Dataset S10. Dark respiration rates in green leaves

Notes to Table **S10**:

The basis for this data set is formed by the data of Wright et al. (2004). Supplementary data to the paper of Wright et al. (2004), available at www.nature.com, contain 274 dark respiration values for 246 species. For each species the minimal value in the data set was taken. To the resulting set of 246 values, 25 values for 25 species were added taken from the literature. These data are marked with a reference in the **"Ref"** column; references are given below the table. Data without a reference are from Wright et al. (2004).

LogRdmass is the original unit of dark respiration rate in the data set of Wright et al. (2004). It is equal to the decimal logarithm of dark respiration rate **Rdmass** measured in nmol CO_2 (g DM)$^{-1}$ s^{-1}, where DM is dry leaf mass. Using the respiration coefficient of unity (1 mol CO_2 released per 1 mol O_2 consumed), energy conversion coefficient of 20 J (ml O_2)$^{-1}$ and dry mass/ wet mass ratio DM/WM = 0.3 (crude mean for all taxa applied in the analysis (SI Methods, Table S12a), **Rdmass** was converted to **qWkg** (W (kg WM)$^{-1}$) as follows: **qWkg** = **Rdmass** $\times$ 22.4 ml O_2 mol^{-1} $\times$ 20 J (ml O_2)$^{-1}$ $\times$ 0.3 $\times$ 10^{-3} = **0.134 Rdmass** W (kg WM)$^{-1}$. Or, for the decimal logarithms, **LogqWkg** = **LogRdmass** $-$ 0.87. The resulting 271 **qWKg** values for 271 species were used in the analyses shown in Figures 1 and 2 and Table 1 in the paper. **Logqd** is an axiliary variable equal to the decimal logarithm of dark respiration rate expressed in W (kg DM)$^{-1}$.

Main reference:

Wright I.J., Reich P.B., Westoby M., Ackerly D.D., Baruch Z., Bongers F., Cavender-Bares J., Chapin T., Cornelissen J.H.C., Diemer M., Flexas J., Garnier E., Groom P.K., Gulias J., Hikosaka K., Lamont B.B., Lee T., Lee W., Lusk C., Midgley J.J., Navas M.-L., Niinemets Ü., Oleksyn J., Osada N., Poorter H., Poot P., Prior L., Pyankov V.I., Roumet C., Thomas S.C., Tjoelker M.G., Veneklaas E.J., Villar R. (2004) The worldwide leaf economics spectrum. Nature 428: 821-827.

Table **S10**. Dark respiration in green leaves

Species	logRdmass	Logqd	LogqWkg	Ref
1. Abies lasiocarpa	0.54	0.19	-0.33	
2. Acacia colletioides	0.76	0.41	-0.11	
3. Acacia doratoxylon	0.83	0.48	-0.04	
4. Acacia floribunda	1.03	0.68	0.16	
5. Acacia havilandiorum	0.95	0.60	0.08	
6. Acacia oswaldii	0.65	0.30	-0.22	
7. Acacia suaveolens	0.84	0.49	-0.03	
8. Acacia willhelmiana	1.06	0.71	0.19	
9. Acer rubrum	0.93	0.58	0.06	
10. Acer saccharum	0.85	0.50	-0.02	
11. Achillea millefolium	1.18	0.83	0.31	
12. Acomastylis rosii	1.32	0.97	0.45	
13. Adenanthos cygnorum	0.64	0.29	-0.23	
14. Adinandra dumosa	0.99	0.64	0.12	
15. Aextoxicon punctatum	0.57	0.22	-0.30	
16. Agropyron repens	1.13	0.78	0.26	
17. Agrostis scabra	1.51	1.16	0.64	
18. Allocasuarina sp	0.89	0.54	0.02	
19. Ambrosia artemisiifolia	1.42	1.07	0.55	
20. Amomyrtus luma			-0.08	Lusk & del Poso 2002
21. Amorpha canescens	1.24	0.89	0.37	
22. Anacardium excelsum	1.41	1.06	0.54	
23. Andersonia heterophylla	1.08	0.73	0.21	
24. Andropogon gerardi	1.13	0.78	0.26	
25. Anemone cylindrica	1.11	0.76	0.24	

