

- 1 *Supporting information –*
- 2 **Appendix S1** Supplemental material on growth, leaf N and P, and leaf toughness data in to
- 3 nutrient enrichment.
- 4 **Appendix S2** Map of experimental sites in Australia and New Zealand and their environmental
- 5 characteristics.
- 6 **Appendix S3** Environmental characteristics of the seven locations in New Zealand and Australia
- 7 used in this study.
- 8 **Appendix S4** Distance-based redundancy analysis of the influence of explanatory and
- 9 environmental variables on patterns of herbivory.
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11 Appendix S1. Summary of *Avicennia marina* growth (shoot elongation, g/cm<sup>2</sup>), and percent leaf  
 12 content of N and P, and leaf toughness (LMA, leaf mass per area, g/cm<sup>2</sup>) in response to nutrient  
 13 enrichment at the seven locations in New Zealand and Australia used in this study. Values are  
 14 means followed by standard error in parens. The number of replicate trees is in parens following  
 15 each location. Data are from Lovelock *et al.* (2007ab, 2009), Martin *et al.* (2010) and Reef *et al.*  
 16 (2010).

LOCATION	Fertilizer					
	Treatment	Growth	N%	P%	N:P (at wt)	LMA
Waikopua, NZ(6):	Control	0.24	2.93	0.19	33.49	0.025
	N	2.48	3.11	0.21	33.24	0.025
	P	0.47	2.69	0.22	27.03	0.026
Whangapoua, NZ (6):	Control	2.53	2.81	0.18	34.24	0.024
	N	5.26	2.61	0.18	31.75	0.025
	P	1.17	2.67	0.18	33.71	0.025
Batemans Bay, NSW (9):	Control	0.65	2.48	0.25	22.12	0.020
	N	1.61	2.49	0.24	22.95	0.021
	P	0.49	2.28	0.26	19.24	0.023
Tinchi Tamba, QLD (9):	Control	0.39)	1.76	0.13	30.93	0.021
	N	2.92	2.32	0.14	37.04	0.022
	P	0.52	1.79	0.14	27.80	0.022
Giralia, WA (9):	Control	1.30	3.03	0.12	55.37	0.031
	N	2.25	3.15	0.12	56.44	0.026
	P	1.23	3.06	0.12	56.71	0.027

Cape Cleveland, QLD (6):	Control	1.55	1.62	0.15	23.98	0.020
	N	5.63	2.33	0.15	33.74	0.020
	P	2.22	1.85	0.17	24.24	0.019
Port Douglas, QLD (8):	Control	1.83	3.58	0.15	53.11	0.014
	N	3.25	3.56	0.13	60.66	0.016
	P	2.33	3.21	0.16	44.45	0.017

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Appendix S2. The seven fertilization experiments in *Avicennia marina* forests used in this study span a 20° latitudinal gradient and include three (1-3) temperate locations in New Zealand (Waikopua, Whangapoua) and Australia (Batemans Bay); two (4,7) subtropical (Tinchi Tamba, Giralia); and two (5, 6) tropical locations (Cape Cleveland, Port Douglas) in Australia.



Appendix S3. Environmental characteristics of the seven locations in New Zealand and Australia used in this study were from the southern temperate zone (North Island, New Zealand at Whangapoua and Waikopua and New South Wales, Australia at Batemans Bay) to subtropical (Tinchi Tamba, Giralia) and tropical (Cape Cleveland, Port Douglas) sites were located in Queensland and in Western Australia. Mean annual, mean maximum, and mean minimum air temperatures and mean annual rainfall, for each of our experimental locations were compiled from the Australian Bureau of Meteorology and the New Zealand MetService

Location	Latitude	Mean annual temp. (°C)	Mean annual max. temp. (°C)	Mean annual min. temp. (°C)	Mean annual rainfall (mm)
Waikopua, NZ	36.908°S, 174.996°E	14.8	18.9	11.3	2500
Whangapoua, NZ	36.748°S, 175.610°E	15.2	19.6	11.4	2000
Batemans Bay, NSW	35.705°S, 150.173°E	21.6	21.7	10.1	900
Tinchi Tamba, QLD	27.285°S, 153.045°E	25.3	25.3	15.5	1000
Giralia, WA	22.497°S, 114.320°E	31.8	33.0	16.8	250
Cape Cleveland, QLD	19.275°S, 147.042°E	28.9	28.9	19.8	1170
Port Douglas, QLD	16.491°S, 145.448°E	29.4	27.9	20.6	2010

Appendix S4. The distance-based redundancy analysis (dbRDA) of the influence of explanatory and environmental variables on patterns of herbivory on *Avicennia marina* over seven locations. dbRDA1 is positively associated with latitude, rainfall and LMA (partial correlations of 0.58, 0.31, and 0.03, respectively) and negatively associated with N:P and growth rates (DAGR) (partial correlations of -0.72 and -0.22) while dbRDA2 is positively associated with N:P, latitude and rainfall (partial correlations of 0.62, 0.43, 0.56, respectively) and negatively associated with LMA and DAGR (partial correlations of -0.29 and -0.17, respectively). WAI (Whaikopua, NZ), WHA (Whangapoua, NZ), BB (Batemans Bay, NSW), TT (Tinchi Tamba, QLD), GIR (Giralia, WA), PD (Port Douglas, QLD), CC (Cape Cleveland, QLD).

