

Medicago & Trifolium, genera 27 & 28 in Fabaceae (Stace, 2010), are very close and share important identification characters, often occur in the same habitats, and can sometimes be confused (eg *T. dubium* & *M. lupulina*). We have 16 *Trifolium* species and 5 *Medicago* spp in the county, and of these only 1 *Trifolium* (*T. hybridum*) and 1 *Medicago* (*M. sat. sat.*) are alien introductions. However, a large part of the populations of many native taxa of both genera have been introduced into the county, often from abroad ~ as fodder plants (*T. rep.*, *T. prat.*, *Med sat. sat.*), as constituents of "conservation mixtures", or in amenity grass mixtures (eg for seeding road verges, lawns & parks).

"Search Strategies" - on one's usual botanical jaunts keep an eye out for *T. schrenkianum* and *T. fragiferum* on boulder clay south of Norwich, for *T. fragiferum* on brackish pasture near the sea, for *T. hybridum* on conservation heathlands ~ also, of course for *M. minima* and *M. sativa* ssp *falcata* in the Brecks. But in May & June many of the scarcer annual species can be deliberately sort out in sites not usually visited ~ very poor suburban grass verges and the edges of lawns (*T. striatum*, *T. subterraneum*, *T. micranthum*); grassy areas round domestic caravan sites (*T. suffocatum*, *T. ornithopoides*); lawns & especially banks around boating ponds, crazy golf courses etc (*T. glomeratum*, *T. stri.*, *T. orn.*). Suburban grass verges near the sea are good places also for *M. polymorpha*. By June many of these species will be going brown & can be easily spotted against the dark green background of grass & (perennial) *T. repens*.

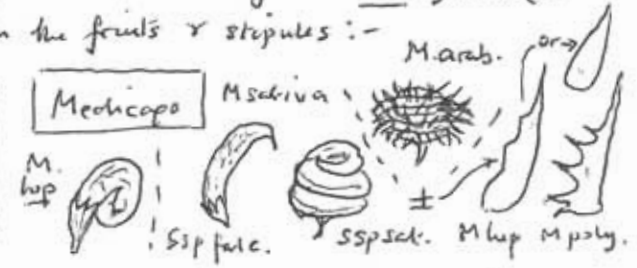
Differences between Trifolium & Medicago Both members of Tribe Trifolieae & share 1 - many flowered congested racemes (flowers in compact "heads" usually), calyx without glandular hairs, & 9 stamens in tube, 1 free. All have ternate leaves of course ~ note long stalk to central leaflet in both genera (> in *Ononis*, *Melilotus*, *Trigonella*). Main differences are in the fruits & stipules: -

Trifolium



Fruits ± straight; short enclosed ± in persistent calyx

Medicago



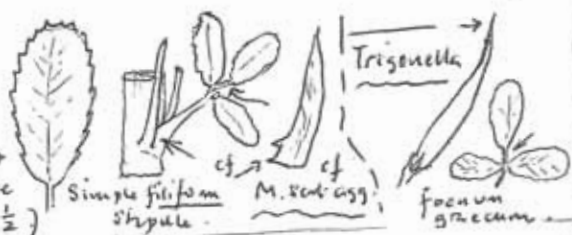
Similar species

Other herbaceous genera in Tribe Trifolieae need distinguishing (beware also non woody early regrowth of woody genera (*Cytisus*, *Genista*, *Ulex*, (?) *Lathyrum*); also *Lotus*).

Ononis: usual spp are ± woody subshrubs
Glandular hairs in calyx
Stems etc long hairy.

Melilotus

Erect, < 150 cms.
Flowers in elongated racemes
Scrobbles nearly to base (M. sat. egg only upper 1/2)



Lotus

Actually 5 leaflets (stace)
Leaves opaque (thickened, no visible venation) (± in L. peil)

Identification characters

- (i) ? annual or perennial (ii) If perennial, creeping stems, rooting at nodes, ? ascending aerial stems.
- (iii) ? Leaves hairy (at least one side) or glabrous (iv) Shape of calyx, especially proportionate length of lobes (v) Shape of stipules, & especially proportionate length of free portion (vi) Fruits/eg Medicago
- (vii) "structure" - axillary racemes sessile or long stalked/basist

