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Supplementary material

Demographic vulnerability of an extreme xerophyte in arid Australia

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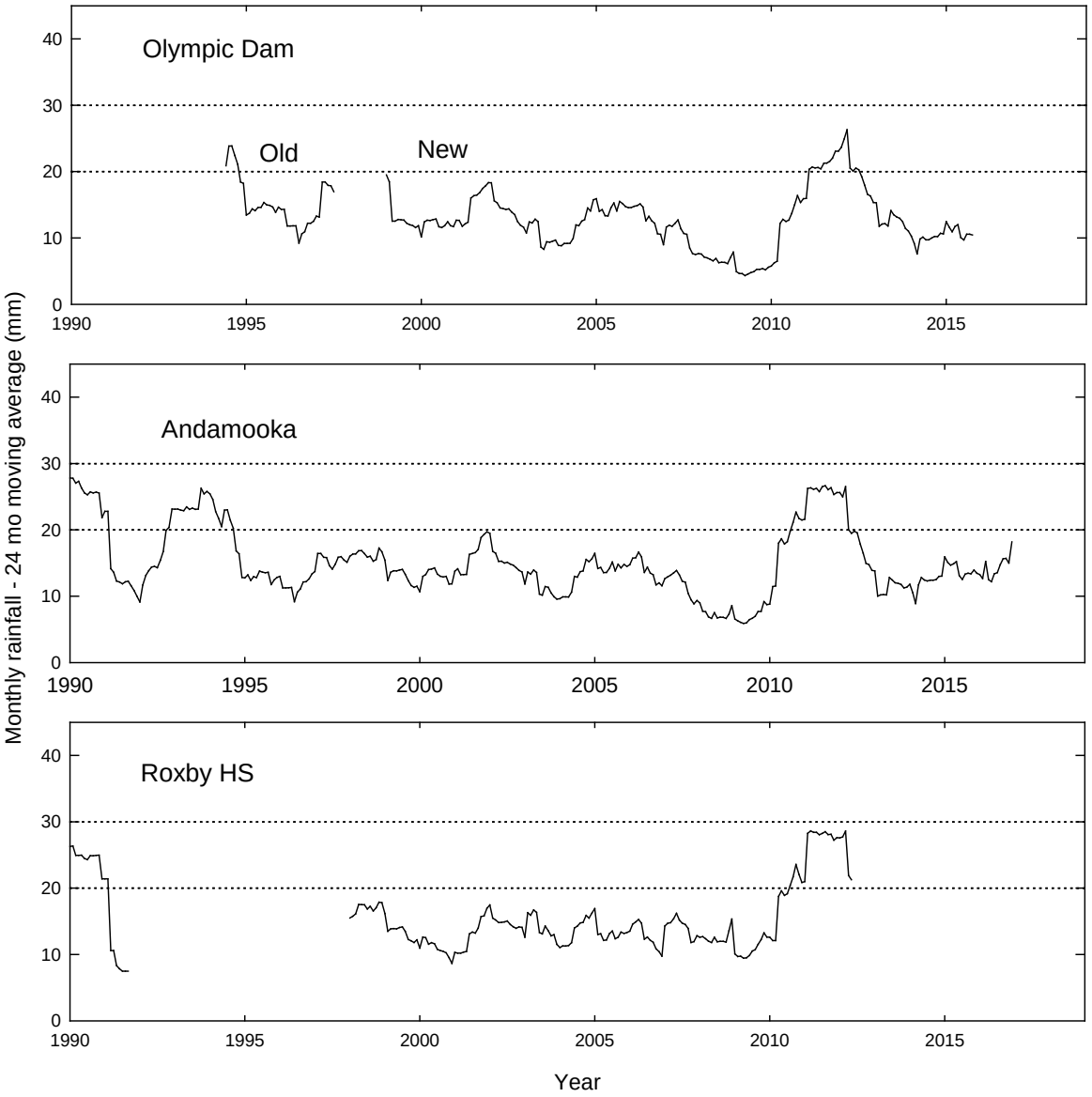

Fig. S1(a) 24-mo moving average rainfall between 1990 and 2016 for rainfall stations closest to Arid Recovery Reserve. Olympic Dam, the nearest station, has only a short rainfall record, during which the station was moved. Data are similar to those from Andamooka (approx. 30 km east) and Roxby Downs Station (Roxby HS) (approx. 26 km south-west). Possible threshold values for *C. glaucophylla* regeneration of 20 and 30 mm rain per month are shown by the dotted lines.

