

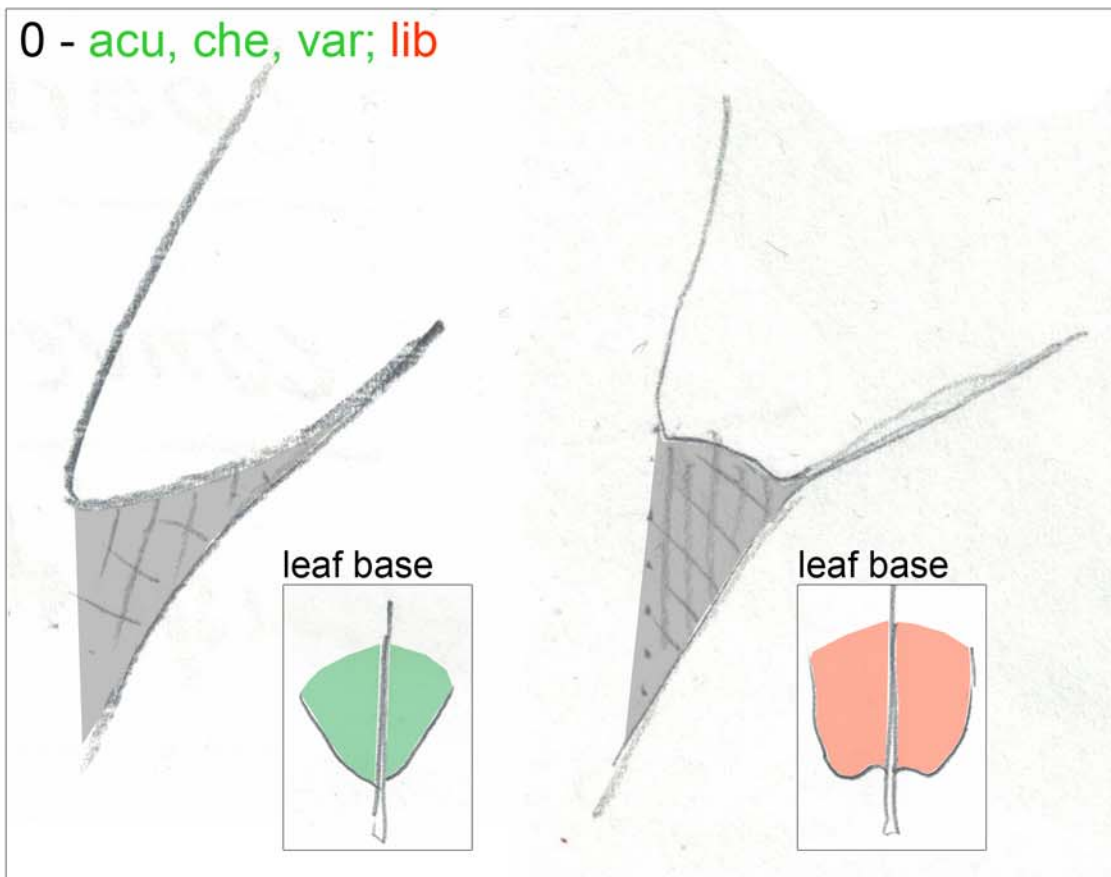
Character	[1]	1	2	[3]	3	4	[5]	5
Species	[Leaf size (length, cm)]	Leaf size	Leaf organisation	Secondary veins	Secondary veins	Intersec. Veins	[Petiole]	Petiole
<i>Q. acutissima</i>	8-19	Large	Simple	13-18	>>10	Absent	>>1cm (to 5 cm)	Long
<i>Q. chenii</i>	7-12	Medium	Simple	12-16	>>10	Absent	1cm (to 1.5 cm)	Short
<i>Q. variabilis</i>	8-15(-20)	Large	Simple	13-18	>>10	Absent	>>1cm (to 5 cm)	Long
<i>Q. crenata</i>	4-9	Medium	Simple	5-8	<10	Present	1-1.5 cm	Short
<i>Q. suber</i>	3-7	Small	Simple	5-6	<10	Absent	0.5-1 cm	Short
<i>Q. brantii</i>	6-10(-13)	Medium	Simple	8-14	>>10	Absent	0.5-2 cm	Short
<i>Q. ithaburensis</i>	4-9	Medium	Simple	5-8	<10	Absent	1-2 cm	Short
<i>Q. macrolepis</i>	5-9	Medium	Simple	5-8	<10	Absent	1-3.5 cm	Medium
<i>Q. afares</i>	7-14	Medium	Simple	8-17	>>10	Absent	1-2 cm	Short
<i>Q. libani</i>	7-12	Medium	Simple	11-16	>>10	Absent	0.8-2 cm	Short
<i>Q. trojana</i>	3-8(-10)	Medium	Simple	9-10	c.10	Absent	0.5-1 cm	Short
<i>Q. euboica</i>	5-9(-11)	Medium	Simple	8-10	c.10	Absent	0.5-1 cm	Short
<i>Q. castaneifolia</i>	10-20	Large	Simple	8-14	>>10	Absent	1-2.5 cm	Short
<i>Q. look</i>	5-7.5	Small	Simple	4-8	<10	Present	0.5-1.5 cm	Short
<i>Q. cerris</i>	5.5-14(-20)	Large	Simple to deeply lobed	5-9	<10	Present	0.3-2cm	Short

