

Ecography

E4657

Griffiths, M. E. and Lawes, M. J. 2006. Biogeographic, environmental, and phylogenetic influences on reproductive traits in subtropical forest trees, South Africa. – *Ecography* 29: 614–622.

Table S1. Reproductive traits of 195 tree species in afrotemperate, scarp, and coastal forests in KwaZulu-Natal, South Africa. Data on reproductive traits was compiled from provincial (Pooley 1993) and regional (van Wyk and van Wyk 1997, Coates Palgrave 2002) field guides, primary sources listed in Germishuizen and Meyer (2003), and from nondestructive measurements of specimens in the Univ. of KwaZulu-Natal Herbarium, Pietermaritzburg*.

Family and species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
ACANTHACEAE																
<i>Duvernoia adhatodoides</i> E.Mey. ex Nees	S	H	FU	A	PU	I	D	G	E	C	C	M	M	M	M	F
<i>Mackaya bella</i> Harv.	S	H	FU	T	PU	I	D	BR	E	R	R	L	M	M	M	F
ACHARIACEAE																
<i>Kiggelaria africana</i> L.	A,S	D	FR	A	Y	I	D	G	Z	R	C	M	M	L	M	M
<i>Rawsonia lucida</i> Harv. & Sond.	A,S	H	FR	A	Y	I	D	Y	G	R	R	S	F	L	L	F
<i>Xylotheca kraussiana</i> Hochst.	C	H	FR	A,T	W	I	D	BR	Z	R	R	M	F	L	M	M
ANACARDIACEAE																
<i>Harpephyllum caffrum</i> Bernh.	S,C	D	FR	T	W	I	F	R	Z	R	C	S	M	L	L	S
<i>Protobius longifolia</i> (Bernh.) Engl.	A,S,C	D	FR	T	Y	I	F	PB	Z	C	R	S	M	M	M	S
<i>Rhus chirindensis</i> Baker f.	A	D	FR	T	G	I	F	R	Z	R	R	S	M	S	M	F
<i>Rhus natalensis</i> Bernh.	C	D	FR	A,T	Y	I	F	R	Z	R	D	S	M	S	M	S
APOCYNACEAE																
<i>Acokanthera oblongifolia</i> (Hochst.) Codd	C	H	FU	A	PI	I	F	PB	Z	R	R	M	M	L	L	F
<i>Rauwolfia caffra</i> Sond.	C	H	FU	T	W	I	D	PB	Z	C	R	S	M	L	L	S
<i>Tabernaemontana ventricosa</i> Hochst. ex A.DC.	S,C	H	FU	T	W	I	D	G	Z	R	C	M	M	L	M	M
AQUIFOLIACEAE																
<i>Ilex mitis</i> (L.) Radlk.	A	D	FR	A	W	I	F	R	Z	R	C	S	M	S	S	F
ARALIACEAE																
<i>Cussonia sphaerocephala</i> Strey	A,S,C	H	FR	T	G	I	F	PB	Z	R	C	S	M	S	M	S
<i>Cussonia spicata</i> Thunb.	A,C	H	FR	T	Y	I	F	PB	Z	R	D	S	M	S	M	S
<i>Cussonia thyrsoiflora</i> Thunb.	A	H	FR	T	Y	I	F	PB	Z	R	C	S	M	S	M	S
<i>Schefflera umbellifera</i> (Sond.) Baill.	A,S,C	H	FR	T	Y	I	F	R	Z	R	C	S	M	S	M	F
ARECACEAE																
<i>Phoenix reclinata</i> Jacq.	C	D	FR	T	W	I	F	O	Z	C	R	S	M	M	L	S
ASTERACEAE																
<i>Bractylaena discolor</i> DC.	C	D	FR	T	W	I	D	BR	W	D	R	S	M	S	S	S
<i>Bractylaena uniflora</i> Harv.	A,S,C	D	FR	A,T	W	I	D	BR	W	D	R	S	M	S	S	S
BORAGINACEAE																
<i>Cordia caffra</i> Sond.	C	H	FU	T	W	I	F	O	Z	C	C	S	M	M	M	S

