

Plant ID for beginners – a new method

Dr Richard Milne

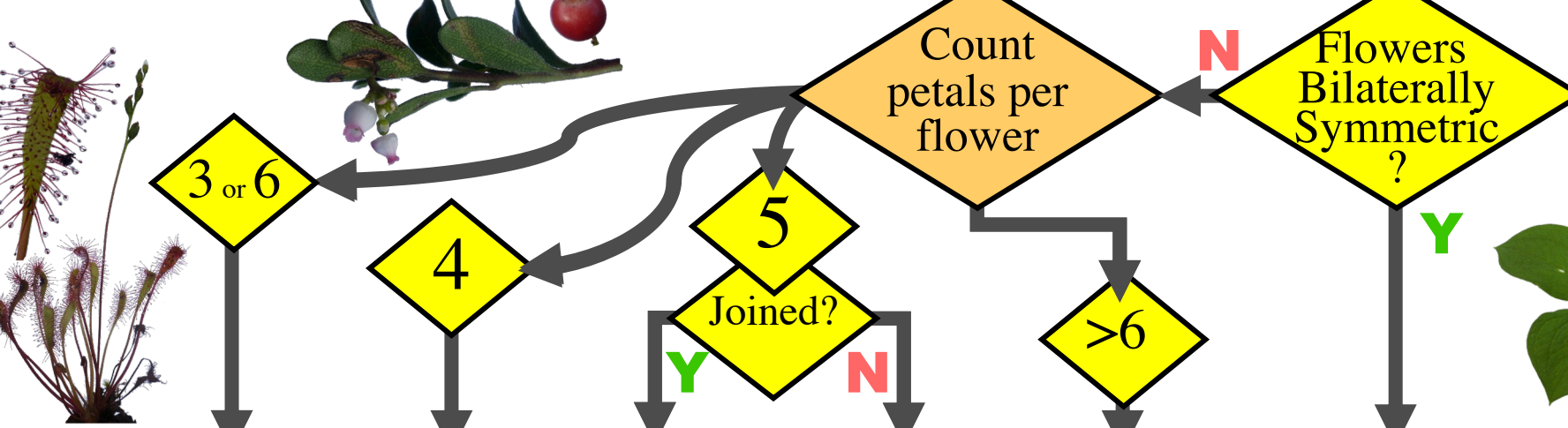
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How best do we start total beginners on the path to becoming good at plant ID? With ~1700 native species, over 500 common aliens and ~3000 more rare aliens, their task seems daunting. However, if they can correctly determine the family, the task immediately becomes more manageable, and the beginner may ID their plant by simply going through images in a book. But how are they to determine the method presented here, tested and refined over 15 years of classes with students and the public.

