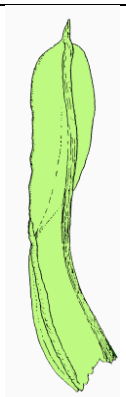
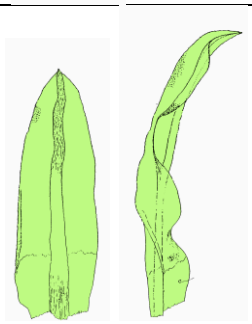
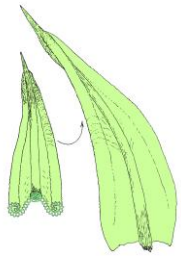
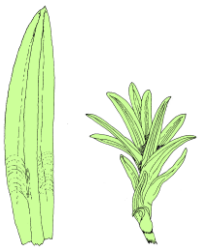
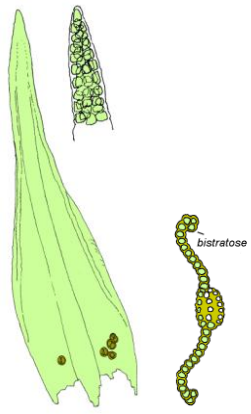
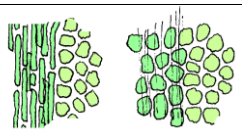
KEY TO BARBULA, PSEUDOCROSSIDIUM, BRYOERYTHROPHYLLUM & DIDYMODON	
1 Lvs oblong lanceolate to narrowly ligulate [tongue-shaped] tapering in upper part,]…….. 2 Lvs tapering gradually from below middle, ranging in shape from broadly ovate to linear-lanceolate ……. 4	
2 Lf margin plane or narrowly recurved [curved under] below only, costa [nerve] ending below apex to shortly excurrent, mature seta yellow……..…….. 3 Lf margin recurved except towards apex, costa usually obviously excurrent, seta dark-red/purple. Common on soil in gardens, arable fields, paths, walls etc…… …***Barbula unguiculata***	
3 Margins of upper leaves flat, yellowish-green, surface matt with papillae. Common, abundant on paths, waste ground, arable fields, gardens, sometimes on walls, bright green in damp situations……***Barbula convoluta*** var. ***convoluta*** Margins of upper leaves undulating, lvs long, ligulate, bright green shiny surface: possibly a luxuriant ecomorph resulting from high nutrient status of substrate……..***Barbula convoluta*** var. ***sardoa***	
4 Nerve excurrent……..5 Nerve ending in or below apex……..9	
5 Lf margin revolute (widely rolled under) ± from base to apex and ± reaching nerve in upper part of leaf ……. 6 Margin plane in upper part of leaf…… 7	
6 Apex acute, nerve excurrent in spear-like point, lvs twisted when dry, shoots with stellate appearance from above, cells 10-14µm in mid-leaf. Common, waste ground on calcareous to neutral often compacted substrates, rarely on walls……***Pseudocrossidium hornschuchianum*** Apex obtuse [blunt], but nerve stout and usually excurrent forming an apiculus, lvs tightly curled when dry, mid-leaf cells only 8-10µm, shoots with stubby appearance from above. Dark vivid green tufts on basic rocks and mortar of walls, strictly calcicole…..***Pseudocrossidium revolutum***	
7 Lvs lanceolate, gradually tapering to long thick rounded-obtuse point (may look pointed under hand lens but clearly obtuse under microscope), mid leaf cells 8-10µm, nerve ending below apex or slightly excurrent, margin plane or recurved low down, clearly BISTRATOSE higher up (even in surface view), cells above nerve quadrate to hexagonal. Curled when dry. Numerous small brownish, globose several-celled gemmae often abundant (100+) in axils of upper lvs, looking like caviar under L.P. Dark olive-brownish on solid substrates, forming tufts or cushions on walls, basic rocks, old concrete etc. ……***Didymodon rigidulus*** Lvs tapering to acute or acuminate point …… 8	

8 Upper lvs narrowly lanceolate to linear-lanceolate, NOT concave/channelled, cells in upper part of lf opaque, upper lvs curling rapidly as begin to dry, flexuose to undulate when moist, long tapering to acute apex, cells over nerve quadrate/hexagonal, upper lf cells papillose. Green tufts/patches base of damp walls, damp tarmac, damp shady soil, silted stream banks & tree roots. Very common (see also under line 16)……***Didymodon insulanus***