BRASSICACEAE															
	<i>Bachmannia woodii</i> (Oliv.) Gilg														
S	H	FU	C	PI	I	D	Y	Z	C	R	S	F	M	M	F
BURSERACEAE															
S,C	D	FU	A	W	I	F	R	Z	R	R	S	M	M	M	S
BUXACEAE															
S	M	FR	A	G	I	D	BR	G	C	C	S	M	S	M	F
CANNABACEAE															
A,S,C	M	FR	A	G	W	F	Y	Z	C	R	S	S	S	M	S
S	M	FR	A	G	W	F	Y	Z	C	R	S	S	S	M	S
S,C	M	FR	A	G	I	F	PB	Z	R	C	S	M	S	M	S
CELASTRACEAE															
A,S	H	FR	A	W	I	F	R	Z	R	R	S	M	S	S	S
A	H	FR	A	W	I	D	R	Z	R	R	S	M	M	M	F
A	H	FR	A	W	I	D	R	Z	C	C	S	M	M	M	F
C	H	FR	A	W	I	D	BR	Z	R	C	S	F	S	M	F
A,S	H	FR	A	W	I	D	R	Z	R	C	S	M	M	M	F
A,S	H	FR	A	G	I	D	Y	Z	C	C	S	F	M	M	F
C	H	FR	A	W	I	D	O	Z	C	C	S	M	S	M	F
S,C	H	FR	A	Y	I	D	R	Z	R	C	S	M	S	M	F
C	H	FR	T	G	I	F	R	Z	R	R	S	M	L	M	S
S	H	FR	A	Y	I	D	BR	Z	R	R	S	F	L	L	F
A	H	FR	A	W	I	D	R	Z	R	C	S	M	M	M	F
CLUSIACEAE															
A,S	D	FR	T	W	I	F	O	Z	R	C	M	F	L	L	F
COMBRETACEAE															
S	H	FR	A	Y	I	D	R	W	R	C	S	M	M	M	S
A,S	H	FR	A	W	I	D	R	W	R	C	S	M	L	M	S
CURTIASIACEAE															
A,S	H	FR	T	W	I	F	R	Z	R	C	S	M	S	M	F
EBENACEAE															
C	D	FU	A	W	I	F	PB	Z	R	C	S	F	M	M	F
C	D	FU	A	W	I	F	O	Z	C	R	S	S	S	M	S
A	D	FU	A	W	I	F	R	Z	C	C	S	S	M	M	F
A,S,C	D	FU	A	W	I	F	PB	Z	C	R	S	M	M	M	S
C	D	FU	A	W	I	F	PB	Z	R	R	S	M	S	M	F

ERYTHROXYLACEAE

Erythroxylum emarginatum Thonn.
Erythroxylum pictum E.Mey. ex Sond.

EUPHORBIACEAE

Acalypha glabrata Thunb.
Alchornea hirtella Benth.
Cavacoa aurea (Cavaco) J.Léonard
Croton gratissimus Burch.
Croton sylvaticus Hochst.
Macaranga capensis (Baill.) Benth. ex Sim
Micrococca capensis (Baill.) Prain
Sclerocroton integerrimum Hochst.
Shirakopsis elliptica (Hochst.) Esser
Suregada africana (Sond.) Kuntze

FABACEAE

Acacia karroo Hayne
Albizia adianthifolia (Schumach.) W.Wight
Baphia racemosa (Hochst.) Baker
Calpurnia aurea (Aiton) Benth.
Dalbergia obovata E.Mey.
Erythrina caffra Thunb.
Erythrina lysisemon Hutch.
Milletia grandis (E.Mey.) Skeels
Philenoptera sutherlandii (Harv.) Schrire

HAMAMELIDACEAE

Trichocladus ellipticus Eckl. & Zeyh.

ICACINACEAE

Apodytes dimidiata E.Mey. ex Arn.
Cassinopsis ilicifolia (Hochst.) Kuntze

LAMIACEAE

Clerodendrum glabrum E.Mey.

LAURACEAE

Cryptocarya latifolia Sond.
Cryptocarya myrtifolia Stapf
Cryptocarya woodii Engl.
Ocotea bullata (Burch.) Baill.
Ocotea kenyensis (Chiov.) Robyns & R. Wilczek

