

Plant ID for beginners – a new method

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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.



Green/brown flowers		Trees and Shrubs		
Often very small		Flowers not green or brown		
Flower arrangement	Leaves broad	Bilateral symmetry	Radial symmetry	Pink/Purple
Single or pair	Araceae 88, 34 Plantaginaceae 71, 44 Caryophyllaceae 13-16, 13-16 Liliaceae 86, 64, 60, 57 Euphorbiaceae 75, 31, 28	White	Yellow	Rosaceae 26-31, 26-31 Buddleiaceae 40, 41 Ericaceae 55, 21, 20, 20 Fabaceae 21-25, 21-25 Rosaceae 26-31, 26-31 Hippocastanaceae 56, 56
In Leaf Axils	Utriculariaceae 76, 76 Caryophyllaceae 13-16, 13-16 Callitricheae 34, 34 Viscaceae 75, 75 Rubiaceae 42, 42	White	Yellow	Rosaceae 26-31, 26-31 Buddleiaceae 40, 41 Ericaceae 55, 21, 20, 20 Fabaceae 21-25, 21-25 Rosaceae 26-31, 26-31 Hippocastanaceae 56, 56
Spike or Raceme	Plantaginaceae 71, 44 Utriculariaceae 76, 76 Caryophyllaceae 13-16, 13-16 Resedaceae 11, 11 Euphorbiaceae 75, 31, 28 Utriculariaceae 76, 76	White	Yellow	Rosaceae 26-31, 26-31 Buddleiaceae 40, 41 Ericaceae 55, 21, 20, 20 Fabaceae 21-25, 21-25 Rosaceae 26-31, 26-31 Hippocastanaceae 56, 56
Umbel Complex group	Araliaceae 4, 13 Cucurbitaceae 36, 74 Umbelliferae 36, 40, 35 Polygonoaceae 73-4, 4, 4 Chenopodiaceae 71-3, 12, 12 Euphorbiaceae 75, 31, 28 Rosaceae 26-31, 26-31 Utriculariaceae 76, 76	White	Yellow	Rosaceae 26-31, 26-31 Buddleiaceae 40, 41 Ericaceae 55, 21, 20, 20 Fabaceae 21-25, 21-25 Rosaceae 26-31, 26-31 Hippocastanaceae 56, 56
Tight head	Plantaginaceae 71, 44 Saxifragaceae 32, 34, 34 Asteraceae 44, 44 Rosaceae 26-31, 26-31 Asteraceae 44, 44 Cannabaceae 76, 96	White	Yellow	Rosaceae 26-31, 26-31 Buddleiaceae 40, 41 Ericaceae 55, 21, 20, 20 Fabaceae 21-25, 21-25 Rosaceae 26-31, 26-31 Hippocastanaceae 56, 56

Fully aquatic plants		
Flowers tiny (<2mm), mostly green	Flowers big and/or white/coloured	Leaves all at stem base
Zosteraceae 90, 90 Plantaginaceae 71, 44 Haloragaceae 62, 62 Cruceae 6-11, 6-11 Isoetesaceae (fern) Hydrocharitaceae 79, 79 Spartanaceae 88, 88 Ceratophyllaceae 34, 34 Elatinaceae 11, 11 Cyperaceae 91-4, 91-4 Zannichelliaceae 90, 90 Ruppiceae/Najadaceae 90, 90	Haloragaceae 62, 62 Cruceae 6-11, 6-11 Isoetesaceae (fern) Hydrocharitaceae 79, 79 Spartanaceae 88, 88 Ceratophyllaceae 34, 34 Elatinaceae 11, 11 Cyperaceae 91-4, 91-4 Zannichelliaceae 90, 90 Ruppiceae/Najadaceae 90, 90	Leaves all at stem base

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.

Count petals per flower

- 3 or 6
- 4
- 5
- >6

Flowers Bilaterally Symmetric?

- Y
- N

Flowers Green or Brown?

- Y
- N

Leaves Grass-like?

