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| Mitt. Münch. Ent. Ges. | 97 | 131-171 | München, 31.10.2007 | ISSN 0340-4943 |
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## A Synonymic List of the Genus *Colias* FABRICIUS, 1807 (Lepidoptera: Pieridae)

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### Abstract

The purpose of this paper is to provide a complete and authoritative nomenclatural list of all available and unavailable names in the genus *Colias* (Lepidoptera: Pieridae).

### Introduction

In many rapidly evolving organisms, like *Colias* butterflies, it is usually difficult to reach a taxonomic decision on whether phenotypically different populations ought to be regarded as 'full' biological species or mere geographical races (i.e., subspecies). Lacking extensive morphological, ecological, genetic and/or molecular evidence, as is often the case, the ultimate decision will rest heavily on the expertise and 'common sense' of the taxonomist investigating a particular situation. Given that, our main aim in this paper has been to compile a nomenclaturally complete and authoritative list of all species-group names ever proposed for *Colias* taxa. In addition, we have attempted to provide the 'best' taxonomic arrangement currently available for the group, based on our own research and that of other colleagues. However, the 'correct' status of various taxa listed herein can only be regarded as provisional, until more evidence is put forward that either negates or supports our taxonomic hypotheses. For instance, many weakly supported subspecies have been synonymised herein, as there is no convincing evidence supporting their recognition as reasonably homogeneous, geographically-delimited sets of populations.

This work does not include type-localities or further information on the status of available names, because that is part of a separate and extensive ongoing study (HAUGUM, GRIESHUBER & WORTHY in prep.). The main purpose of this work is to show which names are available and to provide a nomenclatural and taxonomic basis for further studies.

Virtually all original descriptions of names were checked for this study, and the nomenclatural status of each name was established in accordance with the rules of the International Commission on Zoological Nomenclature (ICZN 1999). In a very few cases, the original descriptions were not physically available to the authors; these are pointed out in appropriate footnotes. Many names were nomenclaturally unavailable from their original descriptions, but subsequent authors raised them to specific or subspecific level. This is especially the case for the 'races' described by VERITY (1905–1911), all of which are unavailable (GRIESHUBER & WORTHY in prep.), though most of them were subsequently made available by BOLLOWS (1930).

### Abbreviations

|     |   |   |
|-----|---|---|
| ab. | = | aberration                              |
| f.  | = | form                                    |
| IOS | = | incorrect original spelling             |
| IS  | = | infrasubspecific and thus not available |
| ISS | = | incorrect subsequent spelling           |
| UE  | = | unjustified emendation                  |
| JH  | = | junior homonym                          |
| JOS | = | junior objective synonym                |
| JSS | = | junior subjective synonym               |

|      |   |                           |
|------|---|---------------------------|
| MI   | = | misidentification         |
| NN   | = | nomen nudum               |
| NO   | = | nomen oblitum             |
| ssp. | = | subspecies                |
| SSS  | = | senior subjective synonym |
| var. | = | variety                   |

Format of the list of names

**species name**

*species name* – Original combination and status

*subspecies name* – Original combination and status

- unavailable / infrasubspecific name – Original combination and status
- *available, but synonymised name* – Original combination and status

Note: Only available names are in italics

**List of names**

**subfamily**

***Coliadinae* SWAINSON, 1821**

**tribe**

***Coliadini* SWAINSON, 1821**

**genus**

***Colias* FABRICIUS, 1807**

**genus group names**

***Colias* FABRICIUS, 1807** (type species: *Papilio hyale* LINNAEUS, 1758 (ICZN Opinion 146, 1943))

- Colais DOYÈRE, 1837 (ISS)
- Ganura ZETTERSTEDT, [1839] (unavailable - (ICZN, Art. 11.6))
- Gólias PRAUN, 1859 (ISS)
- *Eurymus* HORSFIELD, [1829] (JH of *Eurymus* RAFINESQUE, 1815 & JSS – type species: *Papilio hyale* LINNAEUS 1758)
- *Scalidoneura* BUTLER, 1871 (JSS – type species: *Scalidoneura hermina* BUTLER, 1871)
- *Eriocolias* WATSON, 1895 (JSS – type species: *Papilio edusa* FABRICIUS, 1787 (nec *Papilio edusa* FABRICIUS, 1777))
- *Coliastes* HEMMING, 1931 (JOS – type species: *Papilio hyale* LINNAEUS, 1758)
- *Protocolias* PETERSEN, 1963 (JSS – type species: *Colias imperialis* BUTLER, 1871)

**subgenera <sup>1</sup>**

- *Asiocolias* KORB, 2005 (JSS – type species: *Colias christophi* GRUM-GRSHIMAILO, 1885)
- *Mesocolias* PETERSEN, 1963 (JSS – type species: *Colias vauthierii* GUÉRIN-MÉNEVILLE, 1830)
- *Palaeocolias* BERGER, 1986 (JSS of *Colias* FABRICIUS, 1807 & *Protocolias* PETERSEN, 1963 – type species: *Colias ponteni* WALLENGREN, 1860)
- *Neocolias* BERGER, 1986 (JSS – type species: *Papilio erate* ESPER, [1805])
- *Eucolias* BERGER, 1986 (JSS – type species: *Papilio palaeno* LINNAEUS, 1760)
- *Similicolias* BERGER, 1986 (JSS – type species: *Papilio lesbia* FABRICIUS, 1775)
- *Paracolias* BERGER, 1986 (JSS – type species: *Colias dimera* DOUBLEDAY, 1847)

species group names**adelaidae VERHULST, 1991**<sup>2</sup>

- adelaidae* – *Colias adelaidae* VERHULST, 1991  
*karmalana* – *Colias adelaidae karmalana* GRIESHUBER, 1999

**aegidii VERHULST, 1990**

- aegidii* – *Colias aegidii* VERHULST, 1990

**aias FRUHSTORFER, 1903**<sup>3</sup>

- aias* – *Colias palaeno aias* FRUHSTORFER, 1903

**alexandra W. EDWARDS, 1863**<sup>4</sup>

- alexandra* – *Colias alexandra* W. EDWARDS, 1863  
 • *alba* – *Colias alexandra* [ab.] *alba* STRECKER, 1878 (IS)  
*altamont* – *Colias alexandra altamont* KONDLA & KOHLER, 2006  
*altiplano* – *Colias edwardsii altiplano* FISHER & SCOTT, 2006  
*apache* – *Colias alexandra apache* FERRIS, 1988  
*astraea* – *Colias astraea* W. EDWARDS, 1872  
*columbiensis* – *Colias alexandra columbiensis* FERRIS, 1973  
*edwardsii* – *Colias edwardsii* W. EDWARDS, 1870  
 • *hatui* – *Eurymus alexandra edwardsii* [f.] *hatui* BARNES & BENJAMIN, 1926 (IS)  
 ◦ *emilia* – *Colias emilia* W. EDWARDS, 1870 (JSS)  
*pseudocolumbiensis* – *Colias alexandra pseudocolumbiensis* GUPPY & SHEPARD, 2001

**alfacariensis RIBBE, 1905**

- alfacariensis* – *Colias hyale* [ab.] *alfacariensis* RIBBE, 1905 (made available by Opinion 1657 (ICZN 1991))
- *antealfacariensis* – *Colias alfacariensis alfacariensis* [gen. I] *antealfacariensis* REISSINGER, 1971 (IS)
  - *postalfacariensis* – *Colias alfacariensis alfacariensis* [gen. III] *postalfacariensis* REISSINGER, 1971 (IS)
  - *ultimaalfacariensis* – *Colias alfacariensis alfacariensis* [gen. IV] *ultimaalfacariensis* REISSINGER, 1971 (IS)
  - *alba* – *Colias hyale* [var.] *alba* RÜHL, 1893 (SSS)
    - *alba* – *Colias hyale* [var.] *alba* BIENERT, 1869 (1870?) (NN)
    - *albida* – *Colias hyale* [var.] *albida* BIENERT, 1869 (1870?) (NN)
  - *australis* – *Colias hyale hyale* [race] *australis* VERITY, 1911 (JSS; made available by Opinion 1657 (ICZN 1991))
  - *bergeri* – *Colias alfacariensis bergeri* REISSINGER, 1989 (JSS)
    - *antebergeri* – *Colias alfacariensis* [gen. I] *antebergeri* REISSINGER, 1989 (NN)
    - *postbergeri* – *Colias alfacariensis* [gen. III] *postbergeri* REISSINGER, 1989 (NN)
    - *ultimabergeri* – *Colias alfacariensis* [gen. IV] *ultimabergeri* REISSINGER, 1989 (NN)
  - *calida* – *Colias hyale* [gen. II] *calida* VERITY, 1916 (JSS); made available by Opinion 1657 (ICZN 1991))
    - *aegra* – *Colias hyale calida calida* [f.] *aegra* VERITY, 1947 (IS)
    - *antecalida* – *Colias alfacariensis* [gen. I] *antecalida* REISSINGER, 1989 (IS)
    - *antehyale* – *Colias hyale hyale* [gen. I] *antehyale* VERITY, 1947 (IS)
    - *appendiculata* – *Colias hyale hyale* [f.] *appendiculata* VERITY, 1947 (IS)
    - *autumnalis* – *Colias hyale* [f.] *autumnalis* ROCCI, 1920 (IS)
    - *deannulata* – *Colias hyale* [f.] *deannulata* ROCCI, 1920 (IS)
    - *impunctata* – *Colias hyale* [f.] *impunctata* ROCCI, 1920 (IS)
    - *postcalida* – *Colias alfacariensis* [gen. III] *postcalida* REISSINGER, 1989 (IS)
    - *postrema* – *Colias hyale* [f.] *postrema* ROCCI, 1920 (IS)
    - *seriata* – *Colias hyale* [f.] *seriata* ROCCI, 1920 (IS)
    - *sufflava* – *Colias hyale calida calida* [ab.] *sufflava* VERITY, 1947 (IS)
    - *vernalis* – *Colias hyale hyale* [gen. vern. var.] *vernalis* VERITY, 1909 (IS)

- *fontainei* – *Colias alfacariensis fontainei* REISSINGER, 1989 (JSS)
  - antefontainei – *Colias alfacariensis* [gen. I] antefontainei REISSINGER, 1989 (IS)
  - postfontainei – *Colias alfacariensis* [gen. I] postfontainei REISSINGER, 1989 (IS)
  - ultimafontainei – *Colias alfacariensis* [gen. I] ultimafontainei REISSINGER, 1989 (IS)
- *hyrcanica* – *Colias alfacariensis hyrcanica* REISSINGER, 1989 (JSS of *alfacariensis* RIBBE, 1905 & *alba* RÜHL, 1893)
  - antehyrcanica – *Colias alfacariensis* [gen. I] antehyrcanica REISSINGER, 1989 (IS)
  - posthyrcanica – *Colias alfacariensis* [gen. I] posthyrcanica REISSINGER, 1989 (IS)
- *hyrcanica* – *Colias alfacariensis hyrcanica* WEISS, 1990 (JSS of *alfacariensis* RIBBE, 1905 & *alba* RÜHL, 1893; JH of *hyrcanica* REISSINGER, 1989)
- *kantaraica* – *Colias alfacariensis kantaraica* REISSINGER, 1989 (JSS)
- *magyarica* – *Colias alfacariensis magyarica* REISSINGER, 1989 (JSS)
  - antemagyarica – *Colias alfacariensis magyarica* [gen. I] antemagyarica REISSINGER, 1989 (IS)
  - postmagyarica – *Colias alfacariensis magyarica* [gen. III] postmagyarica REISSINGER, 1989 (IS)
  - ultimamagyarica – *Colias alfacariensis magyarica* [gen. IV] ultimamagyarica REISSINGER, 1989 (IS)
- *mandarina* – *Colias alfacariensis mandarina* REISSINGER, 1989 (JSS)
  - mandarna – *Colias alfacariensis mandarna* REISSINGER, 1989 (IOS)
- *metacalida* – *Colias alfacariensis metacalida* REISSINGER, 1989 (JSS)
  - antemetacalida – *Colias alfacariensis metacalida* [gen. I] antemetacalida REISSINGER, 1989 (IS)
  - flavoradiata – *Colias hyale* [ab.] flavoradiata STEINER, 1935 (IS)
  - galvagnii – *Colias hyale* [f.] galvagnii STAUDER, 1921 (IS)
  - omnimarginata – *Colias hyale* [ab.] omnimarginata HAFNER, 1912 (IS)
  - postmetacalida – *Colias alfacariensis metacalida* [gen. III] postmetacalida REISSINGER, 1989 (IS)
  - trimaculata – *Colias hyale* [ab.] trimaculata STEINER, 1935 (IS)
  - ultimametacalida – *Colias alfacariensis metacalida* [gen. IV] ultimametacalida REISSINGER, 1989 (IS)
- *meridionalis* – *Colias hyale* [var.] *meridionalis* KRULIKOWSKY, 1903 (SSS of *alfacariensis* RIBBE, 1905 and JSS of *sareptensis* ALPHÉRAKY, 1875)
- *orthocalida* – *Colias alfacariensis orthocalida* REISSINGER, 1974 (JSS)
  - anteorthocalida – *Colias alfacariensis orthocalida* [gen. I] anteorthocalida REISSINGER, 1974 (NN)
  - cisalpina – *Colias alfacariensis cisalpina* REISSINGER, 1974 (NN)
  - moxa – *Colias alfacariensis orthocalida* [gen. II] moxa REISSINGER, 1974 (IS)
  - postorthocalida – *Colias alfacariensis orthocalida* [gen. III] postorthocalida REISSINGER, 1974 (IS)
- *paracalida* – *Colias alfacariensis paracalida* REISSINGER, 1989 (JSS)
  - albescens – *Colias hyale* [ab.] albescens METSCHL, 1922 (IS)
  - albicans – *Colias hyale* [f.] albicans LEMPKE, 1954 (ISS of albescens METSCHL, 1922)
  - anteparacalida – *Colias alfacariensis paracalida* [gen. I] anteparacalida REISSINGER, 1989 (IS)
  - flavida – *Colias hyale* [ab.] flavida GRUBER, 1932 (IS)
  - flavoapicalis – *Colias hyale* [ab.] flavoapicalis METSCHL, 1922 (IS)
  - flavoradiata – *Colias hyale* [ab.] flavoradiata METSCHL, 1922 (NN)
  - flavoradiata – *Colias hyale* [ab.] flavoradiata GRUBER, 1932 (IS)
  - metschli – *Colias hyale* [ab.] metschli GRUBER, 1932 (IS)
  - ochrocretaea – *Colias hyale* [ab.] ochro-cretaea FRITSCH, 1918 (IS)
  - paracalida – *Colias alfacariensis paracalida* REISSINGER, 1972 (NN)
  - postparacalida – *Colias alfacariensis paracalida* [gen. III] postparacalida REISSINGER, 1989 (IS)

- sieversoides – *Colias hyale* [ab.] sieversoides VERITY, 1908 (IS)
- ultimaparacalida – *Colias alfacariensis paracalida* [gen. IV] ultimaparacalida REISSINGER, 1989 (NN)
- *parapanisa* – *Colias alfacariensis parapanisa* REISSINGER, 1989 (JSS of *alfacariensis* RIBBE, 1905, *alba* RÜHL, 1893 and *hyrcanica* REISSINGER, 1989)
- *remota* – *Colias alfacariensis remota* REISSINGER, 1989 (JSS of *alfacariensis* RIBBE, 1905, *meridionalis* KRULIKOWSKY, 1903 and *sareptensis* ALPHÉRAKY, 1875)
  - anteremota – *Colias alfacariensis remota* [gen. I] anteremota REISSINGER, 1989 (NN)
  - ciscaucasica – *Colias alfacariensis ciscaucasica* REISSINGER, 1989 (NN)
  - postremota – *Colias alfacariensis remota* [gen. III] postremota REISSINGER, 1989 (NN)
  - ultimaremota – *Colias alfacariensis remota* [gen. IV] ultimaremota REISSINGER, 1989 (IS)
- *rumilica* – *Colias alfacariensis rumilica* REISSINGER, 1989 (JSS)
  - anterumilica – *Colias alfacariensis rumilica* [gen. I] anterumilica REISSINGER, 1989 (NN)
  - postrumilica – *Colias alfacariensis rumilica* [gen. III] postrumilica REISSINGER, 1989 (NN)
  - rumelica – *Colias australis rumelica* THURNER, 1964 (NN)
- *saissanica* – *Colias alfacariensis saissanica* REISSINGER, 1989 (JSS)
  - moxasaissanica – *Colias alfacariensis saissanica* [gen. II] moxasaissanica REISSINGER, 1989 (IS)
- *sareptensis* – *Colias sareptensis* ALPHÉRAKY, 1875 (SSS of *alfacariensis* RIBBE, 1905, *meridionalis*, KRULIKOWSKY, 1903 & *remota* REISSINGER, 1989)
  - inversa – *Colias hyale* [ab.] inversa ALPHÉRAKY, 1881 (IS)
  - vernalis – *Colias hyale sareptensis* [gen. vern. var.] vernalis VERITY, 1908 (IS)
- *senonica* – *Colias alfacariensis senonica* REISSINGER, 1972 (JSS)
  - alba – *Colias hyale* [ab.] alba DERENNE, 1933 (IS)
  - antesenonica – *Colias alfacariensis senonica* [gen. I] antesenonica REISSINGER, 1972 (NN)
  - candida – *Colias hyale* [ab.] candida DERENNE, 1936 (IS; replacement name for alba DERENNE, 1933)
  - inornatura – *Colias hyale* [ab.] inornatura DERENNE, 1923 (IS)
  - parisiensis – *Colias hyale* [ab.] parisiensis OBERTHÜR, 1936 (IS)
  - pierardi – *Colias alfacariensis calida* [ab.] pierardi DUFRANE, 1947 (IS)
  - postsenonica – *Colias alfacariensis senonica* [gen. III] postsenonica REISSINGER, 1972 (IS)
  - supervacanea – *Colias alfacariensis calida* [gen. III] supervacanea DUFRANE, 1947 (IS)
  - vernalis – *Colias alfacariensis calida* [gen. I] vernalis DUFRANE, 1947 (IS)
- *slavonica* – *Colias alfacariensis slavonica* REISSINGER, 1989 (JSS)
  - anteslavonica – *Colias alfacariensis slavonica* [gen. I] anteslavonica REISSINGER, 1989 (IS)
  - postslavonica – *Colias alfacariensis slavonica* [gen. III] postslavonica REISSINGER, 1989 (IS)
  - ultimaslavonica – *Colias alfacariensis slavonica* [gen. IV] ultimaslavonica REISSINGER, 1989 (IS)
- *ubercalida* – *Colias australis ubercalida* REISSINGER, 1959 (JSS)
  - anteubercalida – *Colias hyale calida ubercalida* [gen. I] anteubercalida VERITY, 1947 (IS)
  - moxaubercalida – *Colias alfacariensis ubercalida* [gen. II] moxaubercalida REISSINGER, 1972 (IS)
  - postubercalida – *Colias alfacariensis ubercalida* [gen. III/IV] postubercalida REISSINGER, 1972 (IS)
  - uber – *Colias hyale calida* [f.] uber VERITY, 1926 (IS)
  - ubercalida – *Colias hyale calida* [„sottorazza“] ubercalida VERITY, 1947 (IS)
- *vihorlatensis* – *Colias alfacariensis vihorlatensis* REISSINGER, 1989 (JSS)
  - antevihorlatensis – *Colias alfacariensis vihorlatensis* [gen. I] antevihorlatensis REISSINGER, 1989 (NN)
  - flava – *Colias hyale* [ab.] flava HUSZ, 1881 (IS)
  - postvihorlatensis – *Colias alfacariensis vihorlatensis* [gen. III] postvihorlatensis REISSINGER, 1989 (NN)

***alpherakii* STAUDINGER, 1882***alpherakii* – *Colias alpherakii* STAUDINGER, 1882

- leucophryna – *Colias alpherakii* [ab.] leucophryna GRUM-GRSHIMAILO, 1893 (IS)
- versa – *Colias alpherakii alpherakii* [race] versa VERITY, 1911 (IS)
- *alpherakyi* – *Colias alpherakyi* VERITY, 1909 (UE & JOS)
- *chitralensis* – *Colias alpherakii chitralensis* BOLLOWS, 1930 (JH of *Colias chitralensis* MOORE, 1905 & JSS)
  - *chitralensis* – *Colias alpherakii roschana* [race] *chitralensis* VERITY, 1911 (IS)
  - *pakistania* – *Colias alpherakii pakistania* KOÇAK, 1990 (unavailable)<sup>5</sup>
- *kohibaba* – *Colias alpherakii kohibaba* WYATT & OMOTO, 1966 (JSS)
- *roschana* – *Colias alpherakii* [var.] *roschana* GRUM-GRSHIMAILO, 1893 (JSS)
  - *roshana* – *Colias alpherakii roshana* WYATT & OMOTO, 1966 (ISS)
- *tashkurgonica* – *Colias alpherakii tashkurgonica* KESKÜLA, 1997 (JSS)
- *usmatica* – *Colias alpherakii usmatica* STSHETKIN, 1990 (JSS)

**alta** STAUDINGER, 1886<sup>6</sup>

*alta* – *Colias hyale* [var.] *alta* STAUDINGER, 1886

**arida** ALPHÉRAKY, 1889

- arida* – *Colias eogene* [var.] *arida* ALPHÉRAKY, 1889
- *alitha* – *Colias alitha* WATANABE, 2003 (ISS)
  - *flavescens* – *Colias eogene* [f.] *flavescens* RÜHL, 1893 (JSS)
  - *muratai* – *Colias muratai* IWAMOTO, 2006 (JSS)
  - *amanonis* – *Colias amanonis* IWAMOTO, 2006 (JSS)
    - *eogenei* – *Colias eogene arida* [f.] *eogenei* VERITY, 1907 (IS)
- cakana* – *Colias arida cakana* ROSE & SCHULTE, 1992
- *auritheme* – *Colias eogene arida* [ab.] *auritheme* GRUM-GRSHIMAILO, 1893 (IS)
  - *muetingi* – *Colias arida muetingi* ROSE & SCHULTE, 1992 (JSS)<sup>7</sup>

**aurorina** HERRICH-SCHÄFFER, 1850

- aurorina* – *Colias aurorina* HERRICH-SCHÄFFER, 1850
- *alba* – *Colias aurorina* [f.] *alba* HEYNE, 1895 (IS)
  - *aurantiaca* – *Colias aurorina* [f.] *aurantiaca* HEYNE, 1895 (IS)
  - *deserticola* – *Colias aurorina aurorina* [var.] *deserticola* VERITY 1909 (IS)
  - *neuschildi* – *Colias aurorina* [f.] *neuschildi* RÖBER, 1914 (IS)
  - *venus* – *Colias aurorina* [ab.] *venus* GRUM-GRSHIMAILO, 1907 (IS)
  - *auricoma* – *Colias auricoma* EVERSMAANN, 1851 (JSS)
    - *chrysocoma* – *Colias chrysocoma* EVERSMAANN, 1851 (IOS of *auricoma* EVERSMAANN, 1851)
  - *chrysocome* – *Colias chrysocome* FREYER, [1851] (JSS)
  - *tamara* – *Colias tamara* NORDMANN, 1851 (JSS)
  - *taurica* – *Colias aurorina* [f.] *taurica* REBEL, 1901 (JSS)
    - *leucothea* – *Colias aurorina taurica* [ab.] *leucothea* REBEL, 1917 (IS)
- anna* – *Colias aurora* [var.] *anna* GERHARD, 1882
- *daghestanica* – *Colias aurorina daghestanica* VERHULST, 1994 (JSS)
    - *cinctoides* – *Colias aurorina daghestanica* [f.] *cinctoides* MAUX, 2006 (IS)
- heldreichi* – *Colias heldreichi* STAUDINGER, 1862
- *alba* – *Colias aurorina heldreichi* [ab.] *alba* VERITY, 1908 (IS)
  - *fontaineae* – *Colias aurorina heldreichi* [race] *fontaineae* VERITY, 1911 (IS)
  - *fountainei* – *Colias heldreichi* [ab.] *fountainei* AIGNER-ABAFI, 1901 (IS)
  - *griseoviridis* – *Colias aurorina heldreichi* [ab.] *griseoviridis* VERITY, 1908 (IS)
  - *helderichi* – *Colias diva* [var.] *helderichi* RAINERI & CARNEVALE, 1998 (ISS & MI)
  - *heldreichi* – *Colias heldreichi* LEDERER, 1861 (NN)
  - *heldreichii* – *Colias libanotica heldreichii* VERHULST, 2000 (ISS)
  - *vestalis* – *Colias aurorina heldreichi* [ab.] *vestalis* GRUM-GRSHIMAILO, 1907 (IS)
- kermana* – *Colias aurorina kermana* ECKWEILER, 1979<sup>8</sup>
- libanotica* – *Colias libanotica* LEDERER, 1858
- *alba* – *Colias aurorina libanotica libanotica* [ab.] *alba* VERITY, 1911 (NN)
  - *hybrida* – *Colias aurorina libanotica* [ab.] *hybrida* VERITY, 1908 (IS)

