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"Conservation of Mediterranean Plant Diversity: Complementary Approaches and New Perspectives"

The Native Tree Flora of Greece: a database essential for conservation actions

Evangelia N. Daskalakou[1], Katerina Koutsovoulou[2,3] & Costas A. Thanos[3]

[1]Institute of Mediterranean Forest Ecosystems, Hellenic Agricultural Organization "DEMETER", edaskalakou@fria.gr

[2]Department of Botany, Faculty of Biology, National and Kapodistrian University of Athens, cthanos@biol.uoa.gr

[3]Green Fund, Ministry of Environment and Energy, kkoutsov@biol.uoa.gr

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Version II (June 2018)

Vascular flora of Greece

6695 taxa

5828 species and 1982 subspecies (native and naturalized)

belonging to 1083 genera and 185 families

Dimopoulos et al. 2013;
http://portal.cybertaxonomy.org/flora-greece/content

The LINNEAN SOCIETY of London BOTANICAL Journal of the Linnean Society

Botanical Journal of the Linnean Society, 2010, **162**, 130–422. With 12 figures

Patterns and traits of the endemic plants of Greece

KYRIACOS GEORGHIOU* and PINELOPI DELIPETROU

a hotspot for endemism in Europe and the Mediterranean area

endemics: 22.2% of the total number of Greek taxa

(Dimopoulos et al. 2013)

In the framework of an on-going study on the reproductive biology of the native tree flora of Greece, data for all native trees are being collected and regularly enriched with new information

- ✓ plant life form,
- ✓ phenology (flowering and fruiting seasons),
- ✓ masting,
- ✓ dispersal,
- ✓ seed/fruit biometry,
- ✓ seed germination,
- ✓ seed storability and
- ✓ conservation status (IUCN)

Daskalakou & Thanos 2014; Koutsovoulou et al. 2015

The database comprises 169 taxa
2.5% of the entire Greek flora and
0.3% of the tree taxa globally
classified as trees according to the definition
(IUCN's Global Tree Specialist Group)

'a woody plant with usually a single stem growing to a height of at least 2 m, or if multi-stemmed, then at least one vertical stem 5 cm in diameter at breast height'.

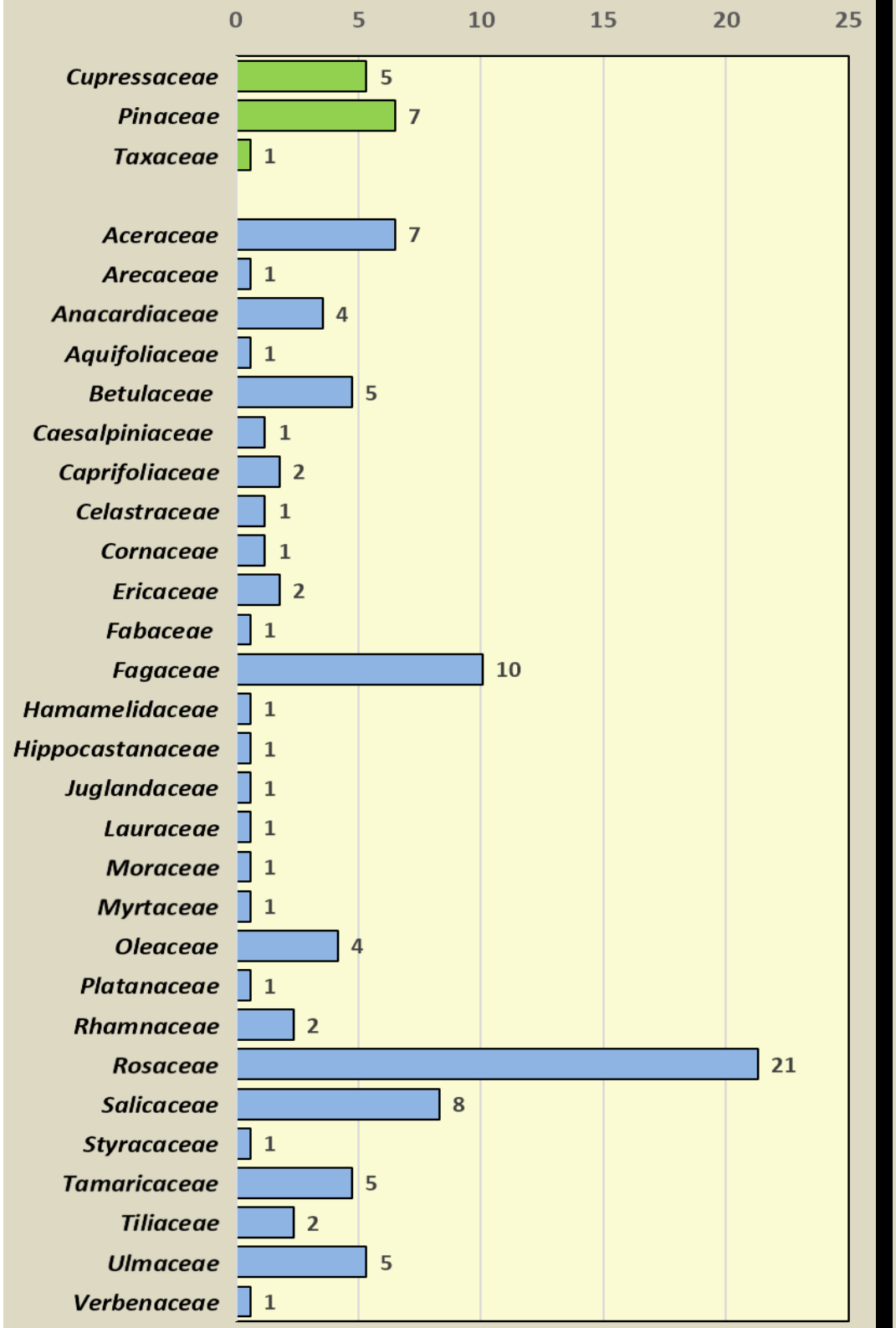
JOURNAL OF SUSTAINABLE FORESTRY
2017, VOL. 36, NO. 5, 454–489
http://dx.doi.org/10.1080/10549811.2017.1310049

Taylor & Francis
Taylor & Francis Group

GlobalTreeSearch: The first complete global database of tree species and country distributions

