

Supplementary Material

Appendix S1. Environmental weed species included in McAlpine and Howell's (2024) list but excluded from this study, with reasons for their exclusion (x). Information on viable seed production in New Zealand was obtained from Healy and Edgar (1980), Webb et al. (1988), Esler (1988), Fromont and King (1992), Timmins and Mackenzie (1995), Edgar and Connor 2000, Ogle and La Cock (2019), New Zealand Plant Conservation Network (www.nzpcn.org.nz), Weedbusters (www.weedbusters.org.nz) and Peter de Lange (pers. comm., July 2022).

Species	Fern or fern ally	Seaweed	Seed not seen in NZ	Seed set rare
<i>Adiantum raddianum</i>	x			
<i>Azolla pinnata</i>	x			
<i>Cyrtomium falcatum</i>	x			
<i>Dryopteris affinis</i>	x			
<i>Dryopteris filix-mas</i>	x			
<i>Equisetum arvense</i>	x			
<i>Nephrolepis cordifolia</i>	x			
<i>Osmunda regalis</i>	x			
<i>Polypodium vulgare</i>	x			
<i>Pteris cretica</i>	x			
<i>Selaginella kraussiana</i>	x			
<i>Sphaeropteris cooperi</i>	x			
<i>Caulerpa brachypus</i>		x		
<i>Undaria pinnatifida</i>		x		
<i>Aloe maculata</i>			x	
<i>Alternanthera philoxeroides</i>			x	
<i>Andropogon virginicus</i>			x	
<i>Anredera cordifolia</i>			x	
<i>Artemisia verlotiorum</i>			x	
<i>Buddleja madagascariensis</i>			x	
<i>Cenchrus purpureus</i>			x	
<i>Ceratophyllum demersum</i>			x	
<i>Chlorophytum comosum</i>			x	
<i>Crassula multicava</i>			x	
<i>Crocasmia ×crocosmiflora</i>			x	
<i>Delairea odorata</i>			x	
<i>Elodea canadensis</i>			x	
<i>Elodea densa</i>			x	
<i>Erica vagans</i>			x	
<i>Erythrina ×sykesii</i>			x	
<i>Furcraea foetida</i>			x	
<i>Furcraea selloa</i>			x	
<i>Hedychium flavescens</i>			x	
<i>Imperata cylindrica</i>			x	
<i>Kalanchoe pinnata</i>			x	
<i>Lagarosiphon major</i>			x	
<i>Lamium galeobdolon</i>			x	

Species	Fern or fern ally	Seaweed	Seed not seen in NZ	Seed set rare
<i>Myriophyllum aquaticum</i>			X	
<i>Phyllostachys aurea</i>			X	
<i>Reynoutria ×bohemica</i>			X	
<i>Reynoutria sachalinensis</i>			X	
<i>Senecio angulatus</i>			X	
<i>Sporobolus ×townsendii</i>			X	
<i>Sporobolus alterniflorus</i>			X	
<i>Tradescantia fluminensis</i>			X	
<i>Vallisneria australis</i>			X	
<i>Watsonia meriana</i>			X	
<i>Yucca gloriosa</i>			X	
<i>Akebia quinata</i>				X
<i>Ammophila arenaria</i>				X
<i>Arundo donax</i>				X
<i>Cenchrus clandestinus</i>				X
<i>Cestrum aurantiacum</i>				X
<i>Cestrum elegans</i>				X
<i>Cestrum fasciculatum</i>				X
<i>Cyperus rotundus</i>				X
<i>Elaeagnus ×reflexa</i>				X
<i>Genista monspessulana</i>				X
<i>Impatiens sodenii</i>				X
<i>Ipomoea indica</i>				X
<i>Jasminum polyanthum</i>				X
<i>Ligustrum ovalifolium</i>				X
<i>Nymphaea alba</i>				X
<i>Passiflora ×rosea</i>				X
<i>Pseudosasa japonica</i>				X
<i>Salix ×fragilis</i>				X
<i>Solanum laxum</i>				X
<i>Tecomaria capensis</i>				X

Appendix S2. Plant traits, assigned seed dispersal syndromes, dispersal mechanisms, modelled maximum dispersal distances and dispersal mechanism references for the New Zealand environmental weed flora. Dispersal distances were not modelled for seeds dispersed by water or for species where the dispersal mechanism is unknown. – indicates trait data was unavailable, * indicates dispersal distance was unable to be modelled but maximum dispersal distance was obtained from published literature (not included in analyses). Dispersal mechanisms: animal (internal + attachment + nesting material + scatter-hoarding) – seeds are dispersed when ingested by fruit- or seed-eating vertebrates, attached to fur, feathers or feet, by birds in material used to make their nests, or when vertebrates cache seeds and fail to retrieve them; wind – seeds are dispersed by wind; wind.none – seeds are dispersed by wind but have no special adaptations; ant – seeds are carried by ants and/or have an elaiosome; ballistic – seeds are ejected from an explosively dehiscent fruit; water – seeds are dispersed by rivers, streams, ocean currents or in surface water flows on land; and unknown – no dispersal mechanisms currently known. Taxonomy follows the Global Biodiversity Information Facility (<https://www.gbif.org>). NZPCN = New Zealand Plant Conservation Network, <https://www.nzpcn.org.nz>; SID = Seed Information Database, <https://ser-sid.org/>.

Species	Order	Family	Fruit type	Growth form	Release height (m)	Seed mass (mg)	Dispersal syndrome	Dispersal mechanism	Dispersal distance (m)	References
<i>Acacia baileyana</i>	Fabales	Fabaceae	fleshy	shrub	10	21.81	ant	ant wind wind.none	106.88 89 4.73	O'Dowd & Gill 1986; Morgan et al. 2002 NZPCN NZPCN
<i>Acacia dealbata</i>	Fabales	Fabaceae	fleshy	tree	30	12.68	ant	ant animal wind wind.none water	183.26 2275.01 152.59 8.11 –	O'Dowd & Gill 1986 Higgins et al. 2006 Cronk & Fuller 1995 Cronk & Fuller 1995 Cronk & Fuller 1995 Rice & Westoby 1981; O'Dowd & Gill 1986; Pemberton & Irving 1990;
<i>Acacia longifolia</i>	Fabales	Fabaceae	fleshy	shrub	10	14.86	ant	ant animal wind wind.none	116.79 1449.87 97.25 5.17	Smart et al. 2023 O'Dowd & Gill 1986; Higgins et al. 2006; Marchante et al. 2010 NZPCN NZPCN
<i>Acacia mearnsii</i>	Fabales	Fabaceae	fleshy	tree	10	13.25	ant	ant animal wind wind.none	115.45 1433.17 96.13 5.11	O'Dowd & Gill 1986 Cronk & Fuller 1995 NZPCN NZPCN

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									water	–	Cronk & Fuller 1995
<i>Acacia melanoxylo</i>	Fabales	Fabaceae	fleshy	tree	30	13.58	internal, ant	animal	2239.25	180.38	O'Dowd & Gill 1986; Cronk & Fuller 1995; Higgins et al. 2006
<i>Acacia paradoxa</i>	Fabales	Fabaceae	fleshy	shrub	3	14	ant	ant	–	72.16	Pemberton & Irving 1990
<i>Acacia verticillata</i>	Fabales	Fabaceae	fleshy	shrub	10	8.86	ant	ant	–	60.08	Cronk & Fuller 1995
<i>Acanthus mollis</i>	Lamiales	Acanthaceae	dry	herb	1.2	208	ballistic	ballistic	–	3.19	Berg 1975
<i>Acer negundo</i>	Sapindales	Sapindaceae	dry	tree	17	35.98	wind	wind	–	171.3	NZPCN
<i>Acer pseudoplatanus</i>	Sapindales	Sapindaceae	dry	tree	20	95.1	wind	wind	–	171.3	NZPCN
<i>Actinidia chinensis</i>	Ericales	Actinidiaceae	fleshy	shrub	–	1.6	internal	animal	–	171.3	Matlack 1987
<i>Agapanthus praecox</i>	Asparagales	Amaryllidaceae	dry	herb	1.2	–	wind	wind	–	171.3	Jones 1945; Matlack 1987; Webb et al. 1988; Cronk & Fuller 1995
<i>Agave americana</i>	Asparagales	Asparagaceae	dry	shrub	10	8.98	unspecialised	unknown	–	171.3	Spurr et al. 2011; Albert et al. 2015
<i>Ageratina adenophora</i>	Asterales	Asteraceae	dry	herb	3	0.06	wind	wind	–	171.3	Sullivan & Williams 2002; Logan & Xu 2006; Higgins et al. 2006
<i>Ageratina riparia</i>	Asterales	Asteraceae	dry	herb	1	–	wind	wind	–	171.3	Esler 1988
<i>Ageratum houstonianum</i>	Asterales	Asteraceae	dry	herb	1	0.1	wind	wind	–	171.3	Fromont & King 1992; Timmins & Mackenzie 1995; Cronk & Fuller 1995
<i>Agrostis capillaris</i>	Poales	Poaceae	dry	herb	1	0.07	unspecialised	animal	1605.81	107.71	Fromont & King 1992; Timmins & Mackenzie 1995
								wind	107.71	5.73	Quin et al. 2023
								wind.none	5.73		Timmins & Mackenzie 1995