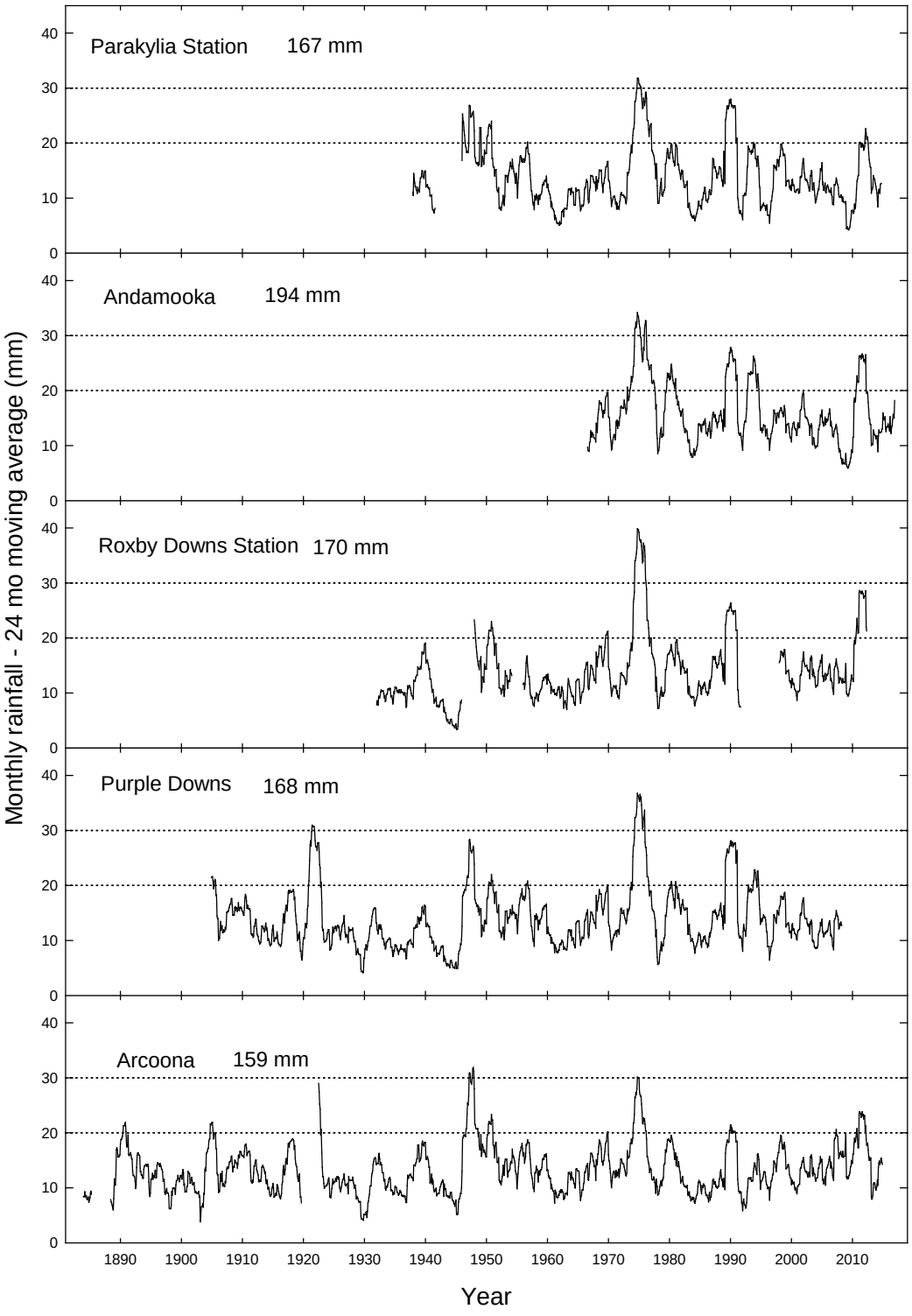

Fig. S1(b) Comparison of 24-mo moving average rainfall for five stations in the region, arranged from the northern-most (top panel) to the southern-most station (bottom panel). Possible threshold values for *C. glaucophylla* regeneration of 20 and 30 mm rain per month are shown by the dotted lines. Mean annual rainfall is shown for each station, although note that the measurement periods differ.

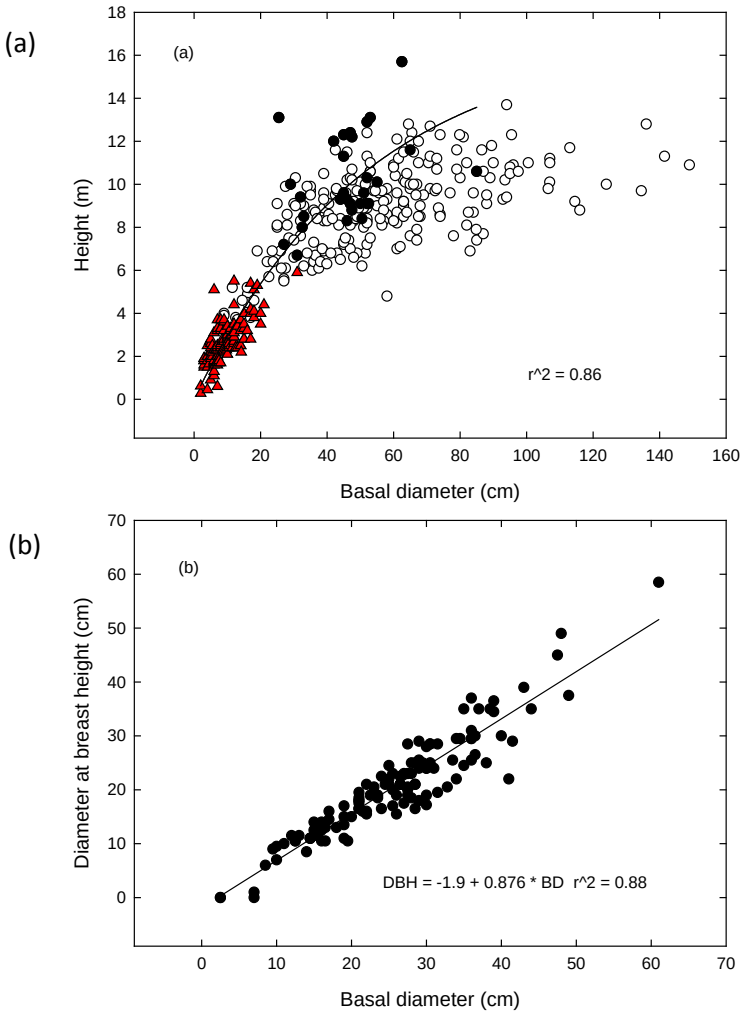

Fig. S2. (a) The relationship between height and basal diameter for *C. glaucophylla* trees in the Roxby Downs region. The red triangles represent 'young' trees (seedlings, saplings and those with a slim, erect form), the filled circles are those noted as being single stem with a good form (straight, approximately circular stem), and the open circles are the remaining trees, most multi-stemmed and many gnarled and twisted. The line was fitted to only the solid symbols (young and single-stemmed trees). (b) The relationship between diameter at breast height and basal diameter for *C. glaucophylla* trees in the Roxby Downs region.