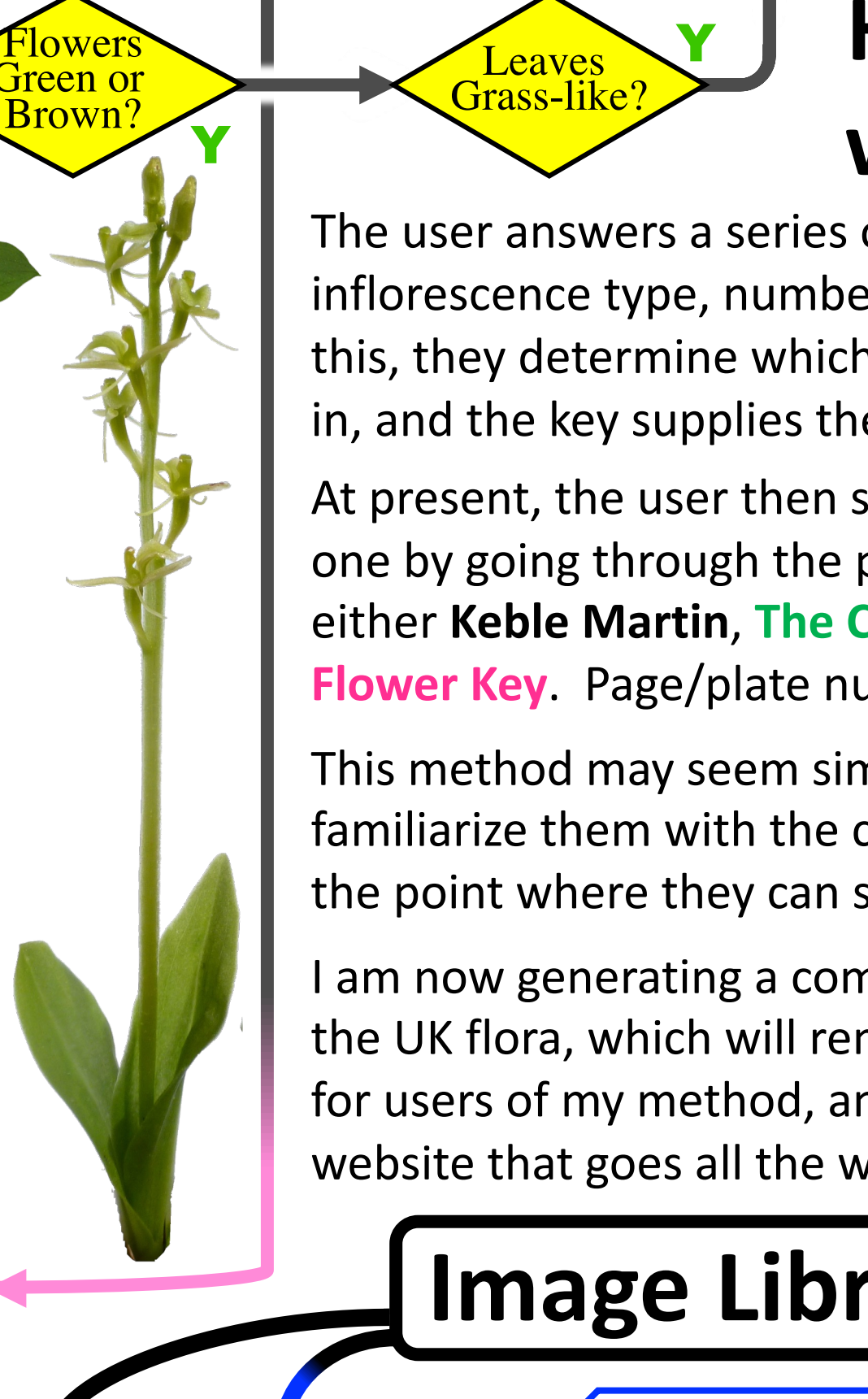


| Flower arrangement | Green/brown flowers. Often very small | Flowers not green or brown |
|---------------------|--|--|
| Single or pair | Araceae 88,34 Plantaginaceae 71,44 Caryophyllaceae 13-16, 136, 137 Liliaceae 86,646-60, 60,517 Euphorbiaceae 75,316, 308-9 | Bilateral symmetry Fabaceae 21-25, 274, 302 Caprifoliaceae 4,152-4, 494-4 Ericaceae 55,212-20, 209-21 Hippocastanaceae 56, 206 |
| In Leaf Axils | Urticaceae 76, 121-122 Caryophyllaceae 13-16, 136, 137 Callitricheae 34, 161-162 Viscaceae 75, 114 Rubiaceae 42, 446-50 | Radial symmetry White Rosaceae 26-31, 240-272, 291-292 Aquifoliaceae 20, 314-315 Caprifoliaceae 4, 152-4, 494-4 Rosaceae 26-31, 240-272, 291-292 Ericaceae 55, 212-20, 209-21 Hippocastanaceae 56, 206 Rosaceae 26-31, 240-272, 291-292 Ericaceae 55, 212-20, 209-21 Hydrangeaceae 56, 206 |
| Spike or Raceme | Plantaginaceae 71, 44 Urticaceae 76, 121-122 Caryophyllaceae 13-16, 136, 137 Resedaceae 11, 212 Euphorbiaceae 75, 316, 308-9 Urticaceae 76, 121-122 Cucurbitaceae 36, 174 Potamogetonaceae 89, 90-91 Scheuchzeriaceae 79, 90-91 | Yellow Hypericaceae 1, 75 Buddleiaceae 4, 8 Grossulariaceae 33, 228-229 Fabaceae 21-25, 274, 302 Cornaceae 4, 114-115 Rosaceae 26-31, 240-272, 291-292 Solanaceae 62, 65-66, 68-69 Tamaricaceae 17, 74 Thymelaeaceae 76, 306-307 Onagraceae 35, 306-307 Caprifoliaceae 4, 152-4, 494-4 |
| Umbel Complex group | Gramineae 95-97, 493-494 Cyperaceae 9, 14-15, 48-49, 494 Resedaceae 11, 212 Typhaceae 88, 642 Juncaceae 86, 737-46, 748-749 Orchidaceae 80-2, 222-223 Asteraceae 44, 54-55, 497-498 Potamogetonaceae 89, 90-91 Polygonoaceae 73-4, 140-52, 161-162 | Green/brown flowers Catkin Salicaceae 77-8, 114-115 Betulaceae 76-7, 109-128 Fagaceae 77-8, 114-115 Myricaceae 76, 307 Corylaceae 77, 109-128 Juglandaceae 56, 206 |