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<i>Ailanthus altissima</i>	Sapindales	Simaroubaceae	dry	tree	25	29.2	wind	water	–	144.51	Timmins & Mackenzie 1995 SID; Kaproth & McGraw 2008
<i>Allium triquetrum</i>	Asparagales	Amaryllidaceae	dry	herb	0.6	–	ant	wind	–	6.78	Kaproth & McGraw 2008
<i>Alnus glutinosa</i>	Fagales	Betulaceae	dry	tree	15	5	wind	water	–	264.89	Pemberton & Irving 1990 SID
<i>Alocasia brisbanensis</i>	Alismatales	Araceae	fleshy	herb	3	10	internal	animal	–	3949.29	Couvreur et al. 2004; Albert et al. 2015; Almeida et al. 2022
<i>Amphilophium crucigerum</i>	Lamiales	Bignoniaceae	dry	shrub	–	55.79	wind	water	–	188.28	Rosenthal 2006 West 1996
<i>Angelica pachycarpa</i>	Apiales	Apiaceae	dry	herb	0.6	8.17	unspecialised	wind	–	30.49	NZPCN
<i>Aponogeton distachyos</i>	Alismatales	Aponogetonaceae	dry	herb	0.06	–	water	wind.none	–	2.33	NZPCN
<i>Araujia sericifera</i>	Gentianales	Apocynaceae	dry	shrub	10	–	wind	water	–	0.12	NZPCN
<i>Archontophoenix cunninghamiana</i>	Arecales	Arecaceae	fleshy	tree	13	568.2	internal	water	–	–	SID Timmins & McKenzie 1995; Vivianne-Smith & Panetta 2005; Killick 2017
<i>Arctium minus</i>	Asterales	Asteraceae	dry	herb	1.5	8.9	attachment	water	–	289.93	Vivianne-Smith & Panetta 2005; Killick 2017
<i>Aristea ecklonii</i>	Asparagales	Iridaceae	dry	herb	0.45	1.22	unspecialised	animal	–	557.81	Weedbusters; SID Weedbusters Esler 1988; Webb et al. 1988; Green 2016; Almeida et al. 2025
<i>Arum italicum</i>	Alismatales	Araceae	fleshy	herb	0.6	39	internal	wind	–	142.35	NZPCN
								wind.none	–	9.55	NZPCN
								water	–	0.51	NZPCN
								wind	–	8.22	NZPCN
								wind.none	–	0.44	NZPCN
								water	–	–	NZPCN Thompson 1976; Webb et al. 1988; Esler 1988

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<i>Asparagus aethiopicus</i>	Asparagales	Asparagaceae	fleshy	herb	–	38.34	internal	animal	51.25	Esler 1988
<i>Asparagus asparagoides</i>	Asparagales	Asparagaceae	fleshy	shrub	–	5.4	internal	animal ant	101.55 13.76	Esler 1988; Fromont & King 1992; Higgins et al. 2006 SID Fromont & King 1992; Timmins & Mackenzie 1995;
<i>Asparagus scandens</i>	Asparagales	Asparagaceae	fleshy	shrub	–	–	internal	animal	115.98	Atkinson 1997
<i>Asphodelus fistulosus</i>	Asparagales	Asphodelaceae	dry	herb	0.4	2.7	unspecialised	unknown	–	
<i>Baccharis halimifolia</i>	Asterales	Asteraceae	dry	shrub	4	0.1	wind	wind animal water	254.48 3794.08 –	Sims-Chilton & Panetta 2011 Almeida et al. 2025 Sims-Chilton & Panetta 2011 Australian National Herbarium https://www.anbg.gov.au/bank-sia/ , accessed 1/6/2023; Weedbusters
<i>Banksia integrifolia</i>	Proteales	Proteaceae	dry	tree	15	13.66	wind	wind	114.72	
<i>Bartlettina sordida</i>	Asterales	Asteraceae	dry	shrub	2	–	wind	wind	111.01	NZPCN Welch 1985; Albert et al. 2015
<i>Bellis perennis</i>	Asterales	Asteraceae	dry	herb	0.15	0.12	unspecialised	animal	149.29	Timmins & Mackenzie 1995; Burrows 1995; Higgins et al. 2006
<i>Berberis darwinii</i>	Ranunculales	Berberidaceae	fleshy	shrub	4	8.45	internal	animal	1878.18	Williams & Karl 1996;
<i>Berberis glaucocarpa</i>	Ranunculales	Berberidaceae	fleshy	shrub	7	42.2	internal	animal	1630.62	Wyman & Kelly 2017
<i>Betula pendula</i>	Fagales	Betulaceae	dry	tree	25	0.6	wind	wind animal	533.42 7952.76	Webb et al. 1988 Mouissie et al. 2005; Albert et al. 2015; Almeida et al. 2022
<i>Biancaea decapetala</i>	Fabales	Fabaceae	dry	shrub	15	1244.9	unspecialised	wind wind.none water	41.31 2.2 –	West 1996 West 1996 Hosaka & Thistle 1954 Couvreur et al. 2004; Warren et al. 2017; Almeida et al. 2022, 2025; NZPCN
<i>Bidens frondosa</i>	Asterales	Asteraceae	dry	herb	2	4.93	attachment	animal water	183.66 –	Kehr et al. 2014

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<i>Bomarea multiflora</i>	Liliales	Alstroemeriaceae	fleshy	shrub	–	–	internal	animal	115.98	Eichberg et al. 2007; Albert et al. 2015; Rutledge & McLendon 1996
<i>Bromus tectorum</i>	Poales	Poaceae	dry	herb	0.8	3	attachment	animal wind wind.none	624.75 41.9 2.23	Cronk & Fuller 1995 Cronk & Fuller 1995
<i>Bryonia cretica</i>	Cucurbitales	Cucurbitaceae	fleshy	shrub	6	22.47	internal	animal	706.83	Snow & Snow 1988; NZPCN Timmins & Mckenzie 1995;
<i>Buddleja davidii</i>	Lamiales	Scrophulariaceae	dry	shrub	3	0.1	wind	wind water	177.34 –	Tallent-Halsell & Watt 2009 Timmins & Mckenzie 1995; Tallent-Halsell & Watt 2009
<i>Callistachys lanceolata</i>	Fabales	Fabaceae	dry	tree	7	–	unspecialised	unknown	–	Hopley & Byrne 2018 Timmins & Mackenzie 1995;
<i>Calluna vulgaris</i>	Ericales	Ericaceae	dry	shrub	0.5	0.03	unspecialised	wind wind.none animal	103.01 5.48 1535.79	Bullock & Clarke 2000 Timmins & Mackenzie 1995; Bullock & Clarke 2000 Welch 1985; Mouissie et al. 2005; Albert et al. 2015; Almeida et al. 2022
<i>Calystegia silvatica</i>	Solanales	Convolvulaceae	dry	shrub	–	21.26	unspecialised	unknown	–	Esler 1988
<i>Canna indica</i>	Zingiberales	Cannaceae	dry	herb	2	155.15	unspecialised	unknown	–	Esler 1988
<i>Carex demissa</i>	Poales	Cyperaceae	dry	herb	0.3	0.69	water	water	–	Rosenthal 2006
<i>Carex divisa</i>	Poales	Cyperaceae	dry	herb	0.6	1.36	unspecialised	unknown	–	
<i>Carex divulsa</i>	Poales	Cyperaceae	dry	herb	0.6	2.51	unspecialised	animal	144.7	Almeida et al. 2022
<i>Carex flacca</i>	Poales	Cyperaceae	dry	herb	0.5	0.9	unspecialised	animal	170.14	Healy & Edgar 1980; Albert et al. 2015; Almeida et al. 2022
<i>Carex flacca</i>	Poales	Cyperaceae	dry	herb	0.5	0.9	unspecialised	water	–	Healy & Edgar 1980
<i>Carex leporina</i>	Poales	Cyperaceae	dry	herb	0.6	0.63	unspecialised	animal	199.15	Carroll 1966
<i>Carex longebrachiata</i>	Poales	Cyperaceae	dry	herb	0.9	1.7	unspecialised	wind wind.none animal	12.55 0.67 187.08	Molloy et al. 1967 Molloy et al. 1967 Molloy et al. 1967
<i>Carex lurida</i>	Poales	Cyperaceae	dry	herb	0.9	1.16	unspecialised	animal	204.26	NZPCN
<i>Carex pendula</i>	Poales	Cyperaceae	dry	herb	2.5	0.75	unspecialised	unknown	–	
<i>Carex scoparia</i>	Poales	Cyperaceae	dry	herb	0.9	0.44	unspecialised	animal	256.02	Warren et al. 2017; Almeida et al. 2025; NZPCN