E. Beech[a], M. Rivers[a,b], S. Oldfield[b], and P. P. Smith[a]

[a]Botanic Gardens Conservation International, Richmond, United Kingdom; [b]IUCN/SSC Global Tree Specialist Group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Celastraceae 1
Cornaceae 1
Ericaceae 2
Fabaceae 1
Fagaceae 10
Hamamelidaceae 1
Hippocastanaceae 1
Juglandaceae 1
Lauraceae 1
Moraceae 1
Myrtaceae 1
Oleaceae 4
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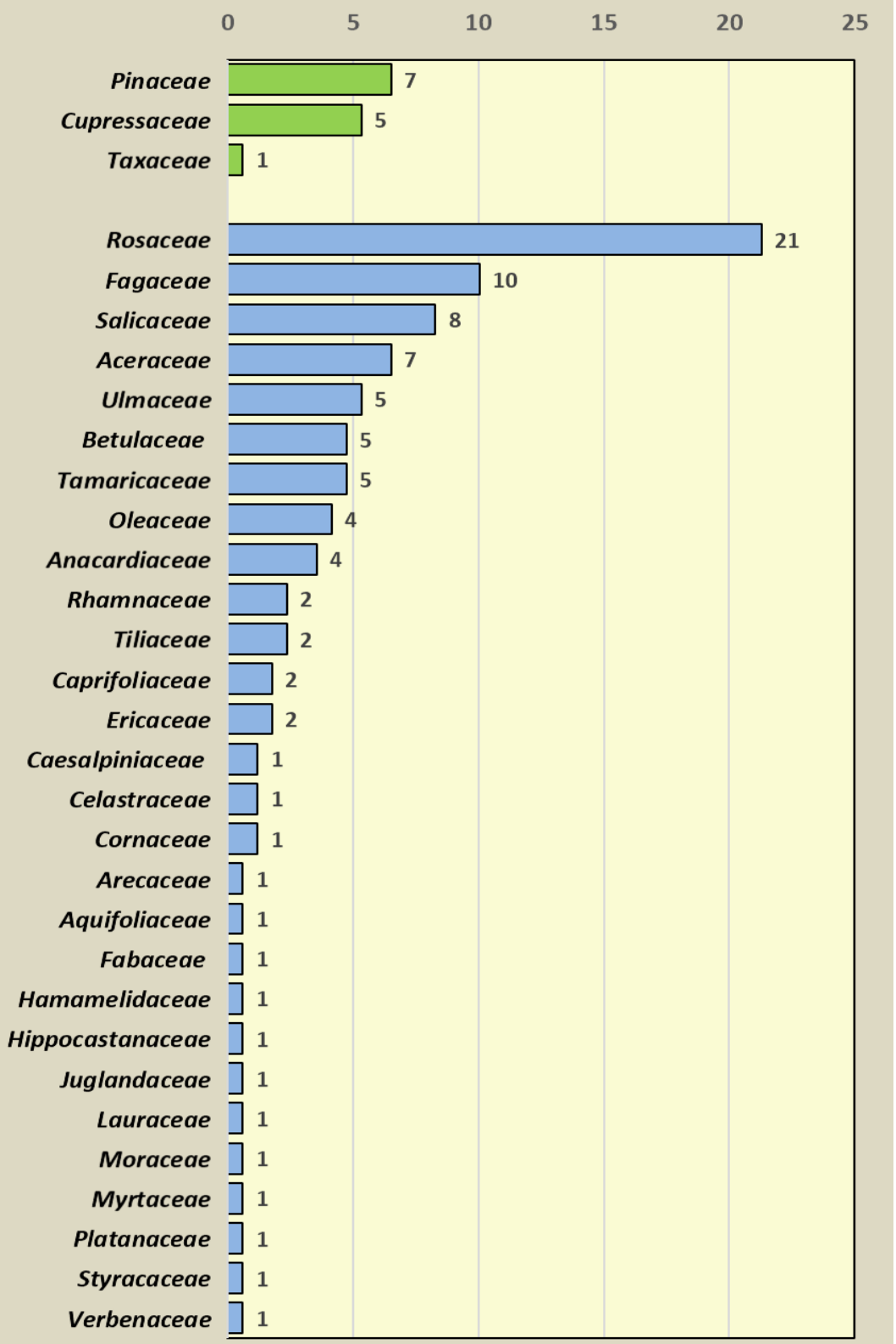
Styracaceae 1
Tamaricaceae 5
Tiliaceae 2
Ulmaceae 5
Verbenaceae 1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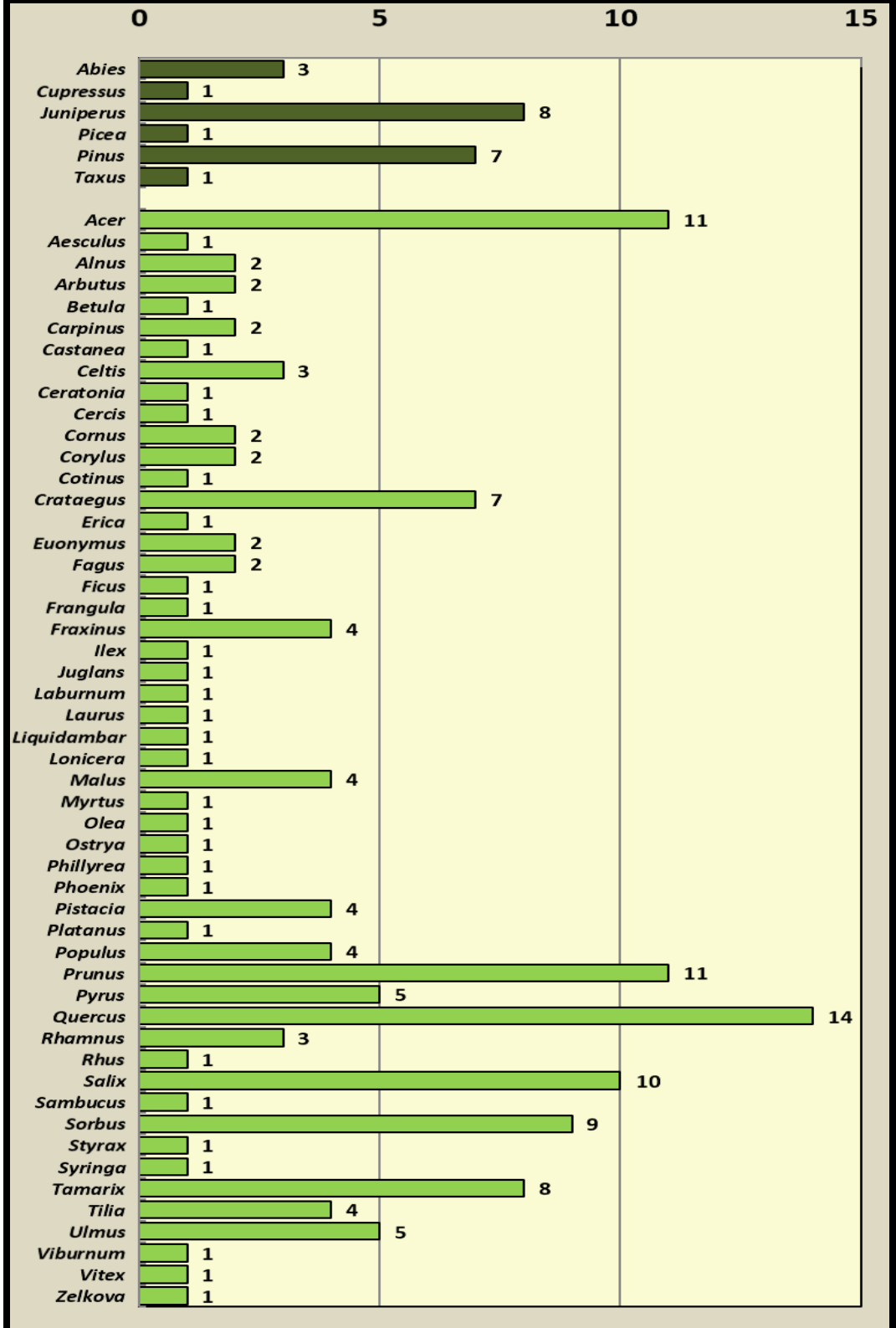
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Carpinus 2
Castanea 1
Celtis 3
Ceratonia 1
Cercis 1
Cornus 2
Corylus 2
Cotinus 1
Crataegus 7
Erica 1
Euonymus 2
Fagus 2
Ficus 1
Frangula 1
Fraxinus 4
Ilex 1
Juglans 1
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Laurus 1
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Lonicera 1
Malus 4
Myrtus 1
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Populus 4
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Pyrus 5
Quercus 14
Rhamnus 3
Rhus 1
Salix 10
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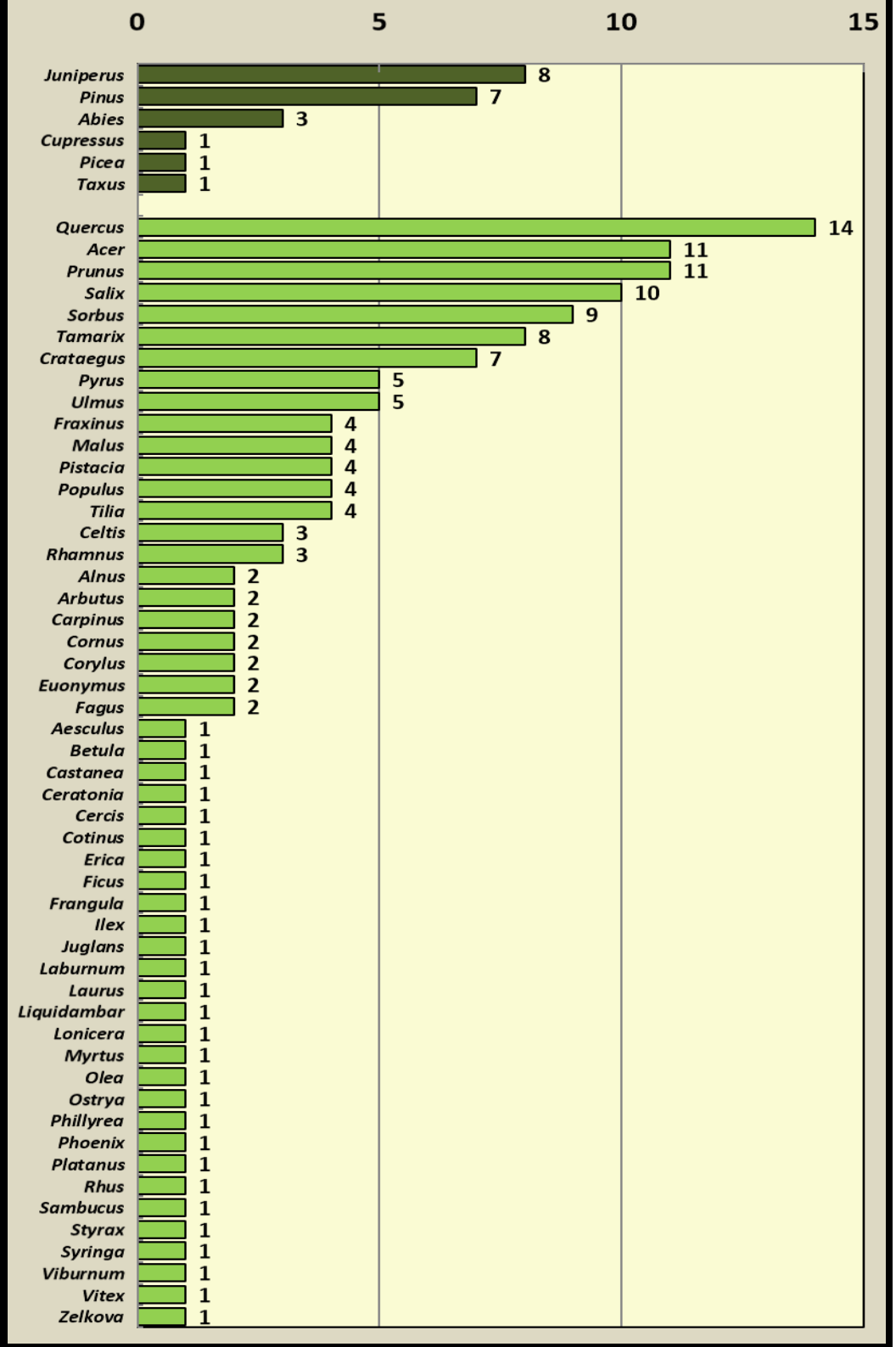
Vitex 1
Zelkova 1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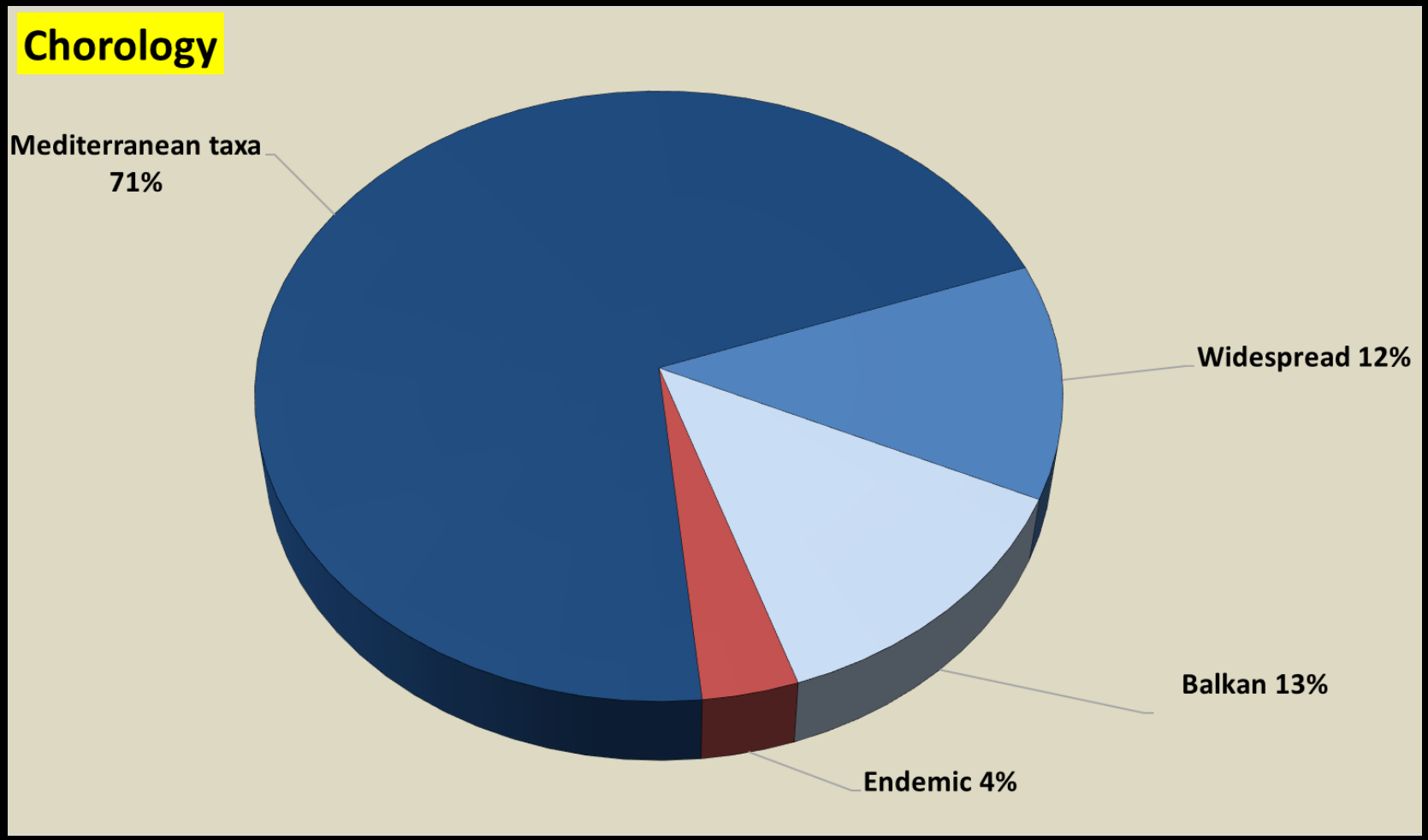

