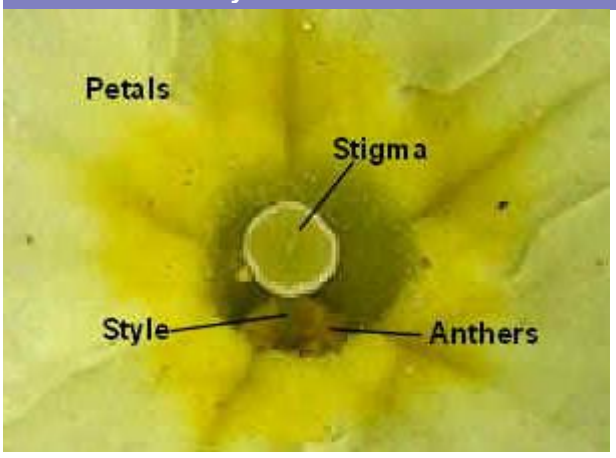
The Frequency of Pin and Thrum Plants in a Wild Cowslip (*Primula veris)* Population, Biddenham's Cowslip Meadow.

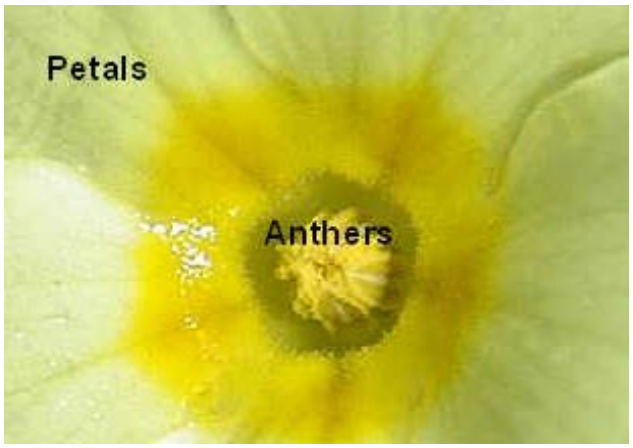
Introduction

Primroses show heterostyly, having two flower forms, *pin (Long)* and *thrum (Short)*. The stigma where pollen lands in pin plants is at the flower entrance on a long style, while the anthers are positioned midway down the floral tube. In thrum plants this anatomy is reversed.

Pin-eyed Primrose Flower

Thrum-eyed Primrose Flower





Background

The two flower types produce pollen incompatible to fertilise themselves, thus ensuring outbreeding and a stronger gene pool. Although pins can self-fertilise in some circumstances. There are some complexities to the physiology of the two types, and the gene control. UK distribution is also affected by regional climate.

A wild sample of 522 *Primula veris* plants collected by Charles Darwin (1877) contained 281 thrums and 241 pins. Many other surveys show the distribution is roughly equal, but typically they count slightly more pins than thrums. Darwin's results differ from that norm.

Brimstone butterflies (*Gonepteryx rhamni*), visiting a pin-eyed flower, gets pollen stuck to the middle of its proboscis from the anthers located half-way down the flower tube. If the Brimstone then visits a thrum-eyed flower, the pollen is positioned to be wiped off on the stigma, halfway down the flower tube. The reverse is also true for transferring pollen from thrum flowers to pins.

Method

We surveyed the plants in Cowslip Meadow on 25 April 2024 from 10.00 to 12.00hrs. The null hypothesis being that there will be an equal distribution of the two forms.

Volunteers examined closely flowering cowslip plants, marking how many of those are L- Pin style (long) and how many S-Thrum style (short). Recording the results in the table:

Our data will be shared with a European cowslip research team at the University of Tartu in Estonia.

Results

Count: **Number of L-Pin** **Number of S-Thrum**

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				Sum: 339						Sum: 370

Total plants 709 surveyed; of these plants 47.8% were pin and 52.2% were thrum.

Discussion

Our survey technique involved two groups picking a transect across the meadow, there was no attempt to standardise a random selection of plants, but it was nevertheless random. Surveyors in advance cannot be drawn more to one form as close inspection is needed to see the style and thus little risk of bias. 709 plants is a reasonable number and more than many surveys so this makers the data more reliable and less swayed by anomalies.

The results show we found more thrum plants (52.2%), the null hypothesis is not proved, but the results are fairly close to an even split.