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<i>Carpobrotus chilensis</i>	Caryophyllales	Aizoaceae	fleshy	herb	–	0.34	internal	animal	58.97	Vila & D'Antonio 1998; Higgins et al. 2006
<i>Carpobrotus edulis</i>	Caryophyllales	Aizoaceae	fleshy	herb	–	0.37	internal	animal	58.63	Vila & D'Antonio 1998; D'Antonio 1990
<i>Casuarina glauca</i>	Fagales	Casuarinaceae	dry	tree	15	3	wind	wind	167.57	
<i>Celastrus orbiculatus</i>	Celastrales	Celastraceae	fleshy	tree	12	10.48	internal	animal	1869.89	Williams & Timmins 2003
<i>Cenchrus alopecuroides</i>	Poales	Poaceae	dry	herb	0.4	–	attachment	animal wind wind.none	469.62 39.08 2.76	McIntyre et al. 1995; Toon et al. 2018 McIntyre et al. 1995 McIntyre et al. 1995
<i>Cenchrus caudatus</i>	Poales	Poaceae	dry	herb	1.2	1.53	unspecialised	unknown	–	
<i>Cenchrus longisetus</i>	Poales	Poaceae	dry	herb	0.35	1.4	unspecialised	unknown	–	
<i>Cenchrus setaceus</i>	Poales	Poaceae	dry	herb	1	1.64	wind	wind animal water	52.81 787.34 –	Toon et al. 2018; NZPCN NZPCN NZPCN
<i>Centranthus ruber</i>	Dipsacales	Caprifoliaceae	dry	herb	0.8	1.77	wind	wind	4.7	SID
<i>Cestrum nocturnum</i>	Solanales	Solanaceae	fleshy	shrub	2.5	3.24	internal	animal	763.84	Higgins et al. 2006
<i>Chamaecytisus prolifer</i>	Fabales	Fabaceae	dry	tree	5	23.6	ballistic, ant	ballistic ant animal water	23.56 75.97 943.07 –	Webb et al. 1988 Pemberton & Irving 1990 Higgins et al. 2006 NZPCN
<i>Chrysojasminum humile</i>	Lamiales	Oleaceae	fleshy	shrub	2.5	–	internal	animal	1963.99	Meisenburg & Fox 2002
<i>Cirsium arvense</i>	Asterales	Asteraceae	dry	herb	1	1.34	wind, ant	wind animal ant water	12.51 186.58 15.03 –	Soomers et al. 2013 Harrington et al. 2011; Albert et al. 2015; Almeida et al. 2022 Pemberton & Irving 1990 Soomers et al. 2013 Matlack 1987; Burrows 1995; McIntyre et al. 1995; Morris et al. 2011
<i>Cirsium vulgare</i>	Asterales	Asteraceae	dry	herb	1.5	2.91	wind, ant	wind	12.36	

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									animal ant	184.29 14.85	Marchant & Higgins 1990a; Couvreur et al. 2004; Harrington et al. 2011; Almeida et al. 2022 Pemberton & Irving 1990
<i>Clematis flammula</i>	Ranunculales	Ranunculaceae	dry	shrub	–	8.12	wind	wind water	35.23 –	Esler 1988 Esler 1988	
<i>Clematis terniflora</i>	Ranunculales	Ranunculaceae	dry	shrub	–	5.24	wind	wind water	36.29 –	Esler 1988 Esler 1988 Esler 1988; Williams &	
<i>Clematis vitalba</i>	Ranunculales	Ranunculaceae	dry	tree	–	2.22	wind	wind water	376.46 –	Buxton 1995 Esler 1988	
<i>Cobaea scandens</i>	Ericales	Polemoniaceae	dry	shrub	–	72.3	wind	wind	21.01	Esler 1988 Webb et al. 1988; Higgins et	
<i>Cornus capitata</i>	Cornales	Cornaceae	fleshy	tree	6	36.9	internal	animal	824.84	al. 2006; Spurr et al. 2011 Esler 1988; Timmins &	
<i>Cortaderia jubata</i>	Poales	Poaceae	dry	shrub	4.5	–	wind	wind	537.05	Mackenzie 1995 Esler 1988; Fromont & King	
<i>Cortaderia selloana</i>	Poales	Poaceae	dry	shrub	6	–	wind	wind	587.47	1992; Timmins & Mackenzie 1995; Almeida et al. 2025	
<i>Cotoneaster coriaceus</i>	Rosales	Rosaceae	fleshy	shrub	5	7.77	internal	animal	820.3	NZPCN	
<i>Cotoneaster franchetii</i>	Rosales	Rosaceae	fleshy	shrub	2	8.88	internal	animal	545.6	Williams & Karl 1996	
<i>Cotoneaster glaucophyllus</i>	Rosales	Rosaceae	fleshy	shrub	4	7.18	internal	animal	762.13	Esler 1988; Fromont & King 1992	
<i>Cotoneaster simonsii</i>	Rosales	Rosaceae	fleshy	shrub	3.5	13.18	internal	animal	626.94	Burrows 1995	
<i>Cotyledon orbiculata</i>	Saxifragales	Crassulaceae	dry	shrub	0.5	0.02	unspecialised	wind wind.none	135.63 5.81	SID SID Stidolph 1951; Esler 1988; Timmins & Mackenzie 1995; Cronk & Fuller 1995; Williams & Karl 1996; Albert et al. 2015; Almeida et al.	
<i>Crataegus monogyna</i>	Rosales	Rosaceae	fleshy	shrub	10	96.87	internal	animal	609.05	2022	

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<i>Cupressus macrocarpa</i>	Pinales	Cupressaceae	dry	tree	–	11.73	wind	wind	259.58	NZPCN
<i>Cuscuta campestris</i>	Solanales	Convolvulaceae	dry	herb	–	0.84	unspecialised	animal	69.51	Costea et al. 2016; Oveisi et al. 2020; Zidon et al. 2016; Almeida et al. 2025
								water	–	Department of Conservation: https://www.doc.govt.nz/content/assets/fcebada855be443a89ba27f28b352140/factsheet-golden-dodder.pdf , accessed 14 April 2023.
<i>Cynodon dactylon</i>	Poales	Poaceae	dry	herb	0.5	0.3	unspecialised	animal	876.53	Dean et al. 1990; Eichberg et al. 2007; Albert et al. 2015; Jurado et al. 1991; Almeida et al. 2022, 2025
<i>Cyperus eragrostis</i>	Poales	Cyperaceae	dry	herb	0.9	0.12	unspecialised	animal	345.14	McIntyre et al. 1995; Reynolds & Cumming 2016
<i>Cytisus multiflorus</i>	Fabales	Fabaceae	dry	shrub	3	5.25	ballistic	ballistic	28.07	Webb et al. 1988
<i>Cytisus scoparius</i>	Fabales	Fabaceae	dry	shrub	2	8.78	ballistic, ant	ballistic	21.09	Webb et al. 1988; Cronk & Fuller 1995
								animal	844.48	Cronk & Fuller 1995; Albert et al. 2015
								ant	68.03	Pembererton & Irving 1990
								water	–	Cronk & Fuller 1995
<i>Dactylis glomerata</i>	Poales	Poaceae	dry	herb	1.2	0.81	unspecialised	wind	67	Timmins & Mackenzie 1995
								wind.none	3.56	Timmins & Mackenzie 1995
								animal	998.89	Welch 1985; Timmins & Mackenzie 1995; Couvreur et al. 2004; Bartuszevige & Endress 2008; Albert et al. 2015; Almeida et al. 2022
								water	–	Timmins & Mackenzie 1995
<i>Datura stramonium</i>	Solanales	Solanaceae	dry	herb	1	8.1	water	wind	7.69	SID
								wind.none	0.33	SID
								water	–	Weaver & Warwick 1984

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<i>Digitalis purpurea</i>	Lamiales	Plantaginaceae	dry	herb	2.5	0.08	unspecialised	wind wind.none animal	38.63 2.05 575.96	SID SID Couvreux et al. 2004; Albert et al. 2015
<i>Dimorphotheca fruticosa</i>	Asterales	Asteraceae	dry	herb	–	–	unspecialised	unknown	–	
<i>Dipogon lignosus</i>	Fabales	Fabaceae	dry	shrub	–	15.6	unspecialised	water	–	NZPCN
<i>Dolichandra unguis-cati</i>	Lamiales	Bignoniaceae	dry	shrub	–	18.33	wind	wind	32.89	NZPCN
<i>Ecchremocarpus scaber</i>	Lamiales	Bignoniaceae	dry	shrub	–	0.4	wind	wind	42.67	NZPCN
<i>Echium vulgare</i>	Boraginales	Boraginaceae	dry	herb	0.9	3.09	unspecialised	wind wind.none water	9.77 0.42 –	SID; NZPCN SID; NZPCN NZPCN
<i>Ehrharta erecta</i>	Poales	Poaceae	dry	herb	0.8	0.85	unspecialised	wind wind.none animal water	56.15 2.98 837.07 –	Timmins & McKenzie 1995 Timmins & McKenzie 1995 Dean et al. 1990; Timmins & McKenzie 1995; Quin et al. 2023 Timmins & McKenzie 1995
<i>Ehrharta villosa</i>	Poales	Poaceae	dry	herb	2	–	unspecialised	wind wind.none	64.55 4.56	Hilton et al. 2007 Hilton et al. 2007
<i>Embothrium coccineum</i>	Proteales	Proteaceae	dry	tree	10	15.26	wind	wind	94.64	NZPCN
<i>Epilobium hirsutum</i>	Myrtales	Onagraceae	dry	herb	2	0.1	wind	wind animal water	205.5 3063.77 –	Soomers et al. 2013; NZPCN Albert et al. 2015; Almeida et al. 2022 Soomers et al. 2013
<i>Eragrostis curvula</i>	Poales	Poaceae	dry	herb	0.7	0.2	unspecialised	wind wind.none	74.15 3.94	McIntyre et al. 1995; NZPCN McIntyre et al. 1995; NZPCN
<i>Erica arborea</i>	Ericales	Ericaceae	dry	tree	5	0.07	unspecialised	unknown	–	
<i>Erica baccans</i>	Ericales	Ericaceae	dry	shrub	2.5	0.08	unspecialised	unknown	–	Atkinson 1997
<i>Erica caffra</i>	Ericales	Ericaceae	dry	shrub	3	0.02	unspecialised	unknown	–	NZPCN
<i>Erica cinerea</i>	Ericales	Ericaceae	dry	shrub	0.3	0.13	unspecialised	wind wind.none animal	59.27 3.15 883.61	Bullock & Clarke 2000 Bullock & Clarke 2000 Albert et al. 2015