- hyprida – *Colias aurorina libanotica* [ab.] hyprida BRIDGES, 1988 (ISS)
- pulchior – *Colias libanotica libanotica* [f.] pulchior VERHULST, 2000 (ISS)
- pulchrion – *Colias aurorina aurorina* [f.] pulchrion D'ABRERA, 1990 (ISS)
- pulchrrior – *Colias aurorina libanotica* [f.] pulchrrior VERITY, 1908 (IS)
- sagartioides – *Colias aurorina libanotica* pulchrrior [ab.] sagartioides VERITY, 1911 (IS)
- vesta – *Colias aurorina libanotica* [ab.] vesta GRUM-GRSHIMAILO, 1907 (IS)

*rosei* – *Colias aurorina rosei* GROSS & EBERT, 1975

*sovarensis* – *Colias aurorina sovarensis* BLOM, 1979

- offusa – *Colias aurorina libanotica* [ab.] offusa VERITY, 1908 (IS)
- oorschoti – *Colias aurorina sovarensis* [f.] oorschoti BLOM, 1979 (IS)

*transcaspica* – *Colias aurorina* [var.] *transcaspica* CHRISTOPH, 1887

#### **behrii W. EDWARDS, 1866**

*behrii* – *Colias behrii* W. EDWARDS, 1866

- canescens – *Eurymus behrii* [f.] canescens COMSTOCK, 1925 (IS)

#### **berylla FAWCETT, 1904**

*berylla* – *Colias berylla* FAWCETT, 1904

- aurantiaca – *Colias berylla* [f.] aurantiaca VERITY, 1911 (IS)

◦ *irma* – *Colias cocandica irma* EVANS, 1924 (JSS)

*longto* – *Colias montium longto* EVANS, 1924

◦ *bergeriana* – *Colias berylla bergeriana* VERHULST, 1992 (JSS)

- rileyi – *Colias berylla rileyi* VERHULST, 1992 (NN)

#### **canadensis FERRIS, 1982**

*canadensis* – *Colias hecla canadensis* FERRIS, 1982

#### **caucasica STAUDINGER, 1871**

*caucasica* – *Colias myrmidone* [var.] *caucasica* STAUDINGER, 1871

- alba – *Colias olga* [f.] alba HEYNE, 1895 (IS)
- aurantiaca – *Colias olga* [f.] aurantiaca HEYNE, 1895 (IS)
- phryne – *Colias olga* [ab.] phryne GRUM-GRSHIMAILO, 1907 (IS)
- rühli – *Colias caucasica* [ab.] rühli KRULIKOWSKY, 1903 (IS)
- *olga* – *Colias olga* ROMANOFF, 1882 (JSS)

*balcanica* – *Colias myrmidone* [var.] *balcanica* REBEL, 1901

- anna – *Colias balcanica* [ab.] anna SCHAWERDA, 1907 (IS)
- aphrodyte – *Colias myrmidone balcanica* [f.] aphrodyte SCHAWERDA, 1909 (IS)
- balcanicus – *Colias myrmidone balcanicus* WAGNER, 1907 (ISS)
- caltha – *Colias myrmidone balcanica* [ab.] caltha SCHAWERDA, 1922 (IS)
- chloris – *Colias myrmidone balcanica* [ab.] chloris SCHAWERDA, 1913 (IS)
- daphnis – *Colias myrmidone balcanica* [ab.] daphnis SCHAWERDA, 1913 (IS)
- immaculata – *Colias myrmidone balcanica* [ab.] immaculata SCHAWERDA, 1922 (IS)
- isabellina – *Colias myrmidone balcanica* [ab.] isabellina SCHAWERDA, 1922 (IS)
- leucochorion – *Colias myrmidone balcanica* [ab.] leucochorion SCHAWERDA, 1922 (IS)
- magnomaculata – *Colias myrmidone balcanica* [ab.] magnomaculata SCHAWERDA, 1922 (IS)
- micans – *Colias myrmidone balcanica* [ab.] micans SCHAWERDA, 1922 (IS)
- nicholli – *Colias balcanica* [ab.] nicholli SCHAWERDA, 1907 (IS)
- nigrocuneata – *Colias myrmidone balcanica* [f.] nigrocuneata SCHAWERDA, 1909 (IS)
- nigrovittata – *Colias myrmidone balcanica* [ab.] nigrovittata REBEL, 1922 (IS)
- orcus – *Colias myrmidone balcanica* [f.] orcus SCHAWERDA, 1909 (IS)
- rebeli – *Colias myrmidone balcanica* [f.] rebeli SCHAWERDA, 1907 (IS)
- rosea – *Colias balcanica* [ab.] rosea SCHAWERDA, 1919 (IS)
- rubromaculata – *Colias balcanica* [ab.] rubromaculata SCHAWERDA, 1939 (IS)
- scotina – *Colias myrmidone balcanica* [ab.] scotina SCHAWERDA, 1922 (IS)
- semialba – *Colias myrmidone balcanica* [f.] semialba WAGNER, 1907 (IS)
- stefania – *Colias myrmidone balcanica* [f.] stefania SCHAWERDA, 1909 (IS)
- vucijabarae – *Colias myrmidone balcanica* [ab.] vucijabarae SCHAWERDA, 1922 (IS)

**chlorocoma CHRISTOPH, 1888**<sup>9</sup>

*chlorocoma* – *Colias chlorocoma* CHRISTOPH, 1888

- ochracea – *Colias chlorocoma* [f.] ochracea VERHULST, 1993 (IS)
- sulphurea – *Colias chlorocoma* [ab.] sulphurea MILLER, 1913 (IS)
- *aladagensis* – *Colias chlorocoma aladagensis* VERHULST, 1993 (JSS)
- *taleshensis* – *Colias chlorocoma taleshensis* ECKWEILER, 2003 (JSS)
- *tkatschukovi* – *Colias chlorocoma tkatschukovi* O. BANG-HAAS, 1936 (JSS)
  - albomaculata – *Colias chlorocoma tkatschukovi* [ab.] albomaculata O. BANG-HAAS, 1936 (IS)
  - tkatschukovi – *Colias chlorocoma* [var.] tkatschukovi RAINERI & CARNEVALE, 1998 (ISS)
- *wyatti* – *Colias chlorocoma wyatti* HÄUSER & SCHURIAN, 1978 (JSS)

**christina W. EDWARDS, 1863**

*christina* – *Colias christina* W. EDWARDS, 1863

- pallida – *Colias christina* [f.] pallida COCKERELL, 1889 (IS)
- *alberta* – *Colias eurytheme alberta* BOWMAN, 1942 (JSS)
  - pallidissima – *Colias eurytheme alberta* [ab.] pallidissima BOWMAN, 1942 (IS)
- kluanensis* – *Colias alexandra kluanensis* FERRIS, 1981
  - *yukonensis* – *Colias yukonensis* BERGER, 1986 (JSS)
- krauthii* – *Colias christina krauthii* KLOTS, 1935
- sacajawea* – *Colias christina sacajawea* KOHLER, 2006

**christophi GRUM-GRSHIMAILO, 1885**

*christophi* – *Colias christophi* GRUM-GRSHIMAILO, 1885

- banghaasi – *Colias christophi* [f.] bang-haasi BOLLOU, 1930 (IS)
- chrisophi – *Colias chrisophi* RAINERI & CARNEVALE, 1998 (ISS)
- novosiltzovi – *Colias christophi* [ab.] novosiltzovi AVINOFF, 1910 (IS)
- simplicissima – *Colias christophi* [ab.] simplicissima AVINOFF, 1910 (IS)
- *aufderheidei* – *Colias christophi auf der heidei* KOTZSCH, 1929 (JSS)
  - heidei – *Colias christophi heidei* TALBOT, 1910 (ISS)
- *kali* – *Colias christophi kali* KORB, 1999 (JSS)
  - cali – *Colias christophi cali* TSHIKOLOVETS, 2003 (ISS)
- helialaica* – *Colias christophi helialaica* SCHULTE, 1988

**chrysotheme (ESPER, [1781])**

*chrysotheme* – *Papilio chrysotheme* ESPER, [1781]

- aestiva – *Colias chrysotheme chrysotheme* [gen. aest. var.] aestiva VERITY, 1908 (IS)
- alba – *Colias chrysotheme* [ab.] alba BAYER, 1923 (IS)
- alba – *Colias chrysotheme chrysotheme* [ab.] alba VERITY, 1909 (IS)
- albicans – *Colias chrysotheme* [ab.] albicans SKALA, 1912 (IS)
- alpestris – *Colias chrysotheme chrysotheme* schugurovi [ab.] alpestris GORBUNOV, 2001 (NN)
- chrisotheme – *Colias chrisotheme* RAINERI & CARNEVALE, 1998 (ISS)
- chrysotome – *Papilio chrysotome* HERBST, 1792 (ISS)
- commasignata – *Colias chrysotheme* [ab.] commasignata RAINERI & CARNEVALE, 1998 (NN)
- contexta – *Colias chrysotheme* [ab.] contexta STERZL, 1928 (IS)
- demarginata – *Colias chrysotheme* [ab.] demarginata PIESZCZEK, 1917 (IS)
- elongata – *Colias chrysotheme* [ab.] elongata HABANEC, 1928 (IS)
- flava – *Colias chrysotheme* [ab.] flava VERITY, 1908 (IS)
- flavescens – *Colias chrysotheme chrysotheme* [ab.] flavescens VERITY, 1909 (IS)
- flavoradiata – *Colias chrysotheme* [ab.] flavoradiata PIESZCZEK, 1917 (IS)
- flavoradiata – *Colias chrysotheme* [ab.] flavoradiata HABANEC & STERZL, 1928 (IS)
- hecloides – *Colias chrysotheme chrysotheme* [f.] hecloides VERITY, 1911 (IS)
- helicoides – *Colias chrysotheme chrysotheme* helicoides KUDRNA, 1983 (ISS)
- hurleyi – *Colias chrysotheme* [ab.] hurleyi AIGNER-ABAFI, 1901 (IS)
- lutea – *Colias chrysotheme* [ab.] lutea SKALA, 1908 (IS)
- macropuncta – *Colias chrysotheme* [ab.] macropuncta STERZL, 1928 (IS)



- *macropunctata* – *Colias chrysotheme* [f.] *macropunctata* BRIDGES, 1988 (ISS)
- *micans* – *Colias chrysotheme* [ab.] *micans* HABANEC & STERZL, 1928 (IS)
- *minor* – *Colias chrysotheme* [gen. I] *minor* SKALA, 1908 (IS)
- *nigrofasciata* – *Colias chrysotheme* [ab.] *nigrofasciata* HABANEC & STERZL, 1928 (IS)
- *nigromarginata* – *Colias chrysotheme* [ab.] *nigromarginata* HABANEC, 1928 (IS)
- *obscura* – *Colias chrysotheme* [ab.] *obscura* SKALA, 1908 (IS)
- *pallida* – *Colias chrysotheme* [ab.] *pallida* SKALA, 1908 (IS)
- *praeclara* – *Colias chrysotheme* [ab.] *praeclara* STERZL, 1916 (IS)
- *pupillata* – *Colias chrysotheme* [ab.] *pupillata* PIESZCZEK, 1917 (IS)
- *pupillata* – *Colias chrysotheme* [ab.] *pupillata* HABANEC & STERZL, 1928 (IS)
- *silaceus* – *Colias chrysotheme* [ab.] *silaceus* HABANEC, 1928 (IS)
- *standfussi* – *Colias chrysotheme* [ab.] *standfussi* GRUM-GRSHIMAILO, 1893 (IS)
- *striata* – *Colias chrysotheme* [ab.] *striata* PIESZCZEK, 1917 (IS)
- *striata* – *Colias chrysotheme* [ab.] *striata* HABANEC & STERZL, 1928 (IS)
- *unipunctata* – *Colias chrysotheme* [ab.] *unipunctata* SKALA, 1908 (IS)
- *vernalis* – *Colias chrysotheme* [var.] *vernalis* RAINERI & CARNEVALE, 1998 (NN)
- *violapunctata* – *Colias chrysotheme* [ab.] *viola-punctata* HABANEC, 1928 (IS)
- *violascens* – *Colias chrysotheme* [ab.] *violascens* GALVAGNI, 1929 (IS)
- *wernereri* – *Colias chrysotheme* [ab.] *wernereri* GEEST, 1905 (IS)
- *ksienzhopolskii* – *Colias chrysotheme ksienzhopolskii* OBRAZTSOV, 1936 (JSS of *chrysotheme* (ESPER, [1781]) & *schugurovi* VERITY, 1908)
- *praealpina* – *Colias chrysotheme praealpina* KOVÁCS, 1956 (JSS)
- *schugurovi* – *Colias chrysotheme* [var.] *schugurovi* VERITY, 1908 (JSS)
  - *acuminata* – *Colias chrysotheme chrysotheme* [ab.] *acuminata* VERITY, 1909 (IS)
  - *chugurovi* – *Colias chrysotheme* [ab.] *chugurovi* KRULIKOWSKY, 1906 (IOS)
  - *malmyzhensis* – *Colias chrysotheme* [ab.] *malmyzhensis* KRULIKOWSKY, 1910 (IS)
  - *nigrofasciata* – *Colias chrysotheme* [ab.] *nigrofasciata* OBRAZTSOV, 1935 (IS)
  - *schugurovi* – *Colias chrysotheme* [ab.] *schugurovi* KRULIKOWSKY, 1906 (emended from *chugurovi*) (IS)
  - *shugurovi* – *Colias chrysotheme* [ab.] *shugurovi* KRULIKOWSKY, 1908 (ISS)
- audre* – *Colias chrysotheme audre* HEMMING, 1933
  - *andre* – *Colias chrysotheme andre* KORSHUNOV & SOLJANIKOV, 1976 (ISS)<sup>10</sup>
- *sibirica* – *Colias chrysotheme* [var.] *sibirica* GRUM-GRSHIMAILO, 1893 (JH of *sibirica* LEDERER, 1853)
- elena* – *Colias chrysotheme elena* GORBUNOV, 1995
  - *splendida* – *Colias chrysotheme audre* [f.] *splendida* WEISS, 1968 (IS)
  - *vestalis* – *Colias chrysotheme vestalis* D'ABRERA, 1990 (unavailable)<sup>11</sup>

#### ***cocandica* ERSCHOFF, 1874**

- cocandica* – *Colias nastes* [var.] *cocandica* ERSCHOFF, 1874
  - *cocandica* – *Colias nastes* [var.] *cocandica* BATES, 1873 (NN)
  - *cocandice* – *Colias cocandice* D'ABRERA, 1990 (ISS)
  - *cokandica* – *Colias cokandica* ELWES, 1898 (ISS)
  - *kokandica* – *Colias nastes* [var.] *kokandica* ELWES, 1884 (ISS)
  - *nastoides* – *Colias cocandica cocandica* [f.] *nastoides* VERITY, 1911 (IS)
  - *obscura* – *Colias cocandica* [f.] *obscura* AUSTAUT, 1898 (IS)
  - *turanica* – *Colias nastes* [var.] *turanica* MÖSCHLER, 1885 (ISS)
- *mraceki* – *Colias cocandica mraceki* VERHULST, 1999 (JSS)
- culminicola* – *Colias cocandica culminicola* KOTZSCH, 1936
  - *xantha* – *Colias cocandica culminicola* [ab.] *xantha* KOTZSCH, 1936 (IS)
- hinducucica* – *Colias cocandica* [race] *hinducucica* BOLLOW, 1930<sup>12</sup>
  - *fulgida* – *Colias cocandica cocandica* [ab.] *fulgida* VERITY, 1911 (IS)
  - *galba* – *Colias cocandica* [ab.] *galba* GRUM-GRSHIMAILO, 1893 (IS)
  - *hindnencica* – *Colias cocandica hindnencica* TYTLER, 1926 (ISS)
  - *hinducucica* – *Colias cocandica cocandica* [race] *hinducucica* VERITY, 1911 (IS)

- hybrida – *Colias cocandica* [ab.] hybrida GRUM-GRSHIMAILO, 1893 (IS)
- integra – *Colias cocandica* [race] hinducucica [ab.] integra VERITY, 1911 (IS)
- *kunjerabi* – *Colias cocandica kunjerabi* VERHULST, 1999 (JSS)
- maja* – *Colias cocandica* [var.] *maja* GRUM-GRSHIMAILO, 1891
  - pupillata – *Colias cocandica* [f.] pupillata STAUDER, 1924 (IS)
- pljushchi* – *Colias cocandica pljushchi* VERHULST, 2000<sup>13</sup>
- tatarica* – *Colias cocandica* [var.] *tatarica* O. BANG-HAAS, 1915
  - aurantiacomaculata – *Colias cocandica tatarica* [f.] aurantiaco-maculata O. BANG-HAAS, 1915 (IS)
  - brunneoviridis – *Colias cocandica tatarica* [f.] brunneo-viridis O. BANG-HAAS, 1915 (IS)
  - circumiens – *Colias cocandica tatarica* [f.] circumiens O. BANG-HAAS, 1915 (IS)
  - griseoviridis – *Colias cocandica tatarica* [f.] griseo viridis O. BANG-HAAS, 1915 (IS)
  - immaculata – *Colias cocandica tatarica* [f.] immaculata O. BANG-HAAS, 1915 (IS)
  - impunctata – *Colias cocandica cocandica* [f.] impunctata TALBOT, 1935 (ISS)
  - impunctatas – *Colias cocandica tatarica* [f.] impunctatas O. BANG-HAAS, 1915 (IS)
  - melanina – *Colias cocandica* [f.] melanina BOLLOW, 1930 (IS)
  - melanitica – *Colias cocandica tatarica* [f.] melanitica O. BANG-HAAS, 1915 (IS)
  - minor – *Colias cocandica tatarica* [f.] minor O. BANG-HAAS, 1915 (IS)
  - radiata – *Colias cocandica tatarica* [f.] radiata O. BANG-HAAS, 1915 (IS)
  - viridis – *Colias cocandica tatarica* [f.] viridis O. BANG-HAAS, 1915 (IS)

### **croceus (GEOFFROY, 1785)**

- croceus* – *Papilio croceus* GEOFFROY, 1785
  - addenda – *Colias edusa* [ab.] addenda GRUND, 1916 (IS)
  - adoratrix – *Colias croceus* [ab.] adoratrix STAUDER, 1913 (IS)
  - aegra – *Colias croceus* [ab.] aegra VERITY, 1909 (IS)
  - afflicta – *Colias edusa* [ab.] afflicta DELAHAYE, 1909 (IS)
  - alba – *Colias edusa* [var.] alba HAWORTH, 1802 (NN)
  - alba – *Colias electo croceus* [ab.] alba LEMPKE, 1933 (IS)
  - albissima – *Colias croceus* [f.] albissima RAGUSA, 1916 (IS)
  - amethystina – *Colias croceus* [ab.] amethystina BOLLOW, 1931 (NN)
  - amethystine – *Colias croceus* [ab.] amethystine FROHAWK, 1938 (IS)
  - angustior – *Colias edusa* angustior COCKERELL, 1889 (IS)<sup>14</sup>
  - atrofasciata – *Colias croceus* [f.] atrofasciata ROCCI, 1920 (IS)
  - aubuissoni – *Colias edusa* [ab.] aubuissoni CARADJA, 1894 (IS)
  - autumnalis – *Colias croceus* [f.] autumnalis SAGARRA, 1921 (NN)
  - autumnalis – *Colias croceus* [f.] autumnalis ROCCI, 1920 (IS)
  - basisuffusa – *Colias electo croceus* [ab.] basisuffusa LEMPKE, 1932 (IS)
  - berioi – *Colias croceus croceus* [ab.] berioi DUFRANE, 1947 (IS)
  - berthina – *Colias croceus* [ab.] berthina BRAUN, 1930 (IS)
  - bicolorata – *Colias electo croceus* [ab.] bicolorata MEZGER, 1932 (IS)
  - bimaculata – *Colias croceus* [f.] bimaculata ROCCI, 1920 (IS)
  - bipupillata – *Colias croceus* [ab.] bipupillata PIONNEAU, 1928 (IS)
  - breignetti – *Colias edusa* [ab.] breignetti MANON, 1927 (IS)
  - brunnea – *Colias edusa* [ab.] brunnea TUTT, 1896 (IS)
  - cabracasa – *Colias croceus* [f.] cabracasa STAMM, 1963 (IS)
  - caerulea – *Colias edusa* [ab.] caerulea VERITY, 1904 (IS)
  - chrysotheme – *Colias edusa* [ab.] chrysotheme TUTT 1896 (IS)
  - chrysothemeformis – *Colias croceus* [f.] chrysothemeformis VERITY, 1919 (IS)
  - chrysothemeobsoleta – *Colias edusa* [ab.] chrysotheme-obsoleta STIEF, 1938 (NN)
  - chrysothemides – *Colias myrmidone* [f.] chrysothemides VERITY, 1911 (IS)
  - cincta – *Colias croceus* [ab.] cincta LE CHARLES, 1926 (IS)
  - cinerascens – *Colias edusa* [ab.] cinerascens ROWLAND-BROWN, 1921 (IS)
  - coerulea – *Colias croceus* [ab.] coerulea DRAGONI-RABENHORST, 1912 (ISS)
  - completa – *Colias electo croceus* [ab.] completa LEMPKE, 1933 (IS)