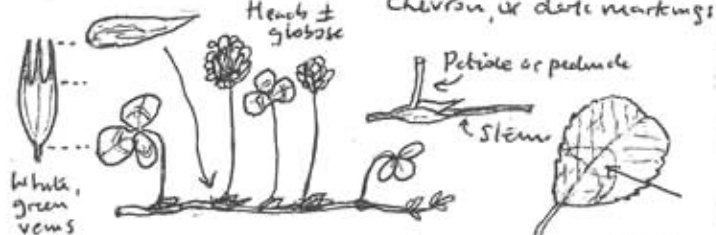
- ① Perennials - usually large leaves and quite tall, either because of long vertical petioles in creeping species, or because of long ascending acaud stems - (2) However, creeping species (*T. rep* & *frag*) can be very small (< 1cm high)
- ① Annuals - usually small leaved and very low growing (procrembsent or decumbent) Never rooting at nodes (*T. arvense* may be semi-erect) - (5)

② Stems creeping at or even just beneath soil surface, rooted at the nodes

Only petioles & peduncles above ground level

T. repens

Leaflets obovate, often with white chevron or dentic markings

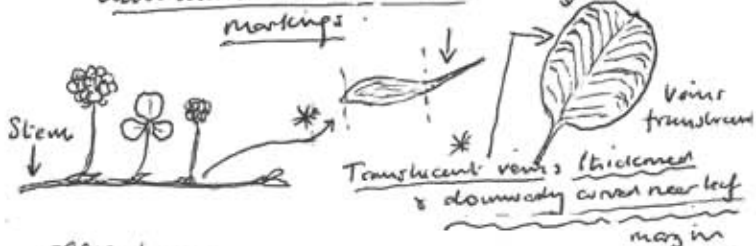


Cultivars can be very large leaved, & tall (< 50 cms) or can be tiny (< 1 cm high) with minute (* of annual sp) leaves - but patches attached to ground
 Flowers white - or pink-white (* much like *T. hybridum*), occy red or mauve

T. fragiferum

Leaflets more oblong, never with white crescent or dentic markings

NB Rare alien *T. resupinatum* & *T. f. moniliforme* have similar inflorescence only



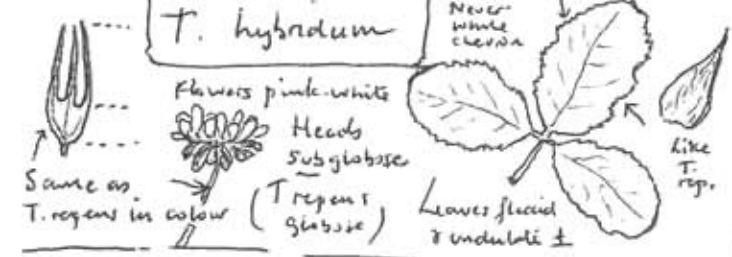
Free part of stipule much longer than in *T. repens*
 Flowers always pink red - never white, pink white
 Calyx not inflated, inflated calyx

② Stems acaud, ascending or scrambling

Leaves glabrous

T. hybridum

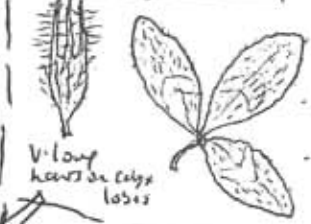
Leaf edge finely & regularly serrate



Flowers pink-white
 Heads subglobose
 Same as *T. repens* in colour (T. repens & *T. hybridum*)
 Leaves glabrous & undulate ±
 Like *T. rep.*

④ Leaves hairy (at least on one surface)

T. pratense



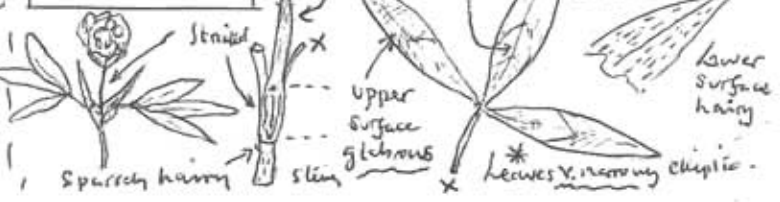
Head globose, sessile
 Flowers pink-purple, pink, white or cream
 Leaflets elliptic to obovate, hairy both surfaces
 Often white chevron
 Stipule abruptly narrowed & narrow free portion
 Striated

