## Supplementary material for

## The contest for the tall forests of south-western Australia and the discourses of advocates

*Grant Wardell-Johnson*<sup>A,H</sup>, *Angela Wardell-Johnson*<sup>B</sup>, *Beth Schultz*<sup>C</sup>, *Joe Dortch*<sup>D</sup>, *Todd Robinson*<sup>E</sup>, *Len Collard*<sup>F</sup> *and Michael Calver*<sup>G</sup>.

<sup>A</sup>ARC Centre for Mine Site Restoration and School of Molecular and Life Sciences, Curtin University, GPO Box U1987, Perth, WA 6845, Australia.

<sup>B</sup>Centre for Human Rights Education, Curtin University, GPO Box U1987, Perth, WA 6845, Australia.

<sup>c</sup>PO Box 203, Nedlands WA 6009, Australia.

<sup>D</sup>Centre for Rock Art Research and Management, University of Western Australia, M257, Perth, WA 6009, Australia.

<sup>E</sup>School of Earth and Planetary Sciences, Curtin University, GPO Box U1987, Perth, WA 6845, Australia.

<sup>F</sup>School of Indigenous Studies, The University of Western Australia, M303, 35 Stirling Highway, Crawley, WA 6009, Australia.

<sup>G</sup>Environment and Conservation Cluster, School of Veterinary and Life Sciences, Murdoch University, Murdoch, Western Australia 6150, Australia.

<sup>H</sup>Corresponding author. Email: g.wardell-johnson@curtin.edu.au; grant.wardell-johnson@outlook.com

**Table S1**. References and discourse/statement number of 118 statements representing the history of tall forest management in south-western Australia

Reference	Discourse/statement number
Attiwill, P. (1982). Conservation and management of the karri forest. A report on a	GRO2, EPS26, EPS23,
consultancy to the Environmental Protection Authority, Western Australia. In	ER5
'Karri Forest Conservation. Report and Recommendations by the Environmental	
Protection Authority' (Bulletin 123) pp 9-45 (Department of Conservation and	
Environment, Perth).	
Bannister, T. (1831). 'A report of Captain (Thomas) Bannister's Journey to King	ER16
George Sound, over Land, Feb. 5th 1831. Report to J.S. Roe, Surveyor General'	
(Government of Western Australia, Perth).	
Batavia, C., and Nelson, M.P. (2016). Conceptual ambiguities and practical challenges	GRO5
of ecological forestry: a critical review. Journal of Forestry	
http://dx.doi.org/10.5849/jof.15-103	
Bolton, G.C. (1992). 'A Fine Country to Starve In'. (UWA Press, Perth).	EPS10 (Mitchell 1930)
Borschmann, G. (1999) 'The people's forest: a living history of the Australian bush'	SY11 (Perry), ER26
The Peoples Forest Press, Blackheath, NSW. Roy Kelly, p. 164 (Quotations from	(Perry)
Douglas 'Dick' Perry).	
Bradshaw, F.J. (2015). 'Reference material for karri forest silviculture'. Technical	SV1, SV8, EPS25
Report FEM067, Forest Management Series (Department of Parks and Wildlife,	
Perth).	