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<i>Erica lusitanica</i>	Ericales	Ericaceae	dry	shrub	2	0.01	unspecialised	wind	225.16	Esler 1988; Mather & Williams 1990; Cronk & Fuller 1995
								wind.none	11.97	Esler 1988; Mather & Williams 1990; Cronk & Fuller 1995
<i>Erigeron karvinskianus</i>	Asterales	Asteraceae	dry	herb	0.4	0.05	wind	wind water	18.15	NZPCN NZPCN
<i>Erythranthe guttata</i>	Lamiales	Phrymaceae	dry	herb	0.6	0.03	unspecialised	water	–	NZPCN
<i>Eschscholzia californica</i>	Ranunculales	Papaveraceae	dry	herb	0.3	1.5	unspecialised	unknown	–	SID
<i>Eucalyptus delegatensis</i>	Myrtales	Myrtaceae	dry	tree	30	8.91	unspecialised	wind wind.none	355.54 18.9	SID SID
<i>Euonymus europaeus</i>	Celastrales	Celastraceae	fleshy	shrub	6	38.95	internal	animal	594.34	Webb et al. 1988; Burrows 1995; Williams & Karl 1996; Higgins et al. 2006
<i>Euonymus japonicus</i>	Celastrales	Celastraceae	fleshy	shrub	7	29.67	internal	animal	711.24	Ando et al. 2022
<i>Eupatorium cannabinum</i>	Asterales	Asteraceae	dry	herb	1.8	0.29	wind	wind animal water	22.7 338.42 –	Matlack 1987; NZPCN Couvreur et al. 2004; Albert et al. 2015; Almeida et al. 2022 NZPCN
<i>Euphorbia paralias</i>	Malpighiales	Euphorbiaceae	dry	herb	0.7	5.8	water	water	–	SID
<i>Fatsia japonica</i>	Apiales	Araliaceae	fleshy	shrub	2	7.1	internal	animal	696.97	Rogan 1997 Couvreur et al. 2004; Mouissie et al. 2005; Albert et al. 2015; Almeida et al. 2022
<i>Festuca rubra</i>	Poales	Poaceae	dry	herb	0.45	1.1	attachment	animal	621.7	Moncrieff 1928; Macdonald 1951; Anderson 2006; Spurr et al. 2011
<i>Ficus macrophylla</i>	Rosales	Moraceae	fleshy	tree	55	2.03	internal	animal	4089.34	
<i>Fraxinus excelsior</i>	Lamiales	Oleaceae	dry	tree	30	61.6	wind	wind animal	145.7 2172.25	SID Spurr et al. 2011
<i>Fuchsia boliviana</i>	Myrtales	Onagraceae	fleshy	shrub	3	–	internal	animal	14835.2	

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<i>Glaucium flavum</i>	Ranunculales	Papaveraceae	dry	herb	0.3	0.96	ballistic	ballistic wind wind.none water	5.88 15.8 0.84 –	Solås et al. 2004 Solås et al. 2004 Solås et al. 2004 Solås et al. 2004
<i>Glyceria declinata</i>	Poales	Poaceae	dry	herb	–	1.28	unspecialised	animal water	116.66 –	Simpson 1971; Almeida et al. 2022 NZPCN Carroll 1966; Marchant & Higgins 1993; Couvreur et al. 2004; Albert et al. 2015;
<i>Glyceria fluitans</i>	Poales	Poaceae	dry	herb	–	1.43	unspecialised	animal water	115.79 –	Almeida et al. 2022; NZPCN NZPCN Carroll 1966; Almeida et al. 2022
<i>Glyceria maxima</i>	Poales	Poaceae	dry	herb	–	0.95	water	animal water	119.05 –	van den Broek et al. 2005
<i>Gunnera tinctoria</i>	Gunnerales	Gunneraceae	fleshy	herb	2.5	0.78	internal	animal	295.03	Williams et al. 2005
<i>Gymnocoronis spilanthoides</i>	Asterales	Asteraceae	dry	herb	1	–	unspecialised	animal water	166.35 –	NZPCN NZPCN Esler 1988; Timmins & Mackenzie 1995; Cronk & Fuller 1995; Atkinson 1997
<i>Hakea gibbosa</i>	Proteales	Proteaceae	dry	shrub	–	44.9	wind	wind	17.65	Esler 1988; Timmins & Mackenzie 1995; Atkinson 1997
<i>Hakea salicifolia</i>	Proteales	Proteaceae	dry	tree	–	20.2	wind	wind	182.35	Esler 1988; Timmins & Mackenzie 1995; Atkinson 1997
<i>Hakea sericea</i>	Proteales	Proteaceae	dry	tree	–	31.7	wind	wind	176.84	1997
<i>Hedera canariensis</i>	Apiales	Araliaceae	fleshy	shrub	–	–	internal	animal	123.85	Webb et al. 1988; Esler 1988; Fromont & King 1992;
<i>Hedera helix</i>	Apiales	Araliaceae	fleshy	shrub	–	19.72	internal	animal	89.69	Burrows 1995; Atkinson 1997
<i>Hedychium gardnerianum</i>	Zingiberales	Zingiberaceae	fleshy	herb	2	–	internal	animal	139.05	Esler 1988; Fromont & King 1992; Timmins & Mackenzie 1995
<i>Helichrysum petiolare</i>	Asterales	Asteraceae	dry	herb	–	–	wind	wind	17.04	

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<i>Helosciadium nodiflorum</i>	Apiales	Apiaceae	dry	herb	1	0.86	unspecialised	animal	72.04	Zidon et al. 2016
<i>Hieracium levicaule</i>	Asterales	Asteraceae	dry	herb	0.75	–	wind	wind water	12.65	Miller et al. 2015; French 2021
<i>Holcus lanatus</i>	Poales	Poaceae	dry	herb	1.1	0.3	unspecialised	animal wind wind.none water	1212.35 81.32 4.32 –	Miller et al. 2015 Carroll 1966; Welch 1985; Couvreur et al. 2004; Mouissie et al. 2005; Albert et al. 2015; Warren et al. 2017; Flaherty et al. 2018; Almeida et al. 2022; Quin et al. 2023; SID Morris et al. 2011; SID Morris et al. 2011; SID van den Broek et al. 2005
<i>Homalanthus populifolius</i>	Malpighiales	Euphorbiaceae	fleshy	shrub	5	21.61	internal	animal ant water wind	1595.12 128.49 – 25.73	Innis 1989; NZPCN Berg 1975 NZPCN SID
<i>Humulus lupulus</i>	Rosales	Cannabaceae	dry	shrub	–	2.62	wind	wind	– 25.73	SID
<i>Hydrangea macrophylla</i>	Cornales	Hydrangeaceae	dry	shrub	2	0.02	unspecialised	unknown	–	NZPCN
<i>Hypericum androsaemum</i>	Malpighiales	Hypericaceae	fleshy	shrub	1.5	0.07	internal	animal	3166.84	Burrows 1995 Rutledge & McLendon 1996;
<i>Hypericum perforatum</i>	Malpighiales	Hypericaceae	dry	herb	1	0.2	unspecialised	wind wind.none animal water	22.35 1.19 333.19 –	NZPCN Rutledge & McLendon 1996; Couvreur et al. 2004; Albert et al. 2015; Almeida et al. 2022, 2025; Rutledge & McLendon 1996 Rutledge & McLendon 1996 Webb et al. 1988; Williams & Karl 1996
<i>Ilex aquifolium</i>	Aquifoliales	Aquifoliaceae	fleshy	tree	12	32.27	internal	animal	1311.88	Webb et al. 1988
<i>Impatiens glandulifera</i>	Ericales	Balsaminaceae	dry	herb	2.5	9.83	ballistic	ballistic water	2.98 –	NZPCN