Table S1. Radiocarbon Results

Lab ID	Sample ID	Distance from bark (mm)	$\delta^{13}C$ (‰)	pMC		^{14}C Age (BP)		Unmodelled Cal ages (AD)							Modelled Cal ages (AD)							A_{model}
				Mean	1σ	Mean	1σ	1σ range		2σ range		Mean	1σ	Median	1σ range		2σ range		Mean	1σ	Median	
-	RD1 3B - Bark	0																	2009	0		
OZU137	RD1 3B - Sample 1	37	-19.6	96.85	0.33	255	30	1646	1953	1636	1954	1722	69	1743	1951	1954	1746	1955	1941	42	1952	
OZU138	RD1 3B - Sample 2	83	-19.1	98.28	0.27	140	25	1699	1945	1692	1949	1841	79	1857	1863	1949	1711	1951	1886	55	1896	61%
OZU139	RD1 3B - Sample 3	127	-19.2	97.89	0.25	170	20	1678	1951	1672	1955	1809	89	1818	1798	1879	1676	1940	1832	51	1840	
OZU140	RD1 3B - Sample 4	171	-18.6	96.55	0.37	280	30	1530	1953	1510	1954	1662	81	1652	1767	1799	1658	1801	1772	35	1786	
OZU141	RD1 3B - Sample 5	217	-19.4	97.22	0.28	225	25	1666	1798	1652	1954	1751	60	1758	1742	1789	1651	1796	1749	40	1760	
-	RD2 9B - Bark	0																	2009	0		
OZU142	RD2 9B - Sample 1	39	-18.5	149.55	0.46	Modern		1971	1972	1970	1972	1971	1	1971	1971	1972	1964	1972	1971	2	1971	
OZU143	RD2 9B - Sample 2	75	-20.3	97.80	0.34	180	30	1674	1954	1669	1955	1801	87	1802	1934	1955	1867	1955	1933	27	1942	94%
OZU144	RD2 9B - Sample 3	115	-19.3	97.98	0.32	165	30	1682	1949	1674	1955	1819	87	1838	1871	1951	1838	1952	1909	39	1924	
OZU145	RD2 9B - Sample 4	152	-18.6	98.25	0.29	140	25	1698	1946	1689	1950	1839	80	1855	1850	1945	1806	1948	1883	50	1890	
OZU146	RD2 9B - Sample 5	192	-18.0	97.96	0.35	165	30	1680	1949	1673	1955	1817	87	1835	1803	1937	1678	1946	1854	63	1864	
-	RD3 2A - Bark	0																	2009	0		
OZU147	RD3 2A - Sample 1	33	-19.9	111.31	0.38	Modern		1996	1998	1958	1998	1993	11	1997	1996	1998	1995	1998	1997	1	1997	
OZU148	RD3 2A - Sample 2	79	-21.2	138.52	0.45	Modern		1975	1975	1963	1976	1973	5	1975	1974	1976	1963	1976	1973	4	1975	66%
OZU149	RD3 2A - Sample 3	124	-19.4	96.87	0.28	255	25	1648	1796	1642	1954	1723	67	1744	1952	1954	1781	1955	1940	46	1952	
OZU150	RD3 2A - Sample 4	170	-20.2	97.77	0.25	180	25	1674	1954	1670	1955	1792	88	1781	1938	1953	1694	1954	1924	58	1946	
OZU151	RD3 2A - Sample 5	220	-20.2	97.97	0.24	165	20	1683	1949	1676	1955	1818	88	1841	1925	1950	1680	1952	1907	67	1934	

Note: Simple sequence deposition model of the OxCal program (Bronk Ramsey 2008) was used for age-depth modelling. Radiocarbon calibration data used in the model were the SH Zone 1-2 Bomb data (Hua *et al.* 2013) extended back in time using the SHCal13 data (Hogg *et al.* 2013). All three models were good, as the overall model agreement indexes ranged from 61 to 94%, which are higher than the accepted level of 60% (Bronk Ramsey 2008)

References for Table S1.

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Hua Q, Barbetti M, Rakowski AZ (2013) Atmospheric radiocarbon for the period 1950-2010. *Radiocarbon* **55**, 2059-2072.