- *corrosus* – *Colias edusa* [ab.] *corrosus* DELAHAYE, 1909 (IS)
- *crassesignata* – *Colias edusa* [ab.] *crassesignata* KITT, 1924 (IS)
- *cremonae* – *Colias croceus* [ab.] *cremonae* A. BANG-HAAS, 1912 (IS)
- *cremonae* – *Colias croceus* [ab.] *cremonae* VERITY, 1911 (IS)
- *cremonaehelice* – *Colias croceus* [f.] *cremonaehelice* RUSSEL, TENNENT & HALL, 2003 (IS)
- *croceoexpansa* – *Colias hyale* [ab.] *croceo-expansa* CARUEL, 1955 (IS)
- *croceous* – *Colias croceus* MANDAL, 1984 (ISS)
- *dawsoni* – *Colias croceus* [ab.] *dawsoni* BOLLOW, 1930 (IS)
- *deannulata* – *Colias croceus* [f.] *deannulata* ROCCI, 1920 (IS)
- *decurtata* – *Colias edusa* [ab.] *decurtata* KITT, 1924 (IS)
- *demarginata* – *Colias edusa* [ab.] *demarginata* PIESZCZEK, 1917 (IS)
- *dentata* – *Colias croceus* [ab.] *dentata* CARUEL, 1955 (IS)
- *derennei* – *Colias croceus* [ab.] *derennei* BRAUN, 1930 (IS)
- *deserticola* – *Colias croceus* [f.] *deserticola* VERITY, 1909 (IS)
- *diloui* – *Colias edusa* [ab.] *diloui* MANON, 1927 (IS)
- *duplex* – *Colias edusa duplex* COCKERELL, 1889 (IS)<sup>15</sup>
- *earinica* – *Colias edusa* [ab.] *earinica* OBERTHÜR, 1909 (IS)
- *enervata* – *Colias edusa* [ab.] *enervata* KITT, 1924 (IS)
- *faillae* – *Colias edusa* [ab.] *faillae* STEFANELLI, 1900 (IS)
- *fischerii* – *Colias croceus* [ab.] *fischerii* BRAUN, 1928 (IS)
- *flammea* – *Colias edusa* [ab.] *flammea* KITT, 1924 (IS)
- *flavida* – *Colias edusa* [f.] *flavida* KSIENZHOPOLSKY, 1912 (1911?) (IS)
- *flavomaculata* – *Colias croceus* [var.] *helice* [ab.] *flavomaculata* BRAUN, 1928 (IS)
- *fulvosignata* – *Colias croceus* [f.] *fulvosignata* ROCCI, 1920 (IS)
- *geisleri* – *Colias edusa* [ab.] *geisleri* BRYK, 1923 (IS)
- *grisandroconiata* – *Colias croceus* [f.] *grisandroconiata* LEMPKE, 1954 (IS)
- *helica* – *Colias helica* RAINERI & CARNEVALE, 1998 (ISS)
- *helicepupillata* – *Colias edusa* [ab.] *helice-pupillata* STIEF, 1938 (NN)
- *helicina* – *Colias edusa* [var.] *helicina* OBERTHÜR, 1880 (IS)
- *helicinoides* – *Colias croceus* [ab.] *helicinoides* BRAUN, 1930 (IS)
- *helicoides* – *Colias croceus* [ab.] *helicoides* SAGARRA, 1924 (IS)
- *henriettae* – *Colias croceus* [var.] *henriettae* PIONNEAU, 1926 (IS)
- *hyaleedusa* – hybrid of *C. hyale* & *C. myrmidone* – *hyale-edusa* RYSZKA, 1949 (unavailable)
- *hyerensis* – *Colias croceus* [f.] *hyerensis* STRAND, 1918 (IS)
- *impunctata* – *Colias croceus* [ab.] *impunctata* PIONNEAU, 1931 (NN)
- *infracraerulescens* – *Colias croceus* [f.] *infracraerulescens* VERITY, 1947 (IS)
- *infralutea* – *Colias croceus* [f.] *infralutea* VERITY, 1947 (IS)
- *infraviridis* – *Colias croceus* [f.] *infraviridis* VERITY, 1947 (IS)
- *internodimidiata* – *Colias croceus* [f.] *internodimidiata* ROCCI, 1920 (IS)
- *iridescens* – *Colias croceus* [ab.] COSTANTINI, 1916 (IS)
- *irregulata* – *Colias croceus croceus* [ab.] *irregulata* DUFRANE, 1947 (IS)
- *lacrimans* – *Colias croceus* [ab.] *lacrimans* STAUDER, 1925 (IS)
- *latemarginata* – *Colias electo croceus* [ab.] *latemarginata* LEMPKE, 1933 (IS)
- *lucifer* – *Colias croceus* [f.] *lucifer* RICHARD, 1946 (IS)
- *maculata* – *Colias electo croceus* [ab.] *maculata* LEMPKE, 1933 (IS)
- *magnipuncta* – *Colias electo croceus* [ab.] *magnipuncta* LEMPKE, 1933 (IS)
- *magnomaculata* – *Colias croceus* [f.] *magnomaculata* LEMPKE, 1954 (IS)
- *major* – *Colias croceus* [f.] *major* LE CHARLES, 1926 (IS)
- *major* – *Colias edusa* [var.] *major* AGASSIZ, 1900 (IS)
- *major* – *Colias edusa major* COCKERELL, 1889 (IS)<sup>16</sup>
- *marescauxi* – *Colias croceus* [f.] *marescauxi* MAUX, 2004 (IS)
- *marginata* – *Colias edusa* [ab.] *helice* [ab.] *marginata* BRAUN, 1923 (IS)
- *mediterranea* – *Colias croceus* [gen. vern. (var. merid.)] *mediterranea* STAUDER, 1913 (IS)<sup>17</sup>
- *megei* – *Colias croceus* [ab.] *mègei* ÉCOLE BORDELAISE, 1926 (IS)

- *melanitica* – *Colias edusa* [ab.] *melanitica* VERITY, 1908 (IS)
- *micans* – *Colias croceus* [ab.] *micans* KONAS, 1914 (IS)
- *micans* – *Colias edusa* [ab.] *micans* FRITSCH, 1911 (IS)
- *micans* – *Colias edusa* [ab.] *micans* KIEFER, 1913 (IS)
- *minor* – *Colias edusa* [var.] *minor* AGASSIZ, 1900 (IS)
- *minor* – *Colias edusa* [ab.] *helice* [ab.] *minor* AGASSIZ, 1900 (IS)
- *minor* – *Colias edusa* [ab.] *minor* FAILLA-TEDALDI, 1889 (IS)
- *minor* – *Colias edusa* *minor* COCKERELL, 1889 (IS)<sup>18</sup>
- *minor* – *Colias croceus* [var.] *helice* [ab.] *minor* PIONNEAU, 1930 (IS)
- *minoris* – *Colias croceus* [f.] *minoris* STAUDER, 1921 (IS)
- *mirmidoniformis* – *Colias edusa* [ab.] *mirmidoniformis* STIEF, 1938 (ISS)
- *myrmidoneformis* – *Colias edusa* [ab.] *myrmidoneformis* GRUBER, 1929 (IS)
- *myrmidonides* – *Colias croceus* [f.] *myrmidonides* STAUDER, 1916 (IS)
- *naieri* – *Colias edusa* [ab.] *naieri* HEINRICH, 1930 (IS)
- *nervosa* – *Colias croceus* [ab.] *nervosa* PIONNEAU, 1929 (IS)
- *niediecki* – *Colias croceus* [ab.] *niediecki* STRAND, 1909 (IS)
- *nigra* – *Colias edusa* [ab.] *nigra* AIGNER-ABAFI, 1906 (IS)
- *nigrofasciata* – *Colias edusa* [ab.] *nigrofasciata* MANON, 1926 (IS)
- *nigrofasciata* – *Colias edusa* [ab.] *nigrofasciata* MAURER, 1909 (IS)
- *nigrofasciata* – *Colias edusa* [ab.] *nigrofasciata* VERITY, 1908 (IS)
- *nigrosarsata* – *Colias croceus* [f.] *nigrosarsata* LEMPKE, 1954 (IS)
- *oberthuri* – *Colias croceus* [ab.] *oberthuri* PIONNEAU, 1924 (IS)
- *oberthuri* – *Colias edusa* [ab.] *helice* [ab.] *oberthuri* BRAUN, 1923 (IS)
- *obscura* – *Colias croceus* [ab.] *obscura* BRANDSTETTER, 1981 (IS)
- *obsoleta* – *Colias edusa* [ab.] *obsoleta* GRUBER, 1929 (IS)
- *obsoleta* – *Colias edusa* [ab.] *obsoleta* TUTT, 1896 (IS)
- *pallida* – *Colias edusa* [ab.] *pallida* MANON, 1926 (IS)
- *pallida* – *Colias edusa* [ab.] *pallida* PIESZCZEK, 1917 (IS)
- *pallida* – *Colias edusa* [ab.] *pallida* TUTT, 1896 (IS)
- *pallidaobsoleta* – *Colias croceus* [ab.] *pallida-obsoleta* FROHAWK, 1938 (IS)
- *parvipuncta* – *Colias croceus* [f.] *parvipuncta* LEMPKE, 1954 (IS)
- *passa* – *Colias edusa* [ab.] *passa* VERITY, 1908 (IS)
- *pasticotersior* – *Colias croceus* [gen. II] *pasticotersior* RAINERI & CARNEVALE, 1998 (ISS)
- *paveli* – *Colias edusa* [ab.] *páveli* AIGNER-ABAFI, 1901 (IS)
- *perpallida* – *Colias edusa* [ab.] *perpallida* MANON, 1927 (IS)
- *plurimaculata* – *Colias electo croceus* [ab.] *plurimaculata* MEZGER, 1932 (IS)
- *posteropseudomas* – *Colias edusa* [ab.] *postero-pseudomas* KRAUT, 1929 (IS)
- *posticominuta* – *Colias croceus* [f.] *posticominuta* VERITY, 1947 (IS)
- *posticotersior* – *Colias croceus* [f.] *posticotersior* VERITY, 1947 (IS)
- *poveli* – *Colias croceus* [ab.] *poveli* BRIDGES, 1988 (ISS)
- *povelli* – *Colias edusa* [ab.] *povelli* GRUBER, 1929 (ISS)
- *pseudochrysdona* – *Colias edusa* [f.] *pseudochrysdona* ALBERTI, 1943 (IS)
- *pseudohelicina* – *Colias croceus* [f.] *pseudohelicina* LASSO, 1983 (IS)
- *pseudomas* – *Colias edusa* *pseudomas* COCKERELL, 1889 (IS)<sup>19</sup>
- *pteridis* – *Papilio pteridis* LINNAEUS, 1764 (NN) (see KIRBY, 1870)
- *pullata* – *Colias edusa* [ab.] *pullata* HEINRICH, 1930 (IS)
- *punctellata* – *Colias croceus* [ab.] *punctellata* BRAUN, 1930 (IS)
- *punctifera* – *Colias edusa* [ab.] *punctifera* BRAUN, 1923 (IS)
- *pupillata* – *Colias edusa* [ab.] *pupillata* METSCHL, 1922 (IS)
- *pupillata* – *Colias edusa* [ab.] *pupillata* REVERDIN, 1906 (IS)
- *purpurascens* – *Colias edusa* *purpurascens* COCKERELL, 1889 (IS)<sup>20</sup>
- *radiata* – *Colias edusa* [ab.] *radiata* NITSCHKE, 1932 (IS)
- *radiata* – *Colias edusa* [f.] *radiata* MANON, 1926 (IS)
- *regressa* – *Colias croceus* [f.] *regressa* VERITY, 1947 (IS)

- reisseri – *Colias electo croceus* [ab.] reisseri AGENJO, 1941 (IS)
- retracta – *Colias edusa* [ab.] retracta KITT, 1924 (IS)
- retronigra – *Colias edusa* [ab.] retronigra DELAHAYE, 1909 (IS)
- ridicula – *Colias croceus* [ab.] ridicula ALPHÉRAKY, 1908 (IS)
- riviericola – *Colias croceus* [ab.] riviericola STRAND, 1927 (IS)
- roseosatura – *Colias croceus* [f.] roseosatura VERITY, 1947 (IS)
- rubroandroconiata – *Colias electo croceus* [ab.] rubroandroconiata OBRAZTSOV, 1936 (IS)
- rufomaculata – *Colias electo croceus* [ab.] rufomaculata LEMPKE, 1932 (IS)
- russwurmi – *Colias edusa* [ab.] russwurmi HARMER, 1999 (IS)
- rutilans – *Colias edusa* [ab.] rutilans MANON, 1926 (IS)
- saturator – *Colias edusa* [ab.] saturator KITT, 1924 (IS)
- saturior – *Colias edusa* [ab.] saturior STIEF, 1938 (ISS)
- schiberi – *Colias croceus* [ab.] schiberi BRIDGES, 1988 (ISS)
- schirberi – *Colias edusa* [ab.] schirberi OBERTHÜR, 1923 (IS)
- semidemarginata – *Colias croceus* [ab.] semi-demarginata PIONNEAU, 1929 (IS)
- semidivisa – *Colias croceus* [f.] semidivisa ROCCI, 1920 (IS)
- semiobsoleta – *Colias croceus* [f.] semiobsoleta ROCCI, 1920 (IS)
- seriata – *Colias croceus* [ab.] seriata PIONNEAU, 1931 (IS)
- seriata – *Colias croceus* [f.] seriata ROCCI, 1920 (IS)
- somnambula – *Colias edusa* [ab.] somnambula BRYK, 1923 (IS)
- sonambula – *Colias croceus* [ab.] sonambula GÓMEZ & FERNÁNDEZ 1974 (ISS)
- striata – *Colias edusa* [ab.] striata GEEST, 1905 (IS)
- subflavescens – *Colias croceus* [var.] *helice* [ab.] subflavescens PIONNEAU, 1930 (IS)
- subhelicina – *Colias edusa* [f.] sub-helicina MANON, 1926 (IS)
- subobsoleta – *Colias croceus* [f.] subobsoleta ROCCI, 1920 (IS)
- subpallida – *Colias edusa* [ab.] sub-pallida MANON, 1926 (IS)
- subtuscuneata – *Colias edusa* [ab.] subtuscuneata GALVAGNI, 1929 (IS)
- subviridis – *Colias edusa* [f.] subviridis MANON, 1927 (IS)
- suffusa – *Colias edusa* [ab.] suffusa TUTT, 1896 (IS)
- tenuimarginata – *Colias electo croceus* [ab.] tenuimarginata LEMPKE, 1933 (IS)
- tergestina – *Colias croceus* [ab.] tergestina STAUDER, 1913 (IS)
- turbida – *Colias electo croceus* [ab.] turbida BRAUN, 1935 (IS)
- unimaculata – *Colias croceus* [var.] unimaculata PIONNEAU, 1925 (IS)
- unimaculata – *Colias edusa* [ab.] unimaculata KITT, 1924 (IS)
- unipuncta – *Colias edusa* [ab.] unipuncta PIESZCZEK, 1917 (IS)
- velata – *Colias edusa* [ab.] velata RAGUSA, 1904 (IS)
- vernalis – *Colias edusa* [gen. vern. var.] vernalis VERITY, 1908 (IS)
- viridis – *Colias croceus* [race] deserticola [ab.] viridis VERITY, 1911 (NN)
- xanthostigma – *Colias croceus* [ab.] xanthostigma STAUDER, 1925 (IS)
- zuellichi – *Colias edusa* [ab.] zuellichi NITSCHKE, 1932 (IS)
- *ampla* – *Pontia daplidice* [race] *ampla* VERITY, 1919 (JSS)
- *caspicus* – *Colias chrysothème caspicus* STICHEL, 1911 (JSS)
- *croceoviridis* – *Colias croceus* [race] *croceoviridis* BERGER, 1936 (JSS)
  - auriflua – *Colias croceus* [f.] auriflua BERGER, 1936 (IS)
  - leucos – *Colias croceus* [f.] leucos BERGER, 1936 (IS)
  - xanthina – *Colias croceus* [f.] xanthina BERGER, 1936 (IS)
- *edusa* – *Papilio edusa* FABRICIUS, 1787 (JH of *Papilio edusa* FABRICIUS, 1777 & SSS of *C. croceus* (GEOFFROY, 1785)
- *helice* – *Papilio helice* HÜBNER, 1800 (JH of *Papilio helice* LINNAEUS, 1764 & JSS of *C. croceus* (GEOFFROY, 1785)
- *pyrenaica* – *Colias edusa* [var.] *pyrenaica* GRUM-GRSHIMAILO, 1893 (JSS)

#### ***dimera* DOUBLEDAY, 1847**

- dimera* – *Colias dimera* DOUBLEDAY, 1847
  - *alba* – *Colias dimera* [f.] *alba* BERGER, 1937 (IS)

- andromorpha – *Colias dimera* [f.] andromorpha FERNÁNDEZ, 1928 (IS)
- erythrogramma – *Colias erythrogramma* GRUM-GRSHIMAILO, 1907 (ISS)
- meridensis – *Colias dimera* [ab.] meridensis NEUBURGER, 1905 (IS)
- semperi – *Colias dimera* [ab.] semperi STRECKER, 1873 (IS)
- semperi – *Colias semperi* STRECKER, 1873 (NN)
- superba – *Colias dimera* [f.] superba BERGER, 1937 (IS)
- *erythrogrammus* – *Colias erythrogrammus* KOLLAR, 1850 (JSS)
  - erythrorammus – *Colias erythrorammus* KOLLAR, 1850 (IOS)
- *fassli* – *Colias dimera* [var.] *fassli* APOLINAR, 1914 (JSS)
- *mariae* – *Colias dimera mariae* APOLINAR, 1914 (JSS)
- *peruviensis* – *Colias minuscula* [f.] *peruviensis* DUFRANE, 1947 (JSS)
- *tolima* – *Colias tolima* FASSL, 1915 (JSS)

### **diva GRUM-GRSHIMAILO, 1891**

*diva* – *Colias diva* GRUM-GRSHIMAILO, 1891

- alba – *Colias diva* [f.] alba VERITY, 1908 (IS)
- aurantiaca – *Colias diva* [f.] aurantiaca BOLLOWS, 1930 (IS)
- aurantiaca – *Colias diva* [f.] aurantiaca VERITY, 1911 (NN)
- chrysochloris – *Colias diva* [ab.] chrysochloris KOTZSCH, 1937 (IS)
- doris – *Colias diva* [ab.] doris GRUM-GRSHIMAILO, 1907 (IS)
- flava – *Colias diva* [f.] flava BOLLOWS, 1930 (IS)
- flava – *Colias diva* [f.] flava VERITY, 1911 (NN)
- isse – *Colias diva* [ab.] isse GRUM-GRSHIMAILO, 1907 (IS)
- nigra – *Colias diva* [f.] nigra VERITY, 1908 (IS)
- rubra – *Colias diva* [f.] rubra VERITY, 1911 (NN)
- rubra – *Colias diva* [f.] rubra BOLLOWS, 1930 (IS)
- viridis – *Colias diva* [f.] viridis BOLLOWS, 1930 (IS)
- viridis – *Colias diva* [f.] viridis VERITY, 1911 (NN)
- *eleonorae* – *Colias eleonorae* MAUX, 1998 (JSS)
  - excelsacincta – *Colias eleonorae* [f.] excelsacincta MAUX, 2006 (IS)
  - lactecincta – *Colias eleonorae* [f.] lactecincta MAUX, 2006 (IS)
- *thia* – *Colias aurora thia* O. BANG-HAAS, 1934 (JSS)
- *vespera* – *Colias aurora vespera* O. BANG-HAAS, 1927 (JSS)

### **dubia ELWES, 1906**

*dubia* – *Colias dubia* ELWES, 1906

### **electo (LINNAEUS, 1763)<sup>21</sup>**

*electo* – *Papilio electo* LINNAEUS, 1763

- capensis – *Colias electo electo* [ab.] capensis MCLEOD & MCLEOD, 2002 (IS)
  - electra – *Papilio electra* LINNAEUS, 1767 (ISS)
  - electru – *Papilio electru* LEWIN, 1795 (ISS of *Papilio electra* LINNAEUS, 1767 & ISS of *Papilio electo* LINNAEUS, 1758 & MI of *C. croceus*)
  - elysium – *Colias electo electo* [f.] elysium KROON, 1985 (IS)
  - eremna – *Colias electo* [ab.] eremna VÁRI, 1976 (IS)
  - flavescens – *Colias electo* [f.] flavescens EISNER, 1963 (IS)
  - inconstantis – *Colias electo electo* [ab.] inconstantis MCLEOD, 2004 (IS)
  - memorabilis – *Colias electo electo* [ab.] memorabilis MCLEOD, 2004 (IS)
  - millari – *Colias electo* [f.] millari STONEHAM, 1957 (IS)
  - overlaeti – *Colias electo electo* [f.] overlaeti BERGER, 1940 (IS)
  - pallida – *Colias electo* [f.] pallida COCKERELL, 1889 (IS)
  - pallidula – *Colias electo electo* [ab.] pallidula MCLEOD, 2004 (IS)
  - *aurivillius* – *Colias aurivillius* KEFERSTEIN, 1883 (JSS)
    - aurivilliusi – *Colias electo* [f.] aurivilliusi BRIDGES, 1988 (ISS)
- hecate* – *Colias hecate* STRECKER, 1905
- bunda – *Colias electo hecate* [f.] bunda BERGER, 1940 (IS)

- elisabethae – *Colias electo hecate* [f.] elisabethae BERGER, 1940 (IS)
  - hecate – *Colias hecate* STRECKER, 1900 (NN)
  - katangae – *Colias electo hecate* [f.] katangae BERGER, 1940 (IS)
  - jolyi* – *Colias mukana jolyi* VERHULST, 2006<sup>22</sup>
  - manengoubensis* – *Colias electo manengoubensis* DARGE, 1968
  - meneliki* – *Colias electo meneliki* BERGER, 1940
    - bafanae – *Colias electo meneliki* [f.] bafanae BERGER, 1953 (IS)
    - kostlani – *Colias electo* [ab.] kostlani STRAND, 1911 (IS)
  - *philbyi* – *Colias electo philbyi* BERGER, 1953 (JSS)
    - bafanae – *Colias electo philbyi* [f.] bafanae BERGER, 1953 (IS)
    - pauper – *Colias electo philbyi* [f.] pauper BERGER, 1953 (IS)
  - mukana* – *Colias electo mukana* BERGER, 1981
  - pseudohecate* – *Colias electo pseudohecate* BERGER, 1940
    - africana – *Colias electo* [f.] africana STONEHAM, 1957 (IS)
    - affricana – *Colias electo pseudohecate* [f.] affricana SMITH & VANE-WRIGHT, 1995 (ISS)
    - ambreana – *Colias electo* [f.] ambreana STONEHAM, 1957 (IS)
    - dormonti – *Colias electo pseudohecate* [ab.] dormonti DUFRANE, 1947 (IS)
    - lecerfi – *Colias electo pseudohecate* [f.] le cerfi BERGER, 1940 (IS)
    - licina – *Colias electo pseudohecate* [f.] licina BERGER, 1940 (IS)
    - splendens – *Colias electo pseudohecate* [f.] splendens BERGER, 1940 (IS)
- eogene FELDER & FELDER, 1865**
- eogene* – *Colias eogene* FELDER & FELDER, 1865
    - languidus – *Colias eogene eogene* [ab.] languidus O. BANG-HAAS, 1927 (IS)
  - *shandura* – *Colias eogene shandura* Evans, 1926 (JSS)<sup>23</sup>
  - elissa* – *Colias eogene* [f.] *elissa* GRUM-GRSHIMAILO, 1890 (JSS)
    - brunescens – *Colias eogene elissa* [ab.] brunescens TSHIKOLOVETS & KOSTJUK, 1994 (ISS)
    - brunneoviridis – *Colias eogene elissa* [ab.] brunneoviridis VERITY, 1907 (IS)
    - oshanini – *Colias eogene* [ab.] oshanini AVINOFF, 1910 (IS)
    - subrubicunda – *Colias eogene elissa* [ab.] subrubicunda GRUM-GRSHIMAILO, 1890 (IS)
    - theia – *Colias eogene* [var.] theia ALPHÉRAKY, 1883 (NN)
    - theia – *Colias theia* ELWES, 1884 (unavailable)<sup>24</sup>
  - *aphrodite* – *Colias eogene* [var.] *aphrodite* VERITY, 1907 (JSS)
  - *erythas* – *Colias eogene* [f.] *erythas* GRUM-GRSHIMAILO, 1890 (JSS)
    - erythes – *Colias eogene erythes* TSHIKOLOVETS & KOSTJUK, 1994 (ISS)
    - erythras – *Colias eogene erythras* TALBOT, 1935 (ISS)
    - hybrida – *Colias eogene* [ab.] hybrida GRUM-GRSHIMAILO, 1893 (IS)
  - francesca* – *Colias eogene francesca* WATKINS, 1927
    - cana – *Colias eogene* [ab.] cana GRUM-GRSHIMAILO, 1890 (IS)
    - mahdii – *Colias eogene francesca* [ab.] mahdii O. BANG-HAAS, 1936 (IS)
  - *ericae* – *Colias eogene ericae* PESCHKE, 1934 (JSS)
- erate (ESPER, [1805])**
- erate* – *Papilio erate* ESPER, [1805]
    - albida – *Colias erate* [ab.] albida BIENERT, 1869 (1870°) (NN)
    - albida – *Colias erate* [ab.] albida RÜHL, 1893 (IS)
    - androconiata – *Colias erate* [ab.] androconiata JACHONTOV, 1910 (IS)
    - angustimarginata – *Colias erate erate* [f.] angustimarginata POPESCU-GORJ, 1978 (IS)
    - bipupillata – *Colias erate* [ab.] bipupillata PIONNEAU, 1928 (IS)
    - chryseis – *Colias erate* [f.] chryseis RÖBER, 1907 (IS)
    - chrysohyaleoides – *Colias erate* [ab.] chrysohyaleoides VERITY, 1908 (IS)
    - chrysopallida – *Colias erate* [ab.] chrysopallida VERITY, 1908 (IS)
    - chrysothemoides – *Colias erate* [f.] chrysothemoides VERITY, 1908 (IS)
    - citronea – *Colias erate* [f.] citronea MEZGER, 1932 (IS)
    - conjuncta – *Colias erate* [ab.] conjuncta VERITY, 1908 (IS)
    - conuncta – *Colias erate* [f.] conuncta BRIDGES, 1988 (ISS)