	Tengal engale
Burrows, N., Dell, B., Neyland, M., and Rupreht, J. (2011). 'Review of silviculture in	EPS11, EPS5, EPS15,
forests of south-western Australia'. Report to the Department of Environment and	EPS16, EPS8, ER12
Conservation through the Director of Sustainable Forest Management (Government	
of Western Australia, Perth).	
Christensen P. (1997). Fauna conservation in production forests of Western Australia.	EPS14, ER8, EPS21
In 'Conservation outside Nature Reserves' (Eds P. Hale, and D. Lamb), pp 466-470	
(Centre for Conservation Biology, The University of Queensland).	
Collard, L.M. (2009). Djidi Djidi, Wardong, Kulbardi, Walitj and Weitj: Nyungar	IR5
Dream Time Messengers. Westerly 54 (2), 7-26.	
Collard, L. & Harben, S. (2010). Nartj Katitj Bidi Ngulluckiny Koorl? (Which	SV13
Knowledge Path Will We Travel?) Studies in Western Australian history, 26, 76-	
95.	
Collard L., & Palmer D. (2015). Koorlankga wer wiern: Indigenous Young People and	IR4
Spirituality. In 'Handbook of Children and Youth Studies' (Eds Wyn, J. & Cahill	1104
H.), pp 875-888 (Springer, Singapore). DOI 10.1007/978-981-4451-15-4 41	GD CA GD 115
Conservation Through Reserves Committee. (1974). Report of the Conservation	GRO3, GRA15
Through Reserves Committee to the Environmental Protection Authority.	
Dargavel, D. 2008. The Zealous Conservator: a Life of Charles Lane Poole. University	ER1 (Lane Poole 1921),
of Western Australia Press, Crawley, Western Australia, p. 71.	ER25 (Lane Poole
	1921)
Dean, C., and Wardell-Johnson, G. (2010). Old-growth forests, carbon and climate	GRA5
change: Functions and management for tall open-forests in two hotspots of	
temperate Australia. <i>Plant Biosystems</i> <b>144</b> , 180-193.	
Dean, C., Wardell-Johnson, G.W., and Kirkpatrick, JD. (2012). Are there any	SV4
circumstances in which logging primary wet-eucalypt forest will not add to the	
global carbon burden? Agricultural and forest meteorology 161, 156-169.	
Dortch, J., Balme, J., & Ogilvie, J. (2012). Aboriginal responses to late Quaternary	SV16
environmental change in a Mediterranean-type region: Zooarchaeological evidence	5 7 10
from south-western Australia. Quaternary International <b>264</b> , 121-134.	
Dortch, J., Monks, C., Webb, W., & Balme, J. (2014). Intergenerational archaeology:	SV14
Exploring niche constructions in southwest Australian zooarchaeology. <i>Australian</i>	3 1 1 4
Archaeology 79, 187-193.	ED24
Drummond, J. (1849). Botany of Western Australia. Journal of Botany and Kew	ER24
Garden Miscellany 1, 247-251.	GI IO
Faith, J., Dortch, J., Jones, C., Shulmeister, J., Travouillon, K. (2016). Large mammal	SV9
species richness and late Quaternary precipitation change in south-western	
Australia. Journal of Quaternary Science 32, 760–769.	
Fernie, L., and Fernie, G. (1989). 'In praise of a National Park' (Lee & Geoff Fernie,	GRO1 (Wilson 1920),
Perth).	ER18 (Moran 1930)
Graham, M. (1999). Some thoughts about the philosophical underpinnings of	IR2
Aboriginal worldviews. Worldviews: Global Religions, Culture, and Ecology, 3 (2),	
105–118.	
Hallam, S. J. (1979). 'Fire and hearth' (Advocate Press Pty Ltd, Melbourne).	SV11
Hitchcock, P. & Borschmann, G. (2018), Gums of Gondwana The history and future of	SY13, SY2, SY4, SY5,
the World's Tall Eucalypt Forests, Publishing proposal	GRO4, ER7, ER21
Hopper, S.D., Keighery, G.J., and Wardell-Johnson, G., (1992). Flora of the karri	GRA10
forest and other communities in the Warren botanical subdistrict of Western	GIGITO
Australia. In 'Research on the Impact of Forest Management in South-West	
Western Australia' Occasional Paper, vol. 2/92, pp. 1–32 (Department of	
	Í.
Concernation and Land Management Dorth	
Conservation and Land Management, Perth).	ED11 ED20
Institute of Foresters of Australia. (2005). Comment on the Shannon and	ER11, ER20
Institute of Foresters of Australia. (2005). Comment on the Shannon and d'Entrecasteaux Draft Management Plan – 2005 by the Institute of Foresters of	ER11, ER20
Institute of Foresters of Australia. (2005). Comment on the Shannon and d'Entrecasteaux Draft Management Plan – 2005 by the Institute of Foresters of Australia. Institute of Foresters of Australia.	
Institute of Foresters of Australia. (2005). Comment on the Shannon and d'Entrecasteaux Draft Management Plan – 2005 by the Institute of Foresters of Australia. Institute of Foresters of Australia.  Kessell, S. L. (1922). Report of the Forests Department for the Year Ended 30th June,	ER11, ER20 ER22
Institute of Foresters of Australia. (2005). Comment on the Shannon and d'Entrecasteaux Draft Management Plan – 2005 by the Institute of Foresters of Australia. Institute of Foresters of Australia.  Kessell, S. L. (1922). Report of the Forests Department for the Year Ended 30th June, 1922. Forests Department of Western Australia, Perth, Western Australia.	ER22
Institute of Foresters of Australia. (2005). Comment on the Shannon and d'Entrecasteaux Draft Management Plan – 2005 by the Institute of Foresters of Australia. Institute of Foresters of Australia.  Kessell, S. L. (1922). Report of the Forests Department for the Year Ended 30th June, 1922. Forests Department of Western Australia, Perth, Western Australia.  Kessell, S. L. (1928). Forestry and Forest Resources, Western Australia. A Statement	
Institute of Foresters of Australia. (2005). Comment on the Shannon and d'Entrecasteaux Draft Management Plan – 2005 by the Institute of Foresters of Australia. Institute of Foresters of Australia.  Kessell, S. L. (1922). Report of the Forests Department for the Year Ended 30th June, 1922. Forests Department of Western Australia, Perth, Western Australia.	ER22

