



## **“Looking for Cowslips” - the instructions**



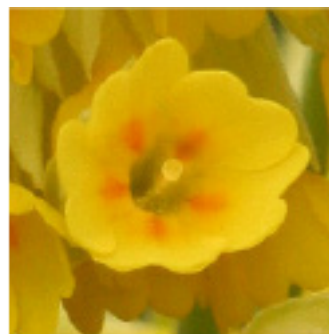
Cowslips Photo Kaarel Kaisel

### **How to tell the difference between the flowers?**

No prior knowledge of the cowslip is necessary; you just have to recognize the plant in the wild. The observation itself is easy and anybody can do it. You just need to take a peek on the flower of each observed individual and determine whether the individual bears flowers of S-morph or L-morph. In S-morphs, the anthers are externally visible. In L-morphs, only a tiny dot can be seen – that is the stigma. Don't worry if you cannot tell apart whether you are looking at the anthers or the stigma. Just move over to the next plant, which could be easier to determine. At first glance, it can be a bit difficult to tell apart the anthers and the stigma. However, the more flowers you look at, the easier it gets.



S-type



L-type

## Conducting the observation

You do not have to pick up the flower to determine the flower morph, it is sufficient to just look at the flower from above. Squat or bend over the plant and turn the flower in your direction. Make sure not to step on the plant so that the plants can remain in one piece and the observation does not harm nature. Observe 100 different plants as sparsely as possible across the entire area where cowslips are visible.

### Start like this:

Before embarking into nature, ensure that at least one of the search party participants has a smartphone with internet access. Should that be impossible, print out the observation form. When you go out and find a place where cowslips grow, open the cowslip website [www.cowslip.science](http://www.cowslip.science) and select 'Observe'. Keep in mind that we are studying cowslips growing in the natural and semi-natural environment, so do not carry out the observations with cowslips growing on flowerbeds in gardens. When possible, look for cowslips growing on grasslands and forest edges. Roadsides can also be a good place for doing the observation. Before submitting the results, take a comprehensive photograph of the surveyed area, which you can upload along with the questionnaire.

Having found a suitable place, begin filling out the questionnaire based on the questions posed. The smartphone will determine your location automatically (provided it has location information or GPS turned on). However, should that be impossible, you should determine your location on the cowslip map yourself. Try to assess how many cowslips there could be in the area. Can you see only a few specimens (up to a hundred), are there numerous plants (up to a few hundred), or is the entire area covered in cowslips (hundreds to thousands of plants)?

Start observing the flowers one by one. Look at the flower and write down whether the individual plant you are looking at has L-morphs or S-morphs. Remember your starting point and take a step further after every observed cowslip individual to avoid examining the same plant multiple times. Keep going until you have looked at 100 flowers. Should there not be that many plants in your study area, no need to worry, just add a comment to the questionnaire that there were no more plants. This information will help us a lot when doing the analysis.

When you are out with a few people, try to divide the area to be observed among yourselves. One person can begin in one corner, another in the other one, and before you begin, agree upon a line that either of you will not cross. For example, 'I'll be doing the survey left of this stone here, and you will survey on the right side'. When the survey party is large, then form smaller groups and divide the area among the groups. One person can stay to fill out the form, for example standing in the middle and writing the results down. The surveyors shout which type of flower (S-morph or L-morph) they just surveyed, and one person writes down the results of the entire group.



Looking for cowslips is fun. Photo Kaarel Kaisel



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