- *costaenigrata* – *Colias erate* [f.] *costaenigrata* MEZGER, 1932 (IS)
- *diana* – *Colias erate* [f.] *diana* RÖBER, 1907 (IS)
- *diffusa* – *Colias erate* [ab.] *chrysohyaleoides* [ab.] *diffusa* VERITY, 1908 (IS)
- *discopallida* – *Colias erate erate* [f.] *discopallida* POPESCU-GORJ, 1978 (IS)
- *erateformis* – *Colias croceus* [ab.] *erateformis* NICULESCU, 1963 (IS)
- *faillaeformis* – *Colias erate erate* [f.] *faillaeformis* POPESCU-GORJ, 1978 (IS)
- *faillaei* – *Colias erate* [ab.] *faillaei* PIONNEAU, 1928 (IS)
- *flavomaculata* – *Colias erate* [f.] *flavomaculata* MEZGER, 1932 (IS)
- *hyaleoides* – *Colias erate* [f.] *hyaleoides* GRUM-GRSHIMAILO, 1890 (IS)
- *latemarginata* – *Colias erate erate* [f.] *latemarginata* POPESCU-GORJ, 1978 (IS)
- *leucooides* – *Colias hyale poliographus* [ab.] *leucooides* STRAND, 1918 (IS)
- *maculata* – *Colias erate* [ab.] *maculata* RAINERI & CARNEVALE, 1998 (NN)
- *maculigena* – *Colias erate* [ab.] *maculigena* AVINOFF, 1910 (IS)
- *nina* – *Colias erate erate* [f.] *nina* POPESCU-GORJ, 1978 (IS)
- *pallida* – *Colias erate* [ab.] *pallida* STAUDINGER, 1861 (IS)
- *sareptensis* – *Colias erate* [ab.] *sareptensis* STAUDINGER, 1871 (IS)
- *semifaillaei* – *Colias erate* [ab.] *semi-faillaei* PIONNEAU, 1928 (IS)
- *undina* – *Colias erate undina* LARSEN, 1978 (NN)
- *unimaculata* – *Colias erate* [ab.] *unimaculata* PIONNEAU, 1928 (IS)
- *afghana* – *Colias hyale afghana* O. BANG-HAAS, 1927 (JSS)
- *beckeri* – *Colias erate* [var.] *beckeri* GERHARD, 1882 (JSS)
- *benesignata* – *Colias erate benesignata* SHELJUZHKO, 1913 (JSS)
- *chrysonona* – *Colias neriene* [var.] *chrysonona* BOISDUVAL, 1840 (JSS)
- *edusoides* – *Colias erate edusoides* SHELJUZHKO, 1913 (JSS)
  - *edusoides* – *Colias erate* [ab.] *edusoides* VERITY, 1908 (IS)
  - *edusoides* – *Colias erate* [ab.] *edusoides* KRULIKOWSKY, 1903 (IS)
- *gigantea* – *Colias erate* [race] *gigantea* BOLLOW, 1930 (JH of *C. gigantea* STRECKER 1900 & JSS)
  - *gigantea* – *Colias erate* [race] *gigantea* VERITY, 1911 (IS)
  - *tania* – *Colias erate tania* HEMMING, 1933 (unavailable)<sup>25</sup>
- *glicia* – *Colias hyale glicia* FRUHSTORFER, 1910 (JSS)
- *helichtha* – *Colias helichtha* LEDERER, 1853 (JSS)
  - *helichta* – *Colias helichta* TALBOT, 1935 (ISS)
  - *helichtha* – *Colias helichtha* KIRBY, 1871 (ISS)
- *ionovi* – *Colias ionovi* KORB, 2005 (JSS)
- *kachgarica* – *Colias hyale* [race] *kachgarica* BOLLOW, 1930 (JSS)
  - *cachgarica* – *Colias hyale cachgarica* BOLLOW, 1930 (ISS)
  - *kachgarica* – *Colias hyale poliographus* [race] *kachgarica* VERITY, 1911 (IS)
  - *kashgarica* – *Colias erate kashgarica* TALBOT, 1935 (ISS)
- *kavboitzi* – *Colias erate kavboitzi* KORB, 2005 (JSS)
- *lativitta* – *Colias lativitta* MOORE, 1882 (JSS)
- *neriene* – *Colias neriene* FISCHER VON WALDHEIM, 1823 (JSS)
- *parva* – *Colias erate* [var.] *parva* RÜHL, 1893 (JSS)

### ***erschoffii* ALPHÉRAKY, 1881**

- erschoffii* – *Colias erschoffii* ALPHÉRAKY, 1881
  - *aurantiaca* – *Colias erschoffii* [f.] *aurantiaca* VERITY, 1907 (IS)
  - *aurantiacoflava* – *Colias erschoffii* [f.] *aurantiacoflava* VERITY, 1907 (IS)
  - *clara* – *Colias erschoffii* [ab.] *clara* RÖBER, 1907 (IS)
  - *erschovi* – *Colias erschovi* AVINOFF, 1910 (ISS)
  - *ershovi* – *Colias ershovi* KORSHUNOV, 1972 (ISS)
  - *pseudohyale* – *Colias erschoffii* [ab.] *pseudohyale* VERITY, 1909 (IS)
  - *pseudophyale* – *Colias erschoffii* *pseudophyale* KUDRNA, 1983 (ISS)
- *tancrei* – *Colias erschoffii* [var.] *tancrei* AUSTAUT, 1890 (JSS)

### ***eurytheme* BOISDUVAL, 1852**

- eurytheme* – *Colias eurytheme* BOISDUVAL, 1852



- alba – *Colias chrysotheme eurytheme* [ab.] alba STRECKER, 1878 (IS)
- alba – *Colias eurytheme* [ab.] alba RÖBER, 1909 (NN)
- albina – *Colias eurytheme* [ab.] albina RÖBER, 1909 (IS)
- enegthenu – *Colias enegthenu* W. EDWARDS, 1872 (ISS)
- eurytheme – *Colias eurytheme* GEEST, 1905 (ISS)
- flava – *Colias chrysotheme eurytheme* [ab.] flava STRECKER, 1878 (IS)
- fumosa – *Colias eurytheme* [ab.] fumosa STRECKER, 1900 (IS)
- hybrida – *Colias philodice* [ab.] hybrida STRECKER, 1878 (IS)
- intermedia – *Colias eurytheme* [f.] intermedia COCKERELL, 1888 (IS)
- neuburgeri – *Colias eurytheme* [ab.] neuburgeri GEEST, 1905 (IS)
- pallida – *Colias eurytheme* [var.] pallida COCKERELL, 1887 (IS)
- pallida – *Colias eurytheme* [f.] intermedia [f.] pallida COCKERELL, 1888 (IS)
- pallida – *Colias eurytheme* [f.] typica [f.] pallida COCKERELL, 1888 (IS)
- rudkini – *Eurymus eurytheme* [f.] rudkini GUNDER, 1932 (IS)
- typica – *Colias eurytheme* [f.] typica COCKERELL, 1888 (IS)
- unicitrina – *Eurymus eurytheme* [f.] *amphidusa* [ab.] unicitrina GUNDER, 1924 (IS)
- *amphidusa* – *Colias amphidusa* BOISDUVAL, 1852 (JSS)
  - *amphidosa* – *Colias eurytheme* [f.] *amphidosa* STROUD, 1951 (ISS)
- *ariadne* – *Colias ariadne* W. EDWARDS, 1870 (JSS)
- *californiana* – *Colias edusa* [var.] *californiana* MÉNÉTRIÉS, 1855 (JSS)
- *graeca* – *Colias chrysotheme graeca* O. BANG-HAAS, 1927 (JSS)
  - *graeca* – *Colias chrysotheme chrysotheme* [race] *graeca* VERITY, 1911 (IS)
- *keewaydin* – *Colias keewaydin* W. EDWARDS, 1869 (JSS)
  - alba – *Colias chrysotheme keewaydin* [ab.] alba STRECKER, 1878 (IS)
  - *keewaydin* – *Colias keewaydin* BOLL, 1876 (ISS)
- *xenodice* – *Colias xenodice* FELDER & FELDER, 1859 (JSS)

#### ***euxanthe* FELDER & FELDER, 1865**

- euxanthe* – *Colias euxanthe* FELDER & FELDER, 1865
  - albula – *Colias euxanthe* [ab.] albula GRUM-GRSHIMAILO, 1907 (IS)
- alticola* – *Colias alticola* GODMAN & SALVIN, 1891
- hermina* – *Scalidoneura hermina* BUTLER, 1871
  - alba – *Colias flaveola euxanthe* [ab.] alba RÖBER, 1909 (IS)
  - dimorpha – *Colias euxanthe* [ab.] dimorpha HEMMING, 1925 (IS)
  - gynomorpha – *Colias euxanthe euxanthe* [f.] gynomorpha BERGER, 1981 (IS)
  - lutea – *Colias euxanthe euxanthe* [f.] lutea BERGER, 1983 (IS)
  - saturata – *Colias flaveola* [ab.] saturata RÖBER, 1909 (IS)
- *puna* – *Colias lesbia* [f.] *puna* FRUHSTORFER, 1907 (JSS)
- stuebeli* – *Colias euxanthe stuebeli* REISSINGER, 1972
  - *coeneni* – *Colias euxanthe coeneni* BERGER, 1983 (JSS)

#### ***felderi* GRUM-GRSHIMAILO, 1891**

- felderi* – *Colias felderi* GRUM-GRSHIMAILO, 1891

#### ***fieldii* MÉNÉTRIÉS, 1855**

- fieldii* – *Colias fieldii* MÉNÉTRIÉS, 1855
  - albicoma – *Colias fieldii* [ab.] albicoma GRUM-GRSHIMAILO, 1907 (IS)
  - calidia – *Colias fieldii* calidia MARTIN, 1923 (NN)
  - feildi – *Colias feildi* ELWES, 1888 (ISS)
  - feildii – *Colias feildii* ELWES, 1880 (ISS)
  - fieldi – *Colias fieldi* VERITY, 1908 (ISS)
  - leucania – *Colias fieldii* [ab.] leucania RÖBER, 1907 (IS)
- *fieldi* – *Colias fieldi* VERITY, 1909 (UE & JOS)
- *edusina* – *Colias edusina* FELDER & FELDER, 1860 (JSS)
- chinensis* – *Colias fieldii* [var.] *chinensis* VERITY, 1908

**flaveola** BLANCHARD, 1852*flaveola* – *Colias flaveola* BLANCHARD, 1852

- *faviola* – *Colias faviola* REED, 1877 (ISS)
- *flaveolia* – *Colias flaveolia* URETA, 1936 (ISS)
- *flaviola* – *Colias flaviola* REED, 1892 (ISS)

*mendoza* – *Colias blameyi* [f.] *mendoza* BREYER, 1939**gigantea** STRECKER, 1900*gigantea* – *Colias pelidne* [var.] *gigantea* STRECKER, 1900

- *mayi* – *Colias christina mayi* CHERMOCK & CHERMOCK, 1940 (JSS)
  - *marjorie* – *Colias christina mayi* [f.] *marjorie* CHERMOCK & CHERMOCK, 1940 (IS)
- *pelidneides* – *Colias palaeno* [var.] *pelidneides* STAUDINGER, 1901 (JSS)

*harroweri* – *Colias gigantea harroweri* KLOTS, 1940*inupiat* – *Colias gigantea inupiat* HARRY, 2007**grumi** ALPHÉRAKY, 1897<sup>26</sup>*grumi* – *Colias cocandica* [var.] *grumi* ALPHÉRAKY, 1897

- *groumi* – *Colias cocandica groumi* D'ABRERA, 1990 (ISS)
- *dvoraki* – *Colias grumi dvoraki* KOCMAN, 1994 (JSS)

*burchana* – *Colias grumi burchana* MRÁČEK & SCHULTE, 1991*evanescens* – *Colias cocandica* [var.] *evanescens* VERITY, 1908

- *aljinshana* – *Colias alpherakyi aljinshana* HUANG & MURAYAMA, 1992 (JSS)

**harfordii** H. EDWARDS, 1877*harfordii* – *Colias harfordii* H. EDWARDS, 1877

- *hartfordii* – *Eurymus hartfordii* GUNDER, 1924 (ISS)
- *martini* – *Eurymus harfordii* [f.] *martini* GUNDER, 1931 (IS)
- *weaverae* – *Eurymus harfordii* [ab.] *weaverae* GUNDER, 1924 (IS)
- *barbara* – *Colias barbara* H. EDWARDS, 1877 (JSS)

**hecla** LEFÈBVRE, 1836*hecla* – *Colias hecla* LEFÈBVRE, 1836

- *hekla* – *Colias hekla* DESCIMON, 1967 (ISS)
- *chrysothemoides* – *Colias hecla hecla* [f.] *chrysothemoides* VERITY, 1911 (IS)
- *glacialis* – *Colias hecla* [var.] *glacialis* M'LACHLAN, 1878 (JSS)
- *groenlandica* – *Colias hecla* [var.] *groenlandica* RÜHL, 1893 (JSS)
  - *groenlandica* – *Colias hecla* [var.] *groenlandica* DUPONT 1893(NN)<sup>27</sup>
- *pallida* – *Colias hecla* [var.] *pallida* [SKINNER], 1892 (JSS)<sup>28</sup>
- *pallida* – *Colias hecla* [var.] *pallida* SKINNER & MENGEL, 1892 (IS)<sup>29</sup>
- *palamedes* – *Colias hecla palamedes* HEMMING, 1934 (unavailable)<sup>30</sup>
- *palmedes* – *Colias hecla* [f.] *palmedes* TALBOT, 1935 (ISS)
- *zetterstedti* – *Colias hecla* [var.] *zetterstedti* GRUM-GRSHIMAILO, 1890 (NO & JSS)

*aquilonaris* – *Colias aquilonaris* GRUM-GRSHIMAILO, 1900

- *aequilonaris* – *Colias aequilonaris* TALBOT, 1935 (ISS)

- *orientalis* – *Colias hecla* [var.] *orientalis* GRUM-GRSHIMAILO, 1900 (JH of *C. palaeno orientalis* STAUDINGER, 1892 & JSS)

- *nivea* – *Colias hecla orientalis* [ab.] *nivea* GRUM-GRSHIMAILO, 1907 (IS)

- *orientis* – *Colias sulitelma orientis* WNUKOWSKY, 1929 (JOS)

*chilkana* – *Colias viluensis* [var.] *chilkana* AUSTAUT, 1898

- *dahurica* – *Colias viluensis* [var.] *dahurica* AUSTAUT, 1899 (JSS)

- *tunkuna* – *Colias tunkuna* AUSTAUT, 1912 (JSS)

- *tunkana* – *Colias viluensis tunkana* TALBOT, 1935 (ISS)

- *tuncuna* – *Colias viluensis tuncuna* KURENTZOV, 1970 (ISS)

*hela* – *Colias hela* STRECKER, 1880*heliophora* – *Colias viluensis heliophora* CHURKIN & GRIESHUBER, 2001*sulitelma* – *Colias hecla* [var.] *sulitelma* AURIVILLIUS, 1890

- *carnea* – *Colias hecla sulitelma* [ab.] *carnea* MEZGER, 1932 (IS)

- citrina – *Colias hecla sulitelma* [ab.] citrina STAUDINGER, 1901 (IS)
- distincta – *Colias hecla sulitelma* [ab.] distincta SHELDON, 1912 (IS)
- holmbomi – *Colias sulitelma* [ab.] holmbomi O. BANG-HAAS, 1916 (IS)
- jora – *Colias hecla* [ab.] jöra ROSA, 1921 (IS)
- nigropunctata – *Colias hecla sulitelma* [ab.] nigropunctata SHELDON, 1912 (IS)
- obscura – *Colias hecla sulitelma* [ab.] obscura SHELDON, 1912 (IS)
- ochreasuffusa – *Colias hecla sulitelma* [ab.] ochrea-suffusa SHELDON, 1912 (IS)
- octava – *Colias hecla sulitelma* [f.] octava NORDSTRÖM, 1935 (NN)<sup>31</sup>
- radiata – *Colias hecla sulitelma* [ab.] radiata MEZGER, 1935 (IS)
- rosea – *Colias hecla sulitelma* [ab.] rosea SHELDON, 1912 (IS)
- sandahli – *Colias hecla* [ab.] sandahli LAMPA, 1885 (IS)
- suffusa – *Eurymus hecla sulitelma* [ab.] suffusa NORDSTRÖM, 1933 (IS)
- sulphurea – *Colias sulitelma* [ab.] sulphurea RÖBER, 1907 (IS)
- suppressa – *Colias hecla sulitelma* [ab.] suppressa SHELDON, 1912 (IS)
- tenuimarginata – *Colias hecla sulitelma* [ab.] tenuimarginata NORDSTRÖM, 1935 (IS)
- viluensis* – *Colias viluensis* MÉNÉTRIÉS, 1858<sup>32</sup>
  - alba – *Colias viluensis* [ab.] alba VERITY, 1907 (IS)
  - chloris – *Colias viluensis* [ab.] chloris GRUM-GRSHIMAILO, 1907 (IS)
  - sulphureoflava – *Colias viluensis* [f.] sulphureo-flava SHELJUZHKO, 1918 (IS)
  - sulphureaflata – *Colias viluensis* [f.] sulphureaflata KURENTZOV, 1970 (ISS)
  - viluiensis – *Colias viluensis* MÉNÉTRIÉS, 1859 (ISS)
  - vilueensis – *Colias vilueensis* O. BANG-HAAS, 1926 (ISS)
- zamolodchikovi* – *Colias hecla zamolodchikovi* CHURKIN & GRIESHUBER, 2001

**heos (HERBST, 1792)***heos* – *Papilio heos* HERBST, 1792

- crocopepla – *Colias aurora* [ab.] crocopepla WARNECKE, 1912 (IS)
- hoes – *Colias hoes* KIM, 1976 (ISS)
- intermedia – *Colias aurora* [ab.] intermedia GRUM-GRSHIMAILO, 1907 (IS)
- lambda – *Colias aurora* [ab.] lambda KARDAKOFF, 1928 (IS)
- obscura – *Colias aurora* [ab.] obscura MOLTRECHT & KON, 1909 (IS)
- ochreopicta – *Colias aurora* [f.] ochreopicta STAUDER, 1924 (IS)
- pupillata – *Colias aurora* [f.] pupillata STAUDER, 1924 (IS)
- rhododactyla – *Colias aurora* [ab.] rhododactyla WARNECKE, 1912 (IS)
- stenotaenia – *Colias aurora* [f.] stenotaenia STAUDER, 1924 (IS)
- theia – *Colias aurora* [ab.] theia WARNECKE, 1912 (IS)
- *alpina* – *Colias aurora* [race] *alpina* BOLLOW, 1930 (JH of *alpina* ELWES, 1899, JSS)
- *alpina* – *Colias aurora* [race] *alpina* VERITY, 1911 (IS)
- *decolorata* – *Colias aurora* [ab.] *decolorata* STAUDINGER, 1898 (IS)
- *obscurissima* – *Colias aurora* [race] *alpina* [ab.] *obscurissima* VERITY, 1911 (IS)
- *aurora* – *Papilio aurora* ESPER, [1783] (JH of *Papilio aurora* CRAMER, 1780)
- *benimonki* – *Colias aurora benimonki* KISHIDA, 1935 (JSS)<sup>33</sup>
- *decolorata* – *Colias aurora* [var.] *decolorata* STAUDINGER, 1898<sup>34</sup> (JSS of *kenteana* HEYNE, 1895 & *heos* HERBST, 1792)
  - *colorata* – *Colias aurora* [var.] *colorata* RAINERI & CARNEVALE, 1998 (ISS)
- *kenteana* – *Colias aurora* [var.] *kenteana* HEYNE, 1895 (JSS)
  - *clara* – *Colias heos alpina* [f.] *clara* BERGER, 1937 (IS)
- *philippsi* – *Colias aurora* [var.] *philippsi* NIEPELT, 1918 (JSS)
- *semenovi* – *Colias aurora semenovi* STANDEL, 1960 (JSS)
  - *nigra* – *Colias aurora* [f.] *nigra* TSHUGUNOV, 1912 (IS)
- *sibirica* – *Colias sibirica* LEDERER, 1853 (JSS)

**hyale (LINNAEUS, 1758)***hyale* – *Papilio hyale* LINNAEUS, 1758

- *albinotica* – *Colias hyale* [ab.] *albinotica* GOODSON, 1960 (IS)
- *alboradiata* – *Colias hyale* [ab.] *alboradiata* HERZIG, 1935 (IS)

- antehyale – *Colias hyale* [gen. I] antehyale REISSINGER, 1974 (NN)
- apicata – *Colias hyale* [ab.] apicata TUTT, 1896 (IS)
- argentea – *Colias hyale* [ab.] argentea FRITSCH, 1913 (IS)
- argyphea – *Colias hyale* [ab.] argyphea LOWE, 1909 (IS)
- atava – *Colias hyale* [ab.] atava REUTTI, 1898 (IS)
- atermarginata – *Colias hyale* [ab.] ater-marginata FROHAWK, 1938 (IS)
- bipupillata – *Colias hyale* [ab.] bipupillata CABEAU, 1922 (IS)
- brabantica – *Colias hyale* [ab.] brabantica STRAND, 1912 (IS)
- brevis – *Colias hyale* [ab.] brevis CROMBRUGGHE, 1911 (IS)
- canarina – *Colias hyale* [f.] canarina STAUDER, 1922 (IS)
- cleopatra – *Colias hyale* [var.] cleopatra LATIER, 1935 (IS)
- crassipuncta – *Colias hyale* [ab.] crassipuncta LE CHARLES, 1927 (IS)
- deaura – *Colias hyale* [ab.] deaura HERZIG, 1935 (IS)
- demarginata – *Colias hyale* [ab.] demarginata NITSCHKE, 1913 (IS)
- divisa – *Colias hyale* [f.] divisa ÉCOLE BORDELAISE, 1926 (IS)
- duplex – *Colias hyale* [ab.] duplex KSIENZHOPOLSKY, 1912 (1911?) (IS)
- elongata – *Colias hyale* [f.] elongata VORBRODT, 1917 (IS)
- elonqata – *Colias hyale* [f.] elonqata REISSINGER, 1989 (ISS)
- emarginata – *Colias hyale* [f.] emarginata RÖBER, 1907 (IS)
- expicta – *Colias hyale* [ab.] expicta JACHONTOV, 1935 (IS)
- flavofasciata – *Colias hyale* [ab.] flavofasciata LAMBILLION, 1907 (IS)
- flavofasciataunimaculata – *Colias hyale* [ab.] flavofasciata-unimaculata STIEF, 1938 (NN)
- flavopupillata – *Colias hyale* [ab.] flavopupillata SOJA, 1930 (IS)
- flavoradiata – *Colias hyale* [f.] flavoradiata FINKE, 1934 (NN)
- flavoradiata – *Colias hyale* [f.] flavoradiata OSTHELDER, 1925 (IS)
- fulvocoma – *Colias hyale* [ab.] fulvocoma KRULIKOWSKY, 1907 (IS)
- gloriciana – *Colias hyale* [f.] gloriciana TALBOT, 1935 (ISS)
- goriciana – *Colias hyale* [ab.] goriciana FRITSCH, 1918 (IS)
- griseoapicata – *Colias hyale* [ab.] griseoapicata HERZIG, 1935 (IS)
- hayale – *Papilio hayale* LEWIN, 1795 (ISS)
- hejali – *Colias hejali* MOTSCHULSKY, 1860 (ISS of *hyale* LINNAEUS, 1758)
- heliceides – *Colias hyale* [var.] heliceides SELYS, 1844 (IS)
- heliseides – *Colias australis calida* [ab.] heliseides RAINERI & CARNEVALE, 1998 (ISS & MI)
- hyaleedusa – hybrid of *C. hyale* & *C. myrmidone* – hyaleedusa RYSZKA, 1949 (unavailable)
- immaculata – *Colias hyale* [ab.] immaculata DERENNE, 1925 (IS)
- infrastrata – *Colias hyale* [f.] infrastrata LEMPKE, 1954 (IS)
- intermedia – *Colias hyale* [ab.] intermedia TUTT, 1896 (IS)
- junior – *Colias hyale* [ab.] junior GEEST, 1905 (IS)
- lactea – *Colias hyale* [ab.] lactea UFFELN, 1923 (IS)
- macropuncta – *Colias hyale* [f.] macropuncta FINKE, 1934 (IS)
- major – *Colias hyale* [ab.] major CARUEL, 1955 (IS)
- melaina – *Colias hyale* [ab.] melaina MÜCK, 1919 (IS)
- melanina – *Colias hyale hyale* [ab.] melanina VERITY, 1909 (IS)
- mellaerti – *Colias hyale* [ab.] mellaerti LAMBILLION, 1913 (IS)
- minor – *Colias hyale* [ab.] minor VAN MELLAERTS, 1926 (IS)
- minor – *Colias hyale* [f.] minor VORBRODT, 1912 (IS)
- myrmhyale – hybrid of *C. myrmidone* & *C. hyale* – myrmhyale MECKE, 1923 (unavailable)
- nigricans – *Colias hyale* [f.] nigricans LEMPKE, 1954 (ISS of *nigriformis* FINKE, 1934)
- nigriformis – *Colias hyale* [f.] nigriformis FINKE, 1934 (IS)
- nigripuncta – *Colias hyale* [ab.] nigripuncta CARUEL, 1955 (IS)
- nigrofasciata – *Colias hyale* [ab.] nigrofasciata GRUM-GRSHIMAILO, 1884 (IS)
- obsoleta – *Colias hyale* [ab.] obsoleta TUTT, 1896 (IS)
- obsoletaunimaculata – *Colias hyale* [ab.] obsoleta-unimaculata STIEF, 1938 (IS)
- ocellata – *Colias hyale hyale* [ab.] ocellata DUFRANE, 1947 (IS)