Lane Poole, C. E. (1918). Annual report of the Woods and Forests Department for the	SY8
year ended 31st December, 1917. Woods and Forests Department, Western	
Australia, Perth, Western Australia.	
Lane Poole, C. E. (1920a). Statement Prepared For The British Empire Forestry	SY1, SY10, SY15, ER19
Conference, London, 1920. Government Printer, Perth, Perth, Western Australia.	
Lane Poole, C. E. (1920b). Notes On The Forests And Forest Products And Industries	EPS1
Of Western Australia. (Forests Department of Western Australia, Perth, Western	
Australia).	
Latimore J. (2018). We must return all our landmarks to their Indigenous names,	IR1
Guardian 17 <sup>th</sup> May 2018 https://www.theguardian.com//2018//we-must-return-	IICI
all-our-landmarks-to-theirindigenous-names	
Lindenmayer, D.B., Burton, P.J., and Franklin J.F. (2008). 'Salvage logging and its	SY19, GRA14
	3119, GRA14
ecological consequences' (CSIRO Publishing, Collingwood).	ED27
McNamara, P.J. (1984). Future Timber supplies for Western Australia: a discussion	ER27
paper prepared for the Hon. Premier and Minister of Forests (Forests Department of	
Western Australia, Perth).	
McIntosh, P.D., and Moroni, M. (2016). Carbon sequestration in Tasmania's forests:	EPS24, ER15
Perceptions, misrepresentations and ecological reality. Australian Forest Growers'	
Conference, Launceston 24-26 October 2016, presented paper. FPA file RM	
D16/144759: 28 October 2016	
McKenzie, N.L., Wardell-Johnson, G., Hopper, S.D. and Gibson, N. (1996). Assessing	GRA7
the adequacy of the Conservation Reserve System in the Jarrah Forest Bioregion,	
south-western Australia. Journal of the Royal Society of WA. 79, 241-248.	
National Association of Forest Industries 1990, No. 6.	EPS3
Pemberton Tourist Bureau, Tourist map, 1974.	ER14
Resource Assessment Commission (1991). Forest and timber inquiry: draft report	SY12
	5112
(Australian Government Publishing Service, Canberra)	CD A1 CD A12
Roberts, J.D., Horwitz, P., Wardell-Johnson, G., Maxson, L., and Mahony, M. (1997).	GRA1, GRA12a,
Taxonomy, relationships and conservation of a new genus and species of	GRA12b, GRA11,
Myobatrachid frog from the High Rainfall Region of Southwestern Australia.	GRA13.
Copeia <b>1997</b> , 373-381.	
Rodger, G.J. (1952). Report of the Royal Commission appointed to inquire into and	SY16, SY17
report upon Forestry and Timber matters in Western Australia. (Government of	
Western Australia, Perth).	
Harper, C, Atkins, S, Hastie, R, Fitzgerald, W.V., and Moore N.J. (1903) Royal	SY3
Commission on Forestry (Government Printer, Perth).	
Ruane, S. (2018). Using a worldview lens to examine complex policy issues: a	IR7, IR8
historical review of bushfire management in the South West of Australia. Local	
Environment DOI: 10.1080/13549839.2018.1467390.	
Schultz, B. (2015). 'Sustained unsustainability – 100 years of mismanagement of the	SY21
karri forest'. (South-West Forests Defence Foundation and WA Forest Alliance,	5121
Perth).	ED.C
Senate Standing Committee on Science and the Environment (1977). 'Woodchips and	ER6
the environment Report' (Australian Government Publishing Service, Canberra).	
South-West Forests Defence Foundation Inc (1986). 'Karri Forest Facts' (South-West	SY14, GRA2,GRA3,
Forests Defence Foundation Inc., Perth).	CD A 6
Stoneman, G. (2008) 'Ecological forestry' and eucalypt forests managed for wood	GRA6
production in south-western Australia. Biological Conservation 137, 558-566.	EPS4, ER17, ER3
production in south Western Hustiana. Brotogreat Conservation 101, 330 300.	I and the second
	EPS4, ER17, ER3
Swann, T., and Browne, B. (2016). 'Barking up the wrong trees. WA's Forest Products	I and the second
Swann, T., and Browne, B. (2016). 'Barking up the wrong trees. WA's Forest Products Commission (FPC) and the performance of its native forestry' (The Australia	EPS4, ER17, ER3 SY18, SY6, SY7, SY9,
Swann, T., and Browne, B. (2016). 'Barking up the wrong trees. WA's Forest Products Commission (FPC) and the performance of its native forestry' (The Australia Institute, Sydney).	EPS4, ER17, ER3  SY18, SY6, SY7, SY9, ER10
<ul> <li>Swann, T., and Browne, B. (2016). 'Barking up the wrong trees. WA's Forest Products Commission (FPC) and the performance of its native forestry' (The Australia Institute, Sydney).</li> <li>Turney, C., Bird, M., Fifield, L., Roberts, R., Smith, M., Dortch, C., Grun, R., Lawson,</li> </ul>	EPS4, ER17, ER3 SY18, SY6, SY7, SY9,
<ul> <li>Swann, T., and Browne, B. (2016). 'Barking up the wrong trees. WA's Forest Products Commission (FPC) and the performance of its native forestry' (The Australia Institute, Sydney).</li> <li>Turney, C., Bird, M., Fifield, L., Roberts, R., Smith, M., Dortch, C., Grun, R., Lawson, E., Ayliffe, L., Miller, G., Dortch, J., and Creswell, R. (2001). Early human</li> </ul>	EPS4, ER17, ER3  SY18, SY6, SY7, SY9, ER10
<ul> <li>Swann, T., and Browne, B. (2016). 'Barking up the wrong trees. WA's Forest Products Commission (FPC) and the performance of its native forestry' (The Australia Institute, Sydney).</li> <li>Turney, C., Bird, M., Fifield, L., Roberts, R., Smith, M., Dortch, C., Grun, R., Lawson, E., Ayliffe, L., Miller, G., Dortch, J., and Creswell, R. (2001). Early human occupation at Devil's Lair, southwestern Australia 50,000 years ago. <i>Quaternary</i></li> </ul>	EPS4, ER17, ER3  SY18, SY6, SY7, SY9, ER10
<ul> <li>Swann, T., and Browne, B. (2016). 'Barking up the wrong trees. WA's Forest Products Commission (FPC) and the performance of its native forestry' (The Australia Institute, Sydney).</li> <li>Turney, C., Bird, M., Fifield, L., Roberts, R., Smith, M., Dortch, C., Grun, R., Lawson, E., Ayliffe, L., Miller, G., Dortch, J., and Creswell, R. (2001). Early human occupation at Devil's Lair, southwestern Australia 50,000 years ago. <i>Quaternary Science Reviews</i> 55, 3-13.</li> </ul>	EPS4, ER17, ER3  SY18, SY6, SY7, SY9, ER10  SV15
<ul> <li>Swann, T., and Browne, B. (2016). 'Barking up the wrong trees. WA's Forest Products Commission (FPC) and the performance of its native forestry' (The Australia Institute, Sydney).</li> <li>Turney, C., Bird, M., Fifield, L., Roberts, R., Smith, M., Dortch, C., Grun, R., Lawson, E., Ayliffe, L., Miller, G., Dortch, J., and Creswell, R. (2001). Early human occupation at Devil's Lair, southwestern Australia 50,000 years ago. <i>Quaternary Science Reviews</i> 55, 3-13.</li> <li>Underwood, R.J. (1988). Rebuilding the cathedral. <i>Landscope</i> 4(1), 56-60.</li> </ul>	EPS4, ER17, ER3  SY18, SY6, SY7, SY9,
<ul> <li>Swann, T., and Browne, B. (2016). 'Barking up the wrong trees. WA's Forest Products Commission (FPC) and the performance of its native forestry' (The Australia Institute, Sydney).</li> <li>Turney, C., Bird, M., Fifield, L., Roberts, R., Smith, M., Dortch, C., Grun, R., Lawson, E., Ayliffe, L., Miller, G., Dortch, J., and Creswell, R. (2001). Early human occupation at Devil's Lair, southwestern Australia 50,000 years ago. <i>Quaternary Science Reviews</i> 55, 3-13.</li> </ul>	EPS4, ER17, ER3  SY18, SY6, SY7, SY9, ER10  SV15

