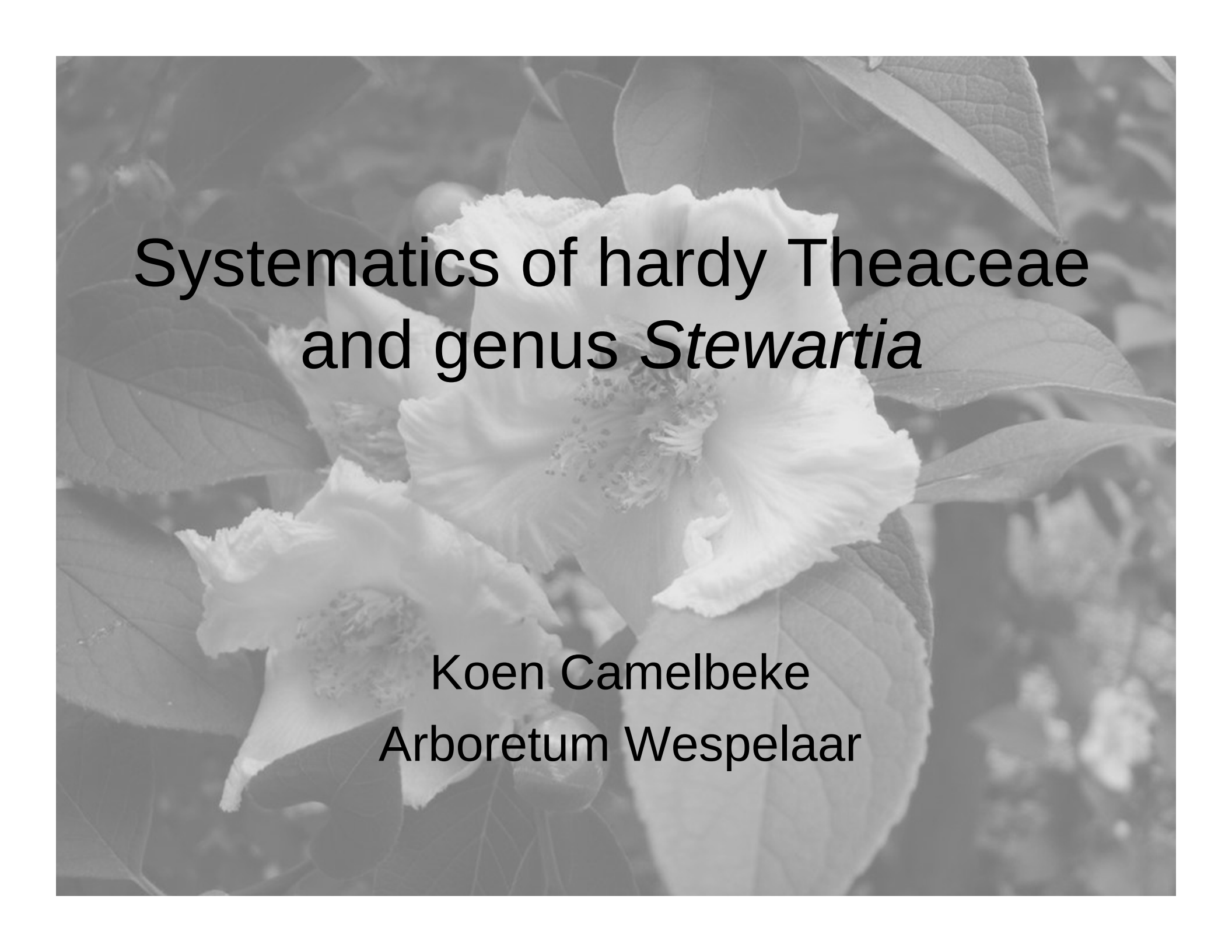