C	H	FR	A	W	I	F	R	Z	R	R	R	S	F	S	M	S
S	H	FU	A	G	I	F	R	Z	R	R	R	S	F	M	L	S
S	M	FR	A	Y	I	D	Y	Z	R	R	R	S	M	S	S	S
S	D	FR	A	Y	W	D	BR	Z	R	R	R	S	M	S	M	S
C	D	FR	A	Y	I	D	PB	Z	R	R	R	S	F	L	M	F
C	M	FR	T	Y	I	D	Y	Z	R	R	R	S	M	M	M	F
S,C	M	FR	T	Y	I	D	O	Z	R	R	R	S	M	M	M	F
S,C	D	FR	A	G	I	D	G	Z	R	R	R	S	F	S	M	S
C	D	FR	A	W	I	D	Y	Z	R	R	R	S	M	S	M	F
C	M	FU	T	Y	I	D	Y	Z	R	R	R	S	M	L	M	F
S	M	FU	T	Y	I	D	BR	Z	R	C	S	S	M	M	M	F
C	D	FR	A	Y	I	D	Y	Z	R	C	S	S	S	M	M	F
C	H	FR	T	Y	I	D	BR	Z	R	R	R	S	M	L	M	M
S,C	H	FR	A	W	I	D	BR	Z	R	R	R	S	M	L	M	M
S,C	H	FU	A	W	I	D	BR	Z	R	R	C	S	F	L	L	F
A,S	H	FU	A,T	Y	I	D	BR	G	R	C	M	S	M	L	M	F
A,S	H	FU	A,T	W	I	D	Y	W	R	C	S	S	M	L	M	F
C	H	FU	T	R	B	D	PB	G	D	R	L	S	M	L	M	F
C	H	FU	T	R	B	D	PB	Z	C	R	L	L	M	L	M	M
S,C	H	FU	T	PU	I	D	BR	E	R	C	M	M	M	L	L	M
S	H	FU	T	PU	I	D	BR	E	R	C	M	M	M	L	L	F
A	H	FU	A,T	G	W	D	BR	E	R	R	S	S	M	S	M	S
A,S,C	H	FU	A,T	W	I	F	PB	Z	R	C	S	S	M	S	M	S
A	H	FR	A	W	I	F	O	Z	R	R	S	S	F	M	M	S
A,S,C	H	FU	A	W	I	F	Y	Z	R	C	M	M	M	M	M	F
A,S,C	H	FU	A	W	I	F	G	Z	D	R	S	S	M	L	L	S
A,S,C	H	FU	A	W	I	F	R	Z	R	R	S	S	M	M	M	S
A,S,C	H	FU	A	W	I	F	PB	Z	R	R	S	S	M	L	L	S
A	D	FU	A	G	I	F	PB	Z	R	C	S	S	M	M	M	S
A	D	FU	T	Y	I	F	PB	Z	R	R	S	S	F	M	L	S

LOGANIACEAE

<i>Strychnos decussata</i> (Pappe) Gilg	A,C	H	FU	A	W	I	F	O	Z	R	C	S	M	M	F
<i>Strychnos gerrardii</i> N.E.Br.	C	H	FU	A	Y	I	F	Y	Z	R	C	S	F	L	M
<i>Strychnos henningsii</i> Gilg.	S,C	H	FU	A	Y	I	F	O	Z	C	C	S	M	L	S
<i>Strychnos madagascariensis</i> Poir.	C	H	FU	A	Y	I	F	Y	Z	R	C	S	F	L	M
<i>Strychnos mitis</i> S.Moore	S	H	FU	A	W	I	F	Y	Z	R	D	S	M	M	F
<i>Strychnos spinosa</i> Lam.	C	H	FU	T	W	I	F	Y	Z	R	C	S	M	L	M
<i>Strychnos usambarensis</i> Gilg.	S	H	FU	A	W	I	F	Y	Z	R	C	S	M	M	S

MALVACEAE

<i>Cola natalensis</i> Oliv.	S,C	M	FR	A	Y	I	D	O	Z	R	R	S	S	L	F
<i>Dombeya tiliacea</i> (Endl.) Planch.	A	H	FR	A	W	I	D	BR	G	C	R	L	F	S	S
<i>Grewia occidentalis</i> L.	A,S,C	H	FR	A	PI	I	F	PB	Z	R	R	M	F	L	F

MELASTOMATACEAE

<i>Memecylon natalense</i> Markgr.	S	H	FR	A	W	I	F	PB	Z	R	R	S	F	M	F
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MELIACEAE

<i>Ekebergia capensis</i> Sparrm.	A,C	D	FR	A	W	I	F	R	Z	R	R	S	M	L	F
<i>Trichilia dregeana</i> Sond.	S,C	M	FU	A	W	I	D	BR	Z	R	R	M	M	L	F
<i>Trichilia emetica</i> Vahl	C	M	FU	A	G	B	D	G	Z	R	R	M	M	L	F
<i>Tournefortia floribunda</i> Hochst.	S,C	H	FU	A	W	B	D	BR	Z	R	C	L	F	L	M

