**Distinguishing Boloria by size**

Identifying fritillaries* in Europe is difficult due to there being over 40 superficially similar species. As a starting point they are usually roughly divided by size into: 'large' fritillaries [Argynnins, Fabriciana, Speyeria], 'medium-sized' fritillaries [Brenthis, Issoria], and 'small' fritillaries [Boloria, Euphydryas, Melitaea]. The eleven large and medium sized are described in a separate guide. Future guides will cover the other small fritillaries, i.e. Euphydryas and Melitaea.

Estimating size is a useful way to begin the identification process. Argynnins, Fabriciana and Speyeria species, for example, are usually noticeably larger (see diagram opposite), whilst the medium sized Brenthis and Issoria species are intermediates with Brenthis daphne sometimes similar in size to the large species and Brenthis ino and Brenthis hecate comparable to the 'small' fritillaries.

**Distinguishing Boloria from the other ‘small’ fritillaries**

To help separate the 15 Boloria species from the other ‘small’ fritillaries we can compare the general appearance of their uppersides. From the photos opposite it is noticeable that Euphydryas and Melitaea species usually have uppersides resembling a grid or net-like pattern, whereas Boloria species have an open pattern of marks and rounded spots. Also, Euphydryas tend to be more colourful and Melitaea duller than Boloria. Most are therefore unlikely to be confused with any of the species in this guide. See page 5 for more guidance.

*This is an arbitrary grouping, see note on page 6.

**Distinguishing Boloria from the ‘large’ and ‘medium-sized’ fritillaries**

Boloria are usually noticeably smaller than all the ‘large’ fritillaries making identification relatively straightforward. However, the ‘medium-sized’ fritillaries, Brenthis and Issoria, can be a similar size to Boloria. Use the guidance below to help identify Boloria.

A detailed comparison of the underside hind-wing will readily distinguish Boloria from the four ‘medium-sized’ fritillaries. Most Boloria have some distinct white marks whilst the Brenthis species have none. Issoria lathonia has silver marks but these are unmistakeably large and bright. See the comparison photos below.

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*A comparison of approximate average sizes*

**LARGE**
- Argynnins, Fabriciana, Speyeria

**MEDIUM**
- Brenthis, Issoria

**SMALL**
- Boloria, Euphydryas, Melitaea

* if this page is displayed or printed at A4 size

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**Upperside**

Boloria species have similar uppersides to the ‘large’ and ‘medium-sized’ fritillaries, all having an open pattern of marks and rounded spots.

To differentiate look for:

**A prominent round black spot here.** This is distinctive and found on the species of Boloria that are fairly widespread in Europe. This spot is not present on all the ‘large’ and ‘medium-sized’ fritillaries.

*Note: This spot is also not visible on most of the more localised Boloria species found in northern Europe or mountainous habitats in central Europe.

The wavy black marks inside this area called the ‘cell’ are reasonably consistent on the ‘large’ and ‘medium-sized’ fritillaries. This photo of Brenthis ino illustrates the usual appearance of these markings.

On Boloria species the markings inside the ‘cell’ are very variable. If present, they are usually noticeably different, being either thicker, more incomplete or less sinuous. See Boloria selene upperside photo above left.

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**Underside**

Boloria euphrosyne

Boloria selene
To simplify the identification process the fifteen fritillaries in this guide are divided into four groups: A B C D, according to their distribution, as shown below. Identification proceeds by looking at each group in turn until you find your butterfly.

**Group A**

1. Pearl-bordered Fritillary [*Boloria euphrosyne*]
2. Small Pearl-bordered Fritillary [*Boloria selene*]
3. Weaver’s Fritillary [*Boloria dia*]

The MALE & FEMALE uppersides of both species have similar markings which are variable. Differentiate by:

- **Shape of these markings** bordering all wings. Best seen on the hind-wings.
  - flat edges
  - inward pointing edges

**MALE & FEMALE underside hind-wing displays the main diagnostic features of these two species. Differentiate by:**

- **Number of white marks** in this area of wing
  - Two marks
  - Several marks

- **Colour of spots** in curved row from a to b
  - Usually reddish with at least one spot having a pale centre
  - Usually solid black

A white patch here distinguishes *selene* from *euphrosyne*.

**MALE & FEMALE upperside markings** noticeably bold, especially bigger and rounder spots here on the hindwing.

**Group B**

1. Titania’s Fritillary
2. Cranberry Fritillary
3. Bog Fritillary
4. Mountain Fritillary
5. Shepherd’s Fritillary
6. Thor’s Fritillary
7. Balkan Fritillary

Scattered colonies across Europe

Sea level to 2000m

**Group C**

1. Freija’s Fritillary
2. Frigga’s Fritillary
3. Arctic Fritillary
4. Polar Fritillary
5. Dusky-winged Fritillary

Scattered colonies in European mountains

Sea level to 1500-2200m

800-3000m

**Group D**

1. Titania’s Fritillary
2. Cranberry Fritillary
3. Bog Fritillary
4. Mountain Fritillary
5. Shepherd’s Fritillary
6. Thor’s Fritillary
7. Balkan Fritillary
8. Freija’s Fritillary
9. Frigga’s Fritillary
10. Arctic Fritillary
11. Polar Fritillary
12. Dusky-winged Fritillary