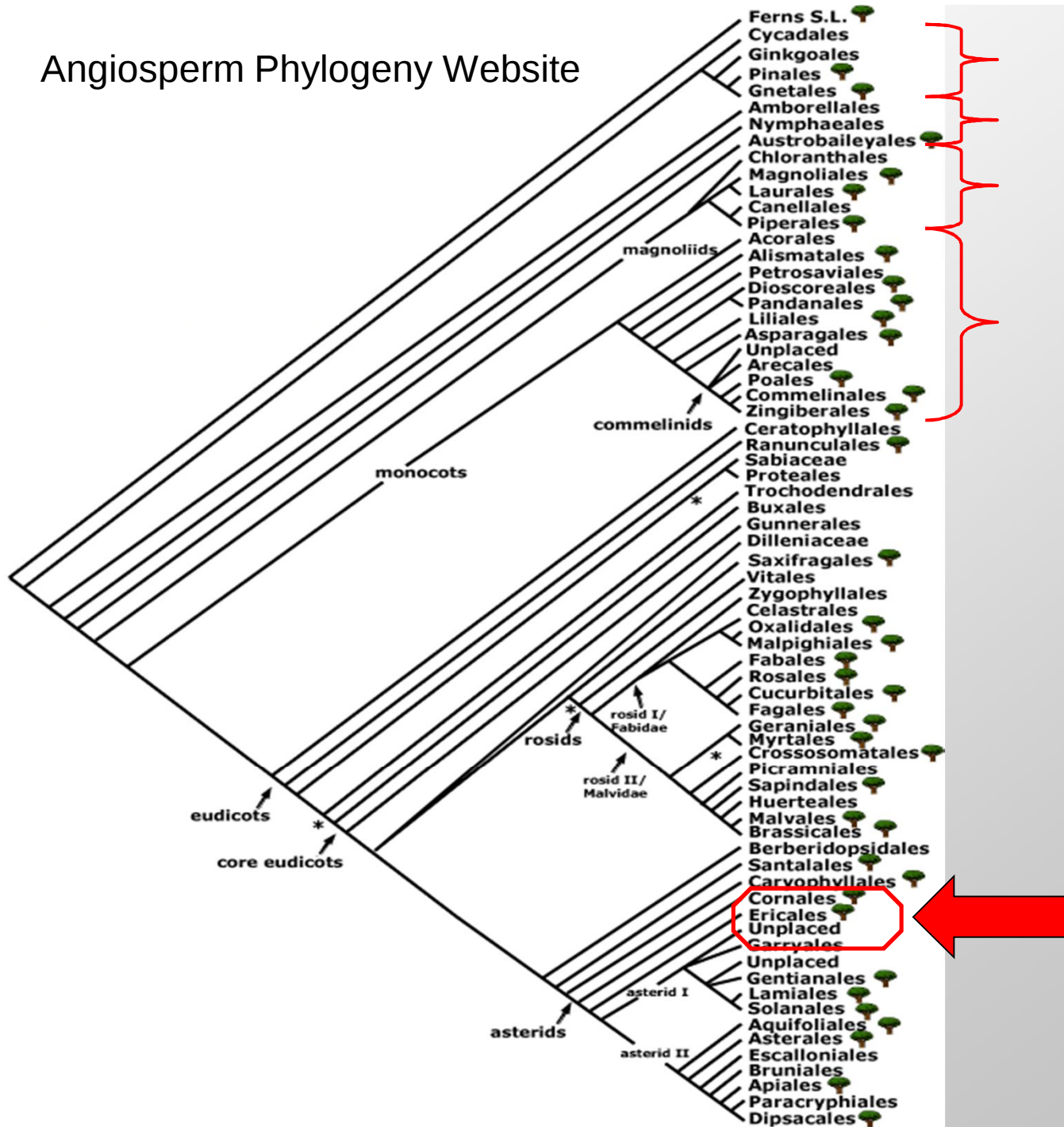