Dimopoulos et al. 2013;
http://portal.cybertaxonomy.org/flora-greece/content

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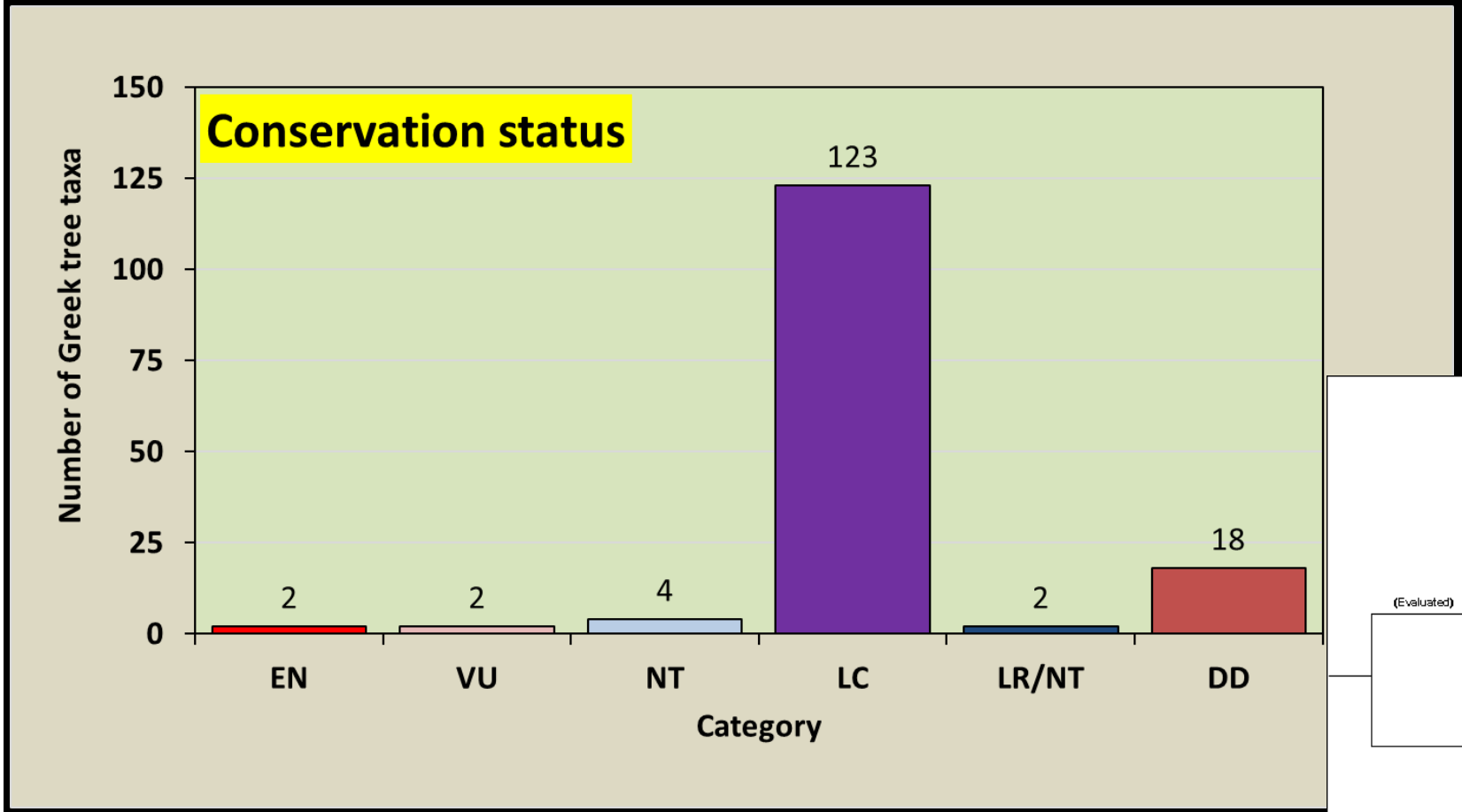
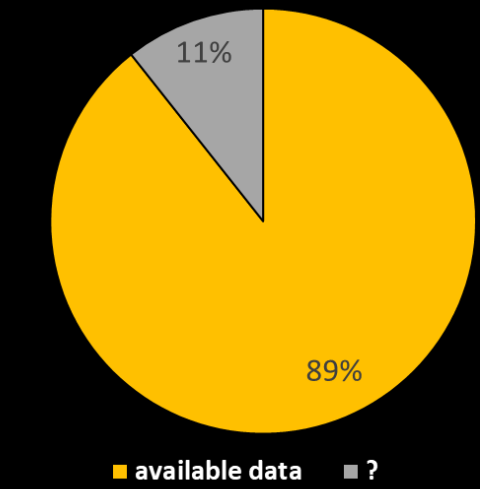
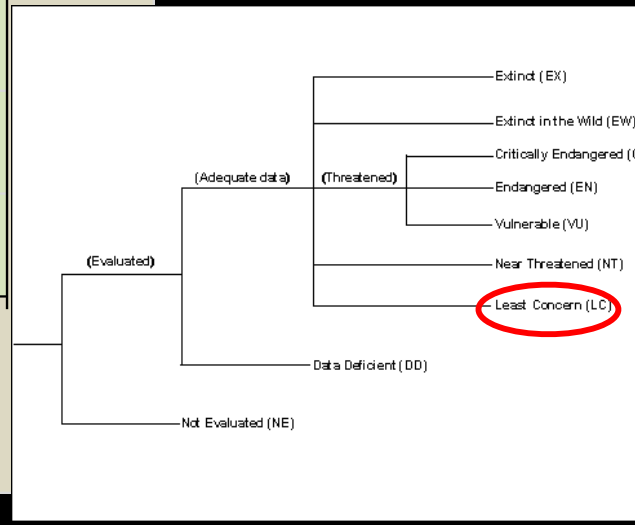
IUCN Categories & Criteria (version 3.1, 2001)