Fennoscandia and Baltic States only

**Note:** In northern areas both species have darker upperside markings and duller undersides.
This group includes the more local species found from sea level to c.1500-2000m. Use the references to compare your butterfly with Groups A and C, noting that [i] only Titania’s Fritillary has the upperside black spots characteristic of all in Group A, [ii] all in Group C are only found above 800m. If you cannot identify your butterfly in groups A and B and if it was found above 800m then continue to Group C. Otherwise, see page 5 for notes on similar species or if your butterfly was found in Fennoscandia and Baltic States go to Group D.

4. Titania’s Fritillary [Boloria titania]

Upperside is similar to dia in Group A, but titania is usually larger.
Wing edges are normally darker than dia.

The prominent black spots here can sometimes be obscured.

MALE & FEMALE underside hind-wing displays main diagnostic features

This spot is black.
Sometimes with a white outline.
Compare with 3 and 5

This mark shaped like an elongated X
Compare with 3

Usually a conspicuous dark zig-zag line from a to b
Compare with 3 and 5

Distribution

Titania flies in Massif Central, south-western Central Alps, Baltic States.

4a. subspecies cypris

Males and females of this subspecies usually have brighter uppersides with bolder markings than titania.

Underside is noticeably different. Cypris is duller with a tinge of violet, sometimes obscuring many of the pale markings.

Cypris flies in Central Alps and eastwards.

5. Cranberry Fritillary [Boloria aquilonaris]

Similar to napaea and pales in Group C but unlikely to be confused as aquilonaris frequents bogs and wet heaths where its foodplant Cranberry [Vaccinium oxyccocos] grows, usually close to standing water. Such areas are rarely found in the high altitude habitat of napaea and pales.

No prominent black spot visible here on male or female. Compare 1, 2, 3 and 4

These marks, like opposing arrowheads, are usually bold and clear compared to 7, 8, 8a where they may appear less distinct. Frequently the arrowheads become linked by a dark line. Also compare 6.

MALE & FEMALE underside hind-wing is distinctive

Complete row of consistently coloured spots from a to b Compare 9

Unlike all other species in this guide the underside hind-wing has a complete row of spots with pale centres and dark outlines.

6. Bog Fritillary [Boloria eunomia]

Male upperside is usually brighter with more delicate markings than other Boloria. Female is duller with bolder, darker markings.

No prominent black spot here on male or female. Compare 1, 2, 3, 4

This mark pointing outwards is distinctive.
Compare 5, 7, 8, 8a

Complete row of consistently coloured spots from a to b

Unlikely all other species in this guide the underside hind-wing has a complete row of spots with pale centres and dark outlines.

6a. subspecies ossiana

Flies in Fennoscandia, Baltic States, and northeastern Poland.

Ossiana is usually smaller with heavier upperside markings.

Majority of marks on underside hind-wing are white rather than pale yellow as in eunomia above.
This group includes more local species only found above 800m. A close comparison of the underside hind-wings will differentiate from species in Groups A and B. Also, note that none of this group have the upperside black spots seen on 1, 2, 3, and 4. Finally, if unable to identify your butterfly and it was found in Fennoscandia/Baltic States then go to Group D. Otherwise, see page 5 for similar species.

### 7. Mountain Fritillary [Boloria napaea]

These two species often fly together in alpine grassland, usually above 1500m*, in geographically and genetically isolated groups which frequently display different characteristics. They can be difficult to separate, often only identifiable by examining genitalia**. Although not always present, the points below should help in identification.

- **Distribution**
  - [See page 6 for maps]
  - Napaea and pales have a limited overlap in the Central Alps; both being found locally north of the Rhone Valley in Switzerland and in the Hohe Tauern in Austria. Pales is gradually replaced by subspecies palustris in most of the southern and western Central Alps, west of the Brenner Pass.

- **Upperside markings on male**
  - usually weak and linear
  - away from vein junction a

- **Usual position of this mark on male and female**
  - close to vein junction a
  - Alignment of this row of spots on male and female
  - sometimes noticeably disjointed

- **Sheen on female**
  - no suffusion or sheen

- **Normal hind-wing**
  - A dark suffusion with a greenish or violet sheen easily distinguishes from pales and palustris females.

- **8a. subspecies palustris**
  - Main difference is male markings are not normally as heavy as pales and more similar to napaea.

- **Pales and palustris usually have:**
  - [i] weak markings on fore-wing
  - [ii] a small white spot here

- **Hind-wing colouring**
  - Dull with sandy red giving low contrast
  - Napaea, pales and palustris usually have:

- **MALE & FEMALE underside**
  - Hind-wing bright with dark red giving high contrast

- **Napaea, pales and palustris usually have:**
  - [i] a small white spot here
  - Compare 1 and 2
  - [ii] weak markings on fore-wing
  - Compare 5

### 8. Shepherd’s Fritillary [Boloria pales]

- **8a. subspecies palustris**
  - Main difference is male markings are not normally as heavy as pales and more similar to napaea.

