Key to Common British Native Ferns

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Introduction

This identification key covers the most common and widespread fern species native to Britain and Ireland. There are in addition some very rare species that are unlikely to be found by any but the most committed fern hunters. These are listed in the Appendix (p9).

Further details for identifying all these species are given in Merryweather (2020), Hutchinson and Thomas (1996); Page (1997); and Merryweather (2005, 2007). Assistance with the more difficult identifications may be obtained from *The Plant Crib* (Rich,T.C.G and Jermy,A.C., 1998, published by BSBI) which is available on line.

Although now recognised as the closest relatives of ferns, all horsetails have been omitted from this key. Most published identification aids include the 8 horsetail species and their several hybrids, but their structure, and their diagnostic characters, are very different from ferns and beginners are advised to take one step at a time and become familiar with one group before tackling the other.

REFERENCES

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THE KEY

It is important to choose mature, fertile fronds. If taking a frond for identification, take the full length of the stipe. Avoid fronds that are sterile (i.e. are not producing spores), damaged or are smaller than the majority of fronds present. With practice, ferns can often be identified from sterile fronds, but beginners will find this more difficult.

1. Frond undivided …… 2

1. Frond divided …… 3

2. Fronds occur singly, lamina **ovate**, **with a fertile stalk arising from near the base** ……... ……..**Common Adder's Tongue**, *Ophioglossum vulgatum*.

2. Fronds occur in clusters and the **parallel-sided lamina has a heart-shaped base** with linear sori on the underside ……..…. **Hart's Tongue Fern**, *Asplenium scolopendrium*.

3. Fronds are less than 10cm long and irregularly and variably sub-divided ……4

3. Fronds are more than 10cm long, OR regularly and more or less symmetrically divided, or both ……..…. 7

4. Fern growing as a spreading mat in moist habitat, fronds very thin (translucent), with sporangia enclosed in cup-like paired indusia ……..……. 5

4. Fern growing in a tuft on rock or wall, fronds are opaque, sporangia are NOT in cup-like paired indusia …….……..……..…..... 6

5. Fronds 2-5cm long, lamina ovate to obovate (sometimes narrowly), leaf-lobes flat, roundish sori held in the plane of the frond, **edges of the indusia toothed** …….. ……**Tunbridge Filmy Fern**, *Hymenophyllum tunbrigense*.

5. Fronds 2-10cm long, lamina ovate to lanceolate or even parallel-sided (usually narrowly), leaf-lobes bent away from the substrate, oval sori held out from the plane of the frond, **edges of the indusia untoothed** …….. **Wilson's Filmy Fern**, *Hymenophyllum wilsonii.*

6. Fronds irregularly 1- or 2- forked, **ultimate segments very narrow**, usually on hard rocks in mountainous areas……. **Forked Spleenwort**, *Asplenium septentrionale*.

6. Fronds irregularly and variably 1- or 2- divided on the same plant, or even occasionally undivided, **and the ultimate stalked segments are fan-shaped, diamond-shaped or rounded with finely toothed margins**, usually growing on limestone or other basic rocks or on wall mortar ..... **Wall Rue**, *Asplenium ruta-muraria*.

N.B. Typically, this fern is more or less regularly 2-divided, and appears in the key again at 29.

7. Fronds once-divided …… 8

7. Fronds divided two, three, or more times …….. 17

8. Plant dimorphic, with markedly different fertile and vegetative fronds …. 9

8. Fertile and vegetative fronds not markedly different …… 10

9. Fronds arise singly, and are fleshy, 5-25cm long, **with fan-shaped pinnae and a fertile spike arising from near the base** …… **Moonwort**, *Botrychium lunaria.*

9. Fronds in clumps, hard, glossy, 20 to 50 cm long**, pinnules parallel sided and decreasing in length markedly** to the base of the frond, vegetative fronds held horizontally, fertile fronds, if present, thinner and erect ……..… **Hard Fern,** *Blechnum spicant*

10. Fronds in clumps, **hard, toothed, prickly, with mitten-shaped pinnae**, dark glossy green, indusia round with central depression, small to medium-sized fern on limestone or other basic rocks in mountains ……..... **Holly Fern**, *Polystichum lonchitis*. **(N.B. this plant is a protected species.)**

10. Fronds not as above …… 11

11. Fronds arising in clumps from a short rhizome ……. 12

11. Fronds arising singly from a long creeping rhizome, frond base truncate, sori without indusia ……..…. 15

12. **Undersurface of the frond densely covered with scales, rust-coloured when mature and surrounding the linear sori,** pinnae rounded and attached to rachis by the whole of the base, grows on lime-rich rocks or wall mortar …..……..... **Rustyback Fern**, *Asplenium ceterach.*

12. Fronds not as above ……..…. 13

13. Frond length less than 7 times the maximum width, the **pinnae are conspicuously glossy on the upper surface, thick and fleshy**, fronds mostly15 to 20 cm, but can be larger, normally **occurs only on rocks close to the sea**……. **Sea Spleenwort**, *Asplenium marinum*.