- Y
- N

Determine Inflorescence Type => row

Flower arrangement	3 or 6 petals	4 petals	5 joined petals	5 free petals	7+ petals	Bilateral flowers
Single or pair	Amaryllidaceae 83, 83 Liliaceae 84, 86 Iridaceae 84, 86 Anthriscaceae 76, 72 Caryophyllaceae 13-16, 13-16 Hydrocharitaceae 79, 79 Alismataceae 79, 51	Papaveraceae 5-6, 90 Rosaceae 26-31, 240, 72 Onagraceae 35, 306, 12, 240, 72 Rubiaceae 42, 446, 50, 194 Caryophyllaceae 13-16, 13-16 Scrophulariaceae 62-65, 62-65	Primulaceae 57-8, 222, 29 Ericaceae 55, 212, 20, 20, 20 Convolvulaceae 61, 368 Campanulaceae 54, 432, 44 Apocynaceae 58, 360, 51 Gentianaceae 58-9, 360, 51 Pyrolaceae 56, 220, 20, 20, 20 Solanaceae 61, 368, 51, 368 Asteraceae 44, 44, 44 Menthanaceae 59, 59	Ranunculaceae 1-4, 78, 88 Rosaceae 26-31, 240, 72, 240, 72 Geraniaceae 19-20, 336, 41 Caryophyllaceae 13-16, 13-16 Hypericaceae 17, 166, 174, 174 Oxalidaceae 20, 328, 17 Saxifragaceae 32, 34, 34 Parnassiaceae 32, 34 Malvaceae 18, 161, 2, 161, 2 Linaceae 19, 22, 19, 22 Cistaceae 11, 11	Nymphaeaceae 1-4, 78, 88 Primulaceae 57-8, 222, 29 Rosaceae 26-31, 240, 72, 240, 72 Geraniaceae 19-20, 336, 41 Caryophyllaceae 13-16, 13-16 Hypericaceae 17, 166, 174, 174 Oxalidaceae 20, 328, 17 Saxifragaceae 32, 34, 34 Parnassiaceae 32, 34 Malvaceae 18, 161, 2, 161, 2 Linaceae 19, 22, 19, 22 Cistaceae 11, 11	Fabaceae 21-25, 21, 25 Violaceae 12, 16, 70 Balsaminaceae 20, 336, 33, 34 Caprifoliaceae 41, 41, 41, 41 Araceae 88, 34, 49, 47 Lentibulariaceae 66, 66 Ranunculaceae 1-4, 78, 88 Aizoaceae - 100, 100 Asteraceae 44-54, 44, 54 Caryophyllaceae 13-16, 13-16 Geraniaceae 19-20, 336, 41
In Leaf Axils	Liliaceae 84-86, 84-86 Lythraceae 34, 304 Anthriscaceae 76, 72	Onagraceae 35, 306, 12, 240, 72 Rosaceae 26-31, 240, 72, 240, 72 Rubiaceae 42, 446, 50, 194 Caryophyllaceae 13-16, 13-16 Scrophulariaceae 62-65, 62-65	Boraginaceae 59-61, 59-61 Ericaceae 55, 212, 20, 20, 20 Primulaceae 57-8, 222, 29 Campanulaceae 54, 432, 44 Convolvulaceae 61, 368 Asteraceae 44, 44 Menthanaceae 59, 59	Rosaceae 26-31, 240, 72, 240, 72 Lythraceae 34, 304 Resedaceae 11, 11 Saxifragaceae 32, 34, 34 Crassulaceae 33, 228, 34 Primulaceae 57-8, 222, 29 Asteraceae 44, 44 Scrophulariaceae 62-65, 62-65	Malvaceae 18, 161, 2, 161, 2 Linaceae 19, 22, 19, 22 Cistaceae 11, 11 Oxalidaceae 20, 328, 17 Saxifragaceae 32, 34, 34 Parnassiaceae 32, 34 Malvaceae 18, 161, 2, 161, 2 Linaceae 19, 22, 19, 22 Cistaceae 11, 11	Labiateae 67-70, 67-70 Scrophulariaceae 62-65, 62-65 Fumariaceae 9, 9 Fabaceae 21-25, 21, 25 Onagraceae 35, 306, 12, 240, 72 Violaceae 12, 16, 70 Campanulaceae 54, 432, 44 Acanthaceae 67, 67
Spike or Raceme	Liliaceae 84-86, 84-86 Lythraceae 34, 304 Dioscoreaceae 84, 84 Alismataceae 79, 51 Rosaceae 26-31, 240, 72 Rubiaceae 42, 446, 50, 194	Cruceae 6-11, 6-11 Onagraceae 35, 306, 12, 240, 72 Rosaceae 26-31, 240, 72, 240, 72 Rubiaceae 42, 446, 50, 194 Caryophyllaceae 13-16, 13-16 Scrophulariaceae 62-65, 62-65	Boraginaceae 59-61, 59-61 Ericaceae 55, 212, 20, 20, 20 Convolvulaceae 61, 368 Campanulaceae 54, 432, 44 Apocynaceae 58, 360, 51 Gentianaceae 58-9, 360, 51 Pyrolaceae 56, 220, 20, 20, 20 Solanaceae 61, 368, 51, 368 Asteraceae 44, 44 Menthanaceae 59, 59	Rosaceae 26-31, 240, 72, 240, 72 Lythraceae 34, 304 Resedaceae 11, 11 Saxifragaceae 32, 34, 34 Crassulaceae 33, 228, 34 Primulaceae 57-8, 222, 29 Asteraceae 44, 44 Scrophulariaceae 62-65, 62-65	Malvaceae 18, 161, 2, 161, 2 Linaceae 19, 22, 19, 22 Cistaceae 11, 11 Oxalidaceae 20, 328, 17 Saxifragaceae 32, 34, 34 Parnassiaceae 32, 34 Malvaceae 18, 161, 2, 161, 2 Linaceae 19, 22, 19, 22 Cistaceae 11, 11	Labiateae 67-70, 67-70 Scrophulariaceae 62-65, 62-65 Fumariaceae 9, 9 Fabaceae 21-25, 21, 25 Onagraceae 35, 306, 12, 240, 72 Violaceae 12, 16, 70 Campanulaceae 54, 432, 44 Acanthaceae 67, 67