| Tight head | Plantaginaceae 71, 44 Saxifragaceae 32, 234-40 Asteraceae 44, 54-55, 497-498 Asteraceae 44, 54-55, 497-498 Cannabaceae 76, 96-97 | Flowers tiny (<2mm), mostly green Leaves all at stem base Zosteraceae 90, 532-4 Plantaginaceae 71, 44 Scrophulariaceae 62, 65-66, 68-69 Cruciferae 6-11, 160-210 Isoetesaceae (fern) Hydrocharitaceae 79, 305-306 Sparangiaceae 88, 300-301 Ceratophyllaceae 34, 72 Elatinaceae 11, 152-153 Cyperaceae 9, 14-15, 48-49, 494 Zannichelliaceae 90, 532-4 Ruppiceae/Najadaceae 90, 532-4 |
| | | Flowers big and/or white/coloured Nymphaeaceae 5, 272-273 Polygonoaceae 73-4, 140-52, 161-162 Crassulaceae 33, 228-229 Hydrocharitaceae 79, 305-306 Alismaceae 79, 116-117 Campulaceae 54, 217-218 Lentibulariaceae 66, 134-135 Ranunculaceae 1-4, 78-88, 101-102 Primulaceae 57, 212-201 Grossulariaceae 33, 228-229 Elaeagnaceae 33, 228-229 Buxaceae 41, 142 |

| Trees and Shrubs | | |
|------------------|--|---|
| | White | Pink/Purple |
| | Rosaceae 26-31, 240-272, 291-292 Aquifoliaceae 20, 314-315 Caprifoliaceae 4, 152-4, 494-4 Rosaceae 26-31, 240-272, 291-292 Ericaceae 55, 212-20, 209-21 Hippocastanaceae 56, 206 Rosaceae 26-31, 240-272, 291-292 Ericaceae 55, 212-20, 209-21 Hydrangeaceae 56, 206 | Rosaceae 26-31, 240-272, 291-292 Buddleiaceae 4, 8 Grossulariaceae 33, 228-229 Fabaceae 21-25, 274, 302 Cornaceae 4, 114-115 Rosaceae 26-31, 240-272, 291-292 Solanaceae 62, 65-66, 68-69 Tamaricaceae 17, 74 Thymelaeaceae 76, 306-307 Onagraceae 35, 306-307 Caprifoliaceae 4, 152-4, 494-4 |