- **Pales and palustris usually have:**
  - [i] weak markings on fore-wing
  - [ii] a small white spot here

- **Hind-wing colouring**
  - Dull with sandy red giving low contrast

- **MALE & FEMALE underside**
  - Hind-wing bright with dark red giving high contrast

- **Napaea, pales and palustris usually have:**
  - [i] a small white spot here
  - Compare 1 and 2
  - [ii] weak markings on fore-wing
  - Compare 5

### 9. Thor’s Fritillary [Boloria thore]

- **Male and female have similar upper and undersides. Female is larger than male.**

- **Underside hind-wing**
  - Dark upperwing very distinctive with large, heavy markings that tend to merge.

- **9a. subspecies borealis**
  - Borealis flies in western and northern Fennoscandia.

- **Upperside markings**
  - Usually brighter, than thore with underside paler

### 10. Balkan Fritillary [Boloria graeca]

- **Main distribution is in Balkan Mountains [see page 6]. However, graeca also flies with 7 and 8a in southwestern Central Alps.**

- **Male and female have similarly marked upper and undersides.**

- **This mark is positioned well inward, often beyond vein junction a**

- **Upperside markings normally bolder and heavier than 7 and 8a**

- **All spots from a to b usually have some semblance of a pale centre.**

- **Compare 7, 8a**

- **8b. subspecies pyrenesmiscens**

- **A greenish underside hind-wing is typical of females.**

- **Compare 7, 8a**

### Notes

- * Napaea is found at sea level in Fennoscandia.
- ** See page 6 for link to guidance notes.
This group includes the five species **ONLY FOUND in Fennoscandia and the Baltic States**. A detailed comparison of the underside hind-wing of any of this group with the other *Boloria* which fly in this area, i.e. 1, 2, 4, 5, 6a, 7, 9a, should differentiate. Most species present in this part of Europe are usually found in sheltered woodland and bogs but 13, 14 and 15 are restricted to bleak, open Arctic regions where they might be found flying with 7 and 11.

11. Freija's Fritillary  
*<i>Boloria freija</i>*

- Male and female similarly marked
- Jagged marks along wing edges **Compare 12**
- Black zig-zag line here **Compare 4**
- These markings resemble a leaping fish **Compare 13, 14**

12. Frigga's Fritillary  
*<i>Boloria frigga</i>*

- Male and female similarly marked
- Smooth linear marks along wing edges. **Compare 11**

**Underside hind-wing unlike any other species in this Group.**

13. Arctic Fritillary  
*<i>Boloria chariclea</i>*

- Male and female similarly marked
- Smaller markings reveal more ground colour. **Compare 11, 12 and 14**

**Shape of this mark is distinctive.**  
**Compare 11 and 14**

14. Polar Fritillary  
*<i>Boloria polaris</i>*

- Male and female similarly marked
- Smooth marks along wing edges. **Compare 11**

**This mark is a bold X shape**  
**Compare 11, 13**

**Two white spots in this area.**  
**Compare 11, 13**

15. Dusky-winged Fritillary  
*<i>Boloria improba</i>*

- Easily identified as both male and female have upper and undersides which are much dusker than all other species in this guide.
- They are also noticeably smaller and only fly in Arctic Fennoscandia.

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**Distinguishing the species in this guide from the other ‘small’ fritillaries, i.e. Euphydryas and Melitaea.**

**Upperside**

As illustrated on page 1 the upperside of *Melitaea* and *Euphydryas* species have a distinctive net-like pattern of markings which is quite different from all species in this guide. Three *Melitaea* species that might possibly cause confusion are shown below, i.e. *aetherie*, *didyma*, and *trivia*. A detailed comparison should identify.

**Underside hind-wing**

On most *Euphydryas* and *Melitaea* the area of the underside hind-wing ringed in white on the photos below, usually contains a pattern of pale markings quite different from any of the species in this guide. A close comparison should readily distinguish.
Distribution Maps

Up to 1950  1951 - 1980! After 1980

Group A
- Pearl-bordered Fritillary
- Small Pearl-bordered Fritillary
- Weaver's Fritillary

Group B
- Titania's Fritillary
- Cranberry Fritillary
- Bog Fritillary

Group C
- Mountain Fritillary
- Shepherd's Fritillary
- Thor's Fritillary
- Balkan Fritillary

Group D
- Freija's Fritillary
- Frigga's Fritillary
- Arctic Fritillary
- Polar Fritillary
- Dusky-winged Fritillary

The distribution maps are reproduced by kind permission of LepiDiv. For more information please visit LepiDiv

Fritillaries: It should be noted that 'fritillaries' is an arbitrary English term embracing over forty similar looking species from two different subfamilies: Heliconiinae and Nymphalinae.

For more information on all aspects of European butterflies please go to european-butterflies.org.uk including: The other Identification Guides in this series. Free to download at EBG Identification Guides Guidance notes on identification by study of genitalia. See page 11 of EBG Newsletter No 7

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