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<i>Iris foetidissima</i>	Asparagales	Iridaceae	fleshy	herb	0.8	79.41	internal	animal	59.12	Webb et al. 1988; Atkinson 1997; Timmins & Mckenzie 1995
<i>Iris pseudacorus</i>	Asparagales	Iridaceae	dry	herb	1	42.79	water	animal	74.76	Timmins & Mckenzie 1995 Almeida et al. 2022 Coops & van der Velde 1995; van den Broek et al. 2005; NZPCN
<i>Jacobaea vulgaris</i>	Asterales	Asteraceae	dry	herb	1.2	0.21	wind, unspecialised	wind animal water	20.7 308.6	Wardle 1987 Wardle 1987 NZPCN
<i>Juglans ailantifolia</i>	Fagales	Juglandaceae	dry	tree	15	6767	scatterhoarding	animal	324.76	Tamura 2001 Weedbusters https://www.weedbusters.org.nz/what-are-weeds/weed-list/japanese-walnut/
<i>Juncus acutus</i>	Poales	Juncaceae	dry	herb	1	0.1	attachment	water animal water	217.05	Esler 1988; NZPCN NZPCN Welch 1985; Esler 1988; Couvreur et al. 2004; Rosenthal 2006; Albert et al. 2015; Almeida et al. 2022;
<i>Juncus articulatus</i>	Poales	Juncaceae	dry	herb	0.6	0.02	attachment	animal wind wind.none water	255.15 17.11 0.91	NZPCN Rosenthal 2006 Rosenthal 2006 NZPCN
<i>Juncus bulbosus</i>	Poales	Juncaceae	dry	herb	0.15	0.24	attachment	animal water	81.21	Esler 1988; NZPCN NZPCN Welch 1985; Esler 1988; Mouissie et al. 2005; Albert et al. 2015; NZPCN
<i>Juncus squarrosus</i>	Poales	Juncaceae	dry	herb	0.35	0.1	attachment	animal water	140.93	NZPCN
<i>Kennedia rubicunda</i>	Fabales	Fabaceae	fleshy	shrub	–	25.41	ballistic, ant	ballistic ant	4.29 12.64	Berg 1975 Berg 1975
<i>Lagunaria patersonia</i>	Malvales	Malvaceae	dry	tree	–	48.2	water	water	–	NZPCN

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<i>Lantana camara</i>	Lamiales	Verbenaceae	fleshy	shrub	2	11.14	internal	animal	776.87	Webb et al. 1988; Fromont & King 1992; Cronk & Fuller 1995; Meisenburg & Fox 2002; Higgins et al. 2006; Green 2016
<i>Larix decidua</i>	Pinales	Pinaceae	dry	tree	–	6.4	wind	wind	393.13	Timmins & Mackenzie 1995; SID
<i>Lathyrus latifolius</i>	Fabales	Fabaceae	dry	herb	–	40.3	unspecialised	unknown	–	
<i>Lathyrus tingitanus</i>	Fabales	Fabaceae	dry	herb	–	93.5	unspecialised	unknown	–	
<i>Laurus nobilis</i>	Lurales	Lauraceae	fleshy	shrub	7	516.27	internal	animal	289.12	NZPCN
<i>Leptospermum laevigatum</i>	Myrtales	Myrtaceae	dry	shrub	2	1.12	wind	wind	195.75	Burrell 1981
<i>Leucanthemum vulgare</i>	Asterales	Asteraceae	dry	herb	1	0.42	unspecialised	animal	243.94	McIntyre et al. 1995; Clements et al. 2004; Rosenthal 2006; Albert et al. 2015; Green 2016; McDougall et al. 2018
<i>Leycesteria formosa</i>	Dipsacales	Caprifoliaceae	fleshy	shrub	2	0.3	internal	animal	971.56	Webb et al. 1988; Williams & Karl 1996; Atkinson 1997; Spurr et al. 2011
<i>Leymus racemosus</i>	Poales	Poaceae	dry	herb	1.6	10.59	unspecialised	unknown	–	
<i>Ligustrum lucidum</i>	Lamiales	Oleaceae	fleshy	shrub	10	31	internal	animal	1682.95	Esler 1988; Fromont & King 1992; Timmins & Mackenzie 1995; Atkinson 1997; Karan 2000; Higgins et al. 2006
<i>Ligustrum sinense</i>	Lamiales	Oleaceae	fleshy	shrub	5	16.53	internal	animal	1463.28	Esler 1988; Fromont & King 1992; Timmins & Mackenzie 1995; Williams & Karl 1996; Atkinson 1997
<i>Ligustrum vulgare</i>	Lamiales	Oleaceae	fleshy	shrub	5	15.96	internal	animal	1475.19	Debussche & Isenmann 1994
<i>Lilium formosanum</i>	Liliales	Liliaceae	dry	herb	0.75	1.65	wind	wind	10.66	Cameron 1989
<i>Lolium arundinaceum</i>	Poales	Poaceae	dry	herb	1.5	1.1	unspecialised	animal	1020.18	Warren et al. 2017
<i>Lolium perenne</i>	Poales	Poaceae	dry	herb	0.75	2	unspecialised	animal	668.12	Welch 1985; Marchant & Higgins 1993; Harrington et al. 2011; Morris et al. 2011;

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									wind	44.81	Couvreur et al. 2004; Albert et al. 2015; Almeida et al. 2022
									wind.none	2.38	Morris et al. 2011
<i>Lomatia fraseri</i>	Proteales	Proteaceae	dry	shrub	4	7.2	wind		wind	80.22	Morris et al. 2011 Perrie & Shepherd 2021 Esler 1988; Timmins & Mackenzie 1995; Williams & Karl 1996; Atkinson 1997
<i>Lonicera japonica</i>	Dipsacales	Caprifoliaceae	fleshy	shrub	–	1.8	internal		animal	61.55	
<i>Lophospermum erubescens</i>	Lamiales	Plantaginaceae	dry	herb	–	0.27	wind		wind	24.69	NZPCN
<i>Ludwigia peploides</i>	Myrtales	Onagraceae	dry	herb	–	1.54	unspecialised		animal	338.29	Marchant & Higgins 1990; Almeida et al. 2022, 2025
									water	–	Kehr et al 2014
<i>Luma apiculata</i>	Myrtales	Myrtaceae	fleshy	tree	8	17.4	internal		animal	2636.6	Heenan et al. 2004
<i>Lupinus arboreus</i>	Fabales	Fabaceae	dry	shrub	3	32.76	ballistic		ballistic	18.39	NZPCN
<i>Lupinus polyphyllus</i>	Fabales	Fabaceae	dry	herb	0.6	21	ballistic		ballistic	1.66	Timmins & Mackenzie 1995
									water	–	Timmins & Mackenzie 1995 Marchant & Higgins 1993; Fromont & King 1992; Timmins & Mackenzie 1995; Atkinson 1997; Higgins et al. 2006
<i>Lycium ferocissimum</i>	Solanales	Solanaceae	fleshy	shrub	6	2.54	internal		animal	1404.99	
<i>Lycopus europaeus</i>	Lamiales	Lamiaceae	dry	herb	1	0.3	water		animal	206.22	Couvreur et al. 2004; Albert et al. 2015; Almeida et al. 2022
									water	–	van den Broek et al. 2005; Rosenthal 2006; NZPCN
<i>Lythrum salicaria</i>	Myrtales	Lythraceae	dry	herb	1	0.07	water		animal	576.73	Couvreur et al. 2004; Albert et al. 2015; Almeida et al. 2022
									wind	38.68	Rutledge & McLendon 1996
									wind.none	2.06	Rutledge & McLendon 1996
									water	–	Rutledge & McLendon 1996; NZPCN
<i>Malva arborea</i>	Malvales	Malvaceae	dry	herb	2	12.69	unspecialised		unknown	–	
<i>Maytenus boaria</i>	Celastrales	Celastraceae	fleshy	shrub	10	14.55	internal		animal	1106.09	NZPCN
<i>Medicago lupulina</i>	Fabales	Fabaceae	dry	herb	–	1.6	unspecialised		animal	64.98	Lammerink 1968; Dunbier 1972; Turkington & Cavers 1979; Bartuszevige & Endress

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<i>Melianthus major</i>	Geraniales	Melianthaceae	dry	shrub	2	31.15	wind	water wind animal water	– 47.24 704.36 –	2008; Albert et al. 2015; Almeida et al. 2022, 2025 Turkington & Cavers 1979 SID Simpson 1971 SID
<i>Miscanthus nepalensis</i>	Poales	Poaceae	dry	herb	2	–	wind	wind	64.55	SID
<i>Moraea flaccida</i>	Asparagales	Iridaceae	dry	herb	0.6	3.11	unspecialised	wind	7.45	van Kleunen et al. 2008; NZPCN
<i>Myoporum insulare</i>	Lamiales	Scrophulariaceae	fleshy	shrub	–	14.66	internal	wind.none animal water	0.4 111.03 –	van Kleunen et al. 2008; NZPCN NZPCN NZPCN Higgins et al. 2006; Guja et al. 2010
<i>Myricaria germanica</i>	Caryophyllales	Tamaricaceae	dry	shrub	1.5	0.05	wind	wind	92.89	Guja et al. 2010 Werth & Scheidegger 2014; Fink et al. 2017; Fink et al. 2022
<i>Nardus stricta</i>	Poales	Poaceae	dry	herb	0.3	0.4	attachment	water animal	– 664.72	Werth & Scheidegger 2014; Fink et al. 2017; Fink et al. 2022 Welch 1985; Mouissie et al. 2005
<i>Nassella neesiana</i>	Poales	Poaceae	dry	herb	1.2	6.7	attachment	animal wind wind.none water	613.09 41.12 2.19 –	Gardener et al. 2003; Humphries & Florentine 2021; NZPCN Gardener et al. 2003 Gardener et al. 2003 NZPCN
<i>Nassella tenuissima</i>	Poales	Poaceae	dry	herb	0.7	0.31	unspecialised	wind wind.none	67.01 3.56	Humphries & Florentine 2021 Humphries & Florentine 2021 Hilgendorf & Calder 1967; Cronk & Fuller 1995; Humphries & Florentine 2021;
<i>Nassella trichotoma</i>	Poales	Poaceae	dry	herb	0.7	–	wind	wind	46.53	Timmins & Mackenzie 1995; NZPCN

