Key to Earth Tongues

1	Black with bristles (projecting setae) on head and/or stem	KEY A *Trichoglossum*
	Without setae, colours various	2
2	Black, green brown or pink; spores, hyaline and aseptate	KEY B
	Black or dark brown, spores , black or brown and septate	3
3	Surface glutinous (sticky, viscid) when fresh; smooth and ceraceous if dry	KEY C
	Surface usually dry, smooth or rugose	KEY D

Species recorded in the UK are shown in bold; species shown in plain text have not yet been recorded in the UK but may be looked for.

Key A: *Trichoglossum* Black or brown, with setae

1 Spores in ascus 4; spores with 15 septa, paraphyses with pale, unswollen tips ***T. tetrasporum***.

1 Spores in ascus 8 2

2 Spores with 15 septa 3

2 Spores with fewer septa 4

3 Spores 110-140µm, asci 175-275; (further description? Type 1 paraphyses) ***T. hirsutum***

Spores 160-200µm, asci 237-281µm ***T. hirsutum var longisporum***

4 Spores <80µm, 3 then 7 septate. A rarely described North American species which seems to be very variable in size and shape of the club. Spores 57-85µm; paraphyses straight or curved (crescent) and with or without smooth apical swelling. ***T. confusum***

4 Spores >90µm, 7-septate or septation variable 5

5 Spores nearly all 7-septate 6

5 Spore septation variable, can be more or less than 7 7

6 Paraphyses segmented and agglutinated. Clubs 3-9cm, stem 3-6.5cm and often brownish. Spores 90-100µm.. paraphyses type 1. (look up habitats in CL) ***T. walteri***

Paraphyses without segments and not agglutinated. Clubs 2.2-3.8cm, stem 2.2-3.5cm. Spores 100-125µm, Found in France *T. octopartitum*

7 Spores mostly 9-12 septate, 98-120µm. In grasslands, rarely recorded; clubs 2-4.5cm, stem 1.2-3.3cm; paraphyses type X ***T. variabile***

Spores mostly 7-9 septate, 120-175µm. Rarely recorded; on dunes or grassland with sandy soil. Clubs 1-6cm; paraphyses pale, without septa or apical swelling.
T. rasum
Spores mostly 3-septate (but range from 0 to 6), 57-75µm. Recorded in grassland and woodland in North America and France. Clubs 3-8cm; paraphyses pale, segmented with swollen, often curved tips.
T. farlowii

Key B Colours various; spores hyaline or becoming pale brown, <60µm and usually aseptate

1 Clubs wholly black or dark brown 2
1 Clubs with green, yellow, pink or pale brown colours 6

2 Spores 50-60µm 3
2 Spores ,<40µm 4

3 Clubs <3cm. Rare species found usually on gravelly, soils round oligotrophic lakes but reported from dunes and grassland. When wet the head may become glutinous. Stems black and hairy; spores 50-60 (70)_µm, hyaline, aseptate with guttules but late in development may darken and have up to 7 septa; paraphyses are straight or curved often with smoothly swollen, pale brown apices which may be embedded in brown material (agglutinated).
Hemileucoglossum littorale
3 Clubs <5cm. Rare species in grassland. Stem brown and smooth or rugose. Otherwise similar to *H. littorale* except that tips of paraphyses tend to be dark and septate spores are more commonly seen.
Hemileucoglossum elongatum

4 On mossy soil; clubs 3-8cm, stem smooth; paraphyses with smoothly swollen hooked or curved tips, often curled. Found in Sweden.
Maasoglossum aseptum
4 On dunes, grassland on sandy soil or woodland; clubs <5cm, stem usually rugose or scaly 5

5 On dunes; spores often become pale brown; paraphyses, not agglutinated; asci 130-160µm; very rare in UK.
Sabuloglossum arenarium
5 On grassland, dunes or in woodland; spores remain hyaline; paraphyses agglutinated; asci 106-127µm; rare in UK.
Geoglossum atropurpureum

6 Stem rough; green or yellow colours; spores >15µm; in woodlands 7
6 Stem smooth; colours green, brown, pink or carmine 8

7 Yellow or pale green; stem scaly and in wet conditions may be viscid; spores 18-22 x 5-7µm; often in wet places.
Microglossum viride