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http://oldredlist.iucnredlist.org/static/categories_criteria_3_1#definitions

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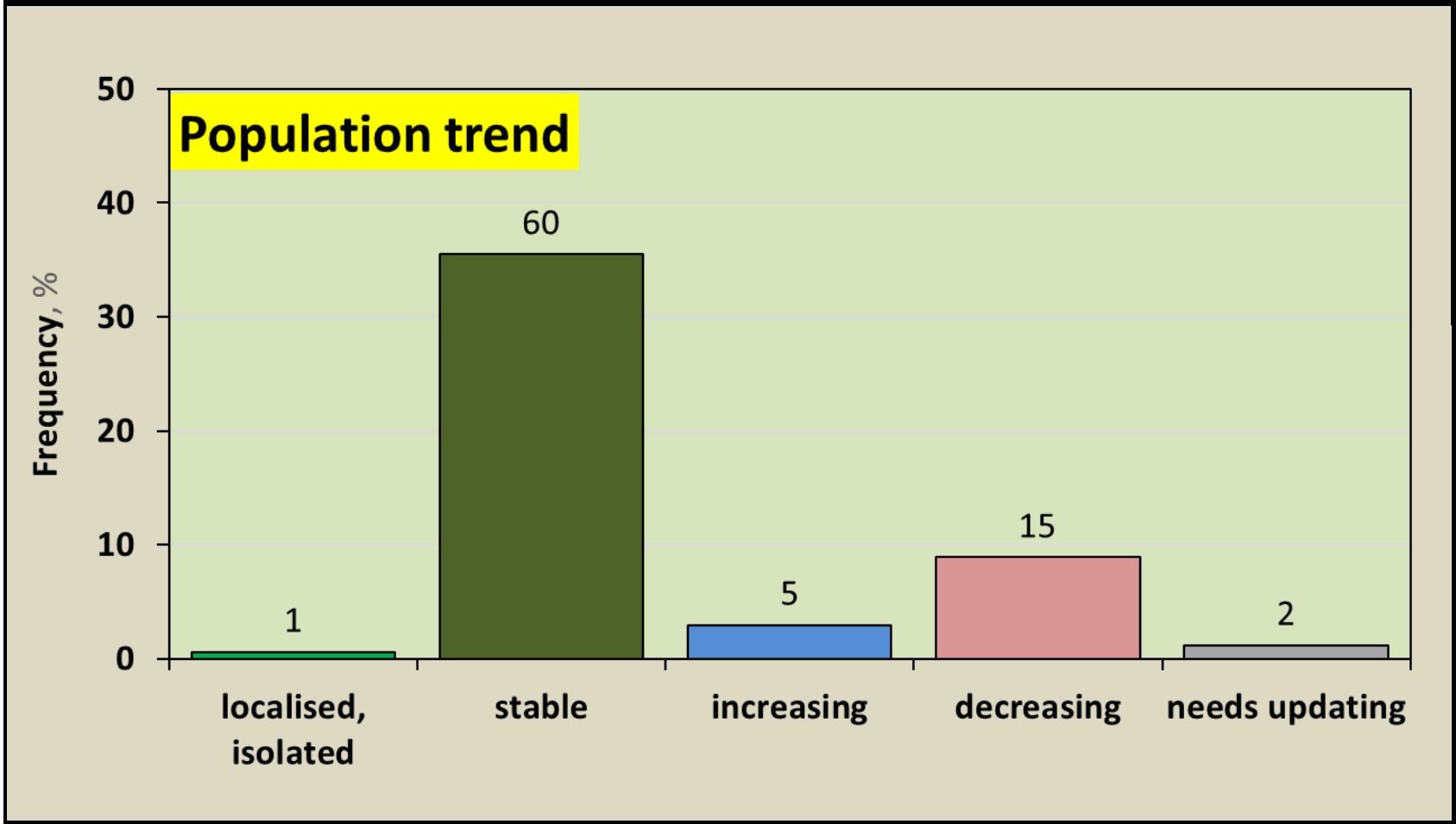