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									animal	559.17	NZPCN
<i>Nymphaea mexicana</i>	Nymphaeales	Nymphaeaceae	dry	herb	–	–	water	animal	39.98	Almeida et al. 2025	
<i>Ochna serrulata</i>	Malpighiales	Ochnaceae	fleshy	shrub	3	55.06	internal	water animal	– 975.68	Bonilla-Barbosa et al. 2000 Heenan et al. 1999; NZPCN	
<i>Olea europaea</i>	Lamiales	Oleaceae	fleshy	shrub	7	107.78	internal	water animal	– 1089.74	NZPCN West 1996; Cameron 2017	
<i>Opuntia monacantha</i>	Caryophyllales	Cactaceae	fleshy	tree	5	24.16	internal, ant	animal ant	517.07 41.65	Humphries et al. 2022 Humphries et al. 2022	
<i>Osteospermum moniliferum</i>	Asterales	Asteraceae	fleshy	shrub	2	31.2	internal	animal	756.91	Esler 1988; Webb et al. 1988; Fromont & King 1992	
<i>Paraserianthes lophantha</i>	Fabales	Fabaceae	dry	shrub	8	64.9	ballistic	ballistic water	23.5 –	NZPCN NZPCN	
<i>Paspalum distichum</i>	Poales	Poaceae	dry	herb	0.45	–	unspecialised	animal water	487.19 –	Middleton et al. 1991; Almeida et al. 2022, 2025; NZPCN NZPCN	
<i>Paspalum vaginatum</i>	Poales	Poaceae	dry	herb	0.3	0.63	unspecialised	animal	598.41	Almeida et al. 2022	
<i>Passiflora caerulea</i>	Malpighiales	Passifloraceae	fleshy	shrub	–	10.05	internal	animal	110.25	NZPCN	
<i>Passiflora edulis</i>	Malpighiales	Passifloraceae	fleshy	shrub	–	15.46	internal	animal	107.07	NZPCN	
<i>Passiflora mixta</i>	Malpighiales	Passifloraceae	fleshy	tree	–	–	internal	animal	663.02	NZPCN	
<i>Passiflora pinnatistipula</i>	Malpighiales	Passifloraceae	fleshy	shrub	–	–	internal	animal	115.98	Williams & Buxton 1995	
<i>Passiflora tarminiana</i>	Malpighiales	Passifloraceae	fleshy	tree	–	–	internal	animal	663.02	Fromont & King 1992	
<i>Passiflora tripartita</i>	Malpighiales	Passifloraceae	fleshy	tree	–	29	internal	animal	1003.68	Williams & Buxton 1995; Williams & Karl 1996; Beavon & Kelly 2015	
<i>Persicaria capitata</i>	Caryophyllales	Polygonaceae	dry	herb	–	1.51	ant	ant	3.31	Pemberton & Irving 1990	
<i>Phalaris arundinacea</i>	Poales	Poaceae	dry	herb	2	0.8	water	wind wind.none	82.9 4.41	SID SID	
								animal	1236.02	Couvreux et al. 2004; Almeida et al. 2022, 2025	

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									water	–	Coops & van der Velde 1995; SID
<i>Phoenix</i>											
<i>canariensis</i>	Arecales	Arecaceae	fleshy	tree	6	1056	internal	animal		286.64	Williams 2006
<i>Phragmites karka</i>	Poales	Poaceae	dry	herb	3	0.1	unspecialised	wind		158.36	SID
								wind.none		8.42	SID
									animal	2361.05	Almeida et al. 2022, 2025; SID
									water	–	SID
<i>Phytolacca</i>											Moncrieff 1928; Hilgendorf & Calder 1967; Wotton 2002; Higgins 2006; Spurr et al.
<i>icosandra</i>	Caryophyllales	Phytolaccaceae	fleshy	shrub	2	5.32	internal	animal		522.65	2011
<i>Pilosella</i>											Esler 1988; Timmins & Mackenzie 1995; Atkinson
<i>officinarum</i>	Asterales	Asteraceae	dry	herb	0.1	0.18	wind	wind		7.67	1997; SID
<i>Pilosella</i>											
<i>piloselloides</i>	Asterales	Asteraceae	dry	herb	0.45	0.21	wind	wind		13.8	Timmins & McKenzie 1995
<i>Pinus contorta</i>	Pinales	Pinaceae	dry	tree	37	4.1	wind	wind		663.88	Timmins & Mackenzie 1995; Wyse & Hulme 2021; SID
<i>Pinus halepensis</i>	Pinales	Pinaceae	dry	tree	18	21	wind	wind		338.42	Wyse & Hulme 2021
<i>Pinus monticola</i>	Pinales	Pinaceae	dry	tree	35	20.41	wind	wind		447.84	Ledgard 2002; SID
<i>Pinus mugo</i>	Pinales	Pinaceae	dry	shrub	8	13.7	wind	wind		277.95	Wyse & Hulme 2021; SID
<i>Pinus muricata</i>	Pinales	Pinaceae	dry	tree	22	13	wind	animal		4144.03	Camarero et al. 2005
								wind		410.61	Wyse & Hulme 2021; SID
<i>Pinus nigra</i>	Pinales	Pinaceae	dry	tree	40	17	wind	wind		493.54	Timmins & Mackenzie 1995; Atkinson 1997; Wyse & Hulme 2021; SID
<i>Pinus patula</i>	Pinales	Pinaceae	dry	tree	33	14	wind	wind		476.9	Cronk & Fuller 1995; Wyse & Hulme 2021
<i>Pinus pinaster</i>	Pinales	Pinaceae	dry	tree	37	47	wind	wind		377.88	Timmins & Mackenzie 1995; Cronk & Fuller 1995; Atkinson 1997; Wyse & Hulme 2021
<i>Pinus ponderosa</i>	Pinales	Pinaceae	dry	tree	57	39	wind	wind		471.28	Wyse & Hulme 2021; SID
<i>Pinus radiata</i>	Pinales	Pinaceae	dry	tree	44	32	wind	wind		443.49	Timmins & Mackenzie 1995; Cronk & Fuller 1995; Atkinson 1997; Wyse & Hulme 2021; SID

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<i>Pinus strobus</i>	Pinales	Pinaceae	dry	tree	50	17	wind	wind	540.98	SID; NZPCN Warren et al. 2017; Almeida et al. 2025
<i>Pinus sylvestris</i>	Pinales	Pinaceae	dry	tree	33	6	wind	animal wind	8065.54 580.02	Wyse & Hulme 2021; SID Albert et al. 2015
<i>Pinus thunbergii</i>	Pinales	Pinaceae	dry	tree	15	13.83	wind	animal wind	8647.55 345.77	Albert et al. 2015
<i>Pinus uncinata</i>	Pinales	Pinaceae	dry	tree	5	7.94	wind	wind	250.15	Camarero et al. 2005
<i>Pittosporum undulatum</i>	Apiales	Pittosporaceae	fleshy	tree	14	8.35	internal	animal	1438.97	Webb et al. 1988; Mullet 2002
<i>Plectranthus ciliatus</i>	Lamiales	Lamiaceae	dry	herb	0.3	0.53	unspecialised	unknown	–	
<i>Plectranthus ecklonii</i>	Lamiales	Lamiaceae	dry	shrub	2.9	–	unspecialised	unknown	–	Esler 1988 Carroll 1966; Marchant & Higgins 1993; Couvreur et al. 2004; Albert et al. 2015; Green 2016; Warren et al. 2017; Almeida et al. 2022, 2025; Rutledge & McLendon 1996
<i>Poa annua</i>	Poales	Poaceae	dry	herb	0.35	0.3	unspecialised	animal wind wind.none water	756.91 50.77 2.7 –	Rutledge & McLendon 1996 Rutledge & McLendon 1996 Rutledge & McLendon 1996
<i>Polygala myrtifolia</i>	Fabales	Polygalaceae	dry	shrub	2	9.65	ant	ant wind wind.none water	79.09 65.86 3.5 –	Berg 1975 NZPCN NZPCN NZPCN Ashton 1979; Rice & Westoby 1981
<i>Pomaderris aspera</i>	Rosales	Rhamnaceae	fleshy	shrub	3	0.78	ant	ant	129.04	Gonzalez et al. 2010
<i>Populus alba</i>	Malpighiales	Salicaceae	dry	tree	25	0.32	unspecialised	wind wind.none water	685.42 36.43 –	Gonzalez et al. 2010 Gonzalez et al. 2010
<i>Potamogeton crispus</i>	Alismatales	Potamogetonaceae	dry	herb	0.05	2.5	unspecialised	animal	48.13	Almeida et al. 2022
<i>Prunus avium</i>	Rosales	Rosaceae	fleshy	tree	12	183.08	internal	animal	545.53	Burrows 1995; Atkinson 1997
<i>Prunus campanulata</i>	Rosales	Rosaceae	fleshy	tree	8	–	internal	animal	550.51	Webb et al. 1988
<i>Prunus domestica</i>	Rosales	Rosaceae	fleshy	tree	6	704.17	internal	animal	300.48	Gibb 1970; McEwen 1978