Character	6	7	8	9	10		
Species	Leaf base	Leaf shape	Leaf margin	Tooth type	Basal tooth side	Tooth type categories	
<i>Q. acutissima</i>	Obtuse, acute	Narrow ovate, lanceolate	Dentate	Bristle-like	Weakly developed, Straight	plesiomorph 1	0
<i>Q. chenii</i>	Obtuse, acute	Narrow ovate, lanceolate	Dentate	Bristle-like	Weakly developed, Straight	plesiomorph 1	0
<i>Q. variabilis</i>	Obtuse, acute	Narrow ovate, lanceolate	Dentate	Bristle-like	Weakly developed, Straight	plesiomorph 1	0
<i>Q. crenata</i>	Obtuse, acute, subauriculate	Narrow ovate, elliptic	Coarsely dentate	Coarse triangular	Convex to sigmoid	plesiomorph 2	1
<i>Q. suber</i>	Obtuse, acute	Ovate, elliptic	Dentate	Cuspidate	Weakly developed	derived 1 sclerophyllous	2
<i>Q. brantii</i>	Cordate	Ovate, elliptic	Dentate	Cuspidate	Convex to sigmoid	plesiomorph 2	1
<i>Q. ithaburensis</i>	Obtuse to cordate	Ovate, elliptic	Dentate	Cuspidate to bristle-like	Convex to sigmoid	plesiomorph 2	1
<i>Q. macrolepis</i> [incl. <i>Q. vallonea</i>]	Cordate	Ovate to broad ovate	Coarsely dentate	Coarse triangular	Convex	derived 2	3
<i>Q. afares</i>	Obtuse, acute	Narrow ovate, elliptic	Dentate	Coarse triangular to cuspidate	Convex to sigmoid	plesiomorph 2	1
<i>Q. libani</i>	Cordate, obtuse	Narrow ovate, elliptic, oblong	Dentate	Bristle-like	Weakly developed, Straight	plesiomorph 1	0
<i>Q. trojana</i>	Cordate	Narrow ovate, elliptic, oblong	Dentate	Cuspidate	Convex to sigmoid	plesiomorph 2	1
<i>Q. euboica</i>	Cordate	Narrow ovate, elliptic	Dentate	Cuspidate	Convex to sigmoid	plesiomorph 2	1
<i>Q. castaneifolia</i>	Obtuse, acute	Narrow ovate, elliptic	Coarsely dentate to dentate	Coarse triangular to cuspidate	Convex to sigmoid	plesiomorph 2	1
<i>Q. look</i>	Obtuse, acute, (sub)auriculate	Narrow ovate, elliptic	Coarsely dentate	Coarse triangular	Convex to sigmoid	derived 2	3
<i>Q. cerris</i>	Obtuse, acute, (sub)auriculate	Narrow to broad elliptic, obovate	Coarsely dentate	Coarse triangular	Convex	derived 3	4

Ad char. 10: Weakly developed = tooth area close to 0, tooth reduced to cusp or bristle-like extension (see **Legend**).

Abbreviations used in legend: acu Quercus acutissima, che Q. chenii, var Q. variabilis, lib Q. libani, sub Q. suber, cre Q. crenata, bra Q. brantii, ith Q. ithaburensis, afa Q. afares, tro Q. trojana, eub Q. euboica, cas Q. castaneifolia, mac Q. macrolepis, loo Q. look, cer Q. cerris.