Tochroleucon



Upper leaves very narrow
 Flowers whitish-yellow
 V. long free portion
 * Narrowly elliptic-obovate
 Leaves soft/hairy & long hairy both surfaces
 Stems profusely hairy

T. medium



Green oval shape
 May have
 White chevron
 Upper surface glabrous
 Lower surface hairy
 * Leaves x. narrowly elliptic
 Sparingly hairy
 Stem

No. 101c Trifolium Visual Key (cont)

Bob Heaney June 2016

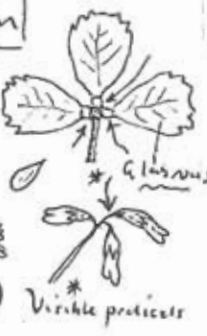
5 Annual species - small leaved and usually creeping (T. arvense may be semi-erect). Never rooting at nodes.

FLOWERS YELLOW

T. micranthum

Stalk-like white cylindrical base to all 3 leaflets

(1) 2-6 (10) flowers (1-2 diagnostic)

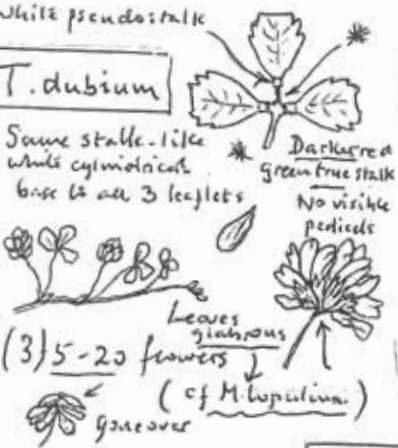


White pseudostalk

T. dubium

Same stalk-like white cylindrical base to all 3 leaflets

(3) 5-20 flowers (of M. lupulina) green over

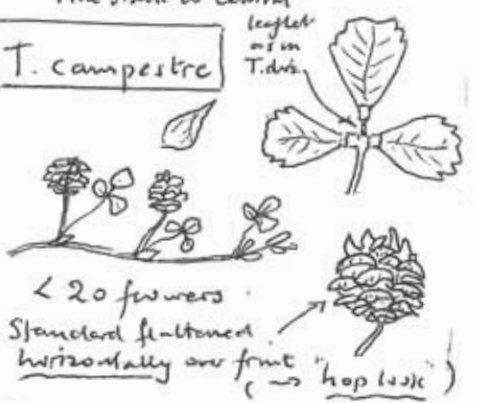


True stalk to central leaflet as in T. dub.

T. campestre

< 20 flowers

Standard flattened horizontally over fruit ("hop lark")



FLOWERS NOT YELLOW

GLABROUS

(i) Flowers in few flowered, short stalked racemes - pink, white or both:

T. ornithopodioides

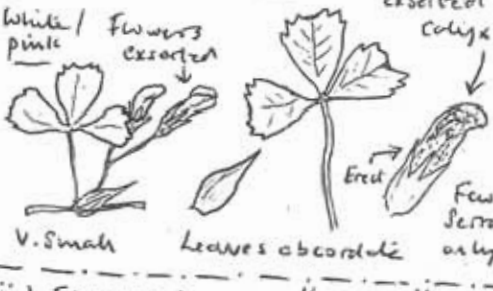
White / pink flowers exserted

v. small

Leaves obovate

Flowers & pods exserted from calyx

Erect Few deep serrations only near tip



(ii) Flowers in sessile "heads": v. pale green

T. suffocatum

1-4(5) flowered

Stipule with one vein excurrent into axil

Leaves like Torn. Flowers & pods exserted



Sessile heads arising from top of rootstock - "structure"

T. glomeratum

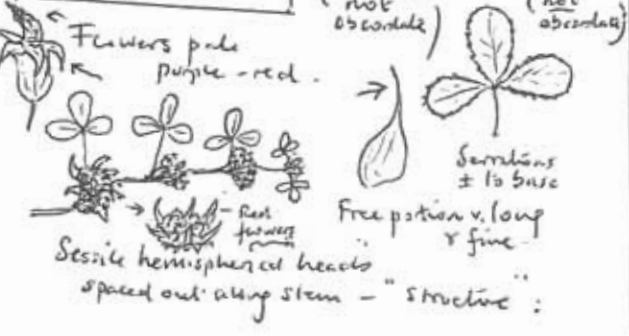
Flowers pale purple-red

Leaflets obovate (not obovate)

Serrations ± to base

Free portion v. long & fine

Sessile hemispherical heads spaced out along stem - "structure"



HAIRY

(i) Flowers in few flowered, long stalked racemes, flowers white.