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<i>Prunus laurocerasus</i>	Rosales	Rosaceae	fleshy	shrub	10	267.3	internal	animal	481.74	Ridley 1998; Spurr et al. 2011
<i>Prunus lusitanica</i>	Rosales	Rosaceae	fleshy	shrub	7	42.71	internal	animal	635.47	Webb et al. 1988
<i>Prunus serotina</i>	Rosales	Rosaceae	fleshy	tree	15	83.9	internal	animal	716.1	Deckers et al. 2008
<i>Prunus serrulata</i>	Rosales	Rosaceae	fleshy	tree	12	52.91	internal	animal	726.72	Esler 1988
<i>Pseudotsuga menziesii</i>	Pinales	Pinaceae	dry	tree	60	10.7	wind	wind	648.95	Timmins & Mackenzie 1995; SID
<i>Psidium cattleianum</i>	Myrtales	Myrtaceae	fleshy	shrub	6	–	internal	animal	2809.04	McEwen 1978; West 1996; Atkinson 1997; Karan 2000; Higgins et al. 2006; Spurr et al. 2011
<i>Psidium guajava</i>	Myrtales	Myrtaceae	fleshy	shrub	3	11.71	internal	animal	2004.87	West 1996; Atkinson 1997; Anderson et al. 2006; Almeida et al. 2025
<i>Psoralea pinnata</i>	Fabales	Fabaceae	dry	shrub	5	6.98	unspecialised	water	–	Esler 1988; Stirton et al. 2015
<i>Pueraria montana</i>	Fabales	Fabaceae	dry	shrub	–	12.32	unspecialised	animal	98.05	Aurambout & Endress 2018
<i>Pultenaea daphnoides</i>	Fabales	Fabaceae	dry	shrub	2	4.2	ant	ant	80.66	Berg 1975; O'Dowd & Gill 1986
<i>Pyracantha angustifolia</i>	Rosales	Rosaceae	fleshy	shrub	2.5	49.08	internal	animal	402.9	Gibb 2000
<i>Quercus robur</i>	Fagales	Fagaceae	dry	tree	30	3378	scatterhoarding	animal	427.35	Almeida et al. 2022; SID
<i>Reynoutria japonica</i>	Caryophyllales	Polygonaceae	dry	shrub	2	2.06	wind	wind	25.26	Maruta 1976
<i>Rhamnus alaternus</i>	Rosales	Rhamnaceae	fleshy	shrub	5	9.53	internal	animal	1108.24	Timmins & Mackenzie 1995; Atkinson 1997
<i>Rhaphiolepis bibas</i>	Rosales	Rosaceae	fleshy	tree	8	8	internal	animal	286.39	1446.8 Fromont & King 1992; Karan 2000
<i>Rhaphiolepis umbellata</i>	Rosales	Rosaceae	fleshy	shrub	–	–	internal	animal	78.8	Corlett 1996
<i>Rhododendron ponticum</i>	Ericales	Ericaceae	dry	shrub	6	0.1	unspecialised	wind	216.78	Cronk & Fuller 1995; Stephenson et al. 2007; Harris et al. 2009; SID
<i>Ribes sanguineum</i>	Saxifragales	Grossulariaceae	fleshy	shrub	2	1.72	internal	animal	11.52	Cronk & Fuller 1995; Stephenson et al. 2007; Harris et al. 2009; SID
<i>Ribes uva-crispa</i>	Saxifragales	Grossulariaceae	fleshy	shrub	1.5	3.33	internal	animal	814.14	Burrows 1994
<i>Ricinus communis</i>	Malpighiales	Euphorbiaceae	dry	shrub	4	285.4	ballistic, ant	ballistic	554.96	Snow & Snow 1988
									20.02	Martins et al. 2006

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									ant	64.58	Pemberton & Irving 1990; Martins et al. 2006
									animal	801.66	Smith 1985; Cronk & Fuller 1995
<i>Robinia pseudoacacia</i>	Fabales	Fabaceae	dry	tree	25	19.2	unspecialised	wind	wind	128.63	Morimoto et al. 2010; SID
								wind	wind.none	6.84	Morimoto et al. 2010; SID
									water	–	Morimoto et al. 2010; SID
<i>Roldana petasitis</i>	Asterales	Asteraceae	dry	shrub	1	–	wind	wind	wind	89.43	NZPCN Esler 1988; Timmins & Mackenzie 1995; Higgins et al. 2006; Jones & Norbury 2011; Rouco & Norbury 2013; NZPCN
<i>Rosa rubiginosa</i>	Rosales	Rosaceae	fleshy	shrub	3	15.56	internal		animal	566.28	NZPCN
<i>Rubus armeniacus</i>	Rosales	Rosaceae	fleshy	shrub	–	3.42	internal		animal	73.2	Esler 1988
<i>Rubus cardiophyllus</i>	Rosales	Rosaceae	fleshy	shrub	–	3.06	internal		animal	73.75	Esler 1988
<i>Rubus cissburiensis</i>	Rosales	Rosaceae	fleshy	shrub	–	2.09	internal		animal	75.69	Esler 1988
<i>Rubus echinatus</i>	Rosales	Rosaceae	fleshy	shrub	–	–	internal		animal	78.8	Esler 1988
<i>Rubus laciniatus</i>	Rosales	Rosaceae	fleshy	shrub	–	3.79	internal		animal	72.69	Esler 1988
<i>Rubus leptothyrsos</i>	Rosales	Rosaceae	fleshy	shrub	–	–	internal		animal	78.8	Esler 1988
<i>Rubus phoenicolasius</i>	Rosales	Rosaceae	fleshy	shrub	4	–	internal		animal	856.36	Esler 1988; NZPCN
<i>Rubus polyanthemus</i>	Rosales	Rosaceae	fleshy	shrub	–	2.93	internal		animal	73.97	Esler 1988
											Esler 1988; Debussche & Isenmann 1994; Mora & Smith-Ramirez 2016; Quin et al. 2023
<i>Rubus ulmifolius</i>	Rosales	Rosaceae	fleshy	shrub	–	2.52	internal		animal	74.73	
									wind	19.49	Mora & Smith-Ramirez 2016
									wind.none	1.11	Mora & Smith-Ramirez 2016
<i>Rubus vestitus</i>	Rosales	Rosaceae	fleshy	shrub	–	–	internal		animal	78.8	Esler 1988
<i>Rumex sagittatus</i>	Caryophyllales	Polygonaceae	dry	shrub	–	1.84	wind		wind	10.9	Esler 1988; SID, NZPCN Welch 1985; Albert et al. 2015; Almeida et al. 2022, 2025
<i>Sagina procumbens</i>	Caryophyllales	Caryophyllaceae	dry	herb	0.1	0.02	unspecialised		animal	103.02	
									wind	6.91	Rosenthal 2006

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<i>Salix cinerea</i>	Malpighiales	Salicaceae	dry	tree	7	0.17	wind	wind.none wind animal	0.37 469.38 6998.02	Rosenthal 2006 Griffiths et al. 2018; NZPCN Couvreur et al. 2004
<i>Salix purpurea</i>	Malpighiales	Salicaceae	dry	shrub	8	0.21	wind	water wind water	– 491.12 –	NZPCN van Kraayenoord et al. 1995 van Kraayenoord et al. 1995
<i>Salpichroa origanifolia</i>	Solanales	Solanaceae	fleshy	shrub	–	–	internal	animal	135.32	Reati et al. 2022 Webb et al. 1988; Burrows 1995; Williams & Karl 1996; Atkinson 1997; Higgins et al. 2006; Spurr et al. 2011
<i>Sambucus nigra</i>	Dipsacales	Viburnaceae	fleshy	shrub	6	9.87	internal	animal	1101.54	
<i>Schinus terebinthifolia</i>	Sapindales	Anacardiaceae	fleshy	shrub	3	18.14	internal	animal ant	1094.9 88.2	Higgins et al. 2006; NZPCN Leal et al. 2007
<i>Schoenoplectus californicus</i>	Poales	Cyperaceae	dry	herb	3	0.68	attachment	animal	379.36	Almeida et al. 2025; NZPCN Eichberg et al. 2007; Albert et al. 2015; Almeida et al. 2022
<i>Sedum acre</i>	Saxifragales	Crassulaceae	dry	herb	0.09	0.04	unspecialised	animal wind wind.none	99.52 9.47 0.41	Esler 1988; Rosenthal 2006 Esler 1988; Rosenthal 2006
<i>Sedum praealtum</i>	Saxifragales	Crassulaceae	dry	shrub	–	0.02	unspecialised	unknown	–	
<i>Senecio elegans</i>	Asterales	Asteraceae	dry	herb	0.6	–	wind	wind	11.8	
<i>Senecio glastifolius</i>	Asterales	Asteraceae	dry	herb	1	0.48	wind	wind	15.85	
<i>Senecio skirrhodon</i>	Asterales	Asteraceae	dry	herb	0.5	–	wind	wind	11.15	
<i>Senna</i>	Fabales	Fabaceae	dry	shrub	2	20.03	ballistic	ballistic	17.43	West 1996
<i>septomtrionalis</i>	Fabales	Fabaceae	dry	shrub	2	20.03	ballistic	ballistic	17.43	West 1996
<i>Setaria palmifolia</i>	Poales	Poaceae	dry	herb	2	1.5	unspecialised	animal water	1068.94 –	Smith 1985; NZPCN Smith 1985; NZPCN
<i>Setaria pumila</i>	Poales	Poaceae	dry	herb	–	1.33	unspecialised	animal	116.36	Almeida et al. 2022, 2025
<i>Silybum marianum</i>	Asterales	Asteraceae	dry	herb	2	24.2	wind, ant	wind ant animal water	8.53 10.24 127.17 –	SID; NZPCN Pemberton & Irving 1990 Harrington et al. 2011; Almeida et al. 2022; SID; NZPCN NZPCN

