



Non-native ferns

Fred Rumsey



Non-native ferns

- 38+ spp. recorded as naturalised/escapes from cultivation
- A further 4 spp. are persistent unintentional introductions on tree-ferns – 2 of which may be spreading by spores within gardens
- About 1/3rd are only spreading vegetatively
- Of those spreading by spore many are apogamous spp.
- Most Alien taxa are found in urban areas often on sheltered damp walls.
- Aim to cover the most frequent escapes
- To horizon-scan visit your local garden centres!



Matteuccia struthiopteris

- One of few non-natives widely distributed as native in Northern Europe
- Always spread as fragments down watercourses?



On VCC 12/17 border – Whitmore Vale



Adiantum capillus-veneris



A. raddianum VC.21



A. × mairisii



Adiantum capillus-veneris



A. raddianum



A. x mairisii



G. Coleman

Adiantum pedatum VC.77



A. pedatum VC.70



J. Merryweather

A. aleuticum VC.105



A. aleuticum 'imbricatum' VC.17

Pedate Maidenhair ferns

Key to hardy *Adiantum* spp.

1. Frond pinnately divided
Frond pedately divided
2. Pinnules lobed but not toothed at apex
Pinnules unlobed, neatly toothed at apex *venustum*
3. Pseudo-indusium oblong, frond rather randomly branched *capillus-veneris*
Pseudo-indusium reniform, frond large, rather neatly branched *raddianum*
4. Frond with even, semi-circular outline, pinnules flat in plane of frond, crenately lobed *pedatum*
Frond with central pinna longer, pinnules rather twisted out of plane of frond, more acutely lobed, pinnae fewer and with “stray” pinnules at first divisions *aleuticum*

A. × mairisii – a sterile horticultural hybrid which may be *A. capillus-veneris* × *raddianum* has intermediate features. It is hardier, vigorous and has perhaps persisted following cultivation.

Adiantum venustum from Asia is an increasingly cultivated hardy species which is expected to escape



A. venustum

Key to *Cyrtomium* taxa naturalised in B&I

- Fronds bright mid-green, conspicuously glossy with a thick texture and entire margins* *C. falcatum*
- Fronds yellowish-green or darker bluish-green, matt to somewhat shiny with a thinner texture and dentate to sub-entire margins
C. fortunei s.l. (key to segregates below)

* *C. falcatum* cv *Rochfordianum* has pronounced tooth like projections on the pinna margins

Nb. The distinction in pinna pair numbers used by Stace, while indicative, is often unreliable in immature plants and other characters should have greater weighting.

- | | |
|---|---|
| 1. Indusium concolorous, pale grey or whitish-tan | 2. |
| Indusium with blackish-brown centre and whitish margin | |
| <i>var. intermedium</i> = <i>C. yamamotoi</i> Tagawa | |
| 2. Pinnae often >30mm wide, with +/- distinct basal acroscopic auricle | |
| <i>var. clivicola</i> (Makino) Tagawa = <i>C. clivicola</i> (Makino) Tagawa | |
| Pinnae <30mm wide, +/- lacking a basal acroscopic auricle | 3. |
| 3. Pinnae thin leathery, not shiny | <i>var. fortunei</i> |
| Pinnae stiff papery, somewhat shiny | <i>C. laetevirens</i> (Hiyama)
Nakaike |



C. falcatum 'Rochfordianum'

the key above is based on Oka (2008) – British garden plants may show atypical features possibly indicating hybridisation and selection in the horticultural trade. Several other spp. are widely grown and might escape.

Cyrtomium falcatum

a variable species with diploid sexual (subsp. *littorale*), triploid apogamous (subsp. *falcatum*) and perhaps tetraploid forms. Only triploid apogamous plants are known to be naturalised.

The species has hybridised with other Asiatic taxa in the wild giving rise to a range of intermediates and the sexual tetraploid *C. devexiscapulae* which is now being offered for sale in the UK. Of similar colour, glossiness and to an extent texture, it differs in having lower pinnae with more narrowly cuneate bases and narrower parallel sided pinnae with no trace of an acroscopic auricle.



Cyrtomium fortunei

extremely variable with its various forms recognised by different authors at differing rank, from varieties to full species. Most (if not all) are apogamous triploids.

All differ from *C. falcatum* in their less succulent texture, more matt surface and variously toothed margins.

Plants of this aggregate are the most widely commercially available in Britain, with most currently sold as var. *clivicola*.

Mature fertile fronds may be needed to satisfactorily name plants but many examples in the horticultural trade (and now outside gardens) do not conform to wild types, exhibiting suites of characters suggestive of hybridisation and selection within the horticultural trade. Where plants cannot be attributed to named taxa it is best to record them as *C. fortunei* sensu lato.

As with other alien apogamous taxa the common garden *Cyrtomiums* are very good colonists and are frequent in urban areas on damp walls. Very young plants may occur with sporeling *Asplenium scolopendrium* from which they differ in the more angular somewhat auriculate simple frond. Identification to species at this stage is not recommended but may be possible, based on colour, glossiness and dentation.