T. subterraneum

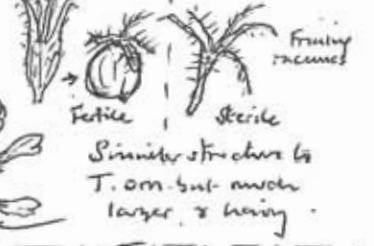
2-5(7) flowered +

Usually much larger than

Numerous sterile calyxes

T. ornithopodioides

Obovate Usually 3-4 fusiform, white



Fertile Sterile Similar structure to T. orn-but much larger & hairy

(ii) Flowers in sessile or short stalked "heads", axillary or terminal. Usually striate stipules.

T. striatum

Can have mucronate tip



Black mottles on veins (±) Flowers pink white. Heads elongate ellipsoid. Veins not thickened recurved

T. scabrum

Equally hairy as T. striatum

Fewer heads more Spherical than T. striatum



No black vein mottles No striations on stipules Veins thickened & recurved near margin (against light)

T. arvense

Unusually for annual ascending-erect with terminal flower heads



Leaves very narrow linear-oblongate to oblong Grey green. Free process v. long (observed by long hairy glabrous)

Perennial

Large leaved, decumbent or erect plants (up to 80 cms) with non spiny curved or spiral fruits.

Annual

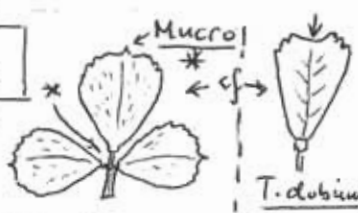
Small leaved creeping plants (prostrate to decumbent), with curved spiral & sometimes spiny fruits.

M. lupulina

Pale "telescoped" stipules early on.

(But T. dubium can do this)

Dissection of stipule edge v. variable



Obovate only ± retuse, mucro
 * Hairy (@20-30x)
 0.5-1 coil
 More flowers usually, & more compact head than T. dubium.
 Paler yellow flowers than T. dubium.

M. minima

Vegetatively very similar indeed to M. lupulina. *

Stipule dissection: Entire to V-shaped sinuate margin

* Fewer flowered (1-6)

(M. lupulina? always > 10)

Smaller, more densely hairy, but hairiness in M. lup. is very variable.
 * Spiny coiled fruits perhaps only separating character from M. lup. 3-5 coils

Leaf shape & habit much as M. lupulina.

M. arabica

Dark brown h/w of marie or chevron (occ absent, or no layer visible on gone over material)

4-6 veins each side *

(of M. polymorpha)

Range

* Lobes no longer than wide undissected portion

NB: Mucro and stalked central leaflet on all 4.



Stipules deeply dissected
 3-5 (6) coils. 1-5 flowers (solid, no gaps visible between coils)

M. polymorpha

* Lobes longer than entire pet

Foliage paler than M. arabica. (and shorter lived) often with M. arabica - stands out as paler pale yellow flowered & group over more quickly.

1-8 flowers
 Pale yellow
 6-9 veins each side

Nearly always 2 1/2 coils *

Coils not contiguous (gap visible)

1.5-5 (6) coils always 2-3 in Norfolk

Medicago sativa

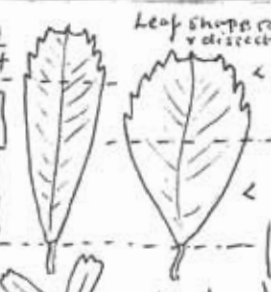


Flowers mauve blue or violet

Stipules flattened not-filiform variable dissection but always with 1-2 basal lobes.

ssp. sativa

2-3 (4) coils no spines



Leaf shape range & dissection

Melittalis sp. Filiform stipule



No basal lobe

ssp. falcata

Leaf shape similar but? smaller.

Flowers yellow

Fruits ± straight to curved to ≤ 1/2 circle.

Seeds 2-5.



ssp. varia

(x varia)

Flowers yellow pale mauve to purple green or blackish (always mixture)

Seeds 3-8 or abortive