| Flower arrangement | Radially symmetric flowers (not green or brown) | Bilateral flowers |
|--------------------|---|--|
| Single or pair | 3 or 6 petals Amaryllidaceae 83, 662-663 Liliaceae 84, 867-868 Iridaceae 84, 867-868 Hydrocharitaceae 79, 305-306 Alismaceae 79, 116-117 | 4 petals Papaveraceae 5, 90-91 Rosaceae 26-31, 240-272, 291-292 Onagraceae 35, 306-307 Rubiaceae 42, 446-50 Caryophyllaceae 13-16, 136, 137 Gentianaceae 58-9, 360-361 |
| In Leaf Axils | 5 joined petals Primulaceae 57, 822-823 Ericaceae 55, 212-20, 209-21 Convolvulaceae 61, 368 Campanulaceae 54, 217-218 Convolvulaceae 61, 368 Apocynaceae 58, 369-370 Menthanaceae 59, 371 | 5 free petals Ranunculaceae 1-4, 78-88, 101-102 Rosaceae 26-31, 240-272, 291-292 Geraniaceae 19-20, 336-337 Caryophyllaceae 13-16, 136, 137 Hypericaceae 1, 75 Oxalidaceae 20, 328-329 Saxifragaceae 32, 234-40 Parnassiaceae 32, 234-40 Malvaceae 18, 161-172 Lythraceae 34, 161-172 Miconiaceae 18, 161-172 Polemoniaceae 59, 371 Santalaceae 19, 20, 336-337 Cistaceae 11, 62 |
| Spike or Raceme | 7+ petals Fabaceae 21-25, 274, 302 Violaceae 12, 166-167 Balsaminaceae 20, 333-334 Caprifoliaceae 4, 152-4, 494-4 Araceae 88, 646-60, 60, 517 Lentibulariaceae 66, 134-135 Aizoaceae - 100-101 Ranunculaceae 1-4, 78-88, 101-102 Asteraceae 44-54, 497-498 (Asteraceae 44-54, 497-498) Caryophyllaceae 13-16, 136, 137 Geraniaceae 19-20, 336-337 | Plantaginaceae 71, 44 Urticaceae 76, 121-122 Cucurbitaceae 36, 174 Potamogetonaceae 89, 90-91 Scheuchzeriaceae 79, 90-91 |
| Umbel | | |
| Complex group | | |
| Tight head | | |



How it works.

The user answers a series of very simple questions – life form, inflorescence type, number of petals (see flowchart). From this, they determine which row and column a plant belongs in, and the key supplies them with a list of families.

At present, the user then simply checks those families one by one by going through the pictures and looking for a match, in either **Keble Martin**, **The Collins Flower Guide**, or **Rose's Wild Flower Key**. Page/plate numbers are provided, too.

This method may seem simplistic, but doing it will naturally familiarize them with the commoner families, moving towards the point where they can start recognizing them, unaided.

I am now generating a complete **library of colour images** of the UK flora, which will remove the need for the above books for users of my method, and eventually create a single website that goes all the way to species.