Umbel	Liliaceae 84-86, 84-86 Amaryllidaceae 83 Butomaceae 79, 51 Alismataceae 79, 51	Papaveraceae 5, 90 Rosaceae 26-31, 240, 72, 240, 72 Onagraceae 35, 306, 12, 240, 72 Rubiaceae 42, 446, 50, 194 Caryophyllaceae 13-16, 13-16 Scrophulariaceae 62-65, 62-65	Primulaceae 57-8, 222, 29 Ericaceae 55, 212, 20, 20, 20 Convolvulaceae 61, 368 Campanulaceae 54, 432, 44 Apocynaceae 58, 360, 51 Gentianaceae 58-9, 360, 51 Pyrolaceae 56, 220, 20, 20, 20 Solanaceae 61, 368, 51, 368 Asteraceae 44, 44 Menthanaceae 59, 59	Rosaceae 26-31, 240, 72, 240, 72 Lythraceae 34, 304 Resedaceae 11, 11 Saxifragaceae 32, 34, 34 Crassulaceae 33, 228, 34 Primulaceae 57-8, 222, 29 Asteraceae 44, 44 Scrophulariaceae 62-65, 62-65	Malvaceae 18, 161, 2, 161, 2 Linaceae 19, 22, 19, 22 Cistaceae 11, 11 Oxalidaceae 20, 328, 17 Saxifragaceae 32, 34, 34 Parnassiaceae 32, 34 Malvaceae 18, 161, 2, 161, 2 Linaceae 19, 22, 19, 22 Cistaceae 11, 11	Labiateae 67-70, 67-70 Scrophulariaceae 62-65, 62-65 Fumariaceae 9, 9 Fabaceae 21-25, 21, 25 Onagraceae 35, 306, 12, 240, 72 Violaceae 12, 16, 70 Campanulaceae 54, 432, 44 Acanthaceae 67, 67
Complex group	Dioscoreaceae 84, 84 Alismataceae 79, 51 Liliaceae 84-86, 84-86 Polygonoaceae 73-4, 4, 4 Rosaceae 26-31, 240, 72 Rubiaceae 42, 446, 50, 194	Rubiaceae 42, 446, 50, 194 Rosaceae 26-31, 240, 72, 240, 72 Onagraceae 35, 306, 12, 240, 72 Rubiaceae 42, 446, 50, 194 Caryophyllaceae 13-16, 13-16 Scrophulariaceae 62-65, 62-65	Boraginaceae 59-61, 59-61 Ericaceae 55, 212, 20, 20, 20 Convolvulaceae 61, 368 Campanulaceae 54, 432, 44 Apocynaceae 58, 360, 51 Gentianaceae 58-9, 360, 51 Pyrolaceae 56, 220, 20, 20, 20 Solanaceae 61, 368, 51, 368 Asteraceae 44, 44 Menthanaceae 59, 59	Rosaceae 26-31, 240, 72, 240, 72 Lythraceae 34, 304 Resedaceae 11, 11 Saxifragaceae 32, 34, 34 Crassulaceae 33, 228, 34 Primulaceae 57-8, 222, 29 Asteraceae 44, 44 Scrophulariaceae 62-65, 62-65	Malvaceae 18, 161, 2, 161, 2 Linaceae 19, 22, 19, 22 Cistaceae 11, 11 Oxalidaceae 20, 328, 17 Saxifragaceae 32, 34, 34 Parnassiaceae 32, 34 Malvaceae 18, 161, 2, 161, 2 Linaceae 19, 22, 19, 22 Cistaceae 11, 11	Labiateae 67-70, 67-70 Scrophulariaceae 62-65, 62-65 Fumariaceae 9, 9 Fabaceae 21-25, 21, 25 Onagraceae 35, 306, 12, 240, 72 Violaceae 12, 16, 70 Campanulaceae 54, 432, 44 Acanthaceae 67, 67
Tight head	Liliaceae 84-86, 84-86 Asteraceae 44-54, 44-54 Rosaceae 26-31, 240, 72 Polygonoaceae 73-4, 4, 4 Asteraceae 44-54, 44-54	Onagraceae 35, 306, 12, 240, 72 Rosaceae 26-31, 240, 72, 240, 72 Rubiaceae 42, 446, 50, 194 Caryophyllaceae 13-16, 13-16 Scrophulariaceae 62-65, 62-65	Boraginaceae 59-61, 59-61 Ericaceae 55, 212, 20, 20, 20 Convolvulaceae 61, 368 Campanulaceae 54, 432, 44 Apocynaceae 58, 360, 51 Gentianaceae 58-9, 360, 51 Pyrolaceae 56, 220, 20, 20, 20 Solanaceae 61, 368, 51, 368 Asteraceae 44, 44 Menthanaceae 59, 59	Rosaceae 26-31, 240, 72, 240, 72 Lythraceae 34, 304 Resedaceae 11, 11 Saxifragaceae 32, 34, 34 Crassulaceae 33, 228, 34 Primulaceae 57-8, 222, 29 Asteraceae 44, 44 Scrophulariaceae 62-65, 62-65	Malvaceae 18, 161, 2, 161, 2 Linaceae 19, 22, 19, 22 Cistaceae 11, 11 Oxalidaceae 20, 328, 17 Saxifragaceae 32, 34, 34 Parnassiaceae 32, 34 Malvaceae 18, 161, 2, 161, 2 Linaceae 19, 22, 19, 22 Cistaceae 11, 11	Labiateae 67-70, 67-70 Scrophulariaceae 62-65, 62-65 Fumariaceae 9, 9 Fabaceae 21-25, 21, 25 Onagraceae 35, 306, 12, 240, 72 Violaceae 12, 16, 70 Campanulaceae 54, 432, 44 Acanthaceae 67, 67