MELIANTHACEAE

<i>Bersama lucens</i> (Hochst.) Szyszyl.	C	H	FR	A,T	Y	I	D	G	Z	R	C	S	M	L	F
<i>Bersama swinnyi</i> E.Phillips	A	H	FR	A,T	W	I	D	BR	Z	R	C	S	M	L	F

MONIMIACEAE

<i>Xymalos monospora</i> (Harv.) Baill	A,S	D	FR	A	Y	I	F	R	Z	C	R	S	M	M	S
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MORACEAE

<i>Ficus bizanae</i> Hutch. & Burret	S	H	O	C	G	I	F	G	Z	R	R	L	F	L	M
<i>Ficus craterostoma</i> Warb. ex Mildbr. & Burret	A,S	H	O	A	Y	I	F	R	Z	C	C	M	F	M	M
<i>Ficus natalensis</i> Hochst.	S,C	H	O	A	G	I	F	R	Z	R	R	M	F	M	M
<i>Ficus petersii</i> Warb.	S,C	H	O	C	G	I	F	R	Z	R	R	M	F	M	M
<i>Ficus sur</i> Forssk.	S,C	H	O	C	R	I	F	R	Z	R	R	L	M	L	M

MYRSINACEAE

<i>Rapanea melanophloea</i> (L.) Mez	A,S	H	FU	C	G	I	F	PB	Z	D	C	S	F	S	M
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MYRTACEAE

<i>Eugenia capensis</i> (Eckl. & Zeyh.) Sond.	A,C	D	FU	A	W	I	F	PB	Z	C	D	S	M	M	F
<i>Eugenia natalitia</i> Sond.	A,S	D	FU	A	W	I	F	PB	Z	C	R	S	M	L	S
<i>Eugenia zuluensis</i> Dummer	A	D	FU	A	W	I	F	R	Z	R	R	S	S	L	S
<i>Syzygium cordatum</i> Hochst. ex C.Krauss.	C	H	FR	T	W	I	F	PB	Z	R	C	L	M	M	S

Syzygium gerrardii (Harv. ex Hook.f.) Burtt Davy
Syzygium guineense (Willd.) DC.

OCHNACEAE

Ochna arborea Burch. ex DC.
Ochna holstii Engl.
Ochna natalitia (Meisn.) Walp.

OLEACEAE

Chionanthus battiscombei (Hutch.) Stearn
Chionanthus foveolatus (E.Mey.) Stearn
Chionanthus peglerae (C.H.Wright) Stearn
Olea capensis L.
Olea woodiana Knobl.
Schrebera alata (Hochst.) Welw.

OLINIACEAE

Olinia radiata Hofmeyr. & Phillips
Olinia ventosa (L.) Cufod.

PHYLLANTHACEAE

Antidesma venosum E.Mey. ex Tul.
Bridelia micrantha (Hochst.) Baill.
Heywoodia lucens Sim
Margaritaria discoidea (Baill.) G.L. Webster

PITTIOSPORACEAE

Pitiosporum viridiflorum Sims

PODOCARPACEAE

Podocarpus falcatius (Thunb.) R.Br. ex Mirb.
Podocarpus henkelii Stapf ex Dallim. & Jacks.
Podocarpus latifolius (Thunb.) R.Br. ex Mirb.

PROTEACEAE

Faurea macnaughtonii E.Phillips

PUTRANJIVACEAE

Drypetes arguta (Müll.Arg.) Hutch.
Drypetes gerrardii Hutch.
Drypetes natalensis (Harv.) Hutch.
Drypetes reticulata Pax

RHAMNACEAE

Ziziphus mucronata Willd.