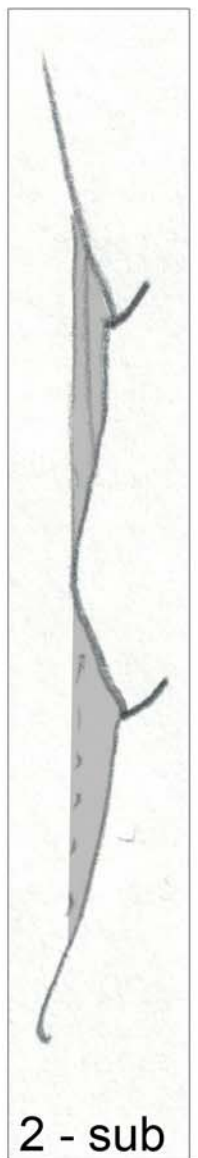
0 - acu, che, var; lib



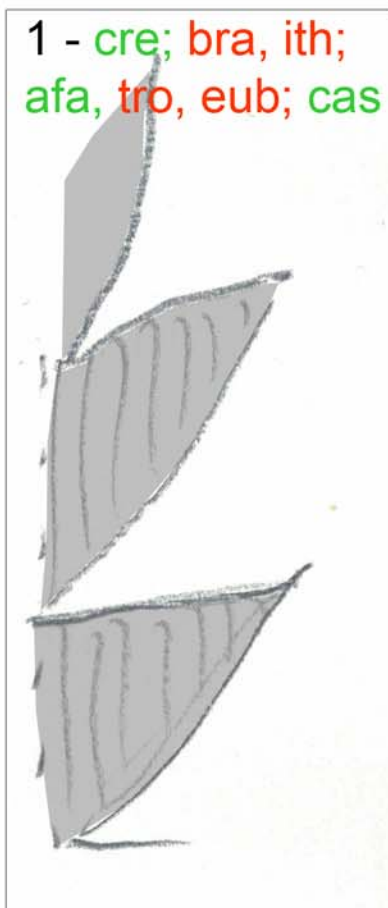
Leaf type 0: tooth weakly developed, tooth apex bristle-like (aristate)

Leaf type 2: weakly developed - cuspidate

2 - sub



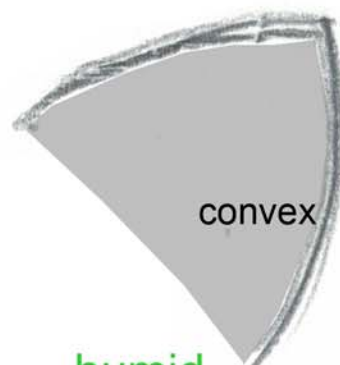
1 - cre; bra, ith;
afa, tro, eub; cas



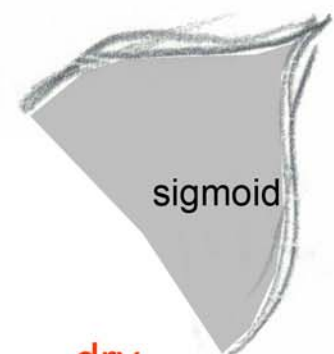
Leaf type 1: tooth strongly developed, tooth apex mucronate to cuspidate

Leaf types 3, 4: further increase of tooth area, subsidiary teeth, lobation (mac; loo, cer)