26.	Anthocephalus chinensis	1.37	1.02	0.50	Feng et al. 2004
27.	Antirrhoea trichantha	1.26	0.91	0.39	
28.	Arctostaphylos uva-ursi	0.72	0.37	-0.15	
29.	Aristotelia chilensis			0.14	Lusk & del Poso 2002
30.	Asclepias syriaca	1.45	1.10	0.58	
31.	Asclepias tuberosa	1.28	0.93	0.41	
32.	Aster azureus	1.24	0.89	0.37	
33.	Aster ericoides	1.30	0.95	0.43	
34.	Astragalus candensis	1.32	0.97	0.45	
35.	Astroloma xerophyllum	0.86	0.51	-0.01	
36.	Astrotricha floccosa	0.95	0.60	0.08	
37.	Atriplex canescens	1.09	0.74	0.22	
38.	Atriplex stipitata	1.59	1.24	0.72	
39.	Austrocedrus chilensis	0.79	0.44	-0.08	
40.	Baccharis angustifolia	1.24	0.89	0.37	
41.	Banksia attenuata	0.80	0.45	-0.07	
42.	Banksia marginata	0.68	0.33	-0.19	
43.	Banksia menziesii	0.75	0.40	-0.12	
44.	Baptisia leucophaea	1.56	1.21	0.69	
45.	Barringtonia macrostachya	0.98	0.63	0.11	Feng et al. 2004
46.	Bellucia grossularioides	0.90	0.55	0.03	
47.	Bertya cunninghamii	1.01	0.66	0.14	
48.	Beyeria opaca	0.97	0.62	0.10	
49.	Bistorta bistortoides	1.45	1.10	0.58	
50.	Boronia ledifolia	0.79	0.44	-0.08	
51.	Bossiaea eriocarpa	0.96	0.61	0.09	
52.	Bossiaea walkeri	0.83	0.48	-0.04	
53.	Bouteloua curtipendula	1.19	0.84	0.32	
54.	Brachychiton populneus	0.67	0.32	-0.20	
55.	Bromus inermis	1.13	0.78	0.26	
56.	Calamovilfa longifolia	1.10	0.75	0.23	
57.	Caldcluvia paniculata			0.04	Lusk & del Poso 2002
58.	Callitris glaucophylla	0.62	0.27	-0.25	
59.	Calophyllum polyanthum	0.93	0.58	0.06	Feng et al. 2004
60.	Calytrix flavescens	0.88	0.53	0.01	
61.	Carya glabra	1.01	0.66	0.14	
62.	Cassinia laevis	1.11	0.76	0.24	
63.	Castanopsis sieboldii	0.65	0.30	-0.22	
64.	Castilla elastica	1.43	1.08	0.56	
65.	Cecropia ficifolia	1.26	0.91	0.39	
66.	Cecropia longipes	1.34	0.99	0.47	
67.	Chionochloa macra	0.18	-0.17	-0.69	Mark 1975
68.	Chionochloa oreophila	0.31	-0.04	-0.56	Mark 1975
69.	Chionochloa rigida	-0.09	-0.44	-0.96	Mark 1975
70.	Conostephium pendulum	0.92	0.57	0.05	
71.	Coreopsis palmata	1.06	0.71	0.19	
72.	Cornus florida	1.04	0.69	0.17	
73.	Correa reflexa	0.66	0.31	-0.21	
74.	Corylus americanus	1.00	0.65	0.13	
75.	Corymbia gummifera	0.75	0.40	-0.12	
76.	Cryptocarya alba	0.97	0.62	0.10	
77.	Dasyphyllum diacanthoides	0.89	0.54	0.02	
78.	Dasyphyllum diacanthoides			0.15	Lusk & del Poso 2002
79.	Desmodium canadense	1.20	0.85	0.33	
80.	Dillenia suffruticosa	1.02	0.67	0.15	
81.	Dodonaea triquetra	1.00	0.65	0.13	
82.	Dodonaea viscosa spatulata	1.19	0.84	0.32	
83.	Drimys winteri	0.97	0.62	0.10	
84.	Drimys winteri			0.09	Lusk & del Poso 2002
85.	Echinacea purpurea	1.24	0.89	0.37	
86.	Eleagnus angustifolia	1.37	1.02	0.50	
87.	Embothrium coccineum	1.20	0.85	0.33	
88.	Eremaea pauciflora	0.96	0.61	0.09	
89.	Eremophila deserti	0.81	0.46	-0.06	
90.	Eremophila glabra	1.00	0.65	0.13	
91.	Eremophila mitchelli	1.04	0.69	0.17	
92.	Eriostemon australasius	0.84	0.49	-0.03	
93.	Erythronium americanum	1.72	1.37	0.85	
94.	Eucalyptus dumosa	0.57	0.22	-0.30	
95.	Eucalyptus haemostoma	0.78	0.43	-0.09	
96.	Eucalyptus intertexta	0.74	0.39	-0.13	
97.	Eucalyptus paniculata	0.79	0.44	-0.08	
98.	Eucalyptus socialis	0.68	0.33	-0.19	
99.	Eucalyptus umbra	0.80	0.45	-0.07	
100.	Eucryphia cordifolia	0.71	0.36	-0.16	
101.	Eucryphia cordifolia			0.08	Lusk & del Poso 2002