<b>l</b> ,
٠,

Fig. S1. Two-way table overlaying discourse groups (seven groups defined, Bray Curtis Metric, Beta -0.1) with variable groups (five groups defined, Two-step Metric, Beta = -0.1) derived from 118 statements relevant to tall forest management and 20 presence/absence variables. The 20 intrinsic variables were associated with conflict (four variables), discourses (six variables), capitals (seven variables) and knowledge systems (three variables). Darkly shaded cells show discourse groups associated with variable groups, and lightly shaded blocks show discourse groups weakly associated with variable groups. Key to column labels (Intrinsic variables - left to right); Cognitive conflict (CON-COG), Values conflict (CON-VAL), Environmental capital (ENV-C), Local knowledge (KNOW-L), Scientific knowledge (KNOW-S), Interest conflict (CON-INT), Relations conflict (CON-REL), Physical capital (PHY-C), Financial capital (FIN-C), Environmental sustainability (ENV-SUS), Environmental survivalism (ENV-SURV), Economic rationalism (ECON-RAT), Environmental Problem solving (ENV-PROB), Cultural capital (CULT-C), Human capital (HUM-C), Social capital (SOC-C), Indigenous knowledge (KNOW-I), Ecological romantic (ECOL-ROM), Natural capital (NAT-C), Ecological rationalist (ECOL-RAT).