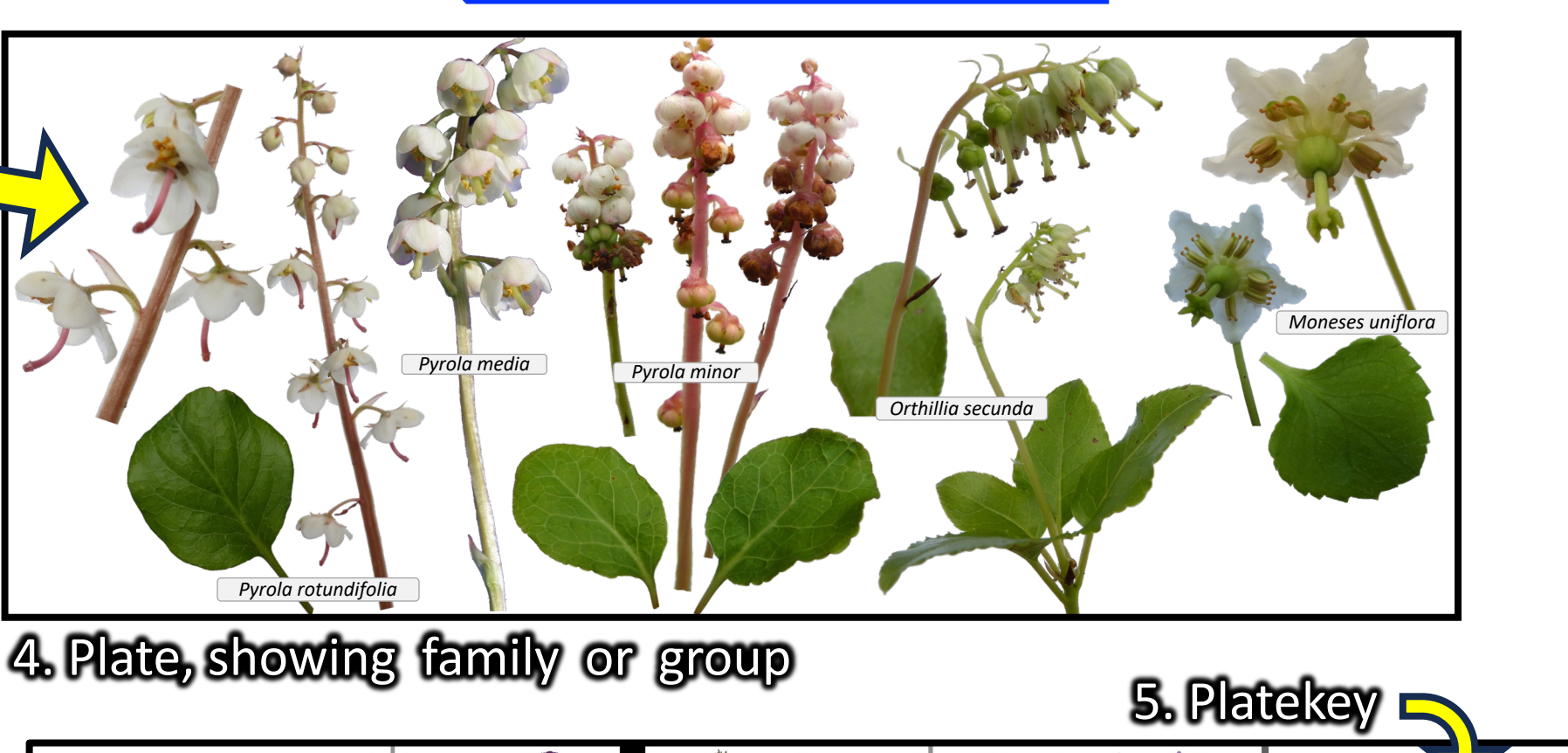
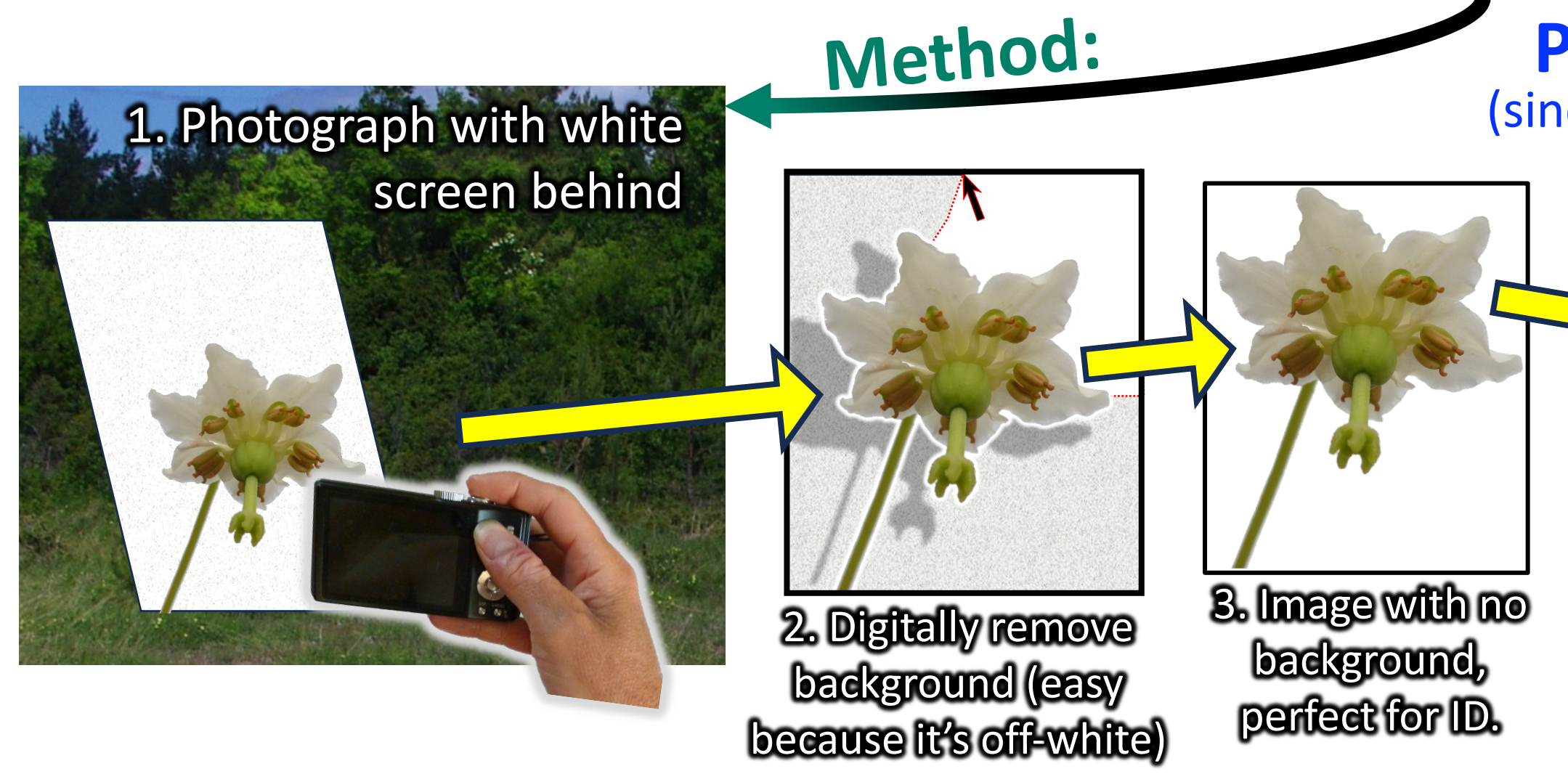
Image Library Creation

Progress (since May 2021)

- Natives* 1091/1377 = 79%
- Archaeophytes 150/187 = 80%
- Neophytes 945

*Excluding microspecies. Target list ~1800 spp including garden hybrids, based on Stace & Crawley (2011).

Thank You to Kevin Walker and the BSBI for help with location info!



A "Platekey": Combining photographs and dichotomous key into a single page.

Example – genus *Geranium*

These will be offered for any group where species can't easily be told apart simply from images. The advantage of this is that the user can employ visual recognition and key characters together, and simultaneously.

E.g. they might see from the pictures that it is either *G. molle* or *G. pusillum*, and go straight to these, using the line between them to determine which one it was.

Alternately it can be used like a dichotomous key, starting with the thickest line and progressing to the thinnest.

A total beginner might use it like a plate in Keble Martin, going straight to the images, then start to use the key aspect later, as they grow in confidence.

Goals: 1) Interactive website. 2) Book. 3) App for mobile phones.

Platekey for *Geranium* showing various species with key characters and images.