A,S	H	FR	A,T	W	I	F	PB	Z	R	C	S	M	L	M	S
A,S	H	FR	A,T	W	I	F	PB	Z	R	C	M	M	M	M	S
A,S	H	FR	T	Y	I	F	PB	Z	R	R	S	M	M	L	S
A,S	H	FR	A	Y	I	F	PB	Z	R	R	M	M	S	M	S
S,C	H	FR	T	Y	I	F	PB	Z	R	R	M	M	M	L	S
C	H	FR	A	W	I	F	PB	Z	R	C	S	M	L	M	S
A,S	H	FR	A	W	I	F	PB	Z	R	C	S	M	L	M	S
A,S	H	FR	A	W	I	F	PB	Z	R	R	S	M	M	M	S
A,S	H	FU	A,T	W	I	F	PB	Z	R	C	S	M	M	L	S
A,S,C	H	FU	A,T	W	I	F	PB	Z	R	R	S	M	S	M	S
S	H	FU	T	W	I	D	BR	W	R	C	M	M	L	L	F
A	H	FU	A	W	I	F	PB	Z	R	R	S	M	L	L	S
A	H	FU	A	PI	I	F	R	Z	C	C	S	M	S	M	S
C	D	FR	A	R	I	F	PB	Z	R	R	S	M	S	M	S
C	M	FR	A	Y	I	F	PB	Z	R	R	S	M	S	M	S
S	D	FR	A	G	I	D	BR	E	C	R	S	M	M	M	F
S	D	FR	A	Y	I	D	G	Z	R	R	S	F	M	M	F
A,S,C	H	FU	T	Y	I	D	BR	Z	R	R	M	M	M	M	F
A	M	O	T	Y	W	F	Y	Z	R	C	M	S	M	L	S
A	M	O	T	G	W	F	G	Z	R	R	L	S	L	L	S
A,S	M	O	A	PI	W	F	R	Z	D	R	M	S	M	L	F
S	H	FU	T	W	I	D	BR	W	R	C	S	M	M	M	S
S,C	D	FR	A	Y	I	F	O	Z	R	R	S	S	L	M	F
A,S	D	FR	A	Y	I	F	O	Z	R	R	S	S	M	M	S
S,C	D	FR	C	Y	I	F	O	Z	R	R	S	M	L	L	S
C	D	FR	A	Y	I	F	BR	Z	R	R	S	M	S	M	S
C	H	FR	A	Y	I	F	R	Z	R	C	S	M	L	M	F

RHIZOPHORACEAE

Cassipourea gummiflua Tul. F M M S S M F F
Cassipourea malosana (Bak.) Alston F M M S S M F F

ROSACEAE

Prunus africana (Hook.f.) Kalkman S M S S M S S

RUBIACEAE

Burchellia bubalina (L.f.) Sims S S S S M S M
Canbium citiatum (Klozsch) Kuntze M M L M F F
Canbium inerme (L.f.) Kuntze M M L M F F
Canbium mundianum Cham. & Schltdl. M M L M F F
Catunaregam obovata (Hochst.) Gonç. M M L M F F
Coffea racemosa Lour. M M L M S F F
Kraussia floribunda Harv. M M L M F F
Lagynias lasiantha (Sond.) Bullock M M L M F F
Oxyanthus spectosus DC. M M L M F F
Pavetta inandensis Bremek. M M L M F F
Pavetta lanceolata Eckl. M M L M F F
Pavetta natalensis Sond. M M L M F F
Pavetta revoluta Hochst. M M L M F F
Plectroniella armata (K.Schum.) Robyns M M L M F F
Psychotria capensis (Eckl.) Vatke M M L M F F
Pydrax obovata (Eckl. & Zeyh.) Bridson M M L M F F
Roibmannia capensis Thunb. M M L M F F
Roibmannia globosa (Hochst.) Keay M M L M F F
Tarenna pavettoides (Harv.) Sim M M L M F F
Tricabstia lanceolata (Sond.) Burtt Davy M M L M F F
Tricabstia sonderiana Hiern M M L M F F
Vangueria infausta Burch. M M L M F F
Vangueria randii S.Moore M M L M F F

RUTACEAE

Calodendrum capense (L.f.) Thunb. M M L M M
Clausena anisata (Willd.) Hook.f. ex Benth. M M L M F F
Oricia bachmannii (Engl.) I.Verd. M M L M S F
Praeroxylon obliquum (Thunb.) Radlk. M M L M S F
Teclea gerrardii I. Verd. M M L M S F
Teclea natalensis (Sond.) Engl. M M L M S F
Vepris lanceolata (Lam.) G.Don. M M L M S F
Zanthoxylum capense (Thunb.) Harv. M M L M S F
Zanthoxylum davyi (I.Verd.) P.G. Waterman M M L M S F

SALICACEAE

Casearia gladiiformis Mast. M M L M M



Fig. S1. Continued next page.