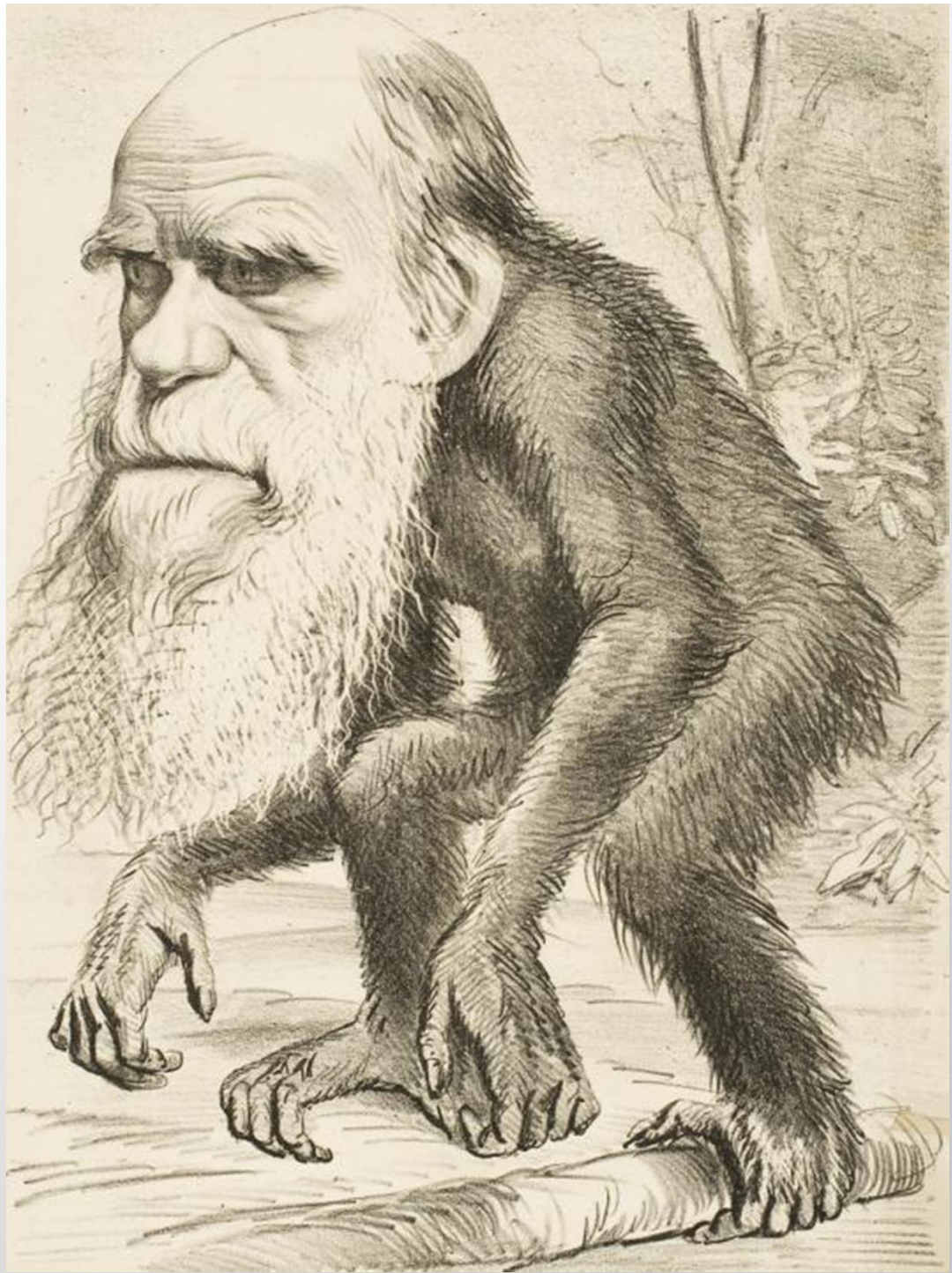


Systematics of hardy Theaceae and genus *Stewartia*

Koen Camelbeke
Arboretum Wespelaar

Angiosperm Phylogeny Website





Angiosperm Phylogeny Website



Ericales

Systematics Theaceae

- Family name
- Theaceae s.s. (versus repository)
- 7-10 genera; 195 – 460 species
- (sub-)tropics; esp. forests of SE Asia
- economically important (tea, oil, ornamentals)
- each genus restricted to single major geographic area; except *Stewartia*!