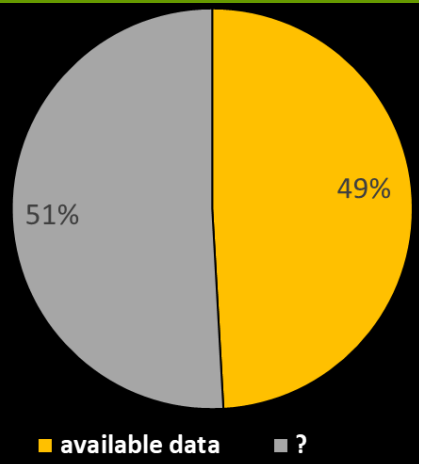

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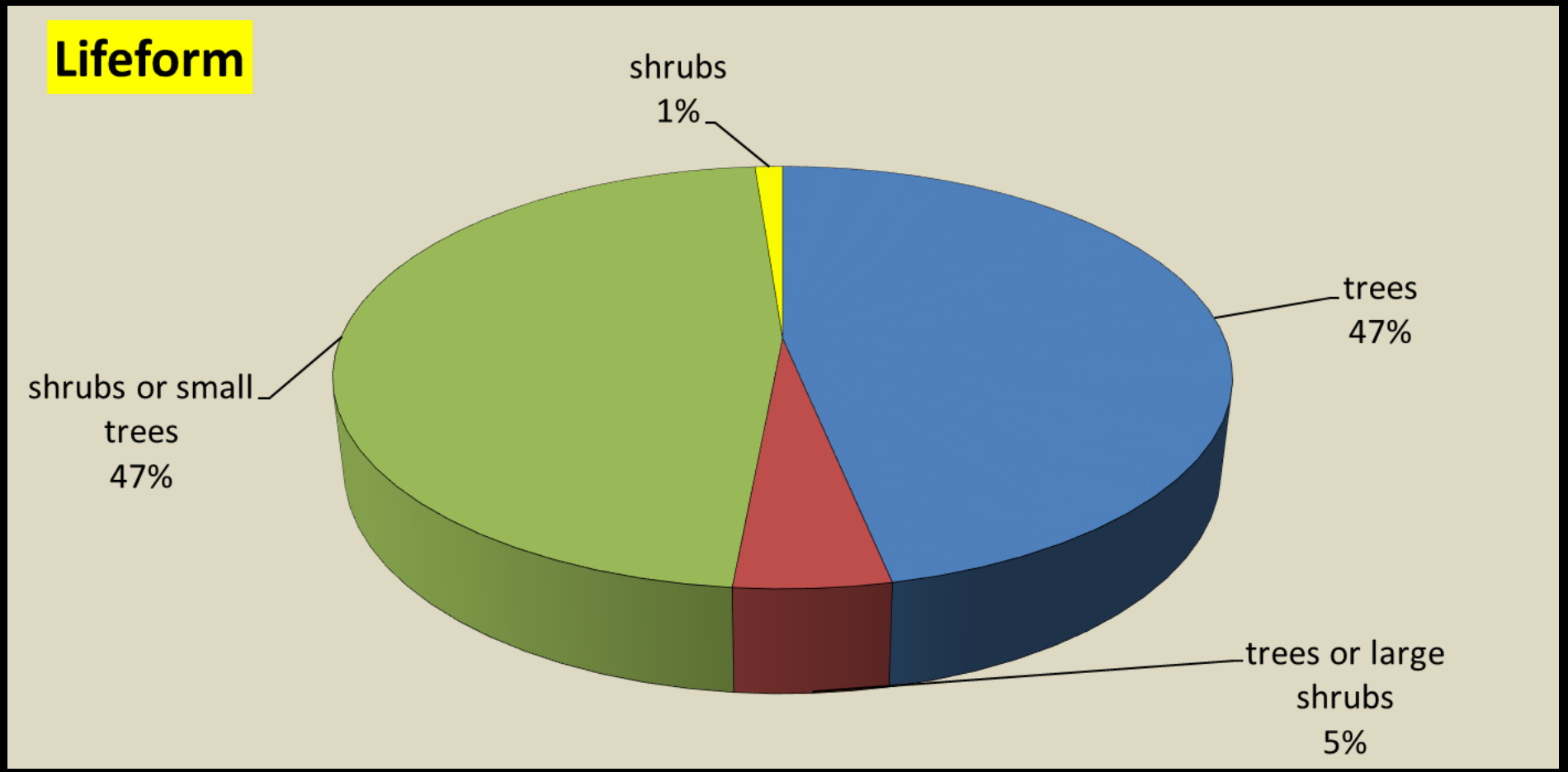
Lifeform
shrubs
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trees
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trees or large
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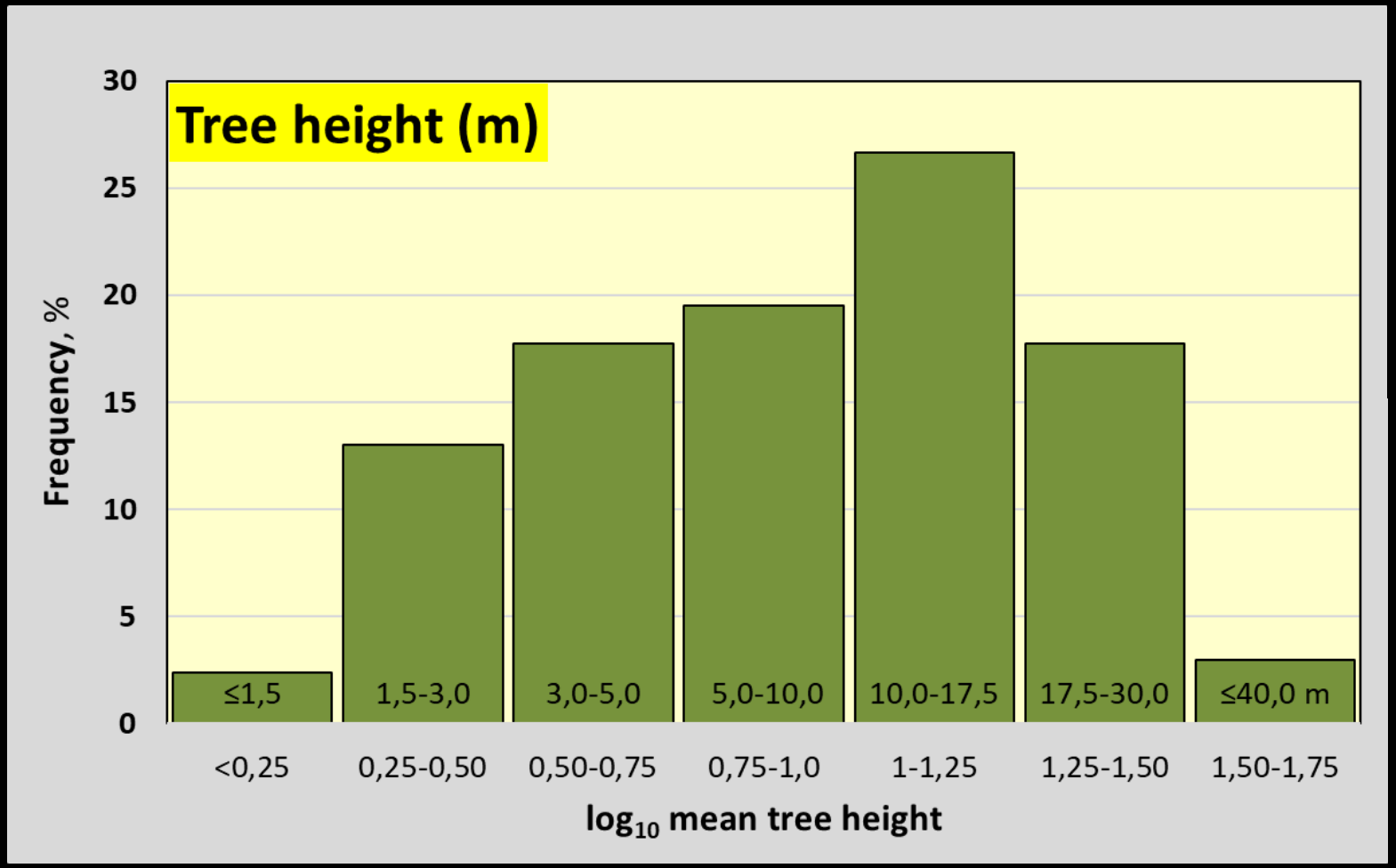

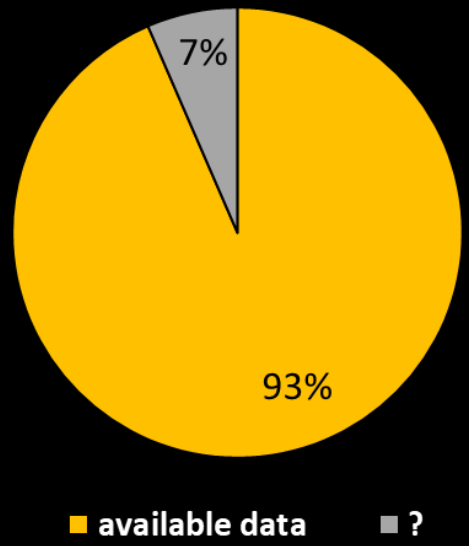

Endemic trees are 3.6% of the Greek tree flora or less than 0.1% of the total Greek flora

Taxon	Family	Geographical distribution in Greece

Other interesting trees of the Greek flora

Taxon	Family	Geographical distribution	
		Greece	elsewhere

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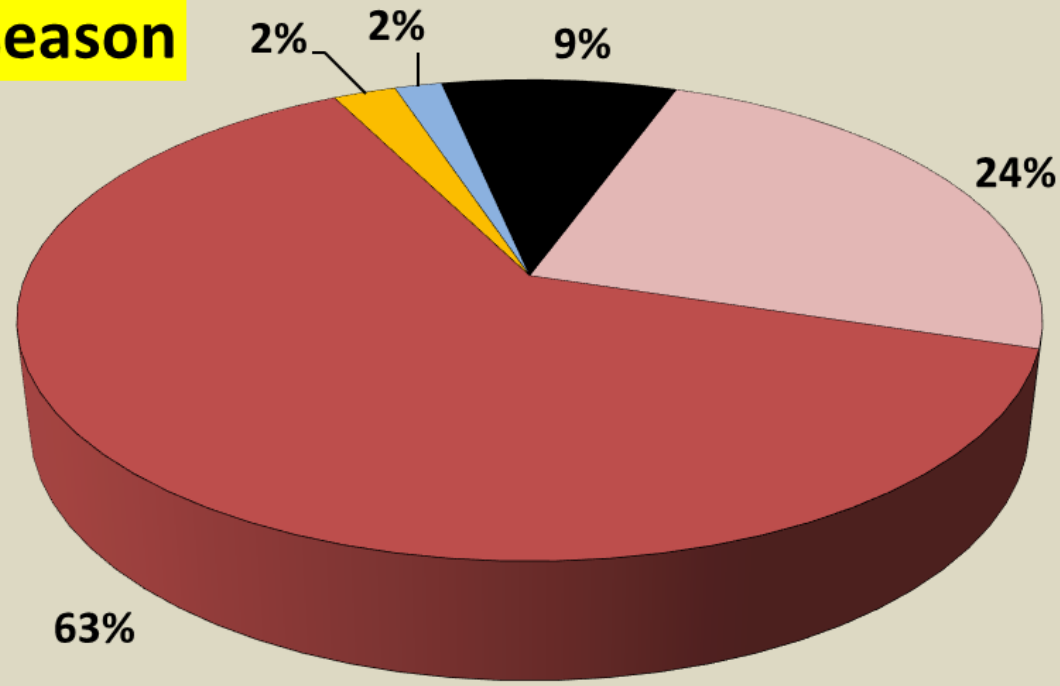
available data for 154 tree ta

