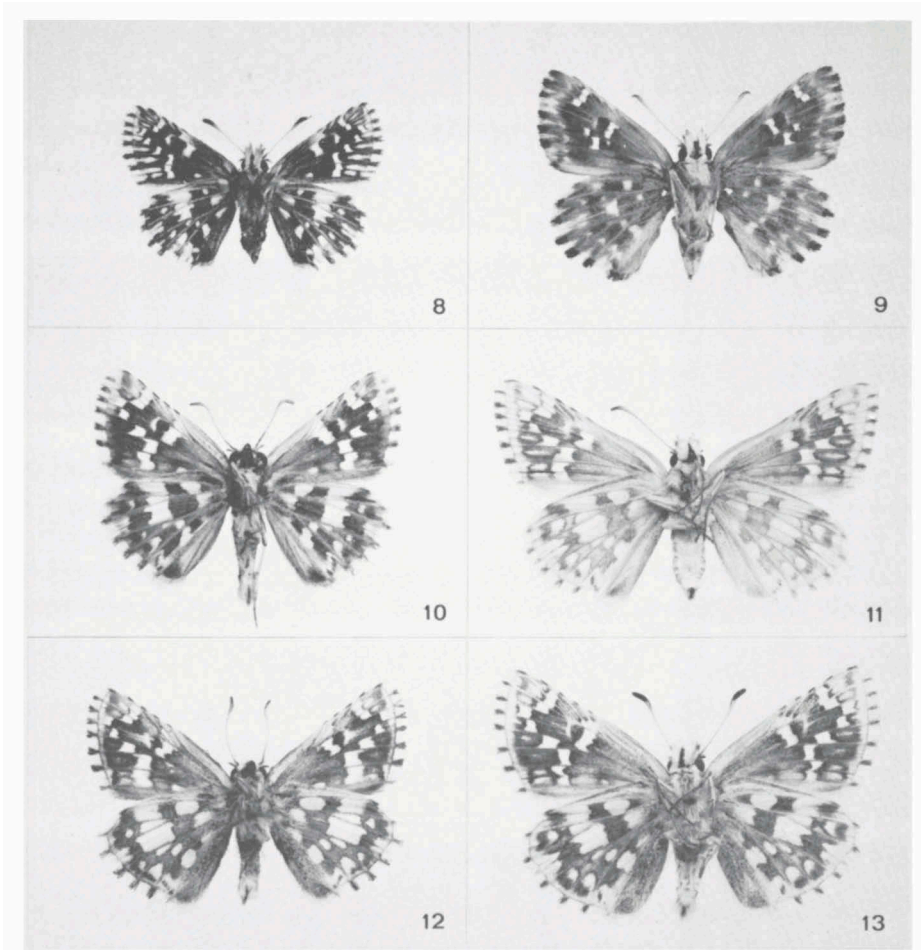
324. **P. P. V.** alis integris diuaticis nigris albo punctatis. *fritillum.* 127.  
*Papilio* alis denticulatis diuaticis nigris albo punctatis. Geoff. Inf. 2. 67. 38.  
*Papilio Maluæ* minor Esp. pap. tab. 51. fig. 2.  
 Schaeff. Elem. tab. 94. fig. 9.  
 Wien, Verz. 159. 3.  
 Habitat in Germaniæ Dipfaco Fullonum.  
 Differt sane a *P. Maluæ*. Alæ haud dentatæ at margine albo nigroque variegato.  
 Color alæ posticæ subtus variat.  
 Variat maior maculis alarum pluribus vix tamen distinctus in Russia meridionali *Papilio Maluæ maior*.  
 Esp. pap. tab. 23. fig. 2.

*H. carthami*, Hübner, Eur. Schmett. f. 720-3 (1801) (Europe tempérée).  
*tessellum*, Ochseneimer, *malvæ* Esper.  
*var. valesiaca*, Mabille, Bull. Soc. Ent. Fr. (1875); *var. major*, obscurior, macul. magn. (Valais).  
*var. Rühli*, Staudinger, maculis paucis, al. post. immaculatis.  
*valesiaca*, Rühl, Pal. Gr. Schmett. p. 671.

Fig. 1. Original descriptions of *Papilio fritillarius* Poda, 1761, *Papilio malvæ maior* Fabricius, 1787, and *Hesperia carthami major* Mabille, 1904.



Figs. 2-5. Species to which the name *Papilio fritillarius* Poda has been assigned. 2, *Pyrgus malvae* (Linnaeus, 1758); 3, *Carcharodus alceae* (Esper, [1780]); 4, *Pyrgus (carlinae) cirsii* (Rambur, 1839); 5, *Pyrgus carthami carthami* (Hübner, [1831]). Fig. 6. *Pyrgus serratulae major* (Staudinger, 1879). Fig. 7. *Pyrgus carthami valesiacus* (Mabille, 1875).



Figs. 8-13. Undersides of specimens of figs. 2-7.