

Colour variation in the Meadow Grasshopper *Chorthippus parallelus* (Zetterstedt 1821) in Worcestershire.

Gary Farmer

The Meadow Grasshopper *Chorthippus parallelus* is a very common species in Worcestershire and one of the easiest to identify, as the females have shortened wings. It is also a variable species with six varieties being recognised (Ragge 1965). I had certainly noticed variation within the species but had never recognised these as distinguishable varieties. However, I had recently started looking at this in Worcestershire in more detail as a brown form has become quite common in the county in recent years. I had seen this form in Dorset for many years but not in Worcestershire until the first decade of the 2000s (the same period that many invertebrates have moved into the county, possibly as a result of climate change).

The female Meadow Grasshopper shows more marked variation than the male in this species and Ragge includes a key (reproduced below) for the following recognised varieties: 'purple' 'brown' 'green' 'green brown legs' 'green brown sides' and 'dorsal stripe' ('Dorsal stripe' indicates that the whole dorsal surface is brown or purple or pink.). These varieties are noted in *Grasshoppers and Crickets* by Ted Benton (Benton 2012) who also describes the uncommon long-winged form *f. explicates* (Selys). This variation is further complicated by the fact that other than var. 'brown' and

'green' the brown in the description can be brown, grey, black, pink or reddish (01 to 07).

I have found five of the six recognised varieties in Worcestershire (and different colour forms of some of these) but the fully purple/pink variety has so far eluded me in the county although I have found it in Somerset. So, is this variety another responding to the changing climate and is it heading our way, or does it already exist in Worcestershire?

I have also found two different varieties of long-winged form of the female Meadow Grasshopper in Worcestershire (08, 09) which causes some confusion with identification of the Lesser Marsh Grasshopper *Chorthippus albomarginatus* (De Geer, 1773) (11) although the pronotum detail and brighter colours of Meadow Grasshopper make separation possible. However, with the increase in Meadow Grasshopper var. 'brown' in the county it will not be long before long-winged forms of this variety appear which will complicate identification further between the two species.

Male or female?

Splitting male and female Meadow Grasshoppers is fairly straight forward as males have longer wings, longer antennae and are smaller in size. If in doubt, examination of the rear end of the abdomen is necessary. Males have a rounded, slightly bulbous end which tends to turn slightly upwards while females have a tapering abdomen with a pair of ovipositor valves which project slightly from the end (10). Note, the length and diameter of the female abdomen varies before and shortly after egg laying when it can be extended.

Key to the colour varieties of Meadow Grasshopper (Ragge 1965, page 202)

- | | |
|--|--------------------------------|
| 1. <u>Head and pronotum with no green</u> | <u>2</u> |
| <u>Head and pronotum green above or on the sides or both</u> | <u>3</u> |
| 2. <u>Head, pronotum and upper parts of hind femora and abdomen a bright reddish colour (females only)</u> | var. 'purple' (01). |
| <u>These part brown, grey or blackish, occasionally with a slight reddish tinge or pink mottling</u> | var. 'brown' (02). |
| 3. <u>Head and pronotum entirely green</u> | <u>4</u> |
| <u>Parts of the head and pronotum grey, brown, pink or reddish</u> | <u>5</u> |
| 4. <u>Hind femora green above</u> | var. 'green' (03). |
| <u>Hind femora grey, brown, pink or reddish above</u> | var. 'green brown legs' (04). |
| 5. <u>Head and pronotum grey, brown, pink or reddish above, with green sides</u> | var. 'dorsal stripe' (05, 07). |
| <u>Head and pronotum green above, with grey, brown, pink or reddish sides</u> | var. 'green brown sides' (06). |



01. *Chorthippus parallelus* var. purple juvenile. Somerset



02. *Chorthippus parallelus* var. brown.



03. *Chorthippus parallelus* var. green.



04. *Chorthippus parallelus* var. green brown legs.



05. *Chorthippus parallelus* var. dorsal stripe.



06. *Chorthippus parallelus* var. green brown sides.



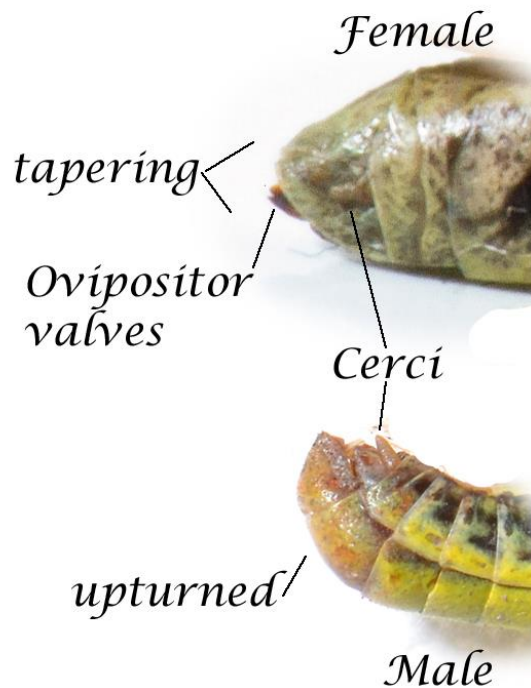
07. *Chorthippus parallelus* var. dorsal stripe pink form.



08. *Chorthippus parallelus* long winged var. green



09. *Chorthippus parallelus* long winged var. dorsal stripe



10. Meadow grasshoppers *Chorthippus parallelus* abdomen tips.



11. Lesser Marsh Grasshopper *Chorthippus albomarginatus* female mottled form.

Images

01. *Chorthippus parallelus* var. purple juvenile. Somerset.
02. *Chorthippus parallelus* var. brown.
03. *Chorthippus parallelus* var. green.
04. *Chorthippus parallelus* var. green brown legs.
05. *Chorthippus parallelus* var. dorsal stripe.
06. *Chorthippus parallelus* var. green brown sides.
07. *Chorthippus parallelus* var. dorsal stripe pink form.
08. *Chorthippus parallelus* long winged var. green.
09. *Chorthippus parallelus* long winged var. dorsal stripe.
10. Meadow grasshoppers *Chorthippus parallelus* abdomen tips.
11. Lesser Marsh Grasshopper *Chorthippus albomarginatus* female mottled form.

References

- Ragge, D.R. 1965. *Grasshoppers, crickets and cockroaches of the British Isles* Wayside and woodland series. Frederick Warne & Co. Ltd, London
- Benton, T. 2012. *Grasshoppers and crickets*. The New Naturalist Library 120. Harper Collins, London.