102. Eupatorium rugesum	1.65	1.30	0.78	
103. Eutaxia microphylla	1.17	0.82	0.30	
104. Fraxinus sp	1.07	0.72	0.20	
105. Galax aphylla	0.99	0.64	0.12	
106. Geijera parviflora	0.76	0.41	-0.11	
107. Gevuina avellana	0.81	0.46	-0.06	
108. Gompholobium grandiflorum	0.95	0.60	0.08	
109. Grevillea aneura	1.02	0.67	0.15	
110. Grevillea buxifolia	1.03	0.68	0.16	
111. Grevillea speciosa	0.87	0.52	0.00	
112. Gutierrezia sarothrae	1.16	0.81	0.29	
113. Hakea dactyloides	0.59	0.24	-0.28	
114. Hakea tephrosperma	0.38	0.03	-0.49	
115. Hakea teretifolia	0.61	0.26	-0.26	
116. Helianthus microcephalus	1.55	1.20	0.68	
117. Helichrysum apiculatum	1.55	1.20	0.68	
118. Hibbertia bracteata	0.87	0.52	0.00	
119. Hibbertia huegelii	0.77	0.42	-0.10	
120. Hibbertia subvaginata	0.87	0.52	0.00	
121. Jacksonia floribunda	0.92	0.57	0.05	
122. Juniperus monosperma	0.68	0.33	-0.19	
123. Kalmia latifolia	0.95	0.60	0.08	
124. Koeleria cristata	1.09	0.74	0.22	
125. Lambertia formosa	0.56	0.21	-0.31	
126. Larrea tridentata	0.89	0.54	0.02	
127. Lasiopetalum ferrugineum	0.63	0.28	-0.24	
128. Laurelia philippiana	0.79	0.44	-0.08	
129. Laurelia philippiana			0.12	Lusk & del Poso 2002
130. Lemna gibba			-0.60	Ullrich-Eberius et al. 1981
131. Leptospermum polygalifolium	1.15	0.80	0.28	
132. Leptospermum trinervium	1.00	0.65	0.13	
133. Lespedeza capitata	1.19	0.84	0.32	
134. Leucopogon conostephioides	1.04	0.69	0.17	
135. Liatris aspera	1.05	0.70	0.18	
136. Licania heteromorpha	0.72	0.37	-0.15	
137. Linociera insignis	0.94	0.59	0.07	Feng et al. 2004
138. Liquidambar styraciflua	0.53	0.19	-0.33	Hamilton et al. 2001
139. Liriodendron tulipifera	1.09	0.74	0.22	
140. Lomatia hirsuta	0.91	0.56	0.04	
141. Lomatia silaifolia	0.91	0.56	0.04	
142. Luehea seemannii	1.33	0.98	0.46	
143. Luma apiculata	0.97	0.62	0.10	
144. Lupinus perennis	1.32	0.97	0.45	
145. Lyginia barbata	0.60	0.25	-0.27	
146. Lyonia lucida	0.76	0.41	-0.11	
147. Macaranga heynei	0.87	0.52	0.00	
148. Machilus thunbergii	0.75	0.40	-0.12	
149. Macrozamia communis	0.60	0.25	-0.27	
150. Macrozamia riedlei	0.52	0.17	-0.35	
151. Magnolia fraseri	1.00	0.65	0.13	
152. Mallotus paniculatus	1.16	0.81	0.29	
153. Manihot esculenta	1.52	1.17	0.65	
154. Maytenus oleodes	0.59	0.24	-0.28	
155. Melaleuca acerosa	0.91	0.56	0.04	
156. Melaleuca uncinata	0.96	0.61	0.09	
157. Melastoma malabathricum	0.84	0.49	-0.03	
158. Miconia dispar	0.72	0.37	-0.15	
159. Micromyrtus sessilis	0.83	0.48	-0.04	
160. Myrceugenia planipes	0.72	0.37	-0.15	
161. Myrceugenia planipes			-0.08	Lusk & del Poso 2002
162. Neolitsea sericea	0.52	0.17	-0.35	
163. Nothofagus dombeyi	0.95	0.60	0.08	
164. Nothofagus dombeyi			0.32	Lusk & del Poso 2002
165. Nothofagus nitida			0.26	Lusk & del Poso 2002
166. Nuytsia floribunda	0.69	0.34	-0.18	
167. Nyssa sylvatica	1.04	0.69	0.17	
168. Ocotea costulata	0.70	0.35	-0.17	
169. Olearia decurrens	1.09	0.74	0.22	
170. Olearia pimelioides	1.14	0.79	0.27	
171. Oxydendron arboreum	1.10	0.75	0.23	
172. Panicum virgatum	1.06	0.71	0.19	
173. Patersonia occidentalis	0.70	0.35	-0.17	
174. Penstemon grandiflorus	1.20	0.85	0.33	
175. Persea borbonia	0.83	0.48	-0.04	
176. Persea lingue	0.64	0.29	-0.23	
177. Persoonia levis	0.40	0.05	-0.47	