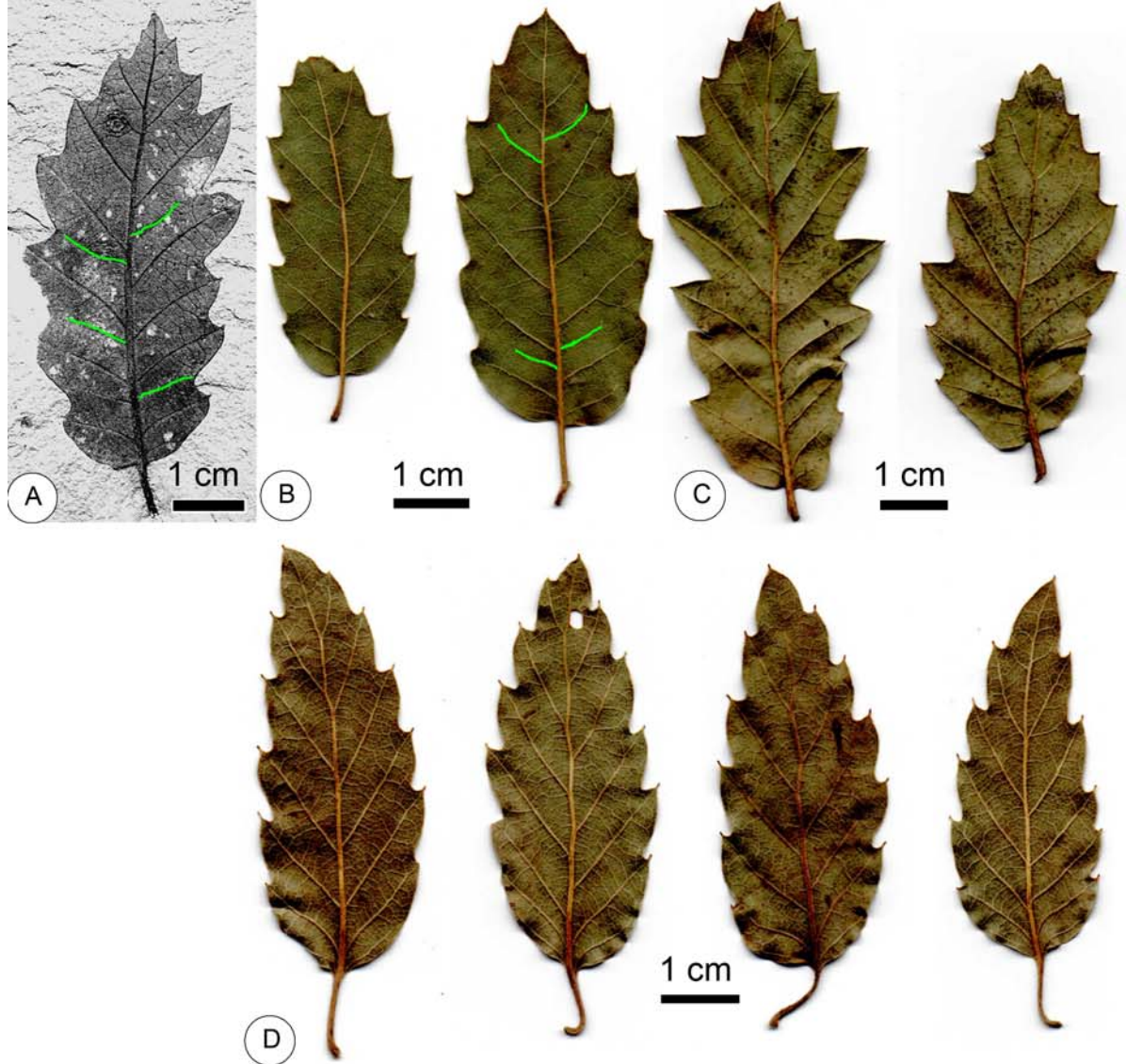
1



humid
(e.g. cas)



dry



A. *Q. kraskinensis* Pavlyutkin **FOSSIL**

B. *Q. crenata* Lucombeana002

C. *Q. crenata* Valentano0003

D. *Q. crenata* Tassarolo001

E. *Q. crenata*
Santi 1795 [*Q. pseudo-robur*]

 = intersecondary veins

Weighted mean distance = 0.1



>>10 secondaries

Subsect. *Libani*

Q. euboica **
Q. trojana **

Q. brantii **

Q. afares

Q. castaneifolia

Q. suber

Basal side of teeth straight

**Q. lithaburensis*

Bristle-like teeth

Subsect. *Aegilops*

<10 secondaries

Bristle-like teeth,
basal side straight

Lanceolate leaves

Q. acutissima
Q. variabilis

Petioles >> 1 cm (to 5 cm)

Subsect. *Campylolepides*

***Q. macrolepis*

Coarsely dentate

Subsect. *Suber*

Subsect. *Cerris*

Intersecondary veins

Can have (sub)auriculate leaf bases

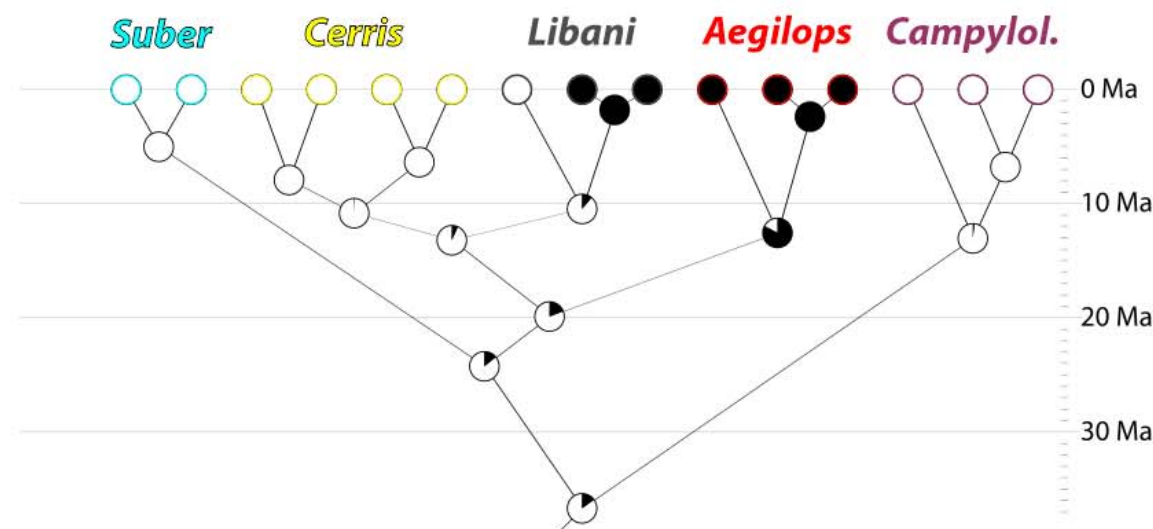
Q. look

Q. crenata

Q. cerris

Leaves can be deeply lobed

* Cordate leaf bases (** always)



ML map of cordate leaf base trait