13. Frond length more than 8 times the maximum width, pinnae not fleshy, not restricted to maritime habitats …… 14

14. **Rachis shiny dark brown or black** (except sometimes at the tips of new fronds), usually 8 to 20 cm long and up to 2 cm wide, many roundish pinnae ……..…… **Maidenhair Spleenwort,** *Asplenium trichomanes.*

14. **Rachis green, pinnae conspicuously toothed**, frond usually 5 – 15 cm long and up to 1.4 cm wide, grows on basic rocks in upland areas ……..…….. …….**Green Spleenwort**, *Asplenium viride*.

15. Small fern, fronds usually 10 – 25 cm in length, **parallel-sided** in the lower part of the frond, sori **round**, with a **thin amber line** (annulus) over each sporangium, visible with a x 10 lens, usually on acidic substrate …… **Common Polypody,** *Polypodium vulgare*

15. Fronds obovate or triangular, sori usually **oval** ……..…… 16

16. Fronds of mature plants 15 – 60 cm in length, oval in outline, with **longest pinnae in central part of frond**, lowest pinnae often inflexed. **Oval** sori, **without a visible dark annulus** …… **Western Polypody,** *Polypodium interjectum*

16. Fronds 5 – 40 cm in length, **triangular or broadly oval** in outline, pinnae often with serrated margins, lower pinnae markedly inflexed. Sori **oval,** with **short brown annulus,** usually on basic substrate ……..... **Southern Polypody,** *Polypodium cambricum*

N.B. The three *Polypodium* species are very variable, and may be difficult to identify on gross morphological grounds alone. In addition, they all hybridise to give intermediate forms. See Page (1997) for details of how to separate them microscopically.

17. Fronds are divided only twice …….....……..….....18

17. Fronds are divided at least three times ……...…….…..... 30

N.B. In Athyrium filix-femina, some individuals have twice-divided fronds and others have three-times-divided fronds. In Cystopteris fragilis, the fronds are twice-divided but the margins of the pinnules of some individuals are so deeply cut that they appear to be three-times-divided. These two species appear in the key twice, under both 'twice-divided' and 'three-times-divided'.

18. Large fern of moist habitats, with large (visible without a lens) **spherical sporangia congregated at the frond apex** where there are no expanded pinnules, and not on the back of the expanded pinnules in

the lower part of the frond …… **Royal Fern**, *Osmunda regalis*.

18. Small sporangia in sori on the back of the expanded pinnules ……. 19

19. Small to medium-sized fronds arising singly from a creeping rhizome in moist woodland or rocky upland slopes, stipe longer than the obovate or triangular blade, **two lowest pinnae conspicuously angled backwards towards the base**, round marginal sori without indusia …… **Beech Fern**, *Phegopteris connectilis*.

19. Fronds not as above …… 20

20. Medium to large lanceolate fronds arising from a **creeping rhizome,** found in wet fens and marshes. **Distinct fertile fronds** formed later in the season are taller, more erect, and have narrower pinnae than the sterile fronds. The **small, naked, round sori are marginal** on the pinnae …… **Marsh Fern**, *Thelypteris palustris*.

20. Fern not as above ……..… 21

21. Medium to large, usually upland fern, fronds clustered on the crown of **short upright rhizome**, **conspicuous white scales** on the **very short stipes**, fronds lanceolate, tapering to very small pinnae at the base, **round naked sori situated marginally** on the pinnules, **minute yellow glandular hairs** on undersurface of lamina, may give off lemon scent when young fronds are rubbed ……..... **(Lemon-Scented) Mountain Fern**, *Oreopteris limbosperma*.

21. Fern not as above ……. 22

22. Medium to large fern with chaffy scales on the stipe, larger pinnules **mitten-shaped with a prominent 'thumb'**, indusia circular, centrally attached…..23

22. Fern not as above ……..…..... 24

23. Medium-sized fern, fronds narrowly lanceolate, rather hard and leathery-textured, glossy; stipes short (rarely more than one-fifth of the frond length), **base of each pinnule forms an acute angle where it tapers to the pinna mid-rib**, pinnule stalks **flat** ..... **Hard Shield Fern**, *Polystichum aculeatum*.