Fig. S1. Hypothesis of the phylogenetic relationships between tree species in forests in KwaZulu-Natal. The order and family arrangement was based on the Soltis et al. (2000) strict consensus tree. This served as a backbone to which family trees were attached. Intra-familial relationships were constructed using published phylogenies (Achariaceae: Chase et al. 2002; Anacardiaceae: Pell 2004; Apocynaceae: Potgieter and Albert 2001; Cannabaceae: Wiegrefe et al. 1988, Sytsma et al. 2002; Celastraceae: Simmons et al. 2001a, b, Simmons pers. comm.; Euphorbiaceae: Webster 1994; Fabaceae: Clarke et al. 2000, Hu et al. 2000, Bruneau et al. 2001, Kajita et al. 2001, Pennington et al. 2001; Icacinaceae: Kårehed 2001; Lauraceae: Chanderbali et al. 2001; Malvaceae: Alverson et al. 1999; Meliaceae: Muellner et al. 2003; Myrtaceae: Wilson et al. 2001, van der Merwe et al. 2005; Oleaceae: Wallander and Albert 2000; Phyllanthaceae: Levin 1986, Chase et al. 2002, Wurdack et al. 2004; Rubiaceae: Andreasen and Bremer 1996, 2000, Andersson and Rova 1999, Lantz et al. 2002; Rutaceae: Chase et al. 1999; Salicaceae: Chase et al. 2002; Sapindaceae: Harrington et al. 2005; Sapotaceae: Anderberg and Swenson 2003, Swenson and Anderberg 2005, Smedmark pers. comm.; Stilbaceae: Kornhall 2004).

Table S2. Relationships between reproductive traits assessed using methods considering each species as an independent observation (TIPs) and then reanalysed in Discrete using analyses that controlled for phylogeny (PICs). LR is a likelihood ratio statistic that is calculated from the difference between an independent model (in which traits are treated as evolving independently) and a dependent model (in which traits are treated as evolving in a correlated fashion). For traits that had significant correlations independent of phylogeny, we note whether the relationship between the traits was negative (–) or positive (+).

	TIPs		LR	PICs		–/+
	χ^2	p		p		
breeding system and flower type						
monoecy – cone and fig flowers	7.96	0.005	2.32	0.298		
hermaphroditism – flowers with free petals	12.24	< 0.001	6.14	0.023	–	
hermaphroditism – flowers with fused petals	13.39	< 0.001	5.42	0.022	+	
dioecy – flowers with free petals	11.61	< 0.001	5.35	0.023	+	
dioecy – flowers with fused petals	7.86	0.005	4.29	0.064		
breeding system and pollination syndrome						
monoecy – wind pollination	43.07	< 0.001	6.13	0.017	+	
monoecy – insect pollination	24.79	< 0.001	6.01	0.007	–	
hermaphroditism – wind pollination	11.62	< 0.001	3.04	0.200		
dioecy – wind pollination	0.53	0.412	1.38	0.649		
breeding system and # flowers per inflorescence						
monoecy – solitary inflorescences	29.92	< 0.001	5.69	0.014	–	
hermaphroditism – solitary inflorescences	25.29	< 0.001	12.15	< 0.001	–	
dioecy – solitary inflorescences	3.32	0.068	3.77	0.120		
breeding system and flower size						
dioecy – small flowers	13.79	< 0.001	7.96	0.001	+	
breeding system and fruit type						
dioecy – fleshy fruit	0.36	0.338	2.71	0.311		
breeding system and dispersal mode						
dioecy – zoochorous dispersal	0.37	0.371	4.07	0.076		
flower type and inflorescence position						
cone and fig flowers – cauliflory	27.72	< 0.001	5.02	0.022	+	
flower type and pollination syndrome						
flowers with free petals – bird pollination	9.53	0.002	6.04	0.006	–	
flowers with fused petals – bird pollination	11.26	< 0.001	6.35	0.007	+	
cone and fig flowers – wind pollination	23.65	< 0.001	3.85	0.097		
cone and fig flowers – insect pollination	9.51	0.002	3.19	0.094		
flower type and flower size						
flowers with free petals – small flowers	20.18	< 0.001	5.50	0.024	+	
flowers with free petals – medium flowers	9.20	0.002	3.71	0.103		
flowers with free petals – large flowers	9.24	0.002	4.58	0.032	–	
cone and fig flowers – small flowers	24.19	< 0.001	8.45	0.004	–	