- *opposita* – *Colias hyale* [ab.] *opposita* ZUSANEK, 1918 (IS)
- *palliata* – *Colias australis calida* [ab.] *palliata* RAINERI & CARNEVALE, 1998 (ISS & MI)
- *pallida* – *Colias hyale* [ab.] *pallida* TUTT, 1896 (IS)
- *pallida* – *Colias hyale* [var.] *pallida* ROBSON, 1880 (IS)
- *pallidamaculata* – *Colias hyale* [ab.] *pallidamaculata* STIEF, 1938 (NN)
- *pallidior* – *Colias hyale* [var.] *pallidior* COCKERELL, 1912 (IS)
- *parvipuncta* – *Colias hyale* [f.] *parvipuncta* LEMPKE, 1954 (IS)
- *polonica* – *Colias hyale* [ab.] *polonica* SITOWSKI, 1913 (IS)
- *posthyale* – *Colias hyale* [gen. III] *posthyale* REISSINGER, 1974 (NN)
- *posticominuta* – *Colias hyale* [f.] *posticominuta* LEMPKE, 1954 (IS)
- *pseudohelice* – *Colias hyale* [ab.] *pseudohelice* METSCHL, 1922 (IS)
- *pseudohelicepallidamacropuncta* – *Colias hyale* [f.] *pseudohelice-pallida-macropuncta* FINKE, 1934 (NN)
- *pulvocoma* – *Colias hyale* [ab.] *pulvocoma* SHARP, [1909] (ISS of *fulvocoma* KRULIKOWSKY, 1907)
- *pupillata* – *Colias hyale* [ab.] *pupillata* LEMPKE, 1936 (IS)
- *pygmoea* – *Colias hyale* [ab.] *pygmoea* LAMBILLION, 1906 (IS)
- *radiata* – *Colias hyale* [ab.] *radiata* GEEST, 1905 (IS)
- *radiifera* – *Colias hyale* [ab.] *radiifera* SCHULTZ, 1907 (ISS)
- *radiiformis* – *Colias hyale* [ab.] *radiiformis* SCHULTZ, 1904 (IS)
- *roseomaculata* – *Colias hyale* [ab.] *roseo-maculata* NICULESCU, 1957 (IS)
- *sagittata* – *Colias hyale* [ab.] *sagittata* SCHNAIDER, 1950 (IS)
- *schoenfeldi* – *Colias hyale* [ab.] *schoenfeldi* METZNER, 1926 (IS)
- *shylae* – *Colias shylae* BINGHAM, 1907 (ISS of *hyale* LINNAEUS, 1758)
- *simplex* – *Colias hyale* [ab.] *simplex* NEUBURGER, 1905 (IS)
- *striata* – *Colias hyale* [ab.] *striata* ZUSANEK, 1918 (IS)
- *striata* – *Colias hyale* [f.] *striata* ROMANISZYN, 1927 (IS)
- *submarginata* – *Colias hyale* [f.] *submarginata* FINKE, 1934 (IS)
- *subobsoleta* – *Colias hyale* [ab.] *subobsoleta* PIONNEAU, 1936 (IS)
- *supervacanea* – *Colias hyale* [var.] *supervacanea* KRULIKOWSKY, 1908 (IS)
- *turi* – *Colias hyale* [ab.] *turi* ROMANISZYN, 1930 (IS)
- *unimaculata* – *Colias hyale* [ab.] *unimaculata* TUTT, 1896 (IS)
- *venata* – *Colias hyale* [ab.] *venata* LEMPKE, 1936 (IS)
- *viridescens* – *Colias hyale* [ab.] *viridescens* WHEELER, 1903 (IS)
- *viridis* – *Colias hyale* [ab.] *viridis* VAN MELLAERTS, 1926 (IS)
- *altaica* – *Colias hyale altaica* BOLLOW, 1930 (JSS)
  - *altaica* – *Colias hyale hyale* [race] *altaica* VERITY, 1911 (IS)
  - *flavosignata* – *Colias hyale hyale* [race] *altaica* [f.] *flavosignata* VERITY, 1911 (NN)
- *grieshuberi* – *Colias alta grieshuberi* KORB, 2004 (JSS)
  - *eratoides* – *Colias hyale* [ab] *eratoides* STRAND, 1918 (IS)
  - *rufa* – *Colias hyale hyale* [f.] *rufa* VERITY, 1907 (IS)
- *hyalis* – *Colias hyale* [var.] *hyalis* KIRBY, 1858 (JSS)
- *kirbyi* – *Colias kirbyi* LEWIS, 1872 (JOS)
- *uhli* – *Colias hyale* [var.] *uhli* KOVÁTS, 1899 (JSS)
- palidis* – *Colias hyale palidis* FRUHSTORFER, 1910
  - *palides* – *Colias hyale irkutskana* [f.] *palides* VERHULST, 2000 (ISS)
  - *palilis* – *Colias hyale palilis* MARTIN, 1923 (ISS)
  - *pallidis* – *Colias hyale pallidis* DUBATOLOV & KOSTERIN, 1998 (ISS)
- *irkutskana* – *Colias hyale irkutskana* STAUDER, 1924 (JSS)
- *khingana* – *Colias hyale khingana* DUBATOLOV & STRELTZOV, 2005 (JSS)
- *novasinensis* – *Colias hyale novasinensis* REISSINGER, 1989 (JSS)

### **hyperborea GRUM-GRSHIMAILO, 1900**

- hyperborea* – *Colias hyperborea* GRUM-GRSHIMAILO, 1900
  - *alba* – *Colias hyperborea* [f.] *alba* SHELJZHKO, 1923 (IS)

- *kurnakovi* – *Colias sulitelma kurnakovi* KURENTZOV, 1970 (JSS)
  - *paradoxa* – *Colias hyperborea paradoxa* CHURKIN & GRIESHUBER, 2001 (JSS)
  - *viluensisoides* – *Colias hyperborea* [f.] *viluensisoides* VERITY, 1909 (JSS)
- johanseni* – *Colias johanseni* TROUBRIDGE & PHILIP, 1990
- puella* – *Colias hyperborea puella* CHURKIN & GRIESHUBER, 2001

#### **interior SCUDDER, 1862**

- interior* – *Colias interior* SCUDDER, 1862
- *interier* – *Colias interier* KIRBY, 1871 (ISS)
  - *nepi* – *Eurymus interior* [f.] *nepi* BARNES & BENJAMIN, 1926 (IS)
  - *solivaga* – *Colias interior solivaga* W. EDWARDS, 1877 (NN)
  - *laurentina* – *Eurymus pelidne* [var.] *laurentina* SCUDDER, 1876 (JSS)<sup>35</sup>
  - *vividior* – *Colias interior vividior* BERGER, 1945 (JSS)

#### **lada GRUM-GRSHIMAILO, 1891**

- lada* – *Colias lada* GRUM-GRSHIMAILO, 1891
- *oreas* – *Colias lada* [ab.] *oreas* GRUM-GRSHIMAILO, 1893 (IS)

#### **ladakensis FELDER & FELDER, 1865**

- ladakensis* – *Colias ladakensis* FELDER & FELDER, 1865
- *flava* – *Colias ladakensis* [f.] *flava* RILEY, 1926 (IS)
  - *laddakensis* – *Colias laddakensis* WATANABE, 2003 (ISS)
  - *fatulaensis* – *Colias ladakensis fatulaensis* WEISS, 2000 (JSS)
  - *seitzi* – *Colias ladakensis seitzi* BOLLOW, 1931 (JSS)
  - *shipkee* – *Colias shipkee* MOORE, 1865 (SSS)<sup>36</sup>
    - *shipkee* – *Colias shipkee* KEFERSTEIN, 1883 (ISS)
    - *shippe* – *Colias shippe* BRIDGES, 1988 (ISS)
  - *wako* – *Colias ladakensis wako* INAOKA, 2000 (JSS)

#### **leechi GRUM-GRSHIMAILO, 1893**

- leechi* – *Colias eogene* [var.] *leechi* GRUM-GRSHIMAILO, 1893
- *carnea* – *Colias leechi* [ab.] *carnea* O. BANG-HAAS, 1937 (IS)
  - *flammula* – *Colias leechi* [ab.] *flammula* O. BANG-HAAS, 1937 (IS)
  - *impunctata* – *Colias leechi* [ab.] *impunctata* O. BANG-HAAS, 1937 (IS)
  - *languidus* – *Colias leechi* [ab.] *languidus* O. BANG-HAAS, 1937 (IS)
  - *nana* – *Colias leechi* [ab.] *nana* O. BANG-HAAS, 1937 (IS)

#### **lesbia (FABRICIUS, 1775)**

- lesbia* – *Papilio lesbia* FABRICIUS, 1775
- *almeidai* – *Colias lesbia pyrrhothea* [ab.] *almeidai* BIEZANKO, 1949 (IS)
  - *angustimargo* – *Colias lesbia* [ab.] *angustimargo* BREYER, 1939 (IS)
  - *citrina* – *Colias lesbia* [ab.] *citrina* BREYER, 1930 (IS)
  - *citronigra* – *Colias lesbia* [ab.] *citronigra* BREYER, 1939 (IS)
  - *costalimai* – *Colias lesbia pyrrhothea* [ab.] *costa-limai* BIEZANKO, 1949 (IS)
  - *eurinice* – *Colias lesbia eurinice* MARTIN, 1923 (NN)
  - *flaveola* – *Colias lesbia* [f.] *flaveola* KÖHLER, 1923 (IS)
  - *forbesi* – *Colias lesbia pyrrhothea* [ab.] *forbesi* BIEZANKO, 1949 (IS)
  - *heliceoides* – *Colias lesbia* [var.] *heliceoides* CAPRONNIER, 1874 (IS)
  - *koehleri* – *Colias lesbia* [ab.] *koehleri* BREYER, 1939 (IS)
  - *lutzi* – *Colias lesbia pyrrhothea heliceoides* [ab.] *lutzi* BIEZANKO, 1949 (IS)
  - *maculata* – *Colias lesbia* [f.] *maculata* KÖHLER, 1923 (IS)
  - *micans* – *Colias lesbia* [f.] *micans* KÖHLER, 1923 (IS)
  - *nigromarginata* – *Colias lesbia* [ab.] *nigromarginata* BREYER, 1939 (IS)
  - *obscura* – *Colias lesbia* [f.] *obscura* KÖHLER, 1923 (IS)
  - *privata* – *Colias lesbia* [ab.] *privata* BREYER, 1939 (IS)
  - *punctata* – *Colias lesbia* [ab.] *punctata* BREYER, 1939 (IS)
  - *rufa* – *Colias lesbia* [ab.] *rufa* KÖHLER, 1928 (NN)
  - *schweizeri* – *Colias lesbia pyrrhothea heliceoides* [ab.] *schweizeri* BIEZANKO, 1949 (IS)

- *strandi* – *Colias lesbia pyrrhothea* [ab.] *strandi* BIEZANKO, 1949 (IS)
  - *travassosi* – *Colias lesbia pyrrhothea heliceoides* [ab.] *travassosi* BIEZANKO, 1949 (IS)
  - *williamsi* – *Colias lesbia pyrrhothea* [ab.] *williamsi* BIEZANKO, 1949 (IS)
  - *aquilo* – *Colias aquilo* AUSTAUT, 1912 (JSS)
  - *pyrrhothea* – *Colotis pyrrhothea* HÜBNER, [1823] (JSS)
    - *pyrrhoteha* – *Colias lesbia pyrrhoteha* HOFFMANN, 1937 (IS)
    - *pyrrothea* – *Colias lesbia pyrrothea* VERHULST, 2000 (ISS)
  - andina* – *Colias lesbia* [var.] *andina* STAUDINGER, 1894
    - *andinica* – *Colias andinica* RAINERI & CARNEVALE, 1998 (ISS)
    - *aurantiaca* – *Colias verhulsti* [f.] *aurantiaca* BERGER, 1983 (IS)
    - *verhulsti* – *Colias verhulsti* BERGER, 1983 (JSS)
  - dinora* – *Colias dinora* KIRBY, 1881
    - *goryna* – *Colias dinora goryna* MARTIN, 1923 (NN)
    - *meieri* – *Colias lesbia meieri* BERGER, 1983 (JSS)
    - *roberti* – *Colias lesbia roberti* SALAZAR, 2002 (JSS)
  - mineira* – *Colias lesbia* [race] *mineira* ZIKÁN, 1940
- marcopolo GRUM-GRSHIMAILO, 1888**
- marcopolo* – *Colias marco-polo* GRUM-GRSHIMAILO, 1888
    - *diana* – *Colias marcopolo* [f.] *diana* SCHULTE, 1989 (IS)
    - *markopolo* – *Colias markopolo* STANDFUSS, 1896 (ISS)
    - *nicolopolo* – *Colias marcopolo* [ab.] *nicolopolo* RÖBER, 1907 (IS)
    - *nicopolo* – *Colias marcopolo* [ab.] *nicopolo* TALBOT, 1935 (ISS)
  - kushana* – *Colias marcopolo kushana* WYATT & OMOTO, 1966
    - *afghanipolo* – *Colias marcopolo afghanipolo* SCHULTE, 1977 (JSS)
- marnoana ROGENHOFER, 1884**
- marnoana* – *Colias marnoana* ROGENHOFER, 1884
    - *androides* – *Colias erate marnoana* [f.] *androides* STORACE, 1956 (IS)
    - *marmoana* – *Colias hyale marmoana* TALBOT, 1935 (ISS)
    - *solilucis* – *Colias erate marnoana* [f.] *solilucis* BERGER, 1953 (IS)
- meadii W. EDWARDS, 1871**
- meadii* – *Colias meadii* W. EDWARDS, 1871
    - *medi* – *Eurymus meadii* [f.] *medi* GUNDER, 1934 (IS)
    - *andelis* – *Colias meadii* [ab.] *andelis* GRUM-GRSHIMAILO, 1907 (IS)
  - elis* – *Colias elis* STRECKER, 1885
    - *ilis* – *Colias ilis* KURENTZOV, 1970 (ISS)
    - *lambillioni* – *Colias elis* [ab.] *lambillioni* DUFRANE, 1947 (IS)
  - lemhiensis* – *Colias meadii lemhiensis* CURTIS & FERRIS, 1985
- minisni BEAN, 1895**
- minisni* – *Colias minisni* BEAN, 1895
    - *isni* – *Eurymus pelidne minisni* [f.] *isni* BARNES & BENJAMIN, 1926 (IS)
    - *minisini* – *Colias pelidne minisini* MILLER & BROWN, 1983 (ISS)
    - *menisme* – *Colias pelidne* [race] *menisme* VERITY, 1908 (ISS)
  - skinneri* – *Colias pelidne* [var.] *skinneri* BARNES, 1897
    - *neri* – *Eurymus pelidne skinneri* [f.] *neri* BARNES & BENJAMIN, 1926 (IS)
- montium OBERTHÜR, 1886**
- montium* – *Colias montium* OBERTHÜR, 1886
    - *andromorpha* – *Colias montium* [f.] *andromorpha* NORDSTRÖM, 1934 (IS)
    - *viridis* – *Colias melinos* [f.] *viridis* BOLLOW, 1930 (JSS)
- mossi ROTHSCHILD, 1913**<sup>37</sup>
- mossi* – *Colias mossi* ROTHSCHILD, 1913
- myrmidone (ESPER, [1781])**
- myrmidone* – *Papilio myrmidone* ESPER, [1781]

- aegra – *Colias myrmidone* [ab.] aegra VERITY, 1909 (IS)
- agnes – *Colias myrmidone* [ab.] agnes PIESCZEK, 1905 (IS)
- alba – *Colias myrmidone* [ab.] alba RÜHL, 1893 (IS)
- alba – *Colias myrmidone* [ab.] alba STAUDINGER, 1871 (NN)
- albomaculata – *Colias myrmidone* (ab.) albomaculata STIEF, 1938 (NN)
- amicans – *Colias myrmidone* [var.] amicans PIESCZEK, 1917 (IS)
- angustimarginata – *Colias myrmidone* [ab.] angustimarginata METSCHL, 1925 (IS)
- antihygiaea – *Colias myrmidone* [ab.] antihygiaea MAYER, 1916 (IS)
- antihygiea – *Colias myrmidone* [ab.] antihygiea BRIDGES, 1988 (ISS)
- aurantiaca – *Colias myrmidone* [ab.] aurantiaca PIESCZEK, 1917 (IS)
- bahri – *Colias myrmidone* [ab.] bahri SKALA, 1912 (IS)
- bicolor – *Colias myrmidone* [ab.] bicolor METSCHL, 1922 (IS)
- caliginosa – *Colias myrmidone* [ab.] caliginosa PIESCZEK, 1917 (IS)
- callos – *Colias myrmidone* [ab.] alba [ab.] callos PIESCZEK, 1912 (IS)
- citronea – *Colias myrmidone* [ab.] citronea GRUND, 1916 (IS)
- completa – *Colias myrmidone* [ab.] completa PIONNEAU, 1937 (IS)
- demarginata – *Colias myrmidone* [ab.] demarginata PIESCZEK, 1917 (IS)
- depuncta – *Colias myrmidone* [ab.] depuncta NITSCHKE, 1912 (IS)
- discolor – *Colias myrmidone* [ab.] discolor FRITSCH, 1912 (IS)
- edusaeformis – *Colias myrmidone* [ab.] edusaeformis KLEMENSIEWICZ, 1911 (IS)
- edusoides – *Colias myrmidone* [ab.] edusoides SKALA, 1912 (IS)
- eosina – *Colias myrmidone* [ab.] eosina METSCHL, 1922 (NN)
- flavescens – *Colias myrmidone* [ab.] flavescens GARBOWSKI, 1892 (IS)
- gartneri – *Colias myrmidone* [ab.] gartneri SKALA, 1912 (IS)
- griseomarginata – *Colias myrmidone* [ab.] griseomarginata BERGER, 1911 (IS)
- hartmanni – *Colias myrmidone* [ab.] hartmanni JOUKL, 1907 (IS)
- helma – *Colias myrmidone* [ab.] helma GEEST, 1905 (IS)
- ilsae – *Colias myrmidone* [ab.] ilsae PIESCZEK, 1917 (IS)
- impunctata – *Colias myrmidone* [ab.] impunctata VERITY, 1908 (IS)
- inspersa – *Colias myrmidone* [ab.] inspersa METSCHL, 1922 (IS)
- intermedia – *Colias myrmidone* [ab.] intermedia PIESCZEK, 1917 (IS)
- inumbrata – *Colias myrmidone* [ab.] inumbrata SCHULTZ, 1904 (IS)
- irinae – *Colias myrmidone* *ermak* [ab.] irinae KRULIKOWSKY, 1909 (IS)
- laticuneata – *Colias myrmidone* [f.] laticuneata SÄLZL, 1934 (IS)
- livida – *Colias myrmidone* [ab.] livida METSCHL, 1922 (NN)
- lutea – *Colias myrmidone* [ab.] lutea SKALA, 1913 (IS)
- lutea – *Colias myrmidone* [ab.] lutea ZELEZNY, 1915 (IS)
- mediocarnea – *Colias myrmidone* [ab.] mediocarnea METSCHL, 1922 (IS)
- micans – *Colias myrmidone* [ab.] micans RÖBER, 1907 (IS)
- minor – *Colias myrmidone* [ab.] minor METSCHL, 1922 (NN)
- mirmidone – *Colias mirmidone* KORSHUNOV, 1972 (ISS)
- myrmhyale – hybrid of *C. myrmidone* & *C. hyale* – myrmhyale MECKE, 1923 (unavailable)
- myrmidonae – *Colias myrmidonae* GROSMAN & STUSEK, 1982 (ISS)
- myrmidonides – *Colias myrmidone* [ab.] myrmidonides KSIENZHOPOLSKI, 1912 (1911?) (IS)
- myrmydone – *Colias myrmydone* RAINERI & CARNEVALE, 1998 (ISS)
- mysmidone – *Colias mysmidone* METSCHL, 1922 (ISS)
- nigerrima – *Colias myrmidone* [ab.] nigerrima PIESCZEK, 1905 (IS)
- nigrovenata – *Colias myrmidone* [ab.] nigrovenata PIESCZEK, 1917 (IS)
- obscura – *Colias myrmidone* [ab.] obscura SKALA, 1912 (IS)
- obscurissima – *Colias myrmidone* [f.] obscurissima PIESCZEK, 1917 (IS)
- opposita – *Colias myrmidone* [ab.] opposita METSCHL, 1922 (NN)
- orcus – *Colias myrmidone* [ab.] orcus PIESCZEK, 1917 (IS)
- orcusides – *Colias myrmidone* [ab.] orcusides STRAND, 1928 (IS)
- pallescens – *Colias myrmidone* [f.] pallescens FRITSCH, 1912 (IS)