23. Large fern with arching obovate fronds, soft-textured, stipes long (rarely less than one-fifth of the frond length), **base of each pinnule forms an obtuse angle where it joins the distinct cylindrical stalk** ……. **Soft Shield Fern**, *Polystichum setiferum.*

N.B. The last two ferns can be variable and not always easy to separate, they also hybridise to form *Polystichum* x *bicknellii*, intermediate between its parents. Hard shield fern tends to be more winter-hardy than soft shield fern.

24. Medium to large fern with large chaffy stipe scales, sori round with **kidney-shaped indusia** (i.e. round indusium with radial attachment) ……..... 25

24. Sori without kidney shaped indusia …… 27

25. Bi-pinnate medium to large ferns, usually robust, with **dark spot** at the junction of the pinna mid-rib and rachis, most easily visible on the undersurface of the frond
……..**Scaly Male Ferns**, *Dryopteris affinis* complex

N.B. The Scaly Male Ferns are an extremely variable group of ferns that form hybrids with the Common Male Fern. For those wanting to separate the *D. affinis* taxa, there is a guide on the BPS website under Publications / Special Publications, No. 13.

25. Bi-pinnate ferns without dark spot at the pinna – rachis junction ……26

> 26. Large fern with arching fronds arising usually from a single upright rhizome, pinnules usually toothed. **Indusia aglandular**, often with **edges spreading outwards,** lost soon after spores are shed, sori distributed over most of the pinnule area ……. **Common Male Fern**, *Dryopteris filix-mas*.
>
> 26. Medium to large fern, with erect fronds arising from a **much-branched rhizome,** bluntly-lobed pinnules have **margins crisped upwards. Sori are limited to the half of the pinnule closest to the pinna midrib, indusia with minute glands** …..……. **Mountain Male Fern**, *Dryopteris oreades*.

27. Medium to large fern with scattered narrow scales along the stipe, **sori are curved, comma- or "J"-shaped, with persistent indusia,** usually on neutral to acidic substrate …… **Common Lady Fern**, *Athyrium filix-femina*.
(See also 30 below)

27. Small to medium-sized fern of basic rocky habitats or walls, sori not as above ..28

> 28. Fronds **thin and delicate**, with **round sori** exposed when the **inflated, pear-shaped (bladder-like) indusia shrink** and detach before spore release ……..…. **Brittle Bladder Fern**, *Cystopteris fragilis*.
>
> 28. Fronds **shiny or leathery**, **linear sori** covered by elongate indusia 29

29. Fronds less than 10cm long, twice divided, sometimes rather irregularly, with **fan-shaped, diamond-shaped or rounded pinnules with finely toothed margins**, indusia with fringed margins ……..……**Wall Rue**, *Asplenium ruta-muraria*.

29. Fronds up to 30cm long, regularly divided, sometimes approaching 3-divided at the base, **lamina (narrowly) triangular, with toothed ovate or lanceolate pinnules,** indusium margins entire ……..….. **Black Spleenwort**, *Asplenium adiantum-nigrum*.

> 30. Fronds up to 120cm long, lamina lanceolate to ovate, sori **curved, comma- or "J"-shaped, with persistent indusia** …….**Common Lady Fern**, *Athyrium filix-femina.*
>
> 30. Lamina obovate or triangular, sori circular or linear …….…….……. 31

31. Sori circular …….…….....……..... 32

31. Sori linear …….....…….……. 38

> 32. Medium to large fern, mature fronds usually 40 cm or longer, indusia kidney-shaped, usually visible after spore release but may be shrivelled …….…..…..... 33
>
> 32. Small to medium fern, very rarely more than 40 cm in length, indusia absent or thin and pear-shaped, often not visible by time of spore release ….…….. 36

33. Medium to large fern of moist habitats, fronds **almost erect, in irregular groups** arising from a semi-creeping rhizome, **facing in various directions. Pinnae rotated to a near horizontal position.** Scales on the

stipe **uniformly pale** or only darker at the base ……. **Narrow Buckler Fern**, *Dryopteris carthusiana*.

N.B. This fern frequently hybridises with the Broad Buckler Fern (see 34) where the two parent species grow close together. The hybrid, *D. x deweveri*, is distinguished by its intermediate morphology and abortive sporangia.