178. Persoonia linearis	0.58	0.23	-0.29	
179. Persoonia saccata	0.72	0.37	-0.15	
180. Petalostemum villosum	1.25	0.90	0.38	
181. Petrophile linearis	0.79	0.44	-0.08	
182. Philotheca difformis	0.99	0.64	0.12	
183. Phyllota phylicoides	1.03	0.68	0.16	
184. Picea engelmanii	0.51	0.16	-0.36	
185. Picea glauca	0.60	0.25	-0.27	
186. Pimelea linifolia	1.22	0.87	0.35	
187. Pimelea microcephala	1.42	1.07	0.55	
188. Pinus banksiana	0.78	0.43	-0.09	
189. Pinus elliottii	-0.10	-0.45	-0.97	Ryan et al. 1994
190. Pinus flexilis	0.60	0.25	-0.27	
191. Pinus palustris	0.56	0.21	-0.31	
192. Pinus resinosa	0.85	0.50	-0.02	Ryan et al. 1994
193. Pinus rigida	0.72	0.37	-0.15	
194. Pinus serotina	0.70	0.35	-0.17	
195. Pinus strobus	0.67	0.32	-0.20	
196. Pinus sylvestris	0.79	0.44	-0.08	
197. Pinus taeda	0.42	0.07	-0.45	Ryan et al. 1994
198. Platanus occidentalis	0.89	0.54	0.02	
199. Poa pratensis	1.28	0.93	0.41	
200. Podocarpus nubigena	0.63	0.28	-0.24	
201. Podocarpus saligna	0.67	0.32	-0.20	
202. Podophyllum peltatum	1.43	1.08	0.56	
203. Pomaderris ferruginea	0.75	0.40	-0.12	
204. Populus deltoides	1.15	0.80	0.28	
205. Populus fremontii	1.16	0.81	0.29	
206. Populus tremuloides	1.35	1.00	0.48	
207. Potamogeton pectinatus		0.67	0.15	Menendez & Sanchez 1998
208. Potentilla arguta	1.12	0.77	0.25	
209. Prosopis glandulosa	0.94	0.59	0.07	
210. Protea acaulos	0.66	0.31	-0.21	
211. Protea neriifolia	0.35	0.00	-0.52	
212. Protea nitida	0.50	0.15	-0.37	
213. Protea repens	0.63	0.28	-0.24	
214. Protium sp1	0.78	0.43	-0.09	
215. Protium sp2	0.76	0.41	-0.11	
216. Prumnopitys andina	0.61	0.26	-0.26	
217. Psychrophila leptosepala	1.18	0.83	0.31	
218. Pterocaulon pycnostachyum	1.19	0.84	0.32	
219. Pultenea daphnoides	0.89	0.54	0.02	
220. Pultenea flexilis	1.15	0.80	0.28	
221. Quercus alba	1.05	0.70	0.18	
222. Quercus coccinea	1.06	0.71	0.19	
223. Quercus ellipsoidalis	1.12	0.77	0.25	
224. Quercus laevis	0.80	0.45	-0.07	
225. Quercus macrocarpa	1.25	0.90	0.38	
226. Quercus myrsinaefolia	0.95	0.60	0.08	
227. Quercus prinus	1.08	0.73	0.21	
228. Quercus rubra	0.92	0.57	0.05	
229. Quercus turbinella	1.19	0.84	0.32	
230. Quercus virginia var geminata	0.76	0.41	-0.11	
231. Regelia ciliata	0.98	0.63	0.11	
232. Rhododendron maximum	0.58	0.23	-0.29	
233. Robinia pseudoacacia	1.05	0.70	0.18	
234. Rudbeckia serotina	1.17	0.82	0.30	
235. Salix glauca	1.25	0.90	0.38	
236. Salix planifolia	1.39	1.04	0.52	
237. Sanguinaria canadensis	1.81	1.46	0.94	
238. Santalum acuminatum	0.59	0.24	-0.28	
239. Saxegothaea conspicua	0.68	0.33	-0.19	
240. Schizachyrium scoparium	1.09	0.74	0.22	
241. Scholtzia involucrata	1.00	0.65	0.13	
242. Senna artemisioides 3lft	1.09	0.74	0.22	
243. Silphium integrifolium	1.28	0.93	0.41	
244. Silphium terebinthinaceum	1.25	0.90	0.38	
245. Solanum ferocissium	1.42	1.07	0.55	
246. Solanum straminifolia	1.53	1.18	0.66	
247. Solidago nemoralis	1.16	0.81	0.29	
248. Solidago rigida	1.08	0.73	0.21	
249. Sorghastrum nutans	1.10	0.75	0.23	
250. Spartothamnella puberula	1.52	1.17	0.65	
251. Stipa spartea	1.04	0.69	0.17	
252. Stirlingia latifolia	0.86	0.51	-0.01	
253. Syncarpia glomulifera	0.79	0.44	-0.08	