- pallida – *Colias myrmidone* [ab.] pallida GARBOWSKI, 1892 (NN)
- pallida – *Colias myrmidone* [ab.] pallida ZELEDNY, 1916 (IS)
- pallidomaculata – *Colias myrmidone* [ab.] pallidomaculata METSCHL, 1922 (IS)
- permaculata – *Colias myrmidone* [ab.] permaculata PIESZCZEK, 1917 (IS)
- pieszczeki – *Colias myrmidone* [ab.] pieszczeki PREDOTA, 1910 (IS)
- pieszezeki – *Colias myrmidone* [ab.] pieszezeki BRIDGES, 1988 (ISS)
- pseudobalcanica – *Colias myrmidone* [ab.] pseudo-balcanica PIESZCZEK, 1917 (IS)
- pseudomaureri – *Colias myrmidone* [ab.] pseudomaureri METSCHL, 1925 (IS)
- pseudorebeli – *Colias myrmidone* [ab.] pseudo-rebeli PIESZCZEK, 1917 (IS)
- pupillata – *Colias myrmidone* [ab.] pupillata PIESZCZEK, 1917 (IS)
- rima – *Colias myrmidone* [ab.] rima METSCHL, 1922 (IS)
- rubroflammea – *Colias myrmidone* [ab.] rubroflammea ZELEDNY, 1916 (IS)
- rubroisabellina – *Colias myrmidone* [ab.] rubro-isabellina FRITSCH, 1912 (IS)
- rudolfi – *Colias myrmidone* [ab.] rudolfi RONNICKE, 1927 (IS)
- schleppniki – *Colias myrmidone* [ab.] schleppniki SCHAWERDA, 1939 (IS)
- schwabi – *Colias myrmidone* [ab.] schwabi PIESZCZEK, 1912 (IS)
- semiflava – *Colias myrmidone* [ab.] semiflava GRUND, 1916 (IS)
- sophiae – *Colias myrmidone ermak* [ab.] sophiae KRULIKOWSKY, 1909 (IS)
- stellata – *Colias myrmidone* [ab.] stellata KRULIKOWSKY, 1908 (IS)
- striata – *Colias myrmidone* [ab.] striata PIESZCZEK, 1917 (IS)
- subcarnea – *Colias myrmidone* [ab.] subcarnea METSCHL, 1922 (NN)
- unimaculata – *Colias myrmidone* [ab.] unimaculata STIEF, 1938 (NN)
- unipuncta – *Colias myrmidone* [ab.] unipuncta PIESZCZEK, 1917 (IS)
- velata – *Colias myrmidone* [ab.] velata GRUND, 1916 (IS)
- verna – *Colias myrmidone* [gen. vern.] verna VERITY, 1911 (IS)
- vernalis – *Colias myrmidone* [gen. vern.] vernalis KSIENZHOPOLSKI, 1912 (1911?) (IS)
- virescalis – *Colias myrmidone* [ab.] virescalis STÖCKL, 1929 (IS)
- zagrabiensis – *Colias myrmidone* [ab.] zagrabiensis STEINER, 1935 (IS)
- antshari – *Colias myrmidone antshari* KORB, 2005 (JSS)
  - antshari – *Colias myrmidone antshari* KORB, 2005 (IOS)
- cytisi – *Colias myrmidone* [var.] cytisi PRITZWITZ, 1842 (1843?) (JSS)
- ermak – *Colias myrmidone* [var.] ermak GRUM-GRSHIMAILO, 1890 (JSS)
  - ermate – *Colias ermate* RAINERI & CARNEVALE, 1998 (ISS)
- ermaki – *Colias myrmidone* [var.] ermaki STAUDINGER, 1901 (UE & JOS of ermak GRUM-GRSHIMAILO)
- nana – *Colias myrmidone* [var.] nana MAYER, 1910 (JSS)
- ratisbonensis – *Colias myrmidone ratisbonensis* FRITSCH, 1919 (JSS)

### **nastes BOISDUVAL, 1832**

- nastes* – *Colias nastes* BOISDUVAL, 1832
  - heclides – *Colias nastes werdandi* [race] werdandi [f.] heclides VERITY, 1911 (IS)
  - standfussi – *Colias pelidne* [f.] standfussi RÖBER, 1909 (IS)
- gueneei – *Colias nastes gueneei* AVINOFF, 1935 (JSS)
- rossi – *Colias nastes* [var.] rossi VERITY, 1909 (UE & JOS)
  - rossi – *Colias nastes* [var.] rossi VERITY, 1908 (ISS)
- rossii – *Colias rossii* GUENÉE, 1864 (JSS)
- alaska* – *Colias nastes alaska* O. BANG-HAAS, 1927
  - alaskae – *Colias nastes alaskae* McDUNNOUGH, 1938 (ISS)
  - alisaka – *Colias nastes alisaka* TALBOT, 1935 (ISS)
  - aljaska – *Colias nastes aljaska* CHURKIN, GRIESHUBER, BOGDANOV & ZAMOLODCHIKOV, 2001 (ISS)
  - cocandicides – *Colias nastes rossii* [f.] cocandicides VERITY, 1911 (IS)
- ferrisi – *Colias nastes ferrisi* VERHULST, 2004 (JSS)
- subarctica – *Eurymus nastes* [race] subarctica McDUNNOUGH, 1928 (JSS)
- dezhevi* – *Colias nastes dezhevi* KORSHUNOV, 1995

- *sibirica* – *Colias nastes sibirica* KURENTZOV, 1970 (JH of *C. sibirica* LEDERER, 1853 & JSS)
  - flinti* – *Colias nastes flinti* CHURKIN, GRIESHUBER, BOGDANOV & ZAMOŁODCHIKOV, 2001
  - jacutica* – *Colias nastes jacutica* KURENTZOV, 1970
    - *jactica* – *Colias nastes jactica* INOMATA, 2005 (ISS)
    - *jakutica* – *Colias nastes jakutica* VERHULST, 2000 (ISS)
    - *jucuttica* – *Colias nastes jucuttica* FERRIS, 1985 (ISS)
  - *jacuticola* – *Colias jacuticola* WEISS & MRÁČEK, 1989 (JSS)
    - *jakuticola* – *Colias jakuticola* VERHULST, 2000 (ISS)
  - magadanica* – *Colias nastes magadanica* CHURKIN, GRIESHUBER, BOGDANOV & ZAMOŁODCHIKOV, 2001
  - moina* – *Colias moina* STRECKER, 1880
    - *harperi* – *Eurymus nastes moina* [f.] *harperi* GUNDER, 1932 (ISS)
    - *moma* – *Colias nastes* [f.] *moma* D'ABRERA, 1990 (ISS & MI)
  - streckeri* – *Colias nastes* [var.] *streckeri* GRUM-GRSHIMAILO, 1895
    - *obscurata* – *Colias nastes streckeri* [ab.] *obscurata* VERITY, 1911 (IS)
    - *palliflava* – *Eurymus nastes streckeri* [ab.] *palliflava* MCDUNNOUGH, 1927 (IS)
  - *dioni* – *Colias nastes dioni* VERHULST, 1999 (JSS)
- nebulosa OBERTHÜR, 1894**
- nebulosa* – *Colias nebulosa* OBERTHÜR, 1894
    - *niveata* – *Colias cocandica niveata* O. BANG-HAAS, 1927 (JSS)
      - *niveata* – *Colias sifanica nebulosa* [ab.] *niveata* VERITY, 1907 (IS)
    - *sungpani* – *Colias cocandica sungpani* O. BANG-HAAS, 1927 (JSS)
  - karoensis* – *Colias nebulosa karoensis* HOSHIAI & ROSE, 1998
  - pugo* – *Colias pugo* EVANS, 1924
  - richthofeni* – *Colias richthofeni* O. BANG-HAAS, 1927<sup>38</sup>
    - *melanitica* – *Colias richthofeni* [ab.] *melanitica* O. BANG-HAAS, 1927 (IS)
    - *richtofani* – *Colias palaeno europome* [var.] *richtofani* RAINERI & CARNEVALE, 1998 (ISS)
- nilagiriensis FELDER & FELDER, 1859**
- nilagiriensis* – *Colias nilagiriensis* FELDER & FELDER, 1859
    - *nilgherriensis* – *Colias hyale* [var.] *nilgherriensis* ELWES, 1884 (ISS)
    - *nilgherriensis* – *Colias nilgherriensis* DUPONT, 1893 (ISS)
  - *nilgiriensis* – *Colias hyale* [var.] *nilgiriensis* VERITY, 1909 (UE & JOS)
- nina FAWCETT, 1904**
- nina* – *Colias nina* FAWCETT, 1904
    - *nina* – *Colias nina* FAWCETT, 1904 (NN)
  - *pulchra* – *Colias berylla pulchra* O. BANG-HAAS, 1927 (JSS)
    - *pulchra* – *Colias berylla* [race] *pulchra* VERITY, 1911 (IS)
  - *tsurpuana* – *Colias nina tsurpuana* GRIESHUBER, 1996 (JSS)
    - *tsurpuan* – *Colias nina tsurpuan* GRIESHUBER, 1996 (IOS)
  - hingstoni* – *Colias nina hingstoni* RILEY, 1927
- occidentalis SCUDDER, 1862**
- occidentalis* – *Colias occidentalis* SCUDDER, 1862
  - chrysomelas* – *Colias chrysomelas* H. EDWARDS, 1877
    - *chryomelas* – *Colias chryomelas* H. EDWARDS, 1877 (IOS)
    - *shastae* – *Eurymus occidentalis chrysomelas* [f.] *shastae* BARNES & BENJAMIN, 1926 (IS)
  - pseudochristina* – *Colias pseudochristina* FERRIS, 1989
    - *pseudochrsitina* – *Colias pseudochrsitina* VERHULST, 2000 (ISS)
  - *wasatchia* – *Colias occidentalis wasatchia* GILLETTE, 1989 (JSS)
  - sullivanii* – *Colias occidentalis sullivanii* HAMMOND & MCCORKLE, 2003
- palaeno (LINNAEUS, 1760)**
- palaeno* – *Papilio palaeno* LINNAEUS, 1760
    - *arctica* – *Colias palaeno* [ab.] *arctica* RANGNOW, 1935 (IS)
    - *avinoffi* – *Colias palaeno palaeno* [f.] *avinoffi* VERITY, 1911 (IS)
    - *flava* – *Colias palaeno synonyma* [f.] *flava* MAEY, 1986 (IS)

- *flavescens* – *Colias palaeno palaeno* [f.] *flavescens* MAEY, 1986 (IS)
- *nordstromi* – *Colias palaeno* [ab.] *nordströmi* BRYK, 1923 (IS)
- *octava* – *Colias palaeno* [ab.] *octava* BRYK, 1923 (IS)
- *parva* – *Colias palaeno* [ab.] *parva* HOYNINGEN-HUENE, 1901 (IS)
- *pupillata* – *Eurymus palaeno* [ab.] *pupillata* NORDSTRÖM, 1933 (IS)
- *schildei* – *Colias palaeno* [var.] *schildei* STAUDINGER, 1892 (IS)
- *subtusmaculata* – *Colias palaeno synonyma* [f.] *subtusmaculata* MAEY, 1986 (IS)
- [*werdandi* – HERRICH-SCHÄFFER'S *C. werdandi* is a misidentification of *C. werdandi* ZETTERSTEDT, 1839, not an available name]
- *cretacea* – *Colias palaeno* [var.] *cretacea* AURIVILLIUS, 1888 (JSS)
  - *cretacea* – *Colias palaeno* [ab.] *cretacea* SCHILDE, 1884 (IS)
- *lapponica* – *Colias palaeno* [var.] *lapponica* STAUDINGER, 1861 (JSS)
- *philomene* – *Papilio philomene* HÜBNER, [1805] (JSS)
- *pruefferi* – *Colias palaeno pruefferi* KRZYWICKI, 1967 (JSS)
- *synonyma* – *Colias palaeno* [var.] *synonyma* BRYK, 1923 (JSS)
- *valeria* – *Colias valeria* SIEVERS, 1860 (JSS)
- arctica* – *Colias palaeno* [var.] *arctica* NORDSTRÖM, 1927
  - *arctica* – *Colias palaeno europomene* [f.] *arctica* VERITY, 1908 (IS)
  - *karaganica* – *Colias palaeno arctica* [f.] *karaganica* KURENTZOV, 1970 (IS)
  - *gomojunovae* – *Colias palaeno gomojunovae* KORSHUNOV, 1996 (JSS)
- baffinensis* – *Colias palaeno baffinensis* EBNER & FERRIS, 1977<sup>39</sup>
- chippewa* – *Colias chippewa* W. EDWARDS, 1870
  - *kohlsaati* – *Eurymus chippewa* [f.] *kohlsaati* GUNDER, 1931 (IS)
  - *schippewa* – *Colias palaeno schippewa* KURENTZOV, 1970 (ISS)
  - *schrippewa* – *Colias palaeno schrippewa* KURENTZOV, 1970 (ISS)
  - *sphippewa* – *Colias palaeno sphippewa* KURENTZOV, 1970 (ISS)
  - *chippawa* – *Colias pelidne* [var.] *canda chippawa* RAINERI & CARNEVALE, 1998 (ISS)
- *helena* – *Colias helena* W. EDWARDS, 1863 (JH of *helena* HERRICH-SCHÄFFER, 1844)
- europome* – *Papilio europome* ESPER [1778]
  - *atavista* – *Colias palaeno europome* [ab.] *atavista* STEPHAN, 1923 (IS)
  - *aurantiaca* – *Colias palaeno* [ab.] *aurantiaca* HACKRAY, 1934 (IS)
  - *belga* – *Colias palaeno europome* *belga* DERENNE, 1928 (IS)
  - *bimaculata* – *Colias palaeno europome* [ab.] *bimaculata* SCHRÖDER, 1923 (IS)
  - *binotata* – *Colias palaeno europome* [ab.] *binotata* CABEAU, 1925 (IS)
  - *cavroi* – *Colias palaeno europome* [ab.] *cavroi* DUFRANE, 1947 (IS)
  - *dentata* – *Colias palaeno europome* *belga* [f.] *dentata* DERENNE, 1934 (IS)
  - *flavoradiata* – *Colias palaeno* [ab.] *flavoradiata* PIESCZEK, 1917 (IS)
  - *illgneri* – *Colias palaeno* [ab.] *illgneri* RÜHL, 1890 (IS)
  - *illgneriana* – *Colias palaeno europome* [f.] *illgneriana* TALBOT, 1935 (ISS)
  - *illgnerina* – *Colias palaeno europome* [f.] *illgnerina* VORBRODT, 1912 (IS)
  - *illgnerireducta* – *Colias palaeno europome* [ab.] *illgnerireducta* SCHRÖDER, 1923 (IS)
  - *impunctata* – *Colias palaeno europome* *belga* [f.] *impunctata* DERENNE, 1934 (IS)
  - *ochracea* – *Colias palaeno europome* [ab.] *ochracea* GEEST, 1905 (IS)
  - *posterodimidiata* – *Colias palaeno europome* *belga* [f.] *posterodimidiata* DERENNE, 1934 (IS)
  - *pupillata* – *Colias palaeno* [ab.] *pupillata* PIESCZEK, 1917 (IS)
  - *reducta* – *Colias palaeno europome* [ab.] *reducta* GEEST, 1905 (IS)
  - *retracta* – *Colias palaeno europome* [f.] *retracta* MAEY, 1986 (IS)
  - *schroderi* – *Colias palaeno europome* [f.] *schroderi* BRIDGES, 1988 (ISS)
  - *schroederi* – *Colias palaeno europome* [ab.] *schroederi* HOMMEL, 1923 (IS)
  - *sitowskii* – *Colias palaeno europome* [ab.] *sitowskii* BIEZANKO, 1924 (IS)
  - *striata* – *Colias palaeno europome* [ab.] *striata* VAN MELLAERTS, 1929 (IS)
  - *subobsoleta* – *Colias palaeno* [ab.] *subobsoleta* PIONNEAU, 1936 (IS)
  - *viridis* – *Colias palaeno* [ab.] *viridis* PIONNEAU, 1936 (IS)
- *alpina* – *Colias palaeno* [var.] *alpina* SPULER, 1901 (JH of *alpina* ELWES, 1899; JSS of

*europomene* OCHSENHEIMER, 1816 & *europome* ESPER, [1778]

- *caflischi* – *Colias palaeno* [var.] *caflischi* CARADJA, 1893 (JSS of *europomene* OCHSENHEIMER, 1816 & *europome* ESPER [1778])
- *deprunneri* – *Colias europomene* [f.] *de-prunneri* ROCCA, 1944 (JSS)
  - *cenisia* – *Colias palaeno deprunneri* [ab.] *cenisia* ROCCA, 1944 (IS)
- *europomene* – *Colias palaeno europomene* OCHSENHEIMER, 1816 (JSS)
  - *altotineensis* – *Colias palaeno europomene* [race] *altotineensis* LORITZ, 1953 (IS)
  - *caflischi* – *Colias palaeno europomene* [f.] *caflischi* TALBOT, 1935 (ISS)
  - *europomme* – *Colias palaeno* [var.] *europomme* MATSUMURA, 1911 (ISS)
  - *fedoziensis* – hybrid of *C. palaeno europomene* & *C. phicomone* – *fedoziensis* HILL, 1939 (unavailable)
  - *flavoinspersa* – *Colias palaeno europomene* [ab.] *flavoinspersa* HEINRICH, 1919 (IS)
  - *flavoradiata* – *Colias palaeno europomene* [ab.] *flavoradiata* WHEELER, 1903 (IS)
  - *herrichi* – *Colias palaeno europomene* [ab.] *herrichi* STAUDINGER, 1892 (IS)
  - *herrichina* – *Colias palaeno europomene* [ab.] *herrichina* GEEST, 1905 (IS)
  - *jurassica* – *Colias palaeno europomene* [f.] *jurassica* VERITY, 1908 (IS)
  - *obliterata* – *Colias palaeno europomene* [ab.] *obliterata* VERITY, 1911 (IS)
  - *roseomaculata* – *Colias palaeno europomene* [ab.] *roseomaculata* LORITZ, 1953 (IS)
  - *rubeopunctata* – *Colias palaeno europomene* [ab.] *rubeopunctata* LORITZ, 1953 (IS)
  - *semidepunctata* – *Colias palaeno europomene* [f.] *semi-depunctata* LORITZ, 1952 (IS)
- orientalis* – *Colias palaeno* [var.] *orientalis* STAUDINGER, 1892
  - *sachalinensis* – *Colias palaeno* [var.] *sachalinensis* MATSUMURA, 1919 (JSS)
    - *sachalienensis* – *Colias palaeno aias* [f.] *sachalienensis* TALBOT, 1935 (ISS)
- poktussani* – *Colias palaeno poktussani* O. BANG-HAAS, 1935
  - *poktusani* – *Colias palaeno poktusani* VERHULST, 2000 (ISS)
- *nekkana* – *Colias palaeno* [f.] *nekkana* MATSUMURA, 1939 (JSS)
- sugitanii* – *Colias palaeno sugitanii* ESAKI, 1929

#### ***pelidne* BOISDUVAL & LE CONTE, [1830]**

*pelidne* – *Colias pelidne* BOISDUVAL & LE CONTE, [1830]

- *canda* – *Colias pelidne* [var.] *canda* RAINERI & CARNEVALE, 1998 (NN)
- *mira* – *Colias pelidne* [ab.] *mira* VERITY, 1911 (IS)
- *moeschleri* – *Colias pelidne* [ab.] *moeschleri* GRUM-GRSHIMAILO, 1893 (IS)
- *labradorensis* – *Colias labradorensis* SCUDDER, 1862 (JSS)

#### ***phicomone* (ESPER, [1780])**

*phicomone* – *Papilio phicomone* ESPER [1780]

- *albidior* – *Colias phicomone* [ab.] *albidior* RONNICKE, 1920 (IS)
- *anticopupillata* – *Colias phicomone* [f.] *anticopupillata* VERITY, 1947 (IS)
- *bipupillata* – *Colias phicomone* [ab.] *bipupillata* MEZGER, 1932 (IS)
- *blachieri* – *Colias phicomone* [ab.] *blachieri* CULOT, 1908 (IS)
- *blachieri* – *Colias phicomone* [ab.] *blachieri* VERITY, 1909 (IS)
- *conversa* – *Colias phicomone* [ab.] *conversa* HAIDENTHALER, 1929 (IS)
- *derosea* – *Colias phicomone* [ab.] *derosea* WAGNER, 1926 (IS)
- *distincta* – *Colias phicomone* [ab.] *distincta* RONNICKE, 1920 (IS)
- *elegans* – *Colias phicomone* [ab.] *elegans* SCHULTZ, 1904 (IS)
- *elongata* – *Colias phicomone* [ab.] *elongata* MEZGER, 1935 (IS)
- *fasciata* – *Colias phicomone* [ab.] *fasciata* RONNICKE, 1920 (IS)
- *fedoziensis* – hybrid of *C. palaeno europomene* & *C. phicomone* – *fedoziensis* HILL, 1939 (unavailable)
- *flava* – *Colias phicomone* [f.] *flavoradiata* OSTHELDER, 1925 (IS)
- *flavida* – *Colias phicomone* [ab.] *flavida* OSTHELDER, 1913 (IS)
- *fleischmanni* – *Colias phicomone* [ab.] *fleischmanni* STAUDER, 1924 (IS)
- *geesti* – *Colias phicomone* [ab.] *geesti* NEUBURGER, 1905 (IS)
- *gynomorpha* – *Colias phicomone* [ab.] *gynomorpha* VERITY, 1911 (IS)
- *hyalides* – *Colias phicomone* [ab.] *hyalides* VERITY, 1911 (IS)

- incompleta – *Colias phicomone* [ab.] incompleta MEZGER, 1934 (IS)
- lanceolata – *Colias phicomone* [f.] lanceolata VERITY, 1947 (IS)
- melinoides – *Colias phicomone* [f.] melinoides VERITY, 1926 (IS)
- minor – *Colias phicomone* [ab.] minor MEZGER, 1935 (IS)
- obscura – *Colias phicomone* [ab.] obscura RONNICKE, 1920 (IS)
- pallida – *Colias phicomone* [ab.] pallida HOFFMANN, 1914 (IS)
- passa – *Colias phicomone* [ab.] passa VERITY, 1911 (IS)
- phaedra – *Colias phicomone* [ab.] phaedra SCHAWERDA, 1924 (IS)
- phicomene – *Colias phicomene* STAUDINGER, 1866 (ISS)
- phycomone – *Colias phycomone* LORKOVIC, 1986 (IS)
- porrecta – *Colias phicomone* [ab.] porrecta HEINRICH, 1930 (IS)
- pricomone – *Colias pricomone* GRUM-GRSHIMAILO, 1907 (ISS)
- privata – *Colias phicomone* [ab.] privata RONNICKE, 1920 (IS)
- pupillata – *Colias phicomone* [ab.] pupillata REHFUS, 1908 (IS)
- pupillata – *Colias phicomone* [ab.] pupillata RONNICKE, 1920 (IS)
- saturata – *Colias phicomone* [var.] saturata AUSTAUT, 1905 (IS)
- theia – *Colias phicomone* [ab.] theia SCHAWERDA, 1919 (IS)
- unimaculata – *Colias phicomone* [ab.] unimaculata PIONNEAU, 1924 (IS)
- unimaculata – *Colias phicomone* [f.] unimaculata VORBRODT & MÜLLER-RUTZ, 1917 (IS)
- *alpiummitida* – *Colias phicomone* [race] *alpiummitida* VERITY, 1926 (JSS)
  - *alpiummitida* – *Colias phicomone pulverulenta* *alpiummitida* RAINERI & CARNEVALE, 1998 (ISS)
- *juliani* – *Colias phicomone* [var.] *juliani* HOSPITAL, 1948 (JSS)
  - *impunctata* – *Colias phicomone* [ab.] *impunctata* VERITY, 1908 (IS)
  - *juliana* – *Colias phicomone* *juliana* REISSINGER, 1990 (ISS)
- *oberthuerei* – *Colias phicomone* [f.] *oberthuerei* VERITY, 1909 (JSS)
- *periphaes* – *Colias phicomone periphaes* FRUHSTORFER, 1908 (JSS)
- *phila* – *Colias phicomone phila* FRUHSTORFER, 1903 (JSS)
- *pulverulenta* – *Colias phicomone* [race] *pulverulenta* VERITY, 1926 (JSS)

### **philodice GODART, 1819**

*philodice* – *Colias philodice* GODART, 1819

- alba – *Colias philodice* [ab.] alba EHRMANN, 1890 (IS)
- alba – *Colias philodice* [ab.] alba RÖBER, 1909 (IS)
- alba – *Colias philodice* [ab.] alba STRECKER, 1878 (IS)
- alba – *Colias philodice* [f.] plicaduta [var.] alba CHERMOCK, 1927 (IS)
- alba – *Colias philodice* [var.] alba PILATE, 1882 (NN)
- albida – *Colias philodice* [f.] plicaduta [var.] albida CHERMOCK, 1928 (IS)
- albinic – *Colias philodice* [var.] albinic W. EDWARDS, 1885 (IS)
- autumnalis – *Colias eurytheme* [f.] autumnalis COCKERELL, 1888 (IS)
- ehrmanni – *Colias philodice* [f.] plicaduta [ab.] ehrmanni CHERMOCK, 1927 (IS)
- inversata – *Colias philodice* [ab.] inversata NAKAHARA, 1926 (IS)
- luteitincta – *Colias philodice* [var.] luteitincta WOLCOTT, 1893 (IS)
- lutetincta – *Colias philodice* [ab.] lutetincta MILLER & BROWN, 1981 (ISS)
- melanic – *Colias philodice* [var.] melanic W. EDWARDS, 1885 (IS)
- minor – *Colias philodice* [f.] plicaduta [ab.] minor CHERMOCK, 1927 (IS)
- miscidice – *Colias philodice* [f.] miscidice SCUDDER, 1889 (IS)
- nig – *Colias philodice* [ab.] nig STRECKER, 1878 (IS)
- nigridice – *Colias philodice* [f.] nigridice SCUDDER, 1889 (IS)
- nigrina – *Colias philodice* [ab.] nigrina STRECKER, 1900 (“UE”, IS)
- nigrofasciata – *Colias philodice* [f.] nigrofasciata REIFF, 1917 (IS)
- nigrofasciata – *Colias philodice* [f.] pallidice [f.] nigrofasciata REIFF, 1918 (IS)
- notatus – *Papilio notatus* MEGERLE, 1803 (*nomen dubium*, possibly SSS of *C. philodice*; suppressed by ICZN Opinion 1710; 1993)
- pallidice – *Colias philodice* [f.] pallidice SCUDDER, 1889 (IS)