33. Fern arises from a short erect rhizome to form a distinct "shuttlecock", fronds 3-4 times divided, **pinnae not or very little rotated**, fronds all **facing towards the centre** at least in the base, scales may be dark or pale ….....….....…… 34

> 34. Large fronds arch outwards from a pronounced shuttlecock, lamina obovate or triangular, **pinnule margins turn downwards, stipe scales have a conspicuous dark central stripe** ……. **Broad Buckler Fern**, *Dryopteris dilatata.*
>
> 34. Pinnule margins flat or turn upwards to give a crisped appearance, stipe scales are **uniformly pale**, or only darker at the base ……..... 35

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35. Fronds widely-spreading, lamina triangular or obovate with **many minute glands on the under-surface. Lower part of the stipe purplish**, stipe scales have a slightly darker patch only at the base if at all, margins of the lobed pinnules **turned upwards to give a crisped appearance** …… **Hay-scented Buckler Fern**, *Dryopteris aemula*.

35. Fronds semi-erect, lamina obovate and delicately dissected, **not glandular**. Stipe scales **uniformly pale** or only slightly darker in the centre, **deeply lobed pinnules are flat** ……. **Mountain Buckler Fern**, *Dryopteris expansa*.

> 36. Small to medium-sized unbranched fronds, lamina 3- to 4-times divided, **circular sori exposed when the inflated pear-shaped (bladder-like) indusia shrivel and disappear**, often before spore release ……..... **Brittle Bladder Fern**, *Cystopteris fragilis.*
>
> 36. Fronds with three distinct triangular segments, naked sori ……. 37

37. Medium-sized fern **restricted to limestone rocks**, fronds **grey-green** with many **microscopic glands** ……..**Limestone Oak Fern**, *Gymnocarpium robertianum*.

37. Small to medium-sized fern of damp woods and rocky slopes, **bright green fronds are not glandular**…… **Common Oak Fern**, *Gymnocarpium dryopteris*.

> 38. Large fern with fronds 50-200+ cm long, lamina branched with broadly triangular segments, the sori, if present are **marginal and protected by the inrolled pinnulet margin** …….. **Bracken**, *Pteridium aquilinum*.
>
> 38. Small fern with fronds less than 50cm, lamina triangular …… 39

39. Grows on lime-rich rocks or wall mortar, **fertile fronds similar to the sterile fronds**, linear sori and indusia **not marginal** …… **Black Spleenwort**, *Asplenium adiantum-nigrum.*

39. Forms tufts or cushions on **non-calcareous mountain screes and rocks**, **conspicuously dimorphic** with fertile fronds more erect and more finely divided than the **parsley-like sterile ones**, **linear sori marginal**, protected by the inrolled pinnulet margins …….. **Parsley Fern**, *Cryptogramma crispa*.

APPENDIX: THE LESS COMMON SPECIES OMITTED FROM THE KEY

The 10 rare native British and Irish species are restricted to very few sites and in some cases to very few individuals.

SCIENTIFIC NAME	ENGLISH NAME	FAMILY
Anogramma leptophylla (L.) Link	Jersey Fern	Adiantaceae
Asplenium onopteris L.	Western Spleenwort	Aspleniaceae
Cystopteris diaphana (Bory) Blasdell	Wintergreen Bladder Fern	Woodsiaceae
C. dickeana Sim	Dickie's Bladder Fern	
C. montana (Lam.) Desv.	Mountain Bladder Fern	
Ophioglossum azoricum C. Presl.	Small Adder's Tongue	Ophioglossaceae
O. lusitanicum L.	Least Adder's Tongue	
Trichomanes speciosum Willd.	Killarney Fern	Hymenophyllaceae
Woodsia alpina (Bolton) S.F.Gray	Alpine Woodsia	Woodsiaceae
W. ilvensis (L.) R.Br.	Oblong Woodsia	

The 6 scarce native species are absent from most of Britain and Ireland, and confined to a limited habitat range, but may be locally common within their restricted distribution.

SCIENTIFIC NAME	ENGLISH NAME	FAMILY
Adiantum capillus-veneris L.	Maidenhair Fern	Adiantaceae
Asplenium obovatum Viv. subspecies *lanceolatum* (Huds.) P.Silva (= *A. billotii*)	Lanceolate Spleenwort	Aspleniaceae
Athyrium distentifolium Tausch	Alpine Lady Fern	Woodsiaceae
Dryopteris cristata (L.) A.Gray	Fen Buckler Fern	Dryopteridaceae
D. submontana (Fras.-Jenkins & Jermy) Fras.-Jenkins	Rigid Buckler Fern	
Pteridium pinetorum C.N.Page & R.R.Mill.	Northern Bracken	Dennstaedtiaceae