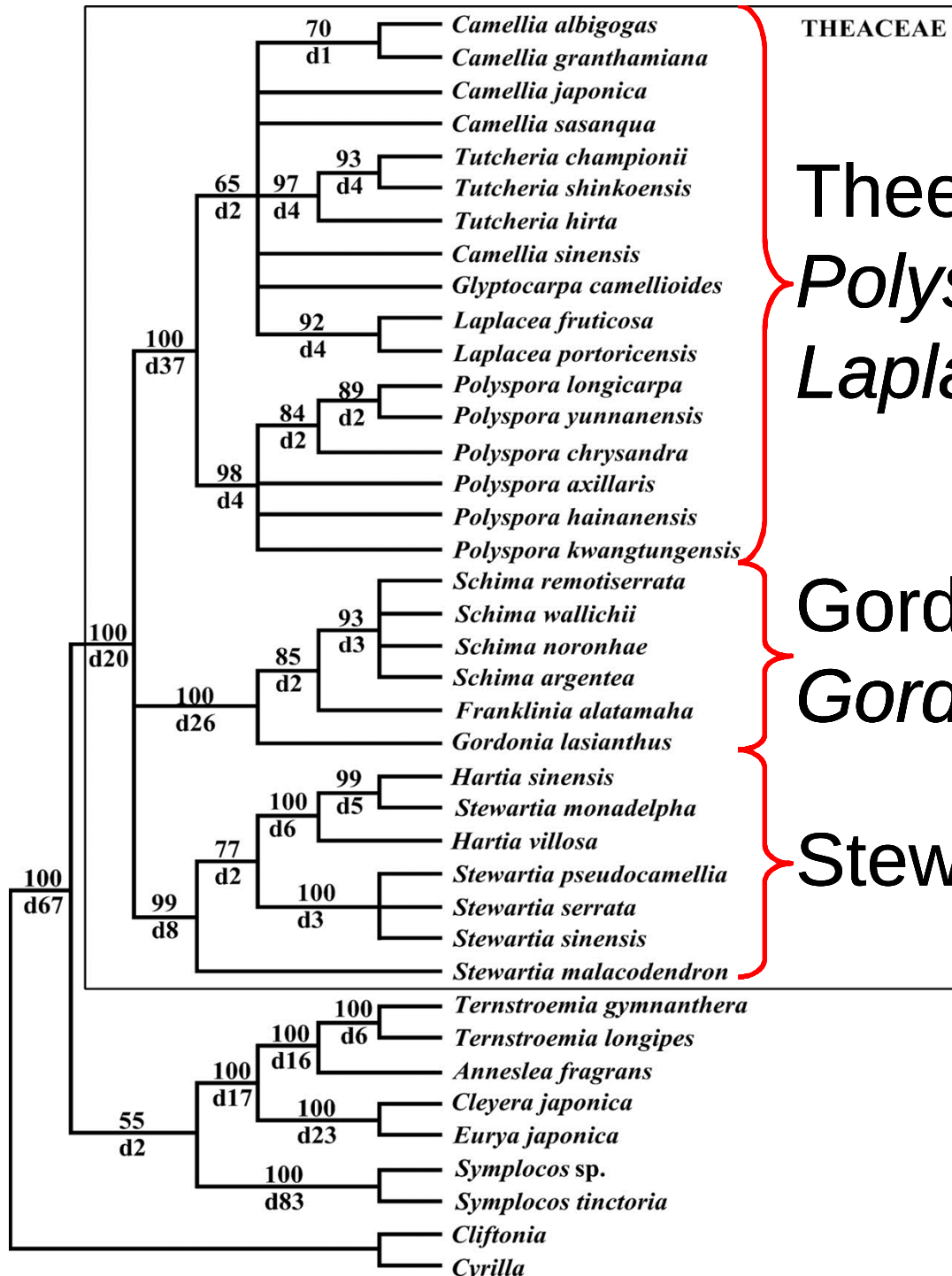
How to recognize Theaceae

- lvs simple, toothed, leathery, oft. withering red; stipules absent
- solitary, showy, 5-merous flowers; often white, sl. wrinkled petals
- several series of numerous stamens; bundles or ring; adnate to petals
- woody loculicidal capsule with persistent central column
- bracteoles that often grade into sepals
- pseudopollen



Theaceae classification (Prince 2007)