- *philodin* – *Colias philodin* W. EDWARDS, 1872 (ISS)
- *plicaduta* – *Colias philodice* [f.] *plicaduta* NAKAHARA, 1926 (IS)
- *raritus* – *Eurymus philodice* [f.] *raritus* GUNDER, 1928 (IS)
- *reducta* – *Colias philodice* [ab.] *reducta* DUFRANE, 1947 (IS)
- *rothkei* – *Colias philodice* [f.] *rothkei* REIFF, 1917 (IS)
- *serrata* – *Colias philodice* [var.] *serrata* CHERMOCK, 1929 (IS)
- *suffusa* – *Colias philodice* [f.] *suffusa* COCKERELL, 1889 (IS)
- *virida* – *Colias philodice* [ab.] *virida* STRECKER, 1878 (IS)
- *anthyale* – *Zerene anthyale* HÜBNER, [1823] (JSS)
- *dorippe* – *Colias dorippe* GODART, 1819 (JSS)
- *maria* – *Colias maria* W. EDWARDS, 1885 (JSS)
- *santes* – *Colias santes* FITCH, 1854 (JSS)
- *tegea* – *Colias tegea* SIEVERS, 1860 (JSS)
- eriphyle* – *Colias eriphyle* W. EDWARDS, 1876
  - *eryphile* – *Colias philodice* *eryphile* BERGER, 1986 (ISS)
  - *euriphyle* – *Colias eurytheme* *euriphyle* RAINERI & CARNEVALE, 1998 (ISS)
  - *laurae* – *Colias eurytheme* *eriphyle* [ab.] *laurae* CHERMOCK, 1929 (IS)
  - *nigricosta* – *Colias eurytheme* *eriphyle* [var.] *nigricosta* CHERMOCK, 1929 (IS)
- *hagenii* – *Colias hagenii* W. EDWARDS, 1884 (JSS)
- *kootenai* – *Colias kootenai* COCKLE, 1910 (JSS)
- guatemalena* – *Colias philodice* [f.] *guatemalena* RÖBER, 1909
- vitabunda* – *Colias philodice* *vitabunda* HOVANITZ, 1943

#### ***poliographus* MOTSCHULSKY, 1861**<sup>40</sup>

- poliographus* – *Colias poliographus* MOTSCHULSKY, 1861
  - *chitosensis* – *Colias erate* *poliographus* [ab.] *chitosensis* KUROSOVA & OMOTO, 1954 (IS)
  - *connexa* – [ab.] *connexa* ITOGA, 1933 (IS)<sup>41</sup>
  - *daisetsuzana* – *Colias hyale* *poliographus* [ab.] *daisetsuzana* MATSUMURA, 1928 (IS)
  - *duplex* – *Colias hyale* *poliographus* [ab.] *duplex* PIONNEAU, 1932 (IS)
  - *glacilis* – *Colias poliographus* [ab.] *glacilis* YOKOYAMA, 1922 (IS)
  - *kutsukakensis* – *Colias poliographus* [ab.] *kutsukakensis* YOKOYAMA, 1920 (IS)
  - *murina* – *Colias hyale* *poliographus* [f.] *murina* FRUHSTORFER, 1910 (IS)
  - *napata* – *Colias hyale* *poliographus* [f.] *napata* FRUHSTORFER, 1910 (IS)
  - *polyographa* – *Colias erate* *polyographa* INOMATA, 2005 (ISS)
  - *polyographus* – *Colias polyographus* ALPHÉRAKY, 1883 (ISS)
  - *sagakoe* – *Colias erate* *poliographus* [f.] *sagakoe* YANO, 1958 (IS)
  - *shinanoensis* – *Colias hyale* *poliographus* [ab.] *shinanoensis* SHIROKI, 1951 (IS)
  - *suzukii* – *Colias hyale* [ab.] *suzukii* MATSUMURA, 1929 (IS)
  - *suzukii* – *Colias hyale* *poliographus* [ab.] *suzukii* ESAKI & NOMURA, 1938 (IS)
  - *taeniata* – *Colias hyale* *poliographus* [ab.] *taeniata* NAITO, 1930 (IS)
  - *umotoi* – *Colias hyale* *poliographus* [ab.] *umotoi* ESAKI & NOMURA, 1938 (IS)
- *amdensis* – *Colias hyale* [race] *amdensis* BOLLOW, 1930 (JSS)
  - *amdensis* – *Colias hyale* *poliographus* [race] *amdensis* VERITY, 1911 (IS)
  - *flavosignata* – *Colias hyale* *poliographus* [race] *flavosignata* VERITY, 1909 (IS)
  - *hera* – *Colias poliographus* [ab.] *hera* GRUM-GRSHIMAILO, 1893 (IS)
  - *croceocoma* – *Colias erate* [ab.] *croceocoma* KRULIKOWSKY, 1907 (IS)
  - *chrysocoma* – *Colias poliographus* [ab.] *chrysocoma* GRUM-GRSHIMAILO, 1893 (IS)
- *elwesii* – *Colias elwesii* BUTLER, 1881 (JSS)
- *formosana* – *Colias erate* *formosana* SHIRÔZU 1955 (JSS)
- *immanis* – *Colias hyale* [f.] *immanis* BOLLOW, 1930 (JSS)
  - *immamis* – *Colias erate* *poliographus* [f.] *immamis* VERHULST, 2000 (ISS)
  - *immanis* – *Colias hyale* *poliographus* [race] *immanis* VERITY, 1911 (IS)
- *manchurica* – *Colias hyale* *manchurica* KISHIDA, 1933 (JSS)<sup>42</sup>
- *naukratis* – *Colias hyale* *naukratis* FRUHSTORFER, 1910 (JSS)
  - *nankrakis* – *Colias hyale* *nankrakis* MARTIN, 1923 (ISS)

- *naucratis* – *Colias erate naucratis* KORSHUNOV, 1998 (ISS)
  - *pallens* – *Colias pallens* BUTLER, 1866 (JSS)
  - *pyxagathus* – *Colias hyale* [f.] *pyxagathus* BOLLOWS, 1930 (JSS)
    - *pyxagathus* – *Colias hyale* [f.] *pyxagathus* FRUHSTORFER, 1910 (IS)
    - *nana* – *Colias hyale poliographus sinensis* [ab.] *nana* VERITY, 1911 (IS)
  - *simoda* – *Colias simoda* L'ORZA, 1869 (JSS)
  - *sinensis* – *Colias hyale* [f.] *sinensis* BOLLOWS, 1930 (JSS)
    - *chinensis* – *Colias hyale* [f.] *chinensis* BOLLOWS, 1930 (ISS)
    - *pallens* – *Colias hyale poliographus* [race] *sinensis* [gen. vern.] *pallens* VERITY, 1911 (NN)
    - *sinensis* – *Colias hyale poliographus* [race] *sinensis* VERITY, 1911 (IS)
  - *subaurata* – *Colias subaurata* BUTLER, 1881 (JSS)
  - *tokotana* – *Colias hyale tokotana* BRYK, 1942 (JSS)
  - *tomarias* – *Colias hyale tomarias* BRYK, 1942 (JSS)
- ponteni WALLENGREN, 1860**
- ponteni* – *Colias ponteni* WALLENGREN, 1860
  - *imperialis* – *Colias imperialis* BUTLER, 1871 (JSS)
- regia GRUM-GRSHIMAILO, 1887**
- regia* – *Colias regia* GRUM-GRSHIMAILO, 1887
  - *svetlanae* – *Colias regia svetlanae* KORB & YAKOVLEV, 1998 (JSS)
- romanovi GRUM-GRSHIMAILO, 1885**
- romanovi* – *Colias romanovi* GRUM-GRSHIMAILO, 1885
  - *aureomarginata* – *Colias romanovi* [f.] *aureomarginata* BERGER, 1937 (IS)
  - *maculata* – *Colias romanovi* [ab.] *maculata* RÖBER, 1907 (IS)
  - *obsoleta* – *Colias romanovi* [f.] *obsoleta* BERGER, 1937 (IS)
  - *seravschana* – *Colias romanovi seravschana* LUKHTANOV, 1999 (JSS)
- sagartia LEDERER, 1869**
- sagartia* – *Colias sagartia* LEDERER, 1869
  - *daubii* – *Colias sagartia* [ab.] *daubii* GEEST, 1905 (IS)
  - *flava* – *Colias sagartia* [f.] *flava* VERITY, 1911 (NN)
  - *lisa* – *Colias sagartia* [ab.] *lisa* GEEST, 1905 (IS)
  - *pullata* – *Colias sagartia* [ab.] *pullata* NEUBURGER, 1905 (IS)
- scudderii REAKIRT, 1865**
- scudderii* – *Colias scudderii* REAKIRT, 1865
  - *flavotincta* – *Colias scudderii* [var.] *flavotincta* COCKERELL, 1901 (JSS)
  - *ruckesi* – *Colias scudderii ruckesi* KLOTS, 1937 (JSS)
- shahfuladi CLENCH & SHOUMATOFF, 1956**
- shahfuladi* – *Colias shahfuladi* CLENCH & SHOUMATOFF, 1956
  - *christinae* – *Colias shahfuladi* [f.] *christinae* SCHULTE, 1989 (IS)
  - *shahfuladi* – *Colias shahfuladi* BERGER, 1986 (ISS)
- sieversi GRUM-GRSHIMAILO, 1887**
- sieversi* – *Colias sieversi* GRUM-GRSHIMAILO, 1887
  - *siversi* – *Colias siversi* LEWIS, 1973 (ISS)
- sifanica GRUM-GRSHIMAILO, 1891**
- sifanica* – *Colias sifanica* GRUM-GRSHIMAILO, 1891
  - *siphonica* – *Colias siphonica* KLOTS, 1931 (ISS)
  - *tancrei* – *Colias sifanica* [ab.] *tancrei* RÖBER, 1907 (IS)
  - *herculeana* – *Colias sifanica herculeana* BOLLOWS, 1930 (JSS)
  - *qinghaiensis* – *Colias sifanica qinghaiensis* CHOU, ZHANG & WANG, 2001 (JSS)
- staudingeri ALPHÉRAKY, 1881**
- staudingeri* – *Colias staudingeri* ALPHÉRAKY, 1881
  - *aurantiacoalba* – *Colias eogene aphrodite* [f.] *aurantiacoalba* VERITY, 1907 (IS)

- aurantiacoflava – *Colias eogene aphrodite* [f.] aurantiacoflava VERITY, 1907 (IS)
- flava – *Colias eogene aphrodite* [f.] flava VERITY, 1909 (IS)
- flavolimbata – *Colias staudingeri staudingeri* [f.] flavolimbata VERITY, 1908 (IS)
- infernalis – *Colias staudingeri* [ab.] infernalis RAINERI & CARNEVALE, 1998 (NN)
- lugens – *Colias staudingeri* [f.] lugens STAUDER, 1924 (IS)
- emivittata – *Colias staudingeri* [var.] emivittata WAGNER, 1913 (JSS)
  - emevittata – *Colias staudingeri* emevittata VERHULST, 2000 (ISS)
  - emivittata – *Colias staudingeri staudingeri* [f.] emivittata VERITY, 1908 (IS)
- kuekenthali – *Colias staudingeri* [f.] kükenthali NIEPELT, 1914 (JSS)
  - kuckenthalia – *Colias staudingeri* [f.] kuckenthalia BOLLOW, 1930 (ISS)
  - kukenthali – *Colias staudingeri* kukenthali VERHULST, 2000 (ISS)
- pamira* – *Colias staudingeri* [var.] *pamira* GRUM-GRSHIMAILO, 1890
  - melanitica – *Colias staudingeri* [f.] melanitica BOLLOW, 1930 (IS)
  - verityi – *Colias staudingeri pamira* [ab.] verityi AVINOFF, 1910 (IS)
- alexandrina – *Colias staudingeri* [var.] alexandrina VERITY, 1908 (JSS)
- maureri – *Colias staudingeri* [var.] maureri STAUDINGER, 1901 (JSS)
- pamiri – *Colias pamiri* RÜHL, 1893 (JSS)

### **stoliczkana MOORE, 1878**

- stoliczkana* – *Colias stoliczkana* MOORE, 1878
- alba – *Colias eogene stoliczkana* [ab.] alba GRUM-GRSHIMAILO, 1907 (NN)
  - alba – *Colias eogene stoliczkana* [f.] alba VERITY, 1907 (IS)
  - demaculata – *Colias stoliczkana* [f.] demaculata RAINERI & CARNEVALE, 1998 (NN)
  - stoliczana – *Colias stoliczana* EVANS, 1923 (ISS)
  - stoliczkanus – *Colias stoliczkanus* ELWES, 1898 (ISS)
  - stoltzkanus – *Colias stoltzkanus* KEFERSTEIN, 1883 (ISS)
- catheenae* – *Colias stoliczkana catheenae* EPSTEIN, 1979
- miranda* – *Colias eogene miranda* FRUHSTORFER, 1903

### **tamerlana STAUDINGER, 1897**<sup>43</sup>

- tamerlana* – *Colias tamerlana* STAUDINGER, 1897
- ukokana – *Colias mongola ukokana* KORB & YAKOVLEV, 2000 (JSS)
- mongola* – *Colias nastes* [var.] *mongola* ALPHÉRAKY, 1897
- melanitica – *Colias cocandica mongola* [ab.] melanitica VERITY, 1911 (IS)
- sidonia* – *Colias cocandica sidonia* WEISS, 1968

### **thisoa MÉNÉTRIÉS, 1832**

- thisoa* – *Colias thisoa* MÉNÉTRIÉS, 1832
- ludmilla – *Colias thisoa* [f.] ludmilla SCHULTE, 1989 (IS)
  - nigra – *Colias thisoa* [f.] nigra KOTZSCH, 1935 (IS)
  - obscurissima – *Colias thisoa* [var.] obscurissima RAINERI & CARNEVALE, 1998 (NN)
  - viridis – *Colias thisoa* [f.] viridis KOTZSCH, 1935 (IS)
  - [“vera”- KOTZSCH (1935) used the Latin word “vera” (= real) to refer to the nominate subspecies, the real *C. thisoa*, thus it is not an available name as supposed by some authors.]
- eos – *Colias eos* HERRICH-SCHÄFFER, 1848 (JSS)
  - helena – *Colias helena* HERRICH-SCHÄFFER, 1844 (JSS)
  - strandiana – *Colias thisoa strandiana* SHELJUZHKO, 1935 (JSS)
- aeolides* – *Colias thisoa* [var.] *aeolides* GRUM-GRSHIMAILO, 1890
- denticulata – *Colias thisoa* [f.] denticulata VERITY, 1907 (IS)
  - immaculata – *Colias thisoa* [f.] immaculata VERITY, 1907 (IS)
  - magna – *Colias thisoa* [v.] magna RAINERI & CARNEVALE, 1998 (NN)
- nikolaevi* – *Colias thisoa nikolaevi* KORSHUNOV, 1998
- *cryptochrysa* – *Colias thisoa cryptochrysa* YAKOVLEV, 2006 (JSS)<sup>44</sup> (syn. nov.)
  - *irtyschensis* – *Colias thisoa irtyschensis* LUKHTANOV, 1999 (JSS)
- shakuhensis* – *Colias thisoa shakuhensis* SHELJUZHKO, 1935
- discorubropunctata – *Colias aeolides* [f.] discorubropunctata EISNER, 1963 (IS)



- *impunctata* – *Colias thisoa shakuhensis* [ab.] *impunctata* SHELJUZHKO, 1935 (IS)
  - *nigrofasciata* – *Colias thisoa shakuhensis* [ab.] *nigrofasciata* SHELJUZHKO, 1935 (IS)
- urumtsiensis* – *Colias thisoa* [f.] *urumtsiensis* VERITY, 1907

### **thrasibulus FRUHSTORFER, 1910**

- thrasibulus* – *Colias thrasibulus* FRUHSTORFER, 1910
- *thrasibulis* – *Colias thrasibulis* RAINERI & CARNEVALE, 1998 (ISS)
  - *elwesi* – *Colias cocandica elwesi* RÖBER, 1907 (JH of *C. elwesii* BUTLER, 1881)
  - *leechii* – *Colias nastes* [var.] *leechii* ELWES, 1898 (JH of *C. leechi* GRUM-GRSHIMAILO, 1893)
  - *zanskarensis* – *Colias thrasibulus zanskarensis* HOSHIAI, 1996 (JSS)
- fasciata* – *Colias montium fasciata* KOZMAN, 1999

### **tibetana RILEY, 1923**

- tibetana* – *Colias cocandica tibetana* RILEY, 1923
- *tibetara* – *Colias cocandica tibetara* RILEY, 1923 (IOS)

### **tyche (BÖBER, 1812)**

- tyche* – *Papilio tyche* BÖBER, 1812
- *alpina* – *Colias melinos* [var.] *alpina* ELWES, 1899 (JSS)
  - *chloe* – *Colias chloe* EVERSMAAN, 1847 (JSS)
  - *chryseis* – *Colias melinos* [race] *chryseis* BOLLOWS, 1930 (JSS)
    - *chryseis* – *Colias melinos* [race] *chryseis* VERITY, 1911 (IS)
  - *deckerti* – *Colias melinos* [var.] *deckerti* VERITY, 1908 (JSS)
  - *herzi* – *Colias melinos* [var.] *herzi* STAUDINGER, 1901 (JSS)
  - *jeholensis* – *Colias melinos* [f.] *jeholensis* MATSUMURA, 1939 (JSS)
    - *jeholensis* – *Colias melinos jeholensis* KURENTZOV, 1970 (ISS)
  - *ludmilla* – *Colias tyche ludmilla* HEMMING, 1933 (JSS)<sup>45</sup>
  - *magna* – *Colias melinos* [var.] *magna* RÜHL, 1893 (JSS)
  - *melinos* – *Colias melinos* EVERSMAAN, 1847 (JSS)
  - *montana* – *Colias melinos* [race] *montana* BOLLOWS, 1930 (JSS of *tyche* BÖBER, 1812 & *alpina* ELWES, 1899)
    - *montana* (IS) – *Colias melinos* [race] *montana* VERITY, 1911 (IS)
  - *relicta* – *Colias melinos relicta* KURENTZOV, 1970 (JSS)
  - *vitimensis* – *Colias melinos* [var.] *vitimensis* AUSTAUT, 1899 (JSS)
- boothii* – *Colias boothii* CURTIS, 1835<sup>46</sup>
- *boothi* – *Colias boothii* VERITY, 1907 (ISS)
  - *bothii* – *Colias bothii* MÖSCHLER, 1860 (ISS)
  - *boothi* – *Colias boothii* VERITY, 1909 (UE & JOS)
  - *chione* – *Colias chione* CURTIS, 1835 (JSS)
- kolosovae* – *Colias tyche kolosovae* CHURKIN, GRIESHUBER, BOGDANOV & ZAMOLODCHIKOV, 2001
- *olga* – *Colias tyche olga* CHURKIN, GRIESHUBER, BOGDANOV & ZAMOLODCHIKOV, 2001 (JH of *olga* ROMANOFF, 1882)
- werdandi* – *Colias werdandi* ZETTERSTEDT, 1839
- *alba* – *Colias nastes werdandi* [ab.] *alba* SCHULTE, 1953 (IS)
  - *anastigma* – *Colias werdandi* [f.] *anastigma* RÖBER, 1907 (IS)
  - *bruncomaculata* – *Colias nastes werdandi* [ab.] *bruncomaculata* SCHULTE, 1953 (IS)
  - *castaneapunctata* – *Colias nastes werdandi* [ab.] *castanea-punctata* SHELDON, 1912 (IS)
  - *christienssoni* – *Colias nastes werdandi* [ab.] *christienssoni* FERRIS, 1985 (ISS)
  - *christiernssoni* – *Colias werdandi* [ab.] *christiernssoni* LAMPA, 1885 (IS)
  - *connexa* – *Colias nastes werdandi* [ab.] *connexa* SHELDON, 1912 (IS)
  - *ellingeri* – *Colias nastes werdandi* [ab.] *ellingeri* SCHULTE, 1953 (IS)
  - *flavopunctata* – *Colias nastes werdandi* [ab.] *flavopunctata* SHELDON, 1912 (IS)
  - *grisea* – *Colias nastes werdandi* [ab.] *grisea* SCHULTE, 1953 (IS)
  - *immaculata* – *Colias werdandi* [ab.] *immaculata* LAMPA, 1885 (IS)
  - *insignata* – *Colias nastes werdandi* [ab.] *insignata* THURAU, 1903 (IS)
  - *mariannae* – *Colias nastes werdandi* [ab.] *mariannae* SCHULTE, 1953 (IS)

- nigrita – *Colias nastes werdandi* [ab.] nigrita SCHULTE, 1953 (IS)
- nigromarginata – *Colias nastes werdandi* [f.] nigromarginata KUJAU, 1912 (IS)
- octava – *Colias werdandi* [ab.] octava BRYK, 1923 (IS)
- palaenoides – *Colias nastes werdandi* [ab.] palaenoides SCHULTE, 1953 (IS)
- pallida – *Colias nastes werdandi* [ab.] pallida SHELDON, 1912 (IS)
- phicomonides – *Colias nastes werdandi* [f.] phicomonides VERITY, 1911 (IS)
- radiata – *Colias nastes werdandi* [ab.] radiata THURAU, 1903 (IS)
- sulphurea – *Colias werdandi* [ab.] sulphurea LAMPA, 1885 (IS)
- torneoensis – *Colias nastes werdandi* [ab.] torneoensis SHELDON, 1912 (IS)
- verdandi – *Colias verdandi* KIRBY, 1865 (ISS)
- wernandi – *Colias wernandi* KURENTZOV, 1970 (ISS)
- zemblica* – *Colias nastes zemblica* VERHULST, 1999<sup>47</sup>
  - zemblica – *Colias nastes werdandi* [f.] zemblica VERITY, 1911 (IS)
  - zemblida – *Colias nastes zemblida* GORBUNOV, 1995 (ISS)
- thula* – *Colias nastes thula* HOVANITZ, 1955
- vauthierii GUÉRIN-MÉNEVILLE, [1830]<sup>48</sup>**
  - vauthierii* – *Colias vauthierii* GUÉRIN-MÉNEVILLE, [1830]
    - micans – *Colias vauthierii* [ab.] micans BREYER, 1939 (IS)
    - vauthieri – *Colias vauthieri* BUTLER, 1881 (ISS)
    - vautieri – *Colias vautieri* BLANCHARD, 1852 (ISS)
  - *ljungneri* – *Colias vauthierii ljungneri* BRYK, 1944 (JSS)
  - *rutilans* – *Colias rutilans* BOISDUVAL, 1836 (JSS)
- cunninghamii* – *Colias cunninghamii* BUTLER, 1881
  - *antarctica* – *Colias lesbia* [var.] *antarctica* STAUDINGER, 1899 (JSS)
    - antarctica – *Colias lesbia antarctica* BREYER, 1939 (ISS)
  - *arena* – *Colias lesbia* [var.] *arena* STAUDINGER, 1899 (JSS)
  - *minuscula* – *Colias minuscula* BUTLER, 1881 (JSS)
    - minuscula – *Colias minuscula* GRUM-GRSHIMAILO, 1907 (ISS)
- wanda GRUM-GRSHIMAILO, 1907**
  - wanda* – *Colias eogene* [var.] *wanda* GRUM-GRSHIMAILO, 1907
    - viridis – *Colias eogene arida* [ab.] viridis VERITY, 1907 (IS)
    - wanda – *Colias eogene arida* [var. et ab.] wanda GRUM-GRSHIMAILO, 1893 (IS)
  - *baeckeri* – *Colias baeckeri* KOTZSCH, 1930 (JSS)
    - beckeri – *Colias beckeri* NOSE, 1990 (ISS)
  - *paskoi* – *Colias baeckeri paskoi* KOČMAN, 1999 (JSS)
- yangguifei* – *Colias chrysotheme yangguifei* HUANG & MURAYAMA, 1992
- weberbaueri STRAND, 1912<sup>49</sup>**
  - weberbaueri* – *Colias weberbaueri* STRAND, 1912
    - virescens – *Colias euxanthe alticola* [ab.] virescens ROTHSCHILD, 1913 (IS)
  - *nigerrima* – *Colias euxanthe nigerrima* FASSL, 1915 (JSS)
  - *strandi* – *Colias strandi* RÖBER, 1924 (JSS)
- blameyi* – *Colias blameyi* JÖRGENSEN, 1916
- erika* – *Colias flaveola erika* LAMAS, 1981
- wiskotti STAUDINGER, 1882**
  - wiskotti* – *Colias wiskotti* STAUDINGER, 1882
    - wiscotti – *Colias wiscotti* GRUM-GRSHIMAILO, 1890 (ISS)
    - wiskolti – *Colias wiskolti* LANG, 1884 (ISS)
    - wiskotti – *Colias wiskotti* HOWARTH & POVOLNY, 1973 (ISS)
    - leuca – *Colias wiskotti* [ab.] leuca STAUDINGER, 1882 (IS)
  - *sagina* – *Colias wiskotti* [var.] *sagina* AUSTAUT, 1891 (JSS)
- aurea* – *Colias wiskotti aurea* KOTZSCH, 1936
  - blanda – *Colias wiskotti aurea* [ab.] blanda KOTZSCH, 1936 (IS)
  - *tirichmirensis* – *Colias wiskotti tirichmirensis* ROSE, 2001 (JSS)