cone and fig flowers – medium flowers	10.75	0.001	3.33	0.111	
cone and fig flowers – large flowers	11.51	< 0.001	2.62	0.191	
inflorescence position and flower colour					
cauliflory – pink flowers	13.87	< 0.001	4.56	0.023	+
cauliflory – red flowers	15.82	< 0.001	4.06	0.028	+
flower colour and pollination syndrome					
pink flowers – insect pollination	15.15	< 0.001	4.03	0.025	–
pink flowers – bird pollination	22.95	< 0.001	5.29	0.006	+
green flowers – wind pollination	7.59	0.006	5.79	0.007	+
red flowers – insect pollination	28.09	< 0.001	7.41	< 0.001	–
red flowers – bird pollination	61.59	< 0.001	9.29	< 0.001	+
flower colour and flower size					
pink flowers – small flowers	22.16	< 0.001	8.54	< 0.001	–
pink flowers – large flowers	18.43	< 0.001	6.57	0.005	+
red flowers – small flowers	10.81	0.001	5.13	0.013	–
red flowers – large flowers	17.03	< 0.001	4.86	0.017	+
purple flowers – small flowers	11.84	< 0.001	4.13	0.042	–
pollination syndrome and # flowers per inflorescence					
wind pollination – solitary inflorescences	57.58	< 0.001	8.92	0.001	+
insect pollination – solitary inflorescences	24.05	< 0.001	6.03	0.001	–
insect pollination – many flowers per inflorescence	8.24	0.004	3.56	0.113	
fruit type and fruit colour					
dry fruits – brown fruits	56.13	< 0.001	27.23	< 0.001	+
dry fruits – purple/black fruits	26.60	< 0.001	11.51	< 0.001	–
fleshy fruits – brown fruits	56.13	< 0.001	27.21	< 0.001	–
fleshy fruits – purple/black fruits	26.60	< 0.001	11.73	0.001	+
fruit type and dispersal mode					
dry fruits – gravity dispersal	21.77	< 0.001	11.30	< 0.001	+
dry fruits – explosive dispersal	11.56	< 0.001	5.57	0.018	+
dry fruits – wind dispersal	19.69	< 0.001	15.58	< 0.001	+
dry fruits – zoochorous dispersal	58.53	< 0.001	31.58	< 0.001	–
fleshy fruits – gravity dispersal	21.77	< 0.001	11.37	< 0.001	–
fleshy fruits – explosive dispersal	11.56	< 0.001	5.36	0.016	–
fleshy fruits – wind dispersal	19.69	< 0.001	15.59	< 0.001	–
fleshy fruits – zoochorous dispersal	58.53	< 0.001	31.58	< 0.001	+
fruit type and number of seeds per fruit					
dry fruits – a single seed per fruit	18.81	< 0.001	7.47	0.005	–
dry fruits – some seeds per fruit	12.29	< 0.001	4.84	0.050	+
fleshy fruits – a single seed per fruit	18.81	< 0.001	7.47	0.004	+
fleshy fruits – some seeds per fruit	12.29	< 0.001	4.84	0.058	
fruit colour and dispersal mode					
brown fruits – gravity dispersal	21.06	< 0.001	7.27	0.004	+
brown fruits – explosive dispersal	16.08	< 0.001	6.59	0.004	+
brown fruits – wind dispersal	17.14	< 0.001	8.05	0.001	+
brown fruits – zoochorous dispersal	59.52	< 0.001	22.99	< 0.001	–
purple/black fruits – zoochorous dispersal	9.58	0.002	5.79	0.018	+
fruit colour and fruit size					
green fruits – large fruits	10.03	0.002	4.99	0.021	+

Table S3. Mean percent \pm 1 SD of different reproductive traits in three forest types found in KwaZulu-Natal, South Africa. The p-values are for Kruskal-Wallis tests run on each individual trait state. Asterisk denotes significant values with appropriate Bonferroni corrections.