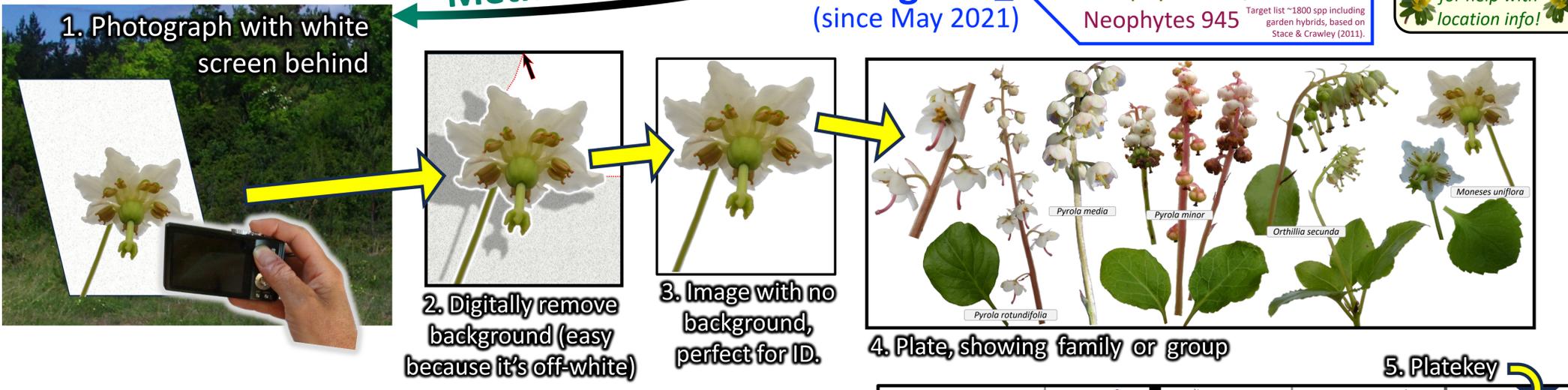
Image Library Creation

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.

- Geranium pyrenaicum*
- Geranium pusillum*
- Geranium robertianum*
- Geranium columbinum*