Melchior	Airy-Shaw	Sealy	Keng	Ye	Takhtajan	Tsou	Prince&Parks
1925	1936	1958	1962	1990	1997	1998	2001
CAMELLIEAE	CAMELLIEAE	GORDONIEAE	CAMELLIEAE	THEEAE	THEEAE	CAMELLIEAE	THEEAE
<u>Camelliinae</u>	<u>Camelliinae</u>	<u>Camelliinae</u>	<u>Camelliinae</u>	<i>Camellia</i>	<i>Camellia</i>	<i>Camellia</i>	<i>Camellia</i>
<i>Camellia</i>	<i>Camellia</i>	<i>Camellia</i>	<i>Camellia</i>	PYRENARIEAE	<i>Tutcheria</i>	<i>Polyspora</i>	<i>Polyspora</i>
<i>Piquetia</i>	<i>Tutcheria</i>	<i>Pyrenaria</i>	<i>Stereocarpus</i>	<i>Tutcheria</i>	<i>Pyrenaria</i>	<i>Pyrenaria</i>	<i>Pyrenaria</i>
<i>Stereocarpus</i>	<i>Piquetia</i>	<i>Yunnanea</i>	<i>Piquetia</i>	<i>Pyrenaria</i>	GORDONIEAE	<i>Sinopyrenaria</i>	<i>Laplacea</i>
<i>Tutcheria</i>	<i>Stereocarpus</i>	<i>Tutcheria</i>	<i>Yunnanea</i>	<i>Parapyrenaria</i>	<i>Gordonia</i>	[<i>Laplacea</i> ?]	<i>Apterosperma</i>
<i>Stewartia</i>	<u>Laplaceinae</u>	<u>Gordoniinae</u>	<u>Pyrenariinae</u>	GORDONIEAE	<i>Laplacea</i>	[<i>Parapyrenaria</i> ?]	GORDONIEAE
<i>Franklinia</i>	<i>Laplacea</i>	<i>Gordonia</i>	<i>Pyrenaria</i>	<i>Polyspora</i>	<i>Schima</i>	GORDONIEAE	<i>Franklinia</i>
<u>Gordoniinae</u>	<i>Polyspora</i>	<i>Laplacea</i>	<i>Tutcheria</i>	<i>Gordonia</i>	<i>Franklinia</i>	<u>Gordoniinae</u>	<i>Gordonia</i>
<i>Laplacea</i>	<i>Pyrenaria</i>	<u>Schiminae</u>	GORDONIEAE	<i>Laplacea</i>	STEWARTIEAE	<i>Apterosperma</i>	<i>Schima</i>
<i>Gordonia</i>	GORDONIEAE	<i>Stuartia</i>	<u>Gordoniinae</u>	SCHIMEAE	<i>Stewartia</i>	<i>Franklinia</i>	STEWARTIEAE
<i>Pyrenaria</i>	<u>Gordoniinae</u>	<i>Schima</i>	<i>Gordonia</i>	<i>Schima</i>		<i>Gordonia</i>	<i>Stewartia</i>
<u>Schiminae</u>	<i>Gordonia</i>	<i>Franklinia</i>	<i>Laplacea</i>	<i>Apterosperma</i>		<i>Schima</i>	
<i>Schima</i>	<i>Franklinia</i>		<u>Schiminae</u>	<i>Franklinia</i>		<u>Stewartiinae</u>	
<i>Hartia</i>	<i>Schima</i>		<i>Schima</i>	STEWARTIEAE		<i>Hartia</i>	
	<u>Stewartiinae</u>		<i>Franklinia</i>	<i>Stewartia</i>		<i>Stewartia</i>	
	<i>Stewartia</i>		<u>Stuartieae</u>	<i>Hartia</i>			
			<i>Hartia</i>				
			<i>Stewartia</i>				