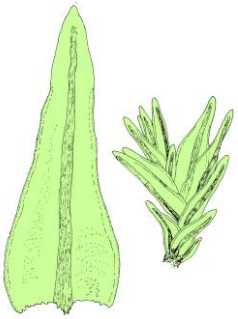
Upper leaves ovate to lanceolate, sharply and longly pointed, erect, deeply channelled, concave, upper cells translucent, nerve shortly to longly excurrent, upper cells with rounded lumens, smooth (c.f. *fallax*), cells over nerve quadrate/hexagonal. Gemmae sometimes present in axils. Patches or scattered plants on highly calcareous soil (especially rendzinas over chalk or limestone), in turf and on sand dunes, uncommon but overlooked…… ***Didymodon acutus***

9 Cells over nerve on upper surface of leaf elongated at middle part of leaf…… 10

Cells over nerve on upper surface quadrate, hexagonal /shortly rectangular…..12

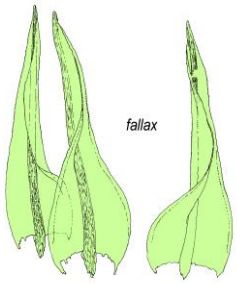


10 Lvs at 45° to stem when moist, upper part of lf ± tongue-shaped with rounded to acute apex, nerve ending below apex, upper lf cells slightly papillose, translucent, 10-12µm wide in mid-leaf, olive green to brownish tufts or patches on damp or wet soil, walls, rocks, dunes – often lime encrusted……***Didymodon tophaceus***

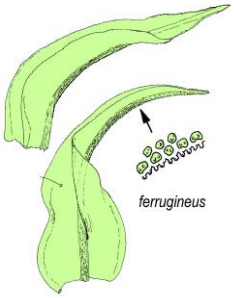


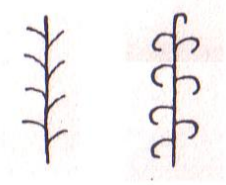
Lvs gradually tapering to acute or obtuse apices in upper part, lvs at narrow angle to stem to strongly recurved when moist, mounted lvs will not lie flat when mounted under coverglass [tip: mount on coverglass in drop of water then invert on slide to enable examination of upper surface over the nerve].... 11

11 Lvs at 20-25° to stem (erecto-patent) to weakly recurved, cells usually only slightly papillose, green reddish or yellowish in variety of habitats. Frequent……***Didymodon fallax***

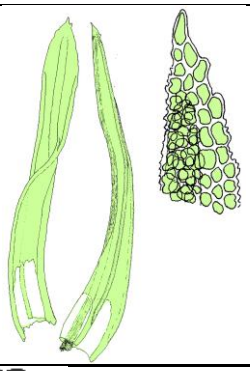
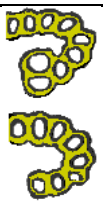
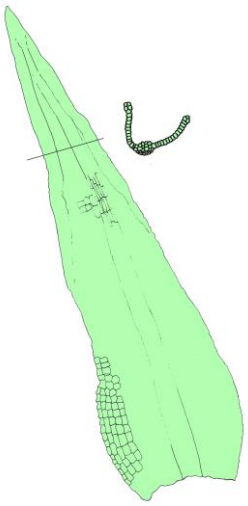
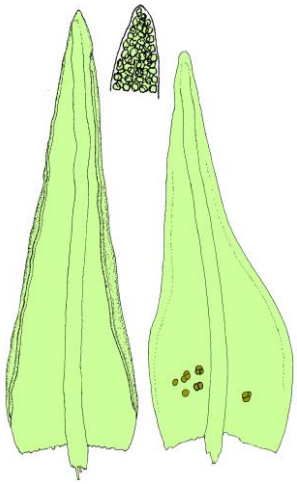