Flowering season



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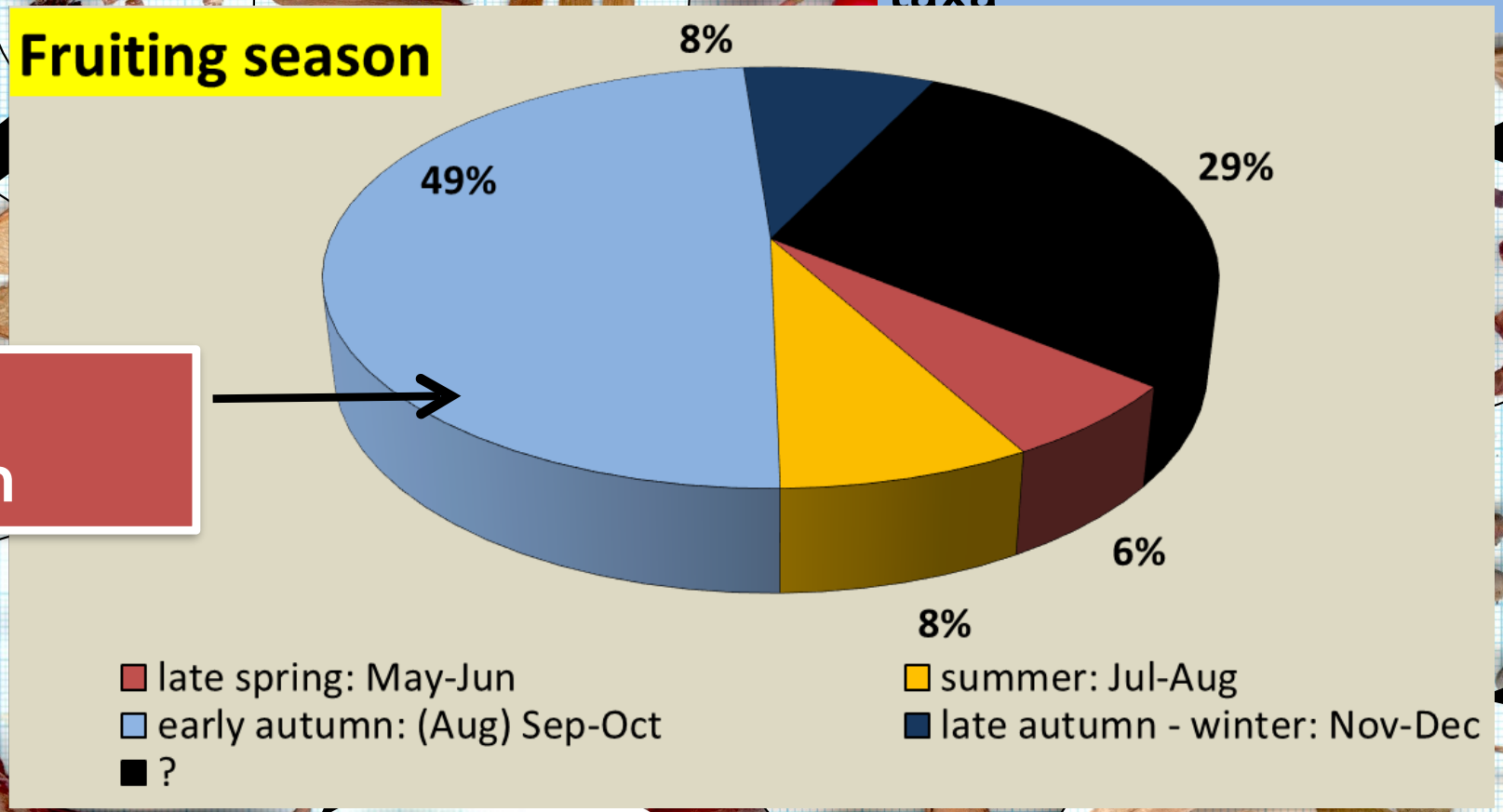
available data for 120 tree taxa