C. fortunei s.l. juvenile



C. falcatum juvenile



Key to **native**, naturalised and casual *Polystichum* species
in Britain and Ireland

Fred Rumsey & Helena Crouch
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1. Frond 1-pinnate 2
Frond 2-3-pinnate 3
2. Fronds to 40cm, tapering strongly to base, pinnae <4x as long as wide 3
P. lonchitis (L.) Roth

Fronds to 180cm, not tapering to base, pinnae >4x as long as wide
P. munitum (Kaulf.) C. Presl.
3. Fronds stiff, +/- leathery, basal acroscopic pinnule conspicuously (>1.5x) longer than the others 4

Fronds not stiff, not leathery, basal acroscopic pinnule less conspicuously (<1.5x) longer than the others 6
4. Fronds narrowing strongly to base, stipe <1/5 total frond length 5
P. aculeatum (L.) Roth

Lowest pinnae not markedly shorter, stipe >1/4 total frond length
5. Frond with thin texture, often <30cm, stipe to 3mm wide, scales on lower rachis linear with dilated ciliate base 5
P. tsus-simense (Hook.) J. Smith

Frond with thick texture, often >30cm, stipe to 5mm wide, scales on lower rachis narrowly lanceolate, ciliate 6
P. mayebarae Tagawa
(= *P. tsus-simense* var. *mayebarae*)
6. Fronds very lustrous glossy above, densely sericeous when young, ovate-lanceolate, to c. 50cm 5
P. polyblepharum (Roemer ex Kunze) C. Presl

Fronds +/- matt, lacking glossy sheen, not conspicuously sericeous when young, narrowly lanceolate, to c. 100cm
P. setiferum (Forssk.) T. Moore ex Woyn.



P. polyblepharum



P. tsus-simense



P. munitum



Dryopteris cycadina

Apogamous Asiatic taxon very widely sold
Distinct in its 1-pinnatifid frond form



Dryopteris erythrosora

Very glossy
2(-3) pinnate
+/- triangular
Flushes bronze

Widely sold



Dryopteris wallichiana

Close relative of *D. affinis*. Naturalised in Europe. Very widely grown

Rachis-scales markedly long and narrow, strongly exerted from the rachis. Laminar texture very stiffly coriaceous; pinnules or pinna-lobes deeply joined together at their bases (i.e. sinus between the pinnules not extending as deeply as in *D. affinis*) in the mid-upper parts of the lamina and pinnae



Juvenile *Dicksonia antarctica*

Like a leathery, raspy *Dryopteris filix-mas*

Rachis and young frond surfaces with dense finer hairy scales

Other tree-ferns possible in Scillies/S.W. Ireland/?elsewhere



Hypolepis ambigua
New Zealand Pig-fern



- Similar to a bristly bracken but sporangia very different
- Well established and spreading on Bute



Woodwardia radicans



Blechnum cordatum
(Syn. *Parablechnum cordatum*)

Pteris in the British Isles

Fred Rumsey (Rumsey2021@outlook.com)
& Helena Crouch (helenacrouch@sky.com)

Pteris is the most speciose non-native pteridophytic genus in the British flora with 6 species currently known as naturalised, or as more transiently escaped aliens. Identification and recording of these [has](#) suffered as the taxa and their diagnostic features are not mentioned in standard British floras.

Key to naturalised species

1. Frond widest above middle, simply pinnate *P. vittata*
Frond widest at base, at least lowest pinnae divided 2.
2. Frond 2-4 pinnate-pinnatifid *P. tremula*
Frond palmate to pinnate above, pinnae not more than once divided 3.
3. Pinnae usually <12mm wide, 2-3 uppermost pinnae pairs decurrent
P. multifida
Pinnae usually >15mm wide, decurrent, or not, rarely more than uppermost pinna pair significantly so 4.
4. Upper pinnae not decurrent, 1-2 (-3) pinnae pairs, variegated *P. nipponica*
Upper pinnae decurrent, (2-)3-7+ pinnae pairs, not variegated* | 5.
5. Only upper pinna pair decurrent, typically 5 or fewer pinnae pairs, sometimes crested or toothed *P. cretica***
At least upper 2 pinna pairs strongly decurrent, mature frond with 7+ pinna pairs, not crested or bizarrely shaped *P. umbrosa*

Juvenile plants of *P. cretica*/*multifida*/*nipponica*/*umbrosa* all have essentially palmate fronds but which can show characteristic shapes. They are more likely to be found in juvenile state than as the more easily distinguishable mature fronds. Juvenile fronds are more serrate. Mature fertile fronds have narrower pinnae than sterile in all species.

- * Variegated plants sold as *P. cretica* 'albo-lineata' are probably all *P. nipponica*, a distinct triploid apomict. *P. cretica* 'Mayii' is variegated and crested but has yet to escape cultivation. *P. ensiformis* usually grown as its variegated cultivar 'Victoriae' differs from *P. cretica* in its shorter, obtuse pinnules and more dimorphic fronds. It is not frost hardy and has never been reported escaped but is sold by most garden centres as a houseplant.

- ** *Pteris cretica* is extremely variable, with many cultivars some monstrose. Sexual and apomictic races and several ploidy levels are known. Young plants may be difficult to separate from *P. umbrosa* a much larger plant when mature (fronds >1m long).



cretica



'wimsettii'



nipponica



multifida



umbrosa



P. tremula

P. vittata

Pteris



filiculoides

cristata



Azolla

- Currently only *A. filiculoides* definitely known
- *A. cristata* (*A. caroliniana* Auct.) is possible
- Vegetative distinction difficult – papillae of 1 vs 2(-3) cells

Marsilea hirsuta is persisting in VC.38

Salvinia spp. may escape

Water ferns





Equisetum

E. hyemale subsp. *affine*

- Asiatic and American taxon
- very widely sold and grown
- persistent where planted by ponds
- has spread by spore and hybridised naturally with *E. ramosissimum* in Germany
- Differs from native subsp. *hyemale* in
 - stem width (5-10 vs 4-6.5mm)
 - number of stem ridges (23-35 vs 14-22)
 - greater persistence of sheath teeth