	Afrotperate	Scarp	Coastal	p
breeding system				
monoecious	10.85 \pm 4.15	12.99 \pm 6.38	12.00 \pm 5.49	0.789
hermaphroditic	59.94 \pm 6.54	68.06 \pm 6.87	59.00 \pm 4.46	0.021
dioecious	29.21 \pm 4.92	18.96 \pm 3.88	29.00 \pm 5.89	0.001
flower type				
petals free	53.52 \pm 5.69	51.39 \pm 6.71	58.00 \pm 6.13	0.049
petals fused	37.15 \pm 7.94	42.43 \pm 6.01	40.33 \pm 5.54	0.110
other	9.33 \pm 4.32	6.18 \pm 4.34	1.67 \pm 1.76	0.001
inflorescence position				
axillary	59.94 \pm 5.62	60.97 \pm 8.11	64.00 \pm 9.40	0.312
cauliflorous	4.36 \pm 2.34	3.82 \pm 2.00	2.33 \pm 1.61	0.081
terminal	26.18 \pm 4.71	22.92 \pm 6.77	24.67 \pm 9.71	0.662
other	9.51 \pm 4.36	12.29 \pm 3.67	9.00 \pm 3.87	0.195
flower colour				
pink	8.97 \pm 1.92	5.49 \pm 1.47	3.00 \pm 1.89	< 0.001*
green	20.91 \pm 7.76	13.68 \pm 4.98	14.67 \pm 5.26	0.032
purple	0.00 \pm 0.00	4.24 \pm 2.85	0.33 \pm 1.05	< 0.001*
red	1.88 \pm 1.81	0.42 \pm 1.19	3.33 \pm 4.16	0.139
white	45.39 \pm 6.47	48.26 \pm 8.84	54.67 \pm 5.71	0.022
yellow	22.85 \pm 7.80	27.92 \pm 5.33	24.00 \pm 8.80	0.156
pollination syndrome				
bird	2.18 \pm 2.29	2.99 \pm 2.03	4.00 \pm 4.92	0.736
insect	85.76 \pm 3.97	92.15 \pm 3.78	90.67 \pm 4.92	0.011
wind	12.06 \pm 4.48	4.86 \pm 3.02	5.33 \pm 1.72	0.001
fruit type				
fleshy	73.03 \pm 6.74	60.07 \pm 5.35	76.33 \pm 7.77	< 0.001*
dry	26.97 \pm 6.74	39.93 \pm 5.35	23.67 \pm 7.77	< 0.001*
fruit colour				
purple/black	33.27 \pm 5.54	21.81 \pm 6.64	29.33 \pm 9.00	0.005
brown	15.94 \pm 5.21	24.65 \pm 5.36	17.33 \pm 5.62	0.013
green	11.09 \pm 3.68	6.18 \pm 4.69	3.67 \pm 3.31	0.002
orange	4.55 \pm 3.08	13.82 \pm 4.09	14.00 \pm 9.79	< 0.001*
red	27.45 \pm 5.47	18.68 \pm 6.48	20.67 \pm 6.63	0.018
yellow	7.70 \pm 3.00	14.86 \pm 6.23	15.00 \pm 5.50	0.004
dispersal mode				
explosive	1.21 \pm 1.68	4.65 \pm 2.94	0.33 \pm 1.05	0.003
gravity	6.79 \pm 4.49	6.39 \pm 4.31	1.67 \pm 1.76	0.013
wind	4.24 \pm 2.62	7.43 \pm 5.43	2.67 \pm 1.41	0.043
zoochorous	87.76 \pm 5.71	81.53 \pm 5.60	95.33 \pm 2.81	<0.001*
flower size				
small	73.70 \pm 8.15	74.67 \pm 6.32	69.10 \pm 8.04	0.263
medium	18.91 \pm 8.34	21.00 \pm 4.73	21.60 \pm 6.41	0.783
large	7.39 \pm 2.50	4.33 \pm 4.73	9.31 \pm 3.02	0.028
# flowers or fruits/inflorescence				
solitary	17.33 \pm 4.27	8.67 \pm 4.77	9.72 \pm 4.89	0.001
some	12.61 \pm 6.29	22.67 \pm 7.34	24.65 \pm 10.09	0.003
many	70.06 \pm 6.08	68.67 \pm 10.45	65.63 \pm 8.01	0.496

fruit size				
small	34.79 ± 6.01	33.00 ± 5.97	26.04 ± 6.54	0.020
medium	40.30 ± 6.74	36.33 ± 5.54	41.53 ± 6.95	0.202
large	24.91 ± 5.23	30.67 ± 7.83	32.43 ± 8.71	0.120
seed size				
small	12.06 ± 4.22	5.33 ± 4.50	9.31 ± 4.67	0.012
medium	64.30 ± 5.59	69.33 ± 6.25	64.24 ± 9.44	0.274
large	21.21 ± 4.02	23.33 ± 5.88	25.83 ± 6.61	0.175
# seeds/fruit				
single	52.79 ± 6.91	48.67 ± 7.57	45.28 ± 9.00	0.097
some	30.18 ± 8.64	35.67 ± 10.66	40.28 ± 5.78	0.040
many	17.03 ± 3.90	15.67 ± 6.68	14.44 ± 5.38	0.618

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