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<i>Solanum dulcamara</i>	Solanales	Solanaceae	fleshy	herb	–	26.44	internal	animal	73.84	Snow & Snow 1988; Albert et al. 2015; Green 2016; Almeida et al. 2022
<i>Solanum linnaeanum</i>	Solanales	Solanaceae	fleshy	shrub	1	4.86	internal	animal	384.92	
<i>Solanum marginatum</i>	Solanales	Solanaceae	fleshy	shrub	5	3	internal	animal	1193.2	
<i>Solanum mauritianum</i>	Solanales	Solanaceae	fleshy	shrub	10	1.15	internal	animal	2461.03	Esler 1988; Fromont & King 1992; Timmins & Mackenzie 1995; Atkinson 1997; Higgins et al. 2006
<i>Solanum pseudocapsicum</i>	Solanales	Solanaceae	fleshy	shrub	1.2	2.78	internal	animal	512.86	Webb et al. 1988; Williams & Karl 1996; Higgins et al. 2006
<i>Sorbus aucuparia</i>	Rosales	Rosaceae	fleshy	tree	8	6.32	internal	animal	1004.91	McEwen 1978; Burrows 1995; Almeida et al. 2022
<i>Spartium junceum</i>	Fabales	Fabaceae	dry	shrub	3	14.54	ballistic	ballistic	22.18	Geerts et al. 2013
								ant	71.53	Geerts et al. 2013
								animal	888.01	Geerts et al. 2013
								water	–	Geerts et al. 2013
<i>Spiraea japonica</i>	Rosales	Rosaceae	dry	shrub	1.5	0.05	unspecialised	wind	105.57	Feldhaus et al. 2013
								wind.none	5.61	Feldhaus et al. 2013
								water	–	Feldhaus et al. 2013
<i>Sporobolus anglicus</i>	Poales	Poaceae	dry	herb	1	–	unspecialised	wind	52	Timmins & Mackenzie 1995; NZPCN
								wind.none	3.67	Timmins & Mackenzie 1995; NZPCN
								water	–	NZPCN
<i>Stenotaphrum secundatum</i>	Poales	Poaceae	dry	herb	0.25	1.77	water	wind	29.32	West 1996
								wind.none	1.56	West 1996
								animal	437.09	West 1996
								water	–	Sauer 1972
<i>Syzygium australe</i>	Myrtales	Myrtaceae	fleshy	shrub	10	97.92	internal	animal	2014.2	Webb et al. 1988
<i>Syzygium smithii</i>	Myrtales	Myrtaceae	fleshy	tree	15	173.15	internal	animal	2008.22	Esler 1988; Fromont & King 1992; Karan 2000
<i>Thinopyrum acutum</i>	Poales	Poaceae	dry	herb	1.25	–	water	water	–	Refoufi & Esnault 2006

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<i>Thinopyrum obtusiflorum</i>	Poales	Poaceae	dry	herb	2	–	unspecialised	animal	775.79	Rob Simons, unpubl. data on notes recorded with herbarium specimen
<i>Thunbergia alata</i>	Lamiales	Acanthaceae	dry	herb	–	25.11	ballistic	ballistic	2.43	Quijano-Abril et al. 2022
<i>Thymus vulgaris</i>	Lamiales	Lamiaceae	dry	shrub	0.3	1.38	unspecialised	water	100*	Gouyon et al. 1987
<i>Toxicodendron succedaneum</i>	Sapindales	Anacardiaceae	fleshy	tree	5	63.08	internal	animal	975.1	Heenan et al. 2008
<i>Trachycarpus fortunei</i>	Arecales	Arecaceae	fleshy	tree	12	181.28	internal	animal	761.53	Esler 1988
<i>Tropaeolum majus</i>	Brassicales	Tropaeolaceae	dry	herb	2	146.7	water	animal water	63.62 –	Webb et al. 1988; West 1996 Chambert & James 2009 Burrows 1995; Ridley 1998;
<i>Tropaeolum speciosum</i>	Brassicales	Tropaeolaceae	fleshy	shrub	–	–	internal	animal	115.98	Spurr et al. 2011
<i>Tussilago farfara</i>	Asterales	Asteraceae	dry	herb	0.3	0.3	wind	wind	10.78	SID Mora & Smith-Ramirez 2016;
<i>Ugni molinae</i>	Myrtales	Myrtaceae	fleshy	shrub	2	0.91	internal	animal	3061.81	NZPCN Smith 1985; Webb et al. 1988; Esler 1988; Cronk & Fuller 1995; Atkinson 1997; Roberts & Florentine 2021
<i>Ulex europaeus</i>	Fabales	Fabaceae	dry	shrub	2	6.54	ballistic, ant	ballistic ant	22.58 72.82	Pemberton & Irving 1990; Roberts & Florentine 2021 Smith 1985; Higgins et al. 2006; Harrington et al. 2011; Reynolds et al. 2015; Roberts & Florentine 2021
<i>Utricularia gibba</i>	Lamiales	Lentibulariaceae	dry	herb	0.3	0.05	unspecialised	animal water animal water	903.94 – 219.24 –	Roberts & Florentine 2021 deWinton et al. 2009 NZPCN
<i>Verbascum thapsus</i>	Lamiales	Scrophulariaceae	dry	herb	1	0.1	unspecialised	wind wind.none animal	17.88 0.95 266.58	Smith 1985; Gross & Werner 1978; Gross 1980 Smith 1985; Gross & Werner 1978; Gross 1980 Warren et al. 2017
<i>Vinca major</i>	Gentianales	Apocynaceae	dry	herb	–	19.41	unspecialised	unknown	–	Esler 1988 Gibb 2000; Anderson et al. 2006; Spurr 2011; Almeida et al. 2022
<i>Vitis vinifera</i>	Vitales	Vitaceae	fleshy	shrub	–	30.5	internal	animal	66.82	

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<i>Zantedeschia aethiopica</i>	Alismatales	Araceae	fleshy	herb	1.5	20.26	internal	animal water	120.26 –	Esler 1988; Stansbury 2001; NZPCN NZPCN
<i>Zizania latifolia</i>	Poales	Poaceae	dry	herb	3	–	water	animal water	880.37 –	NZPCN Timmins & Mackenzie 1995; NZPCN

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Appendix S3. Comparison of maximum seed dispersal distances for environmental weed species estimated using trait-based models (modelled distance) and empirical methods (including mechanistic models). References are listed in Appendix S2.

Species	Dispersal mechanism	Modelled distance (m)	Empirical distance (m)	Reference
<i>Ailanthus altissima</i>	wind	145	200	Kaproth & McGraw 2008
<i>Baccharis halimifolia</i>	wind	254	140	Sims-Chilton & Panetta 2011
<i>Calluna vulgaris</i>	wind	103	80	Bullock & Clarke 2000
<i>Jacobaea vulgaris</i>	wind	21	37	Wardle 1987
<i>Myricaria germanica</i>	wind	93	50	Fink et al. 2017
<i>Pinus contorta</i>	wind	664	790*	Wyse & Hulme 2021
<i>Pinus halapensis</i>	wind	338	350*	Wyse & Hulme 2021
<i>Pinus mugo</i>	wind	278	120*	Wyse & Hulme 2021
<i>Pinus muricata</i>	wind	411	365*	Wyse & Hulme 2021
<i>Pinus nigra</i>	wind	494	690*	Wyse & Hulme 2021
<i>Pinus patula</i>	wind	477	525*	Wyse & Hulme 2021
<i>Pinus pinaster</i>	wind	378	550*	Wyse & Hulme 2021
<i>Pinus ponderosa</i>	wind	471	820*	Wyse & Hulme 2021
<i>Pinus radiata</i>	wind	443	600*	Wyse & Hulme 2021
<i>Pinus sylvestris</i>	wind	580	700*	Wyse & Hulme 2021
<i>Robinia pseudoacacia</i>	wind	129	67	Morimoto et al. 2010
<i>Ehrharta erecta</i>	wind	56	5	Hodder 1997
<i>Rhododendron ponticum</i>	wind	217	100	Stephenson et al. 2007
<i>Spartium junceum</i>	ballistic	22	4	Geerts et al. 2013
<i>Thunbergia alata</i>	ballistic	2	3	Quijano-Abril et al. 2021

* approximate distance from Figure 2b in Wyse and Hulme 2021