- chrysoptera* – *Colias wiskotti* [var.] *chrysoptera* GRUM-GRSHIMAILO, 1888
- *alba* – *Colias wiskotti chrysoptera chrysoptera* [f.] *alba* VERITY, 1911 (NN)
  - *leachi* – *Colias wiskotti chrysoptera* [ab.] *leachi* TYTLER, 1926 (MI & ISS)
  - *leucoptera* – *Colias wiskotti chrysoptera* [ab.] *leucoptera* GRUM-GRSHIMAILO, 1907 (IS)
- draconis* – *Colias wiskotti* [var.] *draconis* GRUM-GRSHIMAILO, 1891
- hofmannorum* – *Colias hofmannorum* ECKWEILER, 2000
- rueckbeili* – *Colias wiskotti rueckbeili* LUKHTANOV, 1994
- *alexandra* – *Colias wiskotti alexandra* RÖBER, 1907 – (JH of *Colias alexandra* W. EDWARDS, 1863)
  - *alexandra* – *Colias wiskotti separata* [race] *alexandra* VERITY, 1909 (IS)
  - *rueckbeili* – *Colias wiskotti draconis* [ab.] *rueckbeili* O. BANG-HAAS, 1927 (IS; repl. name for *Colias wiskotti alexandra* RÖBER, 1907)
- separata* – *Colias wiskotti* [var.] *separata* GRUM-GRSHIMAILO, 1888
- *palaenoides* – *Colias wiskotti wiskotti* [f.] *palaenoides* VERITY, 1908 (IS)
  - *aurantiaca* – *Colias wiskotti* [var.] *aurantiaca* STAUDINGER, 1892 (JSS)
  - *leucothema* – *Colias wiskotti* [var.] *leucothema* GRUM-GRSHIMAILO, 1890 (JSS)
  - *leucothema* – *Colias wiskotti leucothema* D'ABRERA, 1990 (ISS)
- seres* – *Colias wiskotti* [var.] *seres* GRUM-GRSHIMAILO, 1890
- swadneri* – *Colias wiskotti swadneri* CLENCH & SHOUMATOFF, 1956
- *srocadrei* – *Colias wiskotti* [v.] *srocadrei* RAINERI & CARNEVALE, 1998 (ISS)
  - *swadnere* – *Colias wiskotti swadnere* D'ABRERA, 1990 (ISS)

#### Further description details

- <sup>1</sup> The authors see no use for subgeneric names in the genus *Colias*, which only clutter up the nomenclature. Without a complete phylogenetic analysis there is no evidence for splitting the genus *Colias* into subgeneric groups.
- <sup>2</sup> Status uncertain; possibly a subspecies of *C. arida*.
- <sup>3</sup> The taxon *aias* is provisionally accepted as a species distinct from *C. palaeno sugitanii* and other *C. palaeno* subspecies.
- <sup>4</sup> The status of the taxa placed under *C. alexandra* is unclear, thus the placement of these names can be only provisional, e.g. KOHLER (2006) raised *edwardsii* to species status and placed *astraea* as a ssp. thereof. Further investigation (rearing experiments and DNA studies, combined with historical research into dispersal after the last glacial period) is necessary to bring stability to this group.
- <sup>5</sup> KOÇAK (1990) introduced the name "pakistana" for the unavailable name "*Colias alpherakii roschana* [race] *chitralensis* VERITY, 1911" in the mistaken assumption that the name was available. KOÇAK'S (l.c) treatment didn't make it available because he didn't give a description or a reason for considering it to be subspecific, thus his "pakistana" is unavailable. It has to be said that this case is a "borderline" one where it is difficult to reach a firm conclusion, but even if this name could be considered to be available, it would fall into synonymy with *C. alpherakii*.
- <sup>6</sup> The taxon *alta* is provisionally accepted as a species that flies only at high altitudes in Kyrgyzstan and parts of Tajikistan, but it may only be a subspecies of *C. hyale*.
- <sup>7</sup> The taxon *muetingi* is considered to be a junior subjective synonym of *C. a. cakana* (syn. nov.) because there is little difference between specimens. *C. a. muetingi* is a little bit smaller and on average a paler orange, but this is not surprising as the climate in the Qilian Shan is much colder than in the region of the type locality of *C. a. cakana*. There is even a difference in size between type specimens from two different localities. The type locality is at a lower altitude where it is much warmer and drier than at the second locality ("Tulai Nanshan") where some of the paratypes were collected. These "low-altitude-muetingi" are very similar to *C. a. cakana*. It has to be noted that the locality description "Tulai Nanshan" is wrong. In reality the collecting locality is further north in the main chain of the Qilian Shan range. The correct locality is: 80 km SW Jiayuguan, 20 km W Jingtieshan, July 1st Glacier (qiyi bingchuan), 39° 16'05"N, 97° 42'69"E (pers. investigations by J. GRIESHUBER).

- <sup>8</sup> *C. a. kermana* is possibly a junior subjective synonym of *C. a. transcaspica*. There is not much difference between the taxa, but there is not enough material of *C. a. transcaspica* or populations between the type localities of the two taxa available to make a more accurate decision.
- <sup>9</sup> The status of *C. chlorocoma* is unclear; it is quite possible that it is a subspecies of *C. sagartia*. The flight, the biotopes, and the foodplants of the taxa are identical. Furthermore, biogeography contradicts the existence of two separate species. There is only a short distance of some 250-300 km between the known sites of the taxa. Material from this unexplored area could help to resolve this problem. The only differences are that *C. sagartia* males have yellow spots in the marginal band and males with androconial spots are rare. *C. chlorocoma* is rather variable, in particular the green wing pigmentation differs from population to population. HESSELBARTH et al. (1995) synonymised all the described subspecies of *C. chlorocoma*. They examined a huge amount of specimens from many localities, and concluded that the morphological differences between the populations are not constant, because the period of isolation of local populations would have been too short to produce genetically different populations. The arguments of HESSELBARTH et al. (l.c.) are logical and comprehensible, and the investigations of one of us (JG) support the hypothesis of the authors. Following HESSELBARTH et al. (l.c.) the described subspecies are provisionally considered to be junior synonyms, but further studies are necessary to support this. Judging by the wing colour only, it looks like there are two phenotypes: the nominotypical greenish-yellow *C. chlorocoma*, and the greenish *C. sagartia*.
- <sup>10</sup> The name *audre* was misspelled as "andre" for the first time by KORSHUNOV & SOLJANIKOV (1976). A number of subsequent authors, especially Russians (e.g. KORSHUNOV 1977, KORSHUNOV & GORBUNOV 1995), adopted this misspelling in the assumption that "andre" was the correct spelling.
- <sup>11</sup> The name-bearing specimens are from Dshirm in Mongolia, not from the Transalai; they are deposited in the Natural History Museum, London. The words "larger and brighter coloured in both sexes" (D'ABRERA 1990, p. 95) should not be interpreted as "a description or definition that states in words characters that are purported to differentiate the taxon" (ICZN Art. 13.1.1).
- <sup>12</sup> Status uncertain; possibly a junior subjective synonym of *C. c. tatarica* O. BANG-HAAS, 1915.
- <sup>13</sup> Status uncertain; possibly a junior subjective synonym of *C. c. maja* GRUM-GRSHIMAILO, 1891.
- <sup>14</sup> COCKERELL (1889) introduced several names as trinomials. The original names are given without the terms "form", "aberration", or "variation", but from the text it is clear that all the new names are infrasubspecific.
- <sup>15</sup> see footnote under *C. croceus angustior* COCKERELL, 1889.
- <sup>16</sup> see footnote under *C. croceus angustior* COCKERELL, 1889.
- <sup>17</sup> STAUDER (1913) clearly described under "mediterranea" ("g.[en.] v.[ernalis] (var. merid.) mediterranea m.") the spring form of *C. croceus* from the southern area of its distribution, thus the name is unavailable. WAGNER (1917) cited the name as a trinomial, but his subsequent writings clearly show that he also considered "mediterranea" to be a spring form, thus WAGNER (l.c.) didn't make the name available. STAUDER (l.c.) confirmed that his "mediterranea" was only a seasonal form. He (STAUDER l.c.) then synonymised it with "minor" FAILLA-TEDALDI, 1899.
- <sup>18</sup> see footnote under *C. croceus angustior* COCKERELL, 1889.
- <sup>19</sup> see footnote under *C. croceus angustior* COCKERELL, 1889.
- <sup>20</sup> see footnote under *C. croceus angustior* COCKERELL, 1889.
- <sup>21</sup> The status of the described subspecies of *C. electo* is unclear due to lack of enough material. The described subspecies are provisionally accepted as such, except *philbyi* BERGER, 1953 which is a junior subjective synonym of *meneliki* BERGER, 1940. There is strong variation between generations due to the alternance of wet and dry season in parts of Africa, which has not been taken into consideration. Furthermore there are indications that *C. electo* is migratory like its sister species *C. croceus*.
- <sup>22</sup> VERHULST (2006) raised *mukana* to species status, then described *jolyi* VERHULST, 2006 as a subspecies there of. As there is no evidence for the specific status of *mukana*, *jolyi* is regarded as a subspecies of *electo*.
- <sup>23</sup> In *C. eogene* three population groups are accepted here, i.e. *C. e. eogene*, *C. e. francesca*, and *C. e. elissa*, but it has to be noted that *C. e. elissa* could possibly be a junior synonym of the nominate *C. eogene*, as most *C. e. elissa* specimens are impossible to distinguish from nominotypical *C. eogene*. The taxon *C. e. shandura* is considered to be synonymous with the nominate subspecies from Ladakh. Only *C. e. francesca* from the Karakorum seems to be fairly distinct. There is a huge range of variation in the

- intermediate zone between *C. e. eogene* and *C. e. francesca*, making it difficult to assign such populations to one of the two subspecies (e.g. *C. e. ericae*).
- <sup>24</sup> The name "theia" ELWES, 1884 is unavailable, because it was published in synonymy with *C. eogene* (ICZN Art. 11.6). Nobody adopted it as the name of a species or subspecies before 1961 (Art. 11.6.1).
- <sup>25</sup> HEMMING (1933) introduced the name "tania" for the unavailable name "*Colias erate* [race] *gigantea* VERITY, 1911" in the mistaken assumption that the name was available. HEMMING'S treatment didn't make it available as a subspecies because he didn't give a description or a reason for considering it to be subspecific, thus his "tania" is unavailable. It has to be said that this case is a "borderline" one where it is difficult to reach a firm conclusion, but even if this name could be considered to be available, it would fall into synonymy with *C. erate*.
- <sup>26</sup> All described subspecies are probably only ecological variations, and therefore junior synonyms. The taxa *C. g. burchana* and *C. g. evanescens* are only provisionally accepted as subspecies.
- <sup>27</sup> DUPONT (1893) mentioned the name "groenlandica" without any authorship. The available name *C. h. groenlandica* RÜHL, 1893 possibly appeared earlier in the year than DUPONT'S unavailable name, but it is not certain whether DUPONT only cited RÜHL'S *groenlandica* or whether he cited the name from a label or an unpublished manuscript. However, this is without any consequence; DUPONT'S "groenlandica" is a *nomen nudum* because he didn't provide a description.
- <sup>28</sup> The name *Colias hecla* var. *pallida* [SKINNER], 1892 (1 March) is available, because there is no indication that the name was introduced in an infrasubspecific sense. Because the name was published before 1931, the illustration of the specimen (Ent. News 3(3) pl. II, fig.4) together with the new name on the plate legend (without a description in words) makes the name available (ICZN Arts. 12.2.7 & 45.6.4).
- <sup>29</sup> The name *pallida* SKINNER & MENGEL, 1892 (April) is not available as it was published as "*Colias hecla pallida* n. var. ♀". The description clearly indicates that they described only the white female form, thus the name is infrasubspecific and unavailable. SKINNER & MENGEL (1892) possessed a series of *C. hecla* from the West Coast of Greenland which included only one white female as well as orange females. They stated "Mr. T.D.A. Cockerell has suggested that all these forms of the female in different species be called *pallida*, and we think the suggestion a good one."
- <sup>30</sup> HEMMING (1934) introduced the name "palamedes" for the unavailable name "*Colias hecla* [var.] *pallida* SKINNER & MENGEL, 1892" (April) in the mistaken assumption that the name was available. He didn't introduce the name for the available name *pallida* SKINNER, 1892 (1 March). HEMMING'S treatment didn't make it available as a subspecies because he didn't give a description or a reason for considering it to be subspecific, thus his "palamedes" is unavailable. All other "pallida" names are unavailable, so SKINNER'S name *pallida* from 1892 is the only available one and a replacement name is not necessary.
- <sup>31</sup> Provisionally considered to be a *nomen nudum*. Perhaps an earlier work of NORDSTRÖM'S exists where the name was made available.
- <sup>32</sup> MÉNÉTRIÉS'S work with the description of *C. viluensis* was published three times in 1858 and 1859. All three publications seem to be identical, but in SCHRENK'S (1859) "Reise und Forschungen im Amur-Land" the name was spelled "viluensis". This work is well-known, but the other two, where the name was published as *viluensis*, are rare publications. For this reason every subsequent author mistakenly spelled the name as "viluensis". However, the name was first published in 1858 as *viluensis*; "viluensis" is a subsequent misspelling because there is no proof that the spelling *viluensis* is a lapsus calami.
- <sup>33</sup> The original description is not known to the authors, for this reason the name is provisionally added as a JSS to this list. KISHIDA & NAKAMURA (1936) published in Entomological World 4(29/31): 433-645, their "Catalogue of Japanese Insects, Fasc. 9 Lepidoptera". In this work they mentioned the name *benimonki* as having appeared in *Lansania* 7(62): 32 (1935).
- <sup>34</sup> STAUDINGER'S description of *decolorata* is rather confusing, but the sense of the text indicates that he described an infrasubspecific variation or aberration of nominotypical *Colias heos*. He stated that he doubted whether *decolorata* flies everywhere in "Apfelgebirge [Jablonovyi Mts.]" (together with the common form) or whether this form flies there every year. The material from which STAUDINGER described *decolorata* is deposited in his collection in MNHU (Berlin). The series from the Jablonovyi Mts. clearly shows that *decolorata* is nothing more than the pale male form that flies together with the common red form. RÖBER (1907) and FORSTER (1972) considered *decolorata* as a subspecies of *C. heos*, thus the authorship reverts back to STAUDINGER as he used the term "ab." and the term "var." (ICZN Art. 45.6.4.1).

- <sup>35</sup> The name *laurentina* SCUDDER, 1876 was applied to the white female form of *C. pelidne*, therefore it is unavailable from its original publication. Some subsequent authors considered it to be an available subspecies; the authorship reverts back to SCUDDER because he described the name as an infraspecific variety (ICZN Art. 45.6.4.1).
- <sup>36</sup> The names *Colias shipkee* MOORE, 1865 and *Colias ladakensis* FELDER & FELDER, 1865 were published in the same year. It is not known which name was published first, and thus which one has priority. In agreement with most earlier authors the name *ladakensis* is accepted here as the valid name for the species. However, this can be only provisional, because the priority of *ladakensis* can be only ruled on by the ICZN. [Apparently, *shipkee* was published in October, whereas *ladakensis* appeared after October].
- <sup>37</sup> Status uncertain; possibly a subspecies of *C. weberbaueri*. The taxa *C. weberbaueri* and *C. mossi* are considered to be subspecies of *C. flaveola* by one of us (GL).
- <sup>38</sup> There is a lot of material in collections from the Qinghai Nanshan (e.g. Caka and Heimahe) under the name *niveata*, but such specimens are in reality identical with the type material of *richthofeni*, not with *niveata*.
- <sup>39</sup> The taxon *baffinensis* is possibly an ecological form of *chippewa*, thus a junior synonym. The few specimens that were available to us do not permit a final conclusion to be made.
- <sup>40</sup> The taxon is provisionally accepted as a species, but the possibility that it is a subspecies of *C. erate* cannot be excluded. *C. poliographus* is a very variable butterfly which is fairly migratory. This huge variation caused BUTLER (1866 & 1881) to describe three "new species". In the northern part of its distribution the spring generation is small and greenish-yellow, whereas the summer generation is much larger and bright yellow. At the southern end of the distribution very large specimens can be found. A colder climate in the northern part of its distribution and at high altitudes results in smaller green-yellowish specimens in the 1<sup>st</sup> and 3<sup>rd</sup> generations, whereas a warm climate causes fairly large specimens. Examination of very large series clearly shows that there is no subspecific differentiation. No distinctions were found between the populations of the mainland and the islands (Taiwan, Japan, Sakhalin, Kuriles). Furthermore there is no real barrier between the mainland and the islands for a migratory species. The distances between the mainland and Sakhalin or Taiwan, or between Sakhalin, the Kuriles and Japan is not too far for such a butterfly to cross.
- <sup>41</sup> The name "connexa" ITOGA, 1933 was mentioned by KUROSOVA & OMOTO (1954). The original description, is unknown to us.
- <sup>42</sup> The original description is unknown to us. In a subsequent work, KISHIDA & NAKAMURA (1939) stated that the description was first published in 1933 in the journal "Lansania, Vol. 5, No. 45, p. 67".
- <sup>43</sup> KORB (2006) considered the taxa *tamerlana* and *mongola* to be different species. Study of the type material of both taxa shows they are conspecific. The type locality of *mongola* as stated by KORB is incorrect. Recently collected material, and investigations by Sergei CHURKIN along the route from Ulan Bator to Uliastay, show that the type locality of *mongola* must be very close to Uliastay, as the new material is phenotypically identical to the type material. Specimens from further east are much larger and paler (*C. t. sidonia*). Furthermore, S. CHURKIN discovered in the southern Mongolian Altai specimens that are very close to the type series of *tamerlana* in STAUDINGER'S own collection and to specimens recently collected in the Karlik Shan. All this material contradicts KORB'S conclusions. It seems that there is a cline between the Altai (Russia, Mongolia, China), the eastern Changai Mts. (Mongolia) and the Karlik Shan (China), although the populations are now isolated by dry lowland areas. Each local population shows a few distinctions, but the differences are weakly defined, so it would not be surprising if molecular studies provide evidence for synonymising *mongola* and *tamerlana*.
- <sup>44</sup> Provisionally considered to be within the variation of the *C. thisoa nikolaevi* population group which is distributed in the Russian and Mongolian Altai. Specimens coloured like *C. thisoa cryptochrysa* are also known from typical *C. t. nikolaevi*.
- <sup>45</sup> HEMMING (1933) introduced the replacement name *ludmilla* for the unavailable name "*Colias melinos* [race] *chryseis* VERITY, 1911", on the assumption that the name was available but a homonym of [the also unavailable] "*Colias erate* [f.] *chryseis* RÖBER, 1907". The name *ludmilla* could be treated as available, because HEMMING (l.c.) may have regarded *ludmilla* as subspecific ("...is nearest to subspecies *deckerti* VERITY, 1908, but is yellowish in both sexes...").
- <sup>46</sup> The taxon *boothii* CURTIS, 1835 is considered to be a subspecies of *C. tyche*. Nominotypical *C. t. thula* from northwest Alaska are close to the Chukotkan *C. tyche kolosovae*. East of the type locality of *C. t.*

*thula* there is obviously a wide intermediate range between *boothii* and *thula*. It seems that most of the former *thula* populations merged with *boothii* when it dispersed to the north and north-west with the retreat of the ice shield after the last glacial period. It is quite possible that the taxon *canadensis* is also a subspecies of *C. tyche* which merged with *thula* and *boothii*, but the degree of speciation has not been investigated and needs further study.

<sup>47</sup> The only type specimen (holotype by monotypy) was examined. The status of the taxon *zemblica* is unclear. The possibility that it is an old relict of the *C. nastes* group that was isolated on Novaya Zemlya during the last glacial period cannot be excluded. A better informed decision about its status is not possible from the type specimen alone.

<sup>48</sup> The taxon *vauthierii* is considered to be a subspecies of *lesbia* by one of us (GL).

<sup>49</sup> The taxa *weberbaueri*, *blameyi* and *erika* are considered to be subspecies of *C. flaveola* by one of us (GL).

### Additional notes

#### Nomina collectiva

These are names for identical aberrations in various different *Colias* species. Because these names were not described under a specific taxon, they are excluded from the list of names. Furthermore such “ghost names” are clearly infrasubspecific, thus they have to be excluded from any species group (Art. 45.5). VERITY (1909 [1905-1911]) introduced the following nomina collectiva that were not attributed to any specific taxon: *aurantiacomaculata*, *aurantiacopunctata*, *aurantiacoinspersa*, *albomaculata*, *bimaculata*, *caerulea*, *circumiens*, *dentata*, *divisa*, *externodimidiata*, *flavomaculata*, *flavovelata*, *internodimidiata*, *intersecta*, *maculata*, *magnipunctata*, *marginata*, *micans*, *minor*, *nigromaculata*, *posterodimidiata*, *radiata*, *striata*, *tenuimarginata*

#### Taxa placed in another genus

The taxa *Colias chitralensis* MOORE, 1905, and *Colias zaneka* MOORE, 1865 belong in the genus *Gonepteryx*.

### Zusammenfassung

In dieser Arbeit werden sämtliche verfügbaren und nicht verfügbaren Namen der Gattung *Colias* (Lepidoptera: Pieridae) erstmals vollständig aufgelistet. Mit Ausnahme weniger Fälle wurden alle Originalbeschreibungen hinsichtlich des nomenklatorischen Status jedes einzelnen Namens überprüft. Basierend auf Studien von Kollegen und eigenen umfangreichen Untersuchungen wurde ein beträchtlicher Teil der verfügbaren Namen in die Synonymie verwiesen, wenngleich die Synonymisierung diverser Namen letztendlich nur provisorisch sein kann, weil abschließende Beweise mangels weiterführender Studien fehlen.

### Acknowledgements

Special thanks are due to our friend Bob WORTHY (Surrey, England) for his useful comments, especially on the North American *Colias* species, and assistance with the English language.

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Autor(en)/Author(s): Grieshuber Josef, Lamas Gerardo

Artikel/Article: [A Synonymic List of the Genus Colias FABRICIUS, 1807 \(Lepidoptera: Pieridae\). 131-171](#)