

Provisional key to the British *Ranunculus* stem miners (including *P. caulinaris* [excluded from the British list])

1. Whole mine under epidermis of stem2
 - Mine initially under epidermis of stem, soon becoming internal or wholly internal; pupariation within lumen of stem4
2. Pupariation within mine; posterior spiracles 3-branched[*Ophiomyia ranunculae*](#)
 - Pupariation external; reared imagines required.....3
3. Distiphallus with 5-8 coils, coiling upwards [see Coiling].....[*Phytomyza ranunculi*](#)
 - Distiphallus with 3 coils, coiling downwards [see Coiling].....[*Phytomyza caulinaris*](#)
4. Check by rearing imagines;
 - Imago with first and second antennal segments yellow, third segment black, 1 *ors* [if upper *ors* present, greatly reduced], 1 *ori*.....[*Phytomyza ranunculi*](#)
 - Imago otherwise.....5
5. Proboscis conspicuously elongate.....6
 - Proboscis short, normal, third antennal segment distinctly elongate.....[*Phytomyza nigritula*](#)
6. Wings conspicuously pale.....[*Phytomyza albipennis*](#)
 - Wings hyaline, normal.....7
7. Third antennal segment small, surstyli free, abnormally extended ventrally into a flap-like appendage[*Phytomyza evanescens*](#)
 - Third antennal segment larger, surstyli normal[*Phytomyza enigmoides*](#)

Coiling

Phytomyza caulinaris was originally described as a subspecies of *P. ranunculi* by Hering but was raised to full specific status in Spencer and Martinez (1987); this was done so without an analysis of function-morphology. At present, the key defining feature separating the two species is the coils and coiling of the distiphallus, which upon first glance, appears reasonable.

At rest, the coiling of the distiphallus lays horizontally within the abdominal cavity, whereas when outside the body, the coiled distiphallus, in its natural morphological position, is perpendicular; there is not enough space within the abdominal cavity to store the distiphallus perpendicularly.

The upward or downward coiling is not morphologically a true representation but is really caused by other factors: the lack of space within the abdominal cavity, or the dissection process, or the embedding in mounting medium placing forcible contortion upon the distiphallus. These factors result in the base of the long distiphallus turning 90° to the left or right, causing the coiling to be in an anti-clockwise or clockwise direction respectively (viewed from above on the horizontally orientated coils) and transformed to a downward direction if returned by 90° to the natural position or to an upwards direction if turned by 180° left or right.

Therefore, the upward or downward direction of the coiling is considered to be artificial, an incidental effect, which should not define a species. Also, natural variation may account for the number of coils present. The true status of these two species and others in the *ranunculi*-group may not be possible to determine without the results of barcoding from reared and fresh material kept under low temperatures in absolute ethanol.