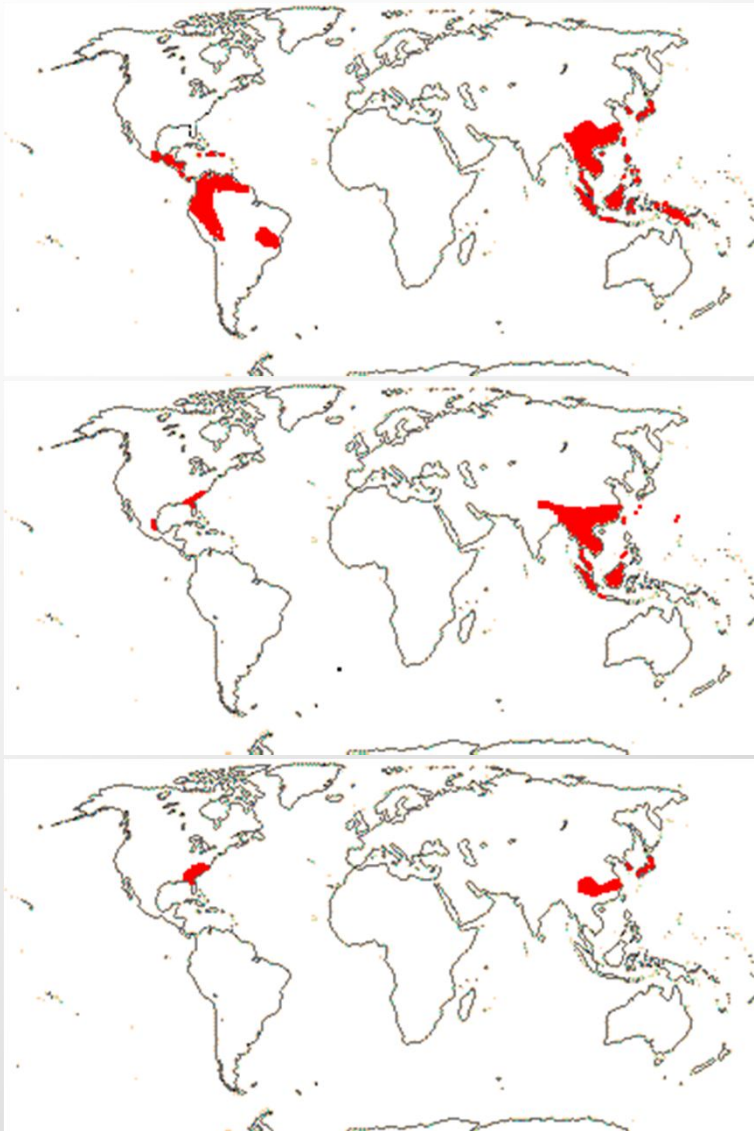
Theeae (*Camellia*,
Polyspora, *Pyrenaria*,
Laplacea, *Apterosperma*)

Gordoniaeae (*Franklinia*,
Gordonia, *Schima*)

Stewartieae (*Stewartia*)

Prince & Parks, strict consensus
chloroplast DNA

Theaceae distribution (APG)



Theeae (*Camellia*,
Polyspora, *Pyrenaria*,
Laplacea, *Apterosperma*)

Gordonieae (*Franklinia*,
Gordonia, *Schima*)

Stewartieae (*Stewartia*)

Theaceae genera (“hardy” in Belgium)

- Camellia
- Gordonia
- Schima
- Franklinia
- Stewartia
- (x Schimlinia)
- (x Gordlinia)



Camellia x williamsii 'Les Jury'

Camellia

- 230-290 spp. (majority in China) (controversial number)
- evergreen trees or shrubs
- flowers solitary or 2-3
- inflorescence bracts (2-more) -> sepals (5 if distinct) -> petals (5-12) (connate)
- stamens many, often connate and basally adnate to the petals
- columella, seeds wingless
- monophyletic



Camellia x williamsii 'Donation'