254. Synoum glandulosum	0.96	0.61	0.09	
255. Taxodium distichum	1.01	0.66	0.14	
256. Thalassodendron ciliatum			0.03	Titlyanov et al. 1992
257. Tilia americana	1.02	0.67	0.15	
258. Trema tomentosa	1.25	0.90	0.38	
259. Triodia scabra	0.91	0.56	0.04	
260. Tsuga canadensis	0.49	0.14	-0.38	
261. Urera caracasana	1.46	1.11	0.59	
262. Vaccinium arboreum	0.81	0.46	-0.06	
263. Vaccinium corymbosum	1.10	0.75	0.23	
264. Vaccinium myrtillus	1.03	0.68	0.16	
265. Veratrum parviflorum	1.27	0.92	0.40	
266. Verticordia nitens	0.78	0.43	-0.09	
267. Vismia japurensis	0.97	0.62	0.10	
268. Vismia lauriformis	1.04	0.69	0.17	
269. Weinmannia trichosperma			0.18	Lusk & del Poso 2002
270. Xanthorrhoea preissii	0.49	0.14	-0.38	
271. Xylomelum pyriforme	0.59	0.24	-0.28	

Additional references to Table **S10**:

Feng Y.-L., Cao K.-F., Zhang J.-L. (2004) Photosynthetic characteristics, dark respiration, and leaf mass per unit area in seedlings of four tropical tree species grown under three irradiances. Photosynthetica 42: 431-437.

Hamilton J.G., Thomas R.B., Delucia E.H. (2001) Direct and indirect effects of elevated CO_2 on leaf respiration in a forest ecosystem. Plant, Cell and Environment 24: 975-982.

Lusk C.H., del Pozo A. (2002) Survival and growth of seedlings of 12 Chilean rainforest trees in two light environments: gas exchange and biomass distribution correlates. Austral Ecology 27: 173-182.

Mark A.F. (1975) Photosynthesis and dark respiration in three alpine snow tussocks (*Chionochloa* spp.) Under Controlled Environments. New Zealand Journal of Botany 13: 93-122.

Menendez M., Sanchez A. (1998) Seasonal variations in P-I responses of *Chara hispida* L. and *Potamogeton pectinatus* L. from stream mediterranean ponds. Aquatic Botany 61: 1-15.

Ryan M.G., Linder S., Vose J.M., Hubbard R.M. (1994) Dark respiration of pines. Ecological Bulletins 43: 50-63.

Titlyanov E.A., Leletkin V.A., Bil' K.Y., Kolmakov P.V., Nechai E.G. (1992) Light and temperature dependence of oxygen exchange, carbon assimilation and primary production in *Thalassodendron cilliatum* blades. Atoll Research Bulletin No. 375, Chapter 11, National Museum of Natural History, Sminthsonian Institution, Washington D.C., USA, pp. 1-20.

Ullrich-Eberius C.I., Novacky A., Fischer E., Lüttge U. (1981) Relationship between energy-dependent phosphate uptake and the electrical membrane potential in *Lemna gibba* G1. Plant Physiology 67: 797-801.