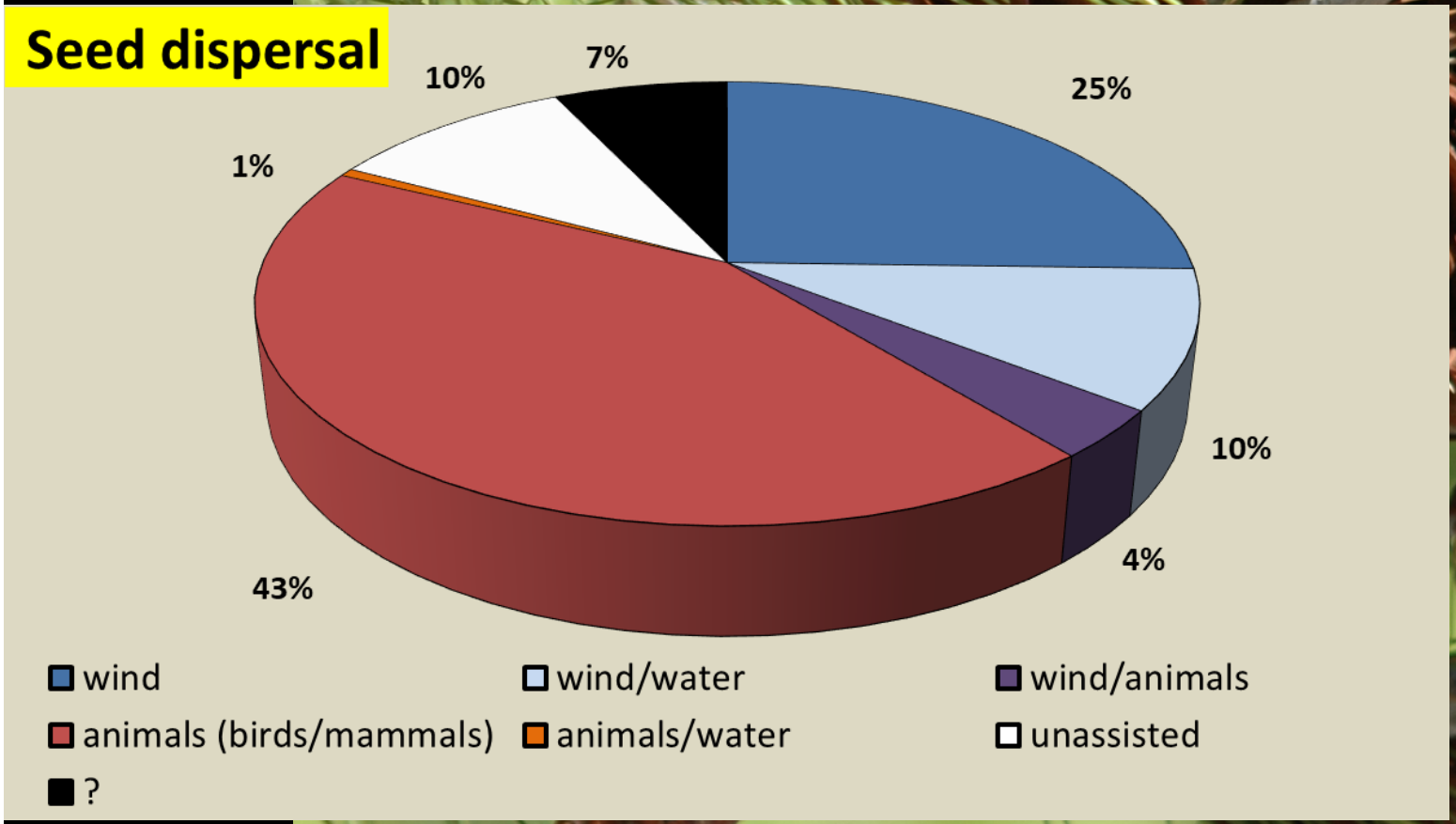
Fruiting season



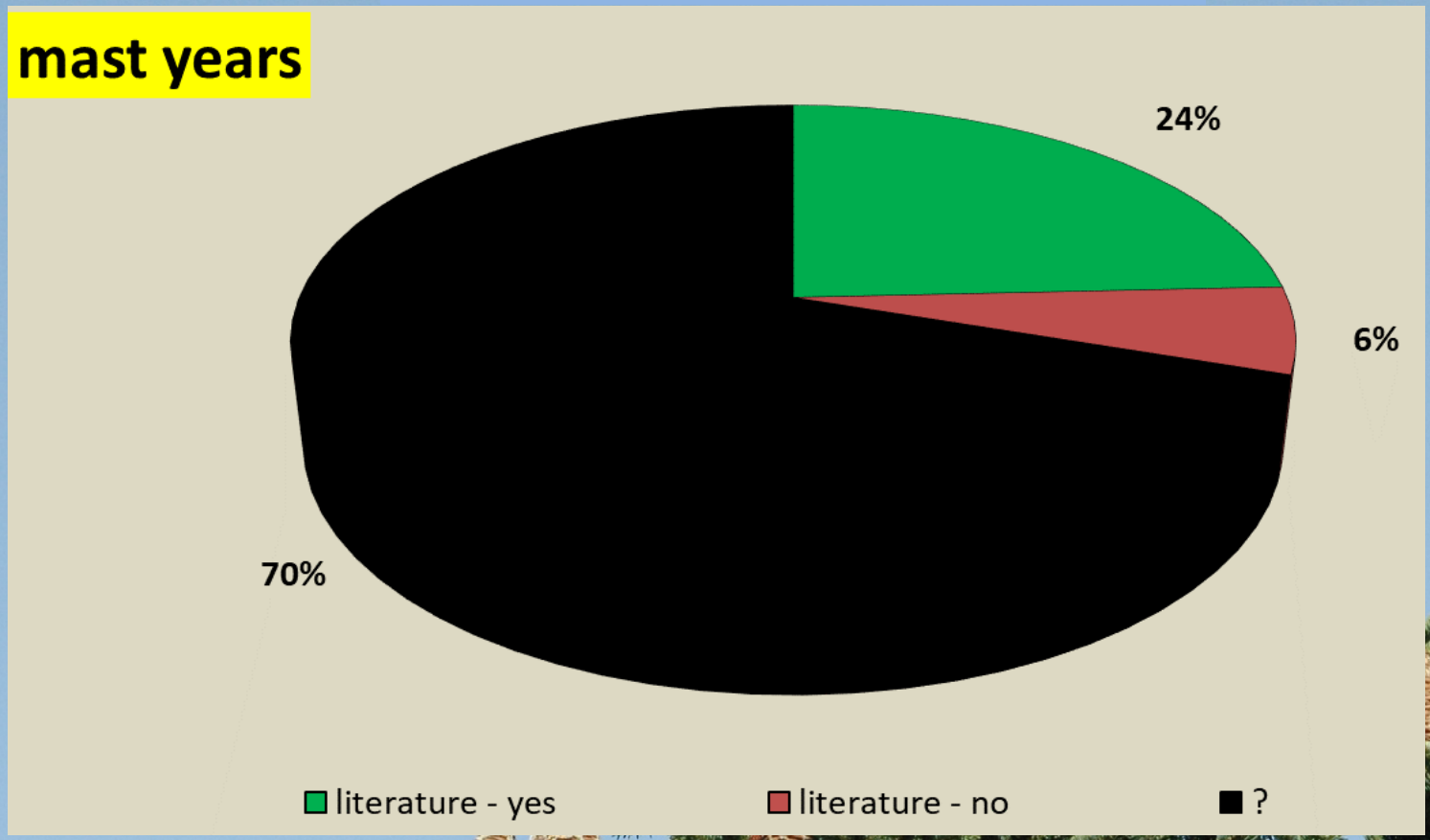
Seed collection

available data for 157 tree taxa

Seed dispersal



available data for 51 tree taxa



Seed Science Research

cambridge.org/ssr

Research Paper

Cite this article: Daskalakou EN, Koutsovoulou K, Mavroeidi L, Tsiamitas C, Kafali E, Radaiou P-E, Ganatsas P, Thanos CA (2018). Interannual variability of germination and cone/seed morphometric characteristics

Interannual variability of germination and cone/seed morphometric characteristics in the endemic Grecian fir (*Abies cephalonica*) over an 8-year-long study

Evangelia N. Daskalakou[1], Katerina Koutsovoulou[2], Lida Mavroeidi[2], Charalambos Tsiamitas[2], Eleftheria Kafali[2], Panagiota-Effrosyni Radaiou[2], Petros Ganatsas[3] and Costas A. Thanos[2]

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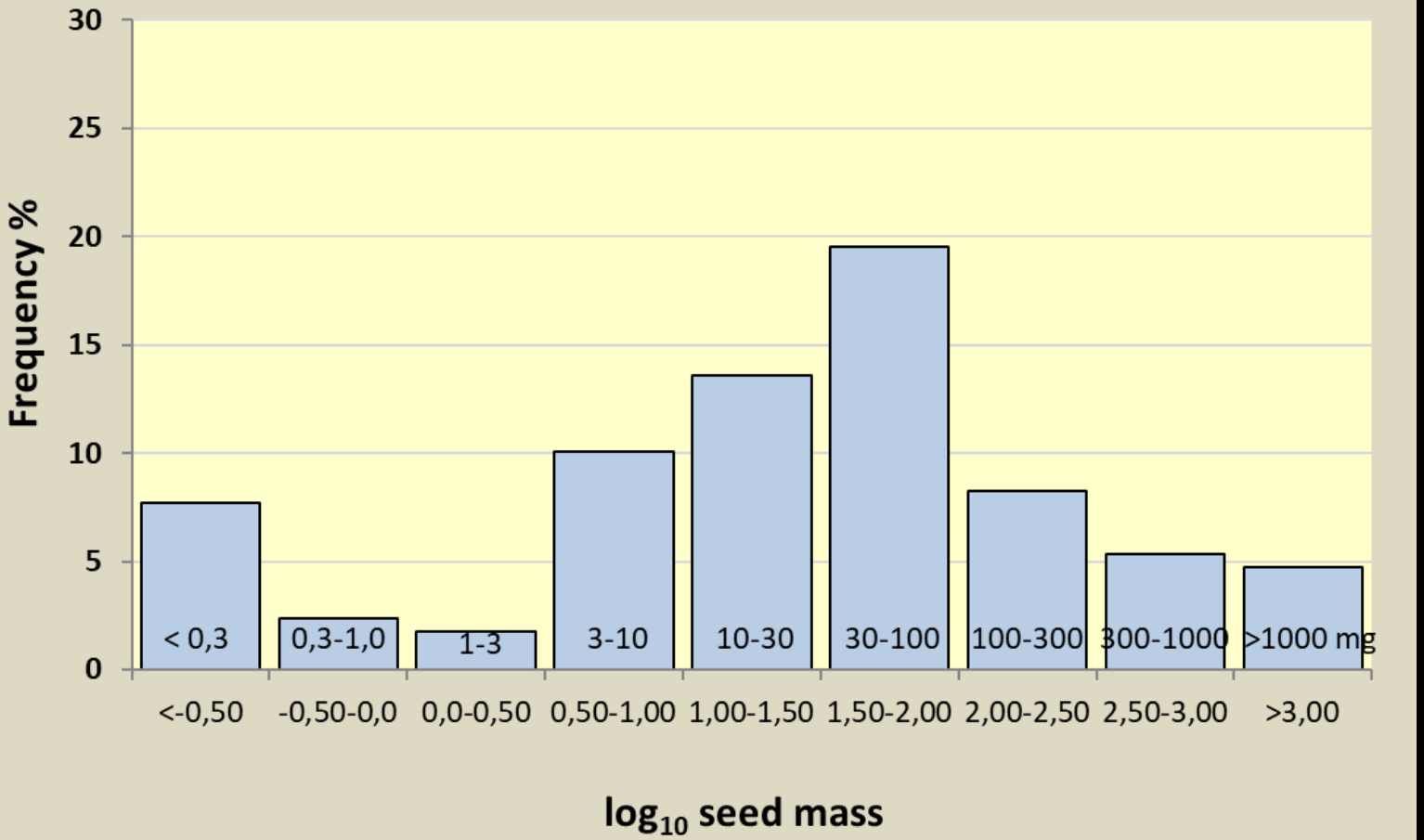
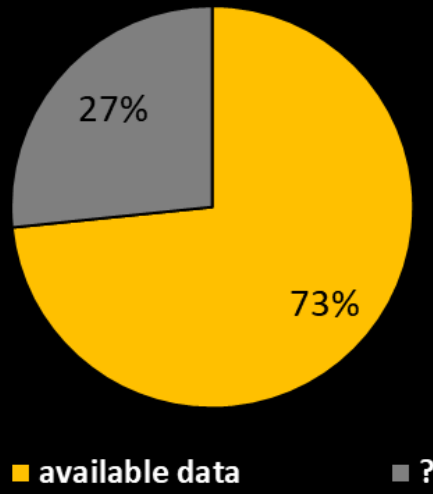
Seed mass (mg)





Royal Botanic Gardens Kew (2008) Seed Information Database (SID). Version 7.1. Available from: http://data.kew.org/sid/ (May 2008)