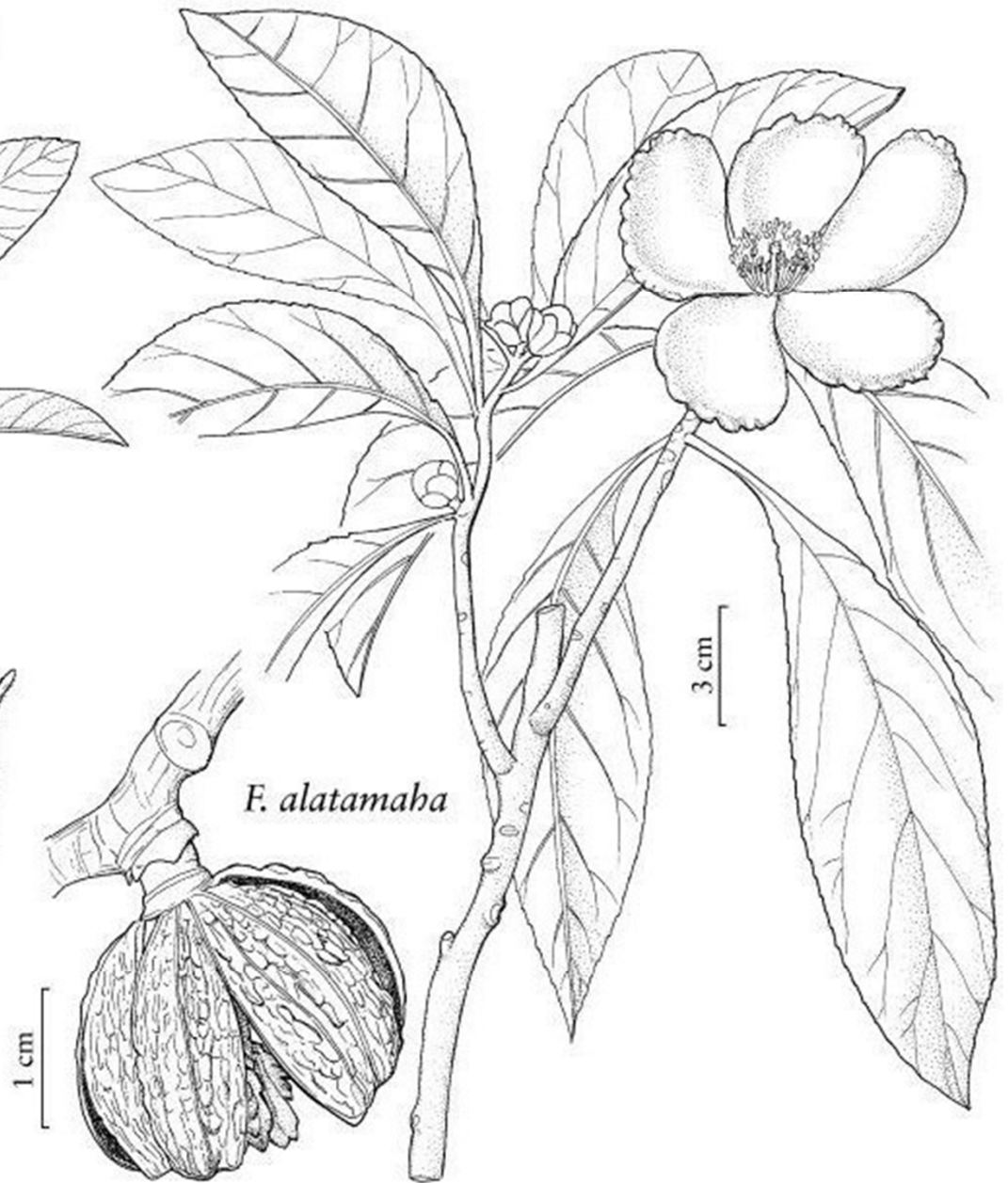
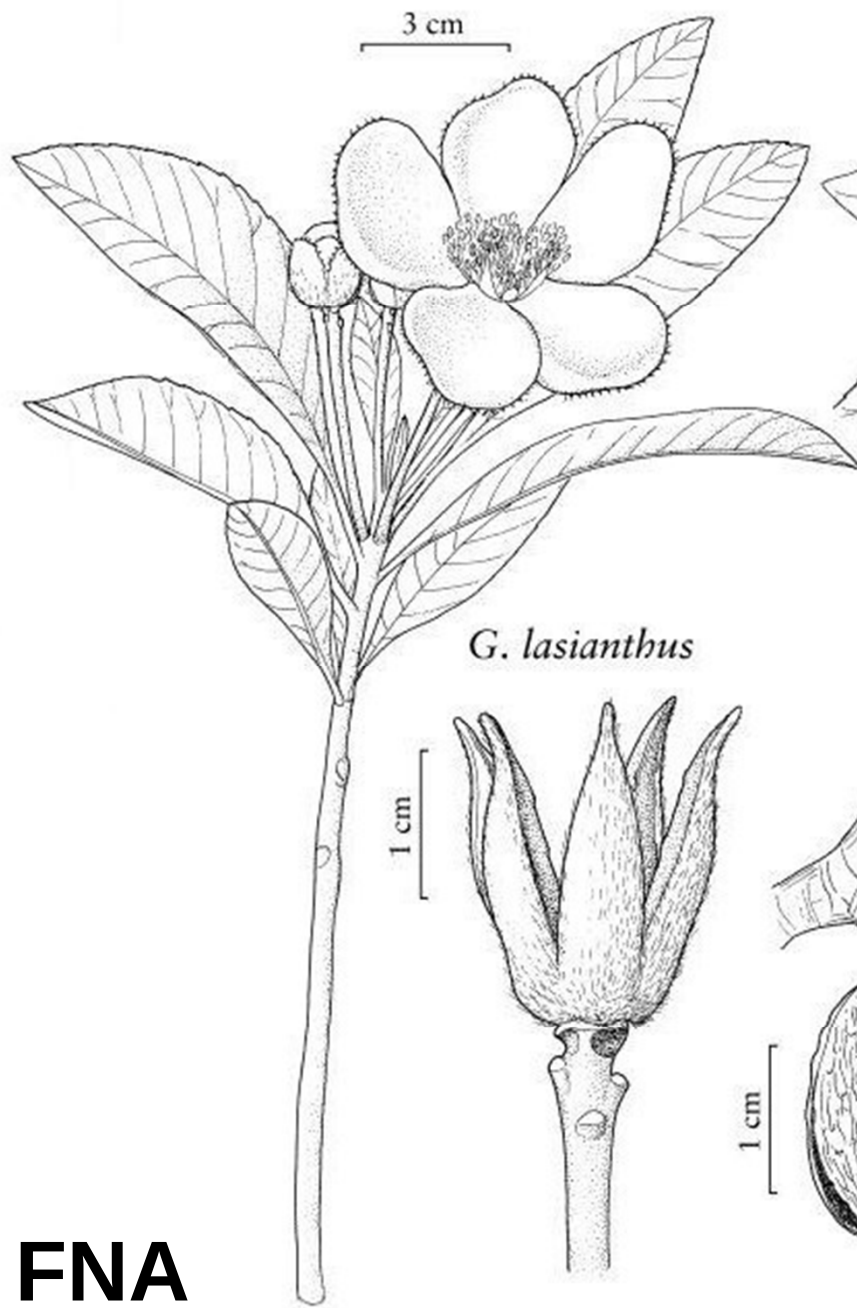


Camellia japonica 'Mme. Lourmand'

Gordonia

- 2 spp. (New World) ~ (20-65 spp. s.l.)
- columnar evergreen trees (to 30m)
- shiny, toothed leaves
- flowers on long pedicel (to 8 cm)
- 5 sepals and white petals
- seeds apically winged

FNA





Schima

- 1 complex-polymorphous sp. (~ 20 spp.)
- Asia
- evergreen tree
- 2 bracteoles
- fruit globose
- columella partially degenerated



Schima wallichii
(SCBG)



Schima superba (Arunachal Pradesh)

Franklinia

- *Franklinia alatamaha*, SE Georgia
- last seen in wild in 1803
- multi-stemmed deciduous shrub/small tree
- globose to subglobose capsule
- columella
- x *Gordlinia grandiflora*
- x *Schimlinia floribunda*





x *Gordlinia grandiflora*



Stewartia (incl. Hartia)

- ca. 20 spp
- evergreen and deciduous
- petioles narrowly to broadly winged
- 2-4 narrowly winged or wingless seed per locule; no columella
- seeds flattened

Li et al. 2002
nrDNA ITS
simplified