7 Green or dark green; stem rugose; spores 16-20 x 4-5µm.
Microglossum griseoviride

8 Spores <16µm 9

8 Spores >16µm 12

9 On neutral or acid grassland soils 10

9 On calcareous grassland or in woodland 11

10 Stem pale brown or pink; head lanceolate, brown, pink or green and dry; paraphyses may be curled or hooked with pale tips
Microglossum rufescens

10 Stem green; head clavate, green, pale brown or carmine and may be viscid; paraphyses, straight or curved with dark tips
Microglossum olivaceum

10 Stem blue-green; head blue-green or grey-green, vertically grooved and twisted, dry; paraphyses, straight with pale tips
Microglossum pratense

11 Asci 66-79 µm. Head pale green or brown-green; stem green or blue-green; paraphyses straight or curved and tips may be swollen. Only found in grassland and so far only in Slovakia.
Microglossum parvisporum

11 Asci 80-95 µm. Head dark green; stem green or dark green; paraphyses straight, without swollen tips. May occur in open woodlands.
Microglossum tenebrosum

12 On calcareous grassland; spores 15-20µm; clubs dark green or brown and lacking pink colour
Microglossum clavatum

12 On neutral or acid grassland or in woodland. 13

13 With pink or pale brown colours; in woodland; spores >18µm 14

13 Without pink colours; in grassland or woodland. 15

14 Head often bright pink; stem paler, white at base; spores 20-21µm, asci 100-130µm, paraphyses straight. Usually amongst moss.
Microglosum fuscorubens

14 Head pink-brown; stem paler and blue at base; spores 18-20µm, asci 109-118µm. On bare soil with or without mosses.
Microglossum cyanobasis

15 Asci mostly >105µm (range 91-110µm); spores 16.6-20.5µm; stem dark- or blue-green, head dark green-brown; among mosses, usually in woodland.
Microglossum nudipes

15 Asci mostly <105µm, in grassland 16

16 Head brown or greenish brown, stem pale or bluish green; spores 15.5-18.5
Microglossum truncatum

Key C Black or dark brown with a glutinous surface when fresh..

1 Mature spores with 15 septa. In woodlands on soil or logs. Spores 92-115µm, many paraphyses with coloured, coiled or hooked tips and with little or no swelling.
Geoglossum difforme

1 Mature spores with 3 or 7 septa. 2

2 Spores become dark early in development. Asci <200 µm. In peat bogs, mossy acid grasslands and with Sphagnum. Stem viscid, head smooth but not always viscid. Spores 60-80µm, 7-septate; paraphyses straight with smoothly swollen apex, pale brown, septate and often constricted at every second septum. Rare in UK.
Geoglossum uliginosum

2 Spores darken late in development. Asci >200 µm. In other habitats; 3

3 Spores with 3 septa 4

3 Spores with up to 7 septa 5

4 Spores mostly 60-70 µm. In grassland or in woodland. Widespead.
Glutinoglossum glutinosum

4 Spores mostly 70-80 µm In grassland on unknown substrate. Known from Slovakia
Glutinoglossum triseptatum

5 Nearly all spores with 7 septa. Spores mostly 74-97 µm; paraphyses with pale brown, swollen tips, straight or crescent.
Glutinoglossum heptaseptatum

5 Spores either 3 and 7-septate or with a variable number of septa 6

6 Spores with 0-7 septa depending on maturity. Asci <220µm. Paraphyses varable in shape and colour but notably thin and often with a wavy outline.
Glutinoglossum lumbricale

6 Spores with 3 or 7 septa. Asci <250-266 µm. 7

7 Fresh stem with an extremely viscid surface, head viscid and both are smooth when dry. Asci 225-266 µm; spores 68-81 x 4.5-5 µm; paraphyses straght or

crescent, some with a single swollen apical cell. On soil in grassland or woodland over calcareous rock.
Glutinoglossum pseudoglutinosum

7 Head may be tomentose when dry; asci 210-255 µm Not on calcareous soils 8

8 Club height <5.5 cm, head to stem ratio 0.14-0.8, spores often dark brown. In grassland and woodland.
Glutinoglossum peregrinans

8 Club height <2.8 cm spores hyaline or pale brown. 9

9 In woodlands; head to stem ratio 0.2-0.25; spores 78-94 x 5-5.5 µm; asci 217-249 x 16-21 µm; paraphyses irregularly curved and hooked with tips globose or pyriform and segments unswollen. Known from Siberia
Glutinoglossum circinatum

9 In grasslands; head to stem ratio 0.5-0.8; spores 70-80 x 4.8-5.2 µm; asci 240-250 x 13-14 µm; paraphyses mostly straight with swollen tips and segments forming chains of swollen cells. Known from Rumania.
Glutinoglossum proliferatum

Key D Black or dark brown, usually with a dry surface when fresh.

