**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 [Argynnis, 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. Argynnis, 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 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.

  **Underside**

  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.

  - **Boloria selene**
  - **Boloria euphrosyne**
  - **Boloria dia**
  - **Boloria dia**

* if this page is displayed or printed at A4 size
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.

**Distribution**
- **See maps on page 6**

**Altitude**
- **Sea level to 2000m**
- **Sea level to 1500-2200m**
- **800-3000m**

**Group A**
First, check if your butterfly is in this group. If you can see prominent black spots here then it is either one of the three widespread species below or Titania's Fritillary on next page. Continue to Group B if you cannot identify your butterfly in this group.

1. **Pearl-bordered Fritillary [Boloria euphrosyne]**
   - Upperside markings of both species have similar markings which are variable. Differentiate by:
     - **Shape of these markings**
     - **flat edges**
     - **inward pointing edges**
   - **Note:** Some females can have paler coloured markings at the wing edges. Occasionally, almost white.
   - **MALE & FEMALE underside hind-wing displays the main diagnostic features of these two species. Differentiate by:**
     - **Number of white marks**
     - **Two marks**
     - **Several marks**
   - **Colour of spots**
     - **Usually reddish with at least one spot having a pale centre**
     - **Usually solid black**
   - **A white patch here distinguishes selene from euphrosyne.***

2. **Small Pearl-bordered Fritillary [Boloria selene]**
   - Male and female markings variable but usually darker than 1 and 2.
   - **Apex of hind-wing is usually sharply angled**
   - **Compare 1 and 2**

3. **Weaver's Fritillary [Boloria dia]**
   - Upperside markings noticeably bold, especially bigger and rounder spots here on the hindwing.
   - **Male and female markings variable but usually darker than 1 and 2.**
   - **MALE & FEMALE underside hind-wing displays main diagnostic features**
   - **Violet colouring in this area**
   - **Compare 1, 2**
   - **Shape of this white mark is distinctive and unique.**
   - **Compare 1 and 2**

4. **Titania’s Fritillary**
   - Scattered colonies across Europe
   - **Reasonably common and widespread in Europe**
   - **Sea level to 1500-2200m**
   - **Scattered colonies**
   - **800-3000m**

**Group B**

**Group C**

**Group D**

Note: In northern areas both species have darker upperside markings and duller undersides.
**Group B**

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 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]**

- **Distribution**: Titania flies in Massif Central, south-western Central Alps, Baltic States.
- **Underside is noticeably different**. Cypris is duller with a tinge of violet, sometimes obscuring many of the pale markings.

**5. Cranberry Fritillary [Boloria aquilonaris]**

- **Similar to napaea and pales in Group C but unlike to be confused as aquilonaris** frequents bogs and wet heaths where its foodplant Cranberry [Vaccinium oxycoccos] grows, usually close to standing water. Such areas are rarely found in the high altitude habitat of napaea and pales.
- **Male & Female underside hind-wing displays main diagnostic features**
- **MALE & FEMALE underside**

**6. Bog Fritillary [Boloria eunomia]**

- **Flies in Fennoscandia, Baltic States, and northeastern Poland.**
- **Ossiana is usually smaller with heavier upperside markings.**
- **MALE & FEMALE underside hind-wing**

**4a. subspecies cypris**

- **Males and females of this subspecies usually have brighter uppersides with bolder markings than titania.**
- **Distribution**: Cypris flies in Central Alps and eastwards.

**6a. subspecies ossiana**

- **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.

### Group C

<table>
<thead>
<tr>
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<tr>
<td>These two species often fly together in alpine grassland, usually above 1500m*, in geographically and genetically isolated groups which frequently display different characteristics. <strong>They can be difficult to separate, often only identifiable by examining genitalia</strong> ** Although not always present, the points below should help in identification.</td>
<td>Usually bold and heavy</td>
<td>Male and female have similar upper and undersides. Female is larger than male.</td>
</tr>
<tr>
<td><strong>Distribution</strong> [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.</td>
<td>Upperside markings on male</td>
<td>Dark upperside very distinctive with large, heavy markings that tend to merge.</td>
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<td>Usually weak and linear</td>
<td>Close to vein junction a</td>
<td>Underside hind-wing has a distinctive band of dull yellow marks from a to b</td>
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<tr>
<td>Away from vein junction a</td>
<td>Alignment of this row of spots on male and female</td>
<td>Borealis flies in western and northern Fennoscandia.</td>
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<td>Usually roughly in line</td>
<td>Sometimes noticeably disjointed</td>
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<td>Normally a violet sheen</td>
<td>Sheen on female</td>
<td>9a. subspecies borealis</td>
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<tr>
<td><strong>7a. subspecies pyreneorientalis</strong></td>
<td><strong>8a. subspecies palustris</strong></td>
<td>Male and female have similarly marked upper and undersides.</td>
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<tr>
<td>Dull with sandy red giving low contrast</td>
<td>A dark suffusion with a greenish or violet sheen easily distinguishes from pales and palustris females.</td>
<td>This mark is positioned well inward, often beyond vein junction a</td>
</tr>
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<td>Hind-wing colouring</td>
<td>Napaea, pales and palustris usually have:</td>
<td>Upperside markings normally bolder and heavier than 7 and 8a</td>
</tr>
<tr>
<td></td>
<td>[i] a small white spot here</td>
<td>All spots from a to b usually have some semblance of a pale centre.</td>
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<td></td>
<td>[ii] weak markings on fore-wing</td>
<td><strong>8b. subspecies pyrenesmiscens</strong></td>
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<td>Male &amp; female underside</td>
<td></td>
<td>A greenish underside hind-wing is typical of females.</td>
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<tr>
<td></td>
<td></td>
<td>Greenish marbling here is distinctive. Compare 7, 8a</td>
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<tr>
<td>Napaea, pales and palustris usually have:</td>
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* 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.

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.
Guide designed by Bill Raymond.

With special thanks for information and photographs to Bernard Watts from www.butterflyeurope.co.uk.

Also, thanks for photographs to: Matt Rowlings from eurobutterflies.com, Roger Gibbons from butterliesoffrance.com, Vincent Baudraz from lepido.ch, and Nick Greatorex-Davies from bulgarialeps.com.

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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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Distribution Maps

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

Up to 1950
1951 - 1980
After 1980