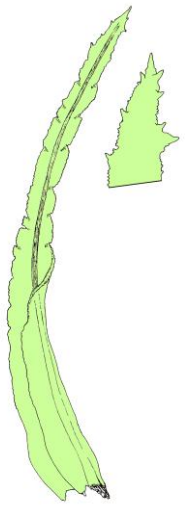
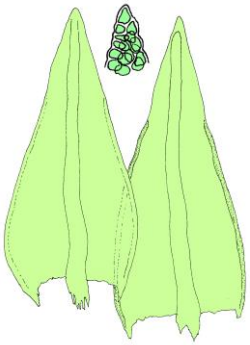
Lvs strongly recurved when moist, tips often pointing back to stem, laminal cells with tall conspicuous papillae & nerve markedly papillose on back (see from side of folded lf). Usuall redish in colour, generally larger plants than D. fallax. Long undisturbed sites, old chalk pits, limestone grassland, sand dunes. Uncommon……***Didymodon ferrugineus***





fallax *ferrugineus*

12	Plants rusty-red or reddish-brown below, lvs narrowly lanceolate, margin irregularly denticulate towards apex, basal cells large, hyaline and narrowly rectangular, contrasting with incrassate, papillose quadrate/hexagonal cells above. Strictly calcicole, rocks, mortar of walls, raised banks, dunes, widespread but local in SE……***Bryoerythrophyllum recurvirostrum*** Plants dull green, brownish or blackish below but never red, margin entire near apex, basal cells quadrate to rectangular……13	
13	Lf margin bistratose (at least above), axillary gemmae usually present (except in *D. umbrosus*)……14 Lf margin unistratose, axillary gemmae absent……16	
14	Basal part of leaves expanded with rectangular hyaline cells, and erect, with very narrow outer row of cells, lamina distinctly channelled and curving back from basal part, apex acute. Upper cells hexagonal, usually wider than long, opaque, mamillose, margins bistratose at least half the way up. Nerve thin, ending below apex. Irregular-shaped multicellular, brown rhizoidal tubers present. Only female plants known in U.K. On damp mortar at base of walls, chalk pits, silty banks by streams & occasionally roadside banks. Overlooked, but widespread……***Didymodon umbrosus.*** Not fitting above description…… 15	
15	Lvs lanceolate, gradually tapering to long thick rounded-obtuse point (may look pointed under hand lens but clearly obtuse under microscope), mid leaf cells 8-10µm, nerve ending below apex or slightly excurrent, margin plane or recurved low down, clearly BISTRATOSE higher up (even in surface view), cells above nerve quadrate to hexagonal. Small brownish, globose several-celled gemmae frequent in axils of upper lvs. Dark olive-brownish green on solid substrates forming tufts or cushions on walls, basic rocks, old concrete etc. ……***Didymodon rigidulus.*** Lvs ovate-lanceolate, mid-leaf cells only 6-8µm wide, lvs wider than ***D. rigidulus,*** cells above nerve quadrate to hexagonal. Small brownish, globose several-celled gemmae frequent in axils of upper lvs. Dull green patches on basic rocks and concrete in & by streams and rivers below flood level, usually on alluvial detritus, in recent years has colonized tarmac paths and damp compacted soil. Now widespread. Frequent….***Didymodon nicholsonii.***	See *rigidulus* figure under 7. *nicholsonii* 

16 Leaf apices often broken off as fragments, margins crenulate, often irregularly toothed and notched, fragile, narrowly ligulate to awl shaped, undulate, nerve ending below apex, cells over nerve quadrate, mid-leaf cells 6-8µm wide, papillose and opaque, basal cells rectangular. Capsules unknown. On brickwork & concrete by streams and rivers, damp shaded basic walls. Common……..……..…….…….…….…..***Didymodon sinuosus*** . Leaves not undulate, toothed or notched…….. 17	
17 Upper leaves ovate-lanceolate to ovate, imbricate and hardly altered when dry, apex rounded to acute, base slightly decurrent (tears off with leaves), margin recurved below, nerve ending in or below apex, cells over nerve ± hexagonal (c.f. rectangular cells of *D. tophaceus*), cells at lf base shortly rectangular, those above rounded & in rows parallel to nerve, incrassate but smooth, 6-10µm wide in mid-lf, (c.f. 10-12µm in *D. tophaceus*), dull green to brownish, usually on solid substrates: rocks, & walls an occasionally on sand dunes……***Didymodon luridus.*** Upper leaves narrowly lanceolate to linear-lanceolate, flexuose and curled when dry……18	
18 Upper lvs curled when dry, flexuose when moist, mostly 2-5mm or more long, see diags. under couplet 8……***Didymodon insulanus.*** Upper lvs flexuose to slightly twisted but not curled when dry, mostly 1-3mm long, apex very pointed compared with *D. insulanus*, grows in drier places, e.g. on wall tops. Forming dense bright olive-green above to brownish below, rounded cushions on solid substrates, rocks, walls, concrete – and very rarely on wood – hardly ever on soil……***Didymodon vinealis.***