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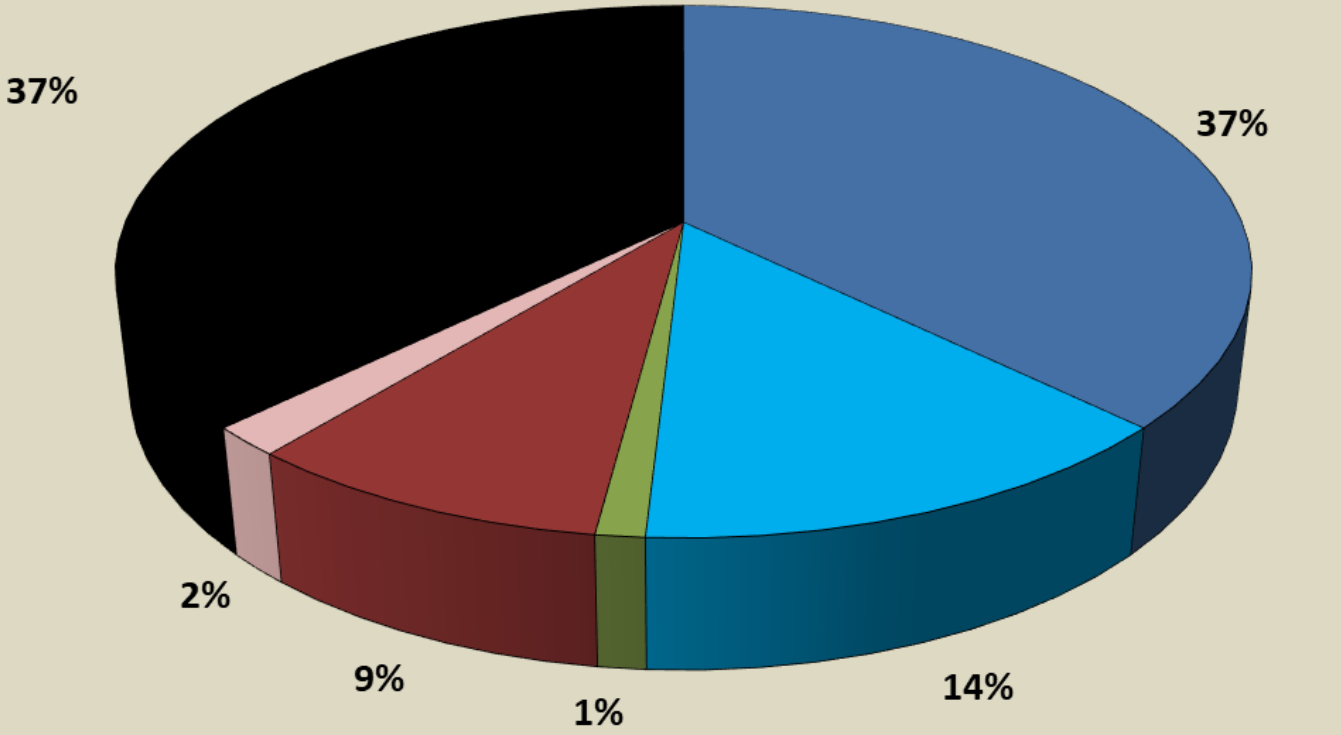
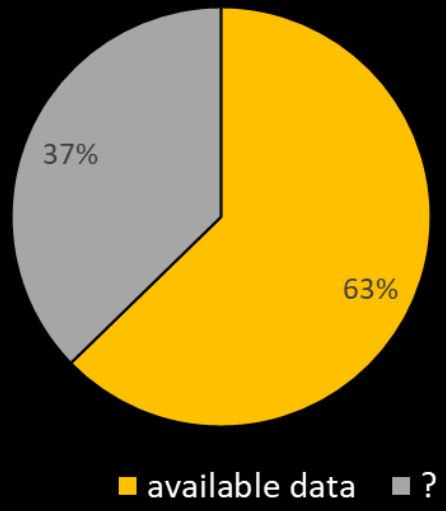
Storage behaviour





Hong & Ellis 1996; Gosling 2007

Royal Botanic Gardens Kew (2008) Seed Information Database (SID). Version 7.1. Available from: http://data.kew.org/sid/ (May 2008)

Germination characters in European plants

- **Postdevelopers**

Seeds with underdeveloped and undifferentiated embryos are associated with delayed, WINTER or SPRING germination.

- **Afterripeners**

Seeds require a few months in dry, warm state. Usually encountered among plants showing 'early seed maturation'. Safeguards seeds from untimely summer/early autumn germination.

- **Hardcoaters**

Hard coats are associated with either EPISODIC (postfire) or ERRATIC germination (after animal consumption, drought, freezing/thawing, weathering …)

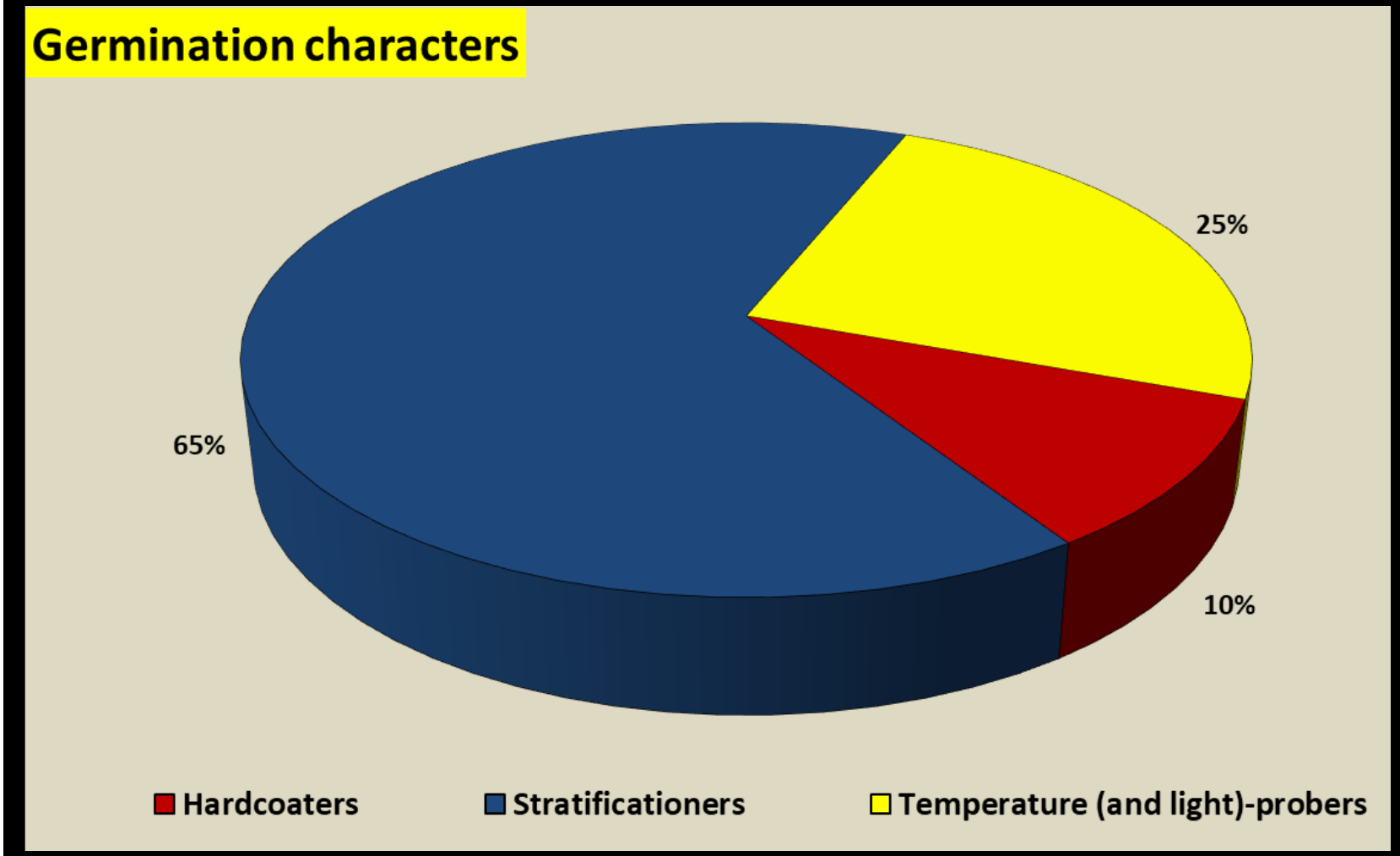
- **Stratificationers**

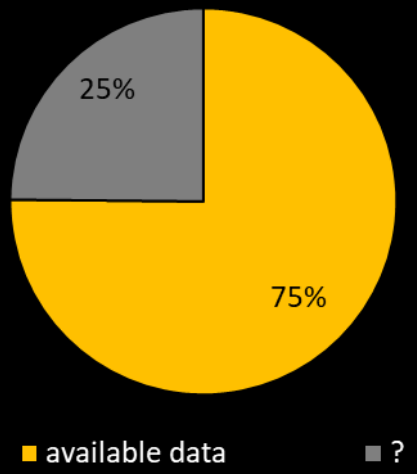
A requirement of cold stratification is associated with: LATE WINTER or SPRING germination

- **Temperature (and light)-probers**

Temperature (and light) detecting mechanisms are associated with TIMING OF GERMINATION in: a) Autumn (cool T, Mediterranean), b) Winter (cold T, temperate and mountainous), c) Spring (warm T, alpine and arctic) and d) Summer (hot T, mostly immigrants)

Thanos et al. 2017





Thanos et al. 2017; Baskin & Baskin 2014

CONCLUSIONS

Direct scientific information on seed germination and seed storage behaviour is either fully unavailable or relatively fragmented and outdated for at least 44 taxa belonging to 18 genera (*Juniperus*, *Acer*, *Celtis*, *Crataegus*, *Lonicera*, *Malus*, *Pistacia*, *Prunus*, *Pyrus*, *Populus*, *Quercus*, *Rhamnus*, *Salix*, *Sambucus*, *Sorbus*, *Styrax*, *Tamarix* and *Ulmus*).

The *ex situ* conservation of a significant part (~ 26%) of the Greek tree flora (e.g. through seedbanking) is challenging.

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CONCLUSIONS

The non-studied taxa are either rare and endemic plants of Greece, common or show scattered natural distribution (e.g. taxa of *Juniperus*, *Acer*, *Salix*, *Tamarix* and *Ulmus*) or produce recalcitrant seeds (e.g. *Quercus* spp.)

Further research is needed for an effective protection and conservation of the native tree flora of Greece,

but also for numerous relevant applications (urban forestry, restoration after wildfires or other disturbances and nursery practice).

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MAJOR SOURCES

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14. general literature search (1990-2018)

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