1 Spores with 3, 15 or 7 septa; becoming dark and septate early in development 2

1 Spores with variable number of septa ranging from (0) 5 to 12; becoming dark and septate late in development 12

2 Spores with 3 septa, 39-53 µm. Stem relatively short (head to stem ratio 0.5-0.8). On calcareous soil with alpine distribution.
Geoglossum heuflerianum

2 Spores with 15 septa; >95µm. 3

2 Spores mainly with 7 septa; <95 µm 4

3 Spores 122 - 140 µm. In Europe only recorded in Portugal
Geoglossum pygmaeum

3 Spores 92-115 µm; surface may be smooth or glutinous.
See *Geoglossum difforme*, Key C

4 Amongst Sphagnum, in peat bogs or wet mossy (acid) grassland 5

4 In other habitats 8

5 Spores pale brown, often hyaline; surface of clubs glutinous if fresh
See *Geoglossum uliginosum* Key C

5 Spores dark brown, surface not glutinous 6

6 Paraphyses with agglutinated, pale brown tips, often unswollen, septa constricted but sometimes at alternate septa *figure? Spores 75-87 µm.
Geoglossum simile

6 Paraphyses with dark brown tips, the end cell swollen. 7

7 Paraphyses with little or no agglutination, tips smoothly swollen. Spores 60-90 x 6-8 µm
Geoglossum glabrum

7 Paraphyses strongly agglutinated, often abruptly swollen at the tips. Spores 75-90 x 7-9 µm.
Geoglossum sphagnophilum

8 Paraphyses with little or no swelling at the tips, segments 3 to 4 x longer than wide, often curved (crescent) and not constricted at septa, In grassland and woodland.
Geoglossum umbratile

8 Paraphyses smoothly or abruptly swollen at tips. 9

9 On grassland or sand dunes; spores 52-80 µm 10

9 In woodlands or woodland clearings; spores 75-95 µm 11

10 Head black with a smooth matt surface, stem black and smooth but may be rugose when young. Paraphyses with terminal chains of short swollen segments (often as wide as long), pale brown often with abruptly swollen, globose tips. Widespread and common in grassland and on fixed sand dunes.
Geoglossum cookeanum

10 Head black with a shiny surface, stem smooth, brown. Tips of paraphyses smoothly swollen with segments below 3 to 4 x longer than wide, dark grayish. Known from Spain and Portugal on sand dunes and sandy soil inland
Geoglossum brunneipes

11 Tips of paraphyses slightly swollen and some are coiled (circinate). Segments constricted at septa.
Geoglossum barlae

11 Tips of paraphyses strongly swollen, often curved or crooked but not coiled. Segments not constricted at septa. Spain and Portugal.
Geoglossum pseudoumbratile

12 Spores with 5-7 septa, 50-65 µm. Paraphyses mostly straight, apically swollen up to 8 µm, coloured above. Grassy areas in woodlands
Geoglossum vleugelianum

12 Spores with >7 septa when mature. 13

13 Spores with 7-9 septa, 67-85 µm. Paraphyses very numerous, brown, mostly curved (crescent), the apical segment with little or no swelling and often

hooked (crook); not agglutinated. Stem black or dark brown. Grassy areas, often within or adjacent to woodland. Common in Scandinavia, in UK rare, mainly Scotland

Geoglossum starbaeckii

13 Spores with (0) 7-12 septa depending on maturity, mainly 80-95 µm. Paraphyses pale, similar to those of *G. starbaeckii* but the tips more often swollen to 10 µm; often agglutinated, embedded in brown amorphous material. Stem pale to dark brown. Common on open grassland and moorland.

Geoglossum fallax