

**Appendix S2** Table summarizing studies included in the meta-analysis. Note that individual papers could include multiple experiments (e.g., Exp. a, b, etc.), and the sample size for studies that did not report individual (but rather composite) species responses is designated as a "group". For references, see App. S1.

### Increased temperature

Reference	Exp.	System	Taxon	Habitat	Study location	Response type	$N_{\text{non-native}}$	$N_{\text{native}}$
Braby & Somero 2006	a	Aquatic	Invertebrate	Subtidal	California, USA	Survival	1	1
Braby & Somero 2006	b	Aquatic	Invertebrate	Subtidal	California, USA	Survival	1	1
Braby & Somero 2006	c	Aquatic	Invertebrate	Subtidal	California, USA	Survival	1	1
Carveth <i>et al.</i> 2006	a	Aquatic	Fish	Stream	Arizona, USA	Survival	4	10
Findlay <i>et al.</i> 2010	a	Aquatic	Invertebrate	Intertidal	England	Growth, Survival	1	1
Parker <i>et al.</i> 2010	a	Aquatic	Invertebrate	Subtidal	Australia	Growth	1	1
Parker <i>et al.</i> 2010	b	Aquatic	Invertebrate	Subtidal	Australia	Growth	1	1
Parker <i>et al.</i> 2010	c	Aquatic	Invertebrate	Subtidal	Australia	Survival	1	1
Petes <i>et al.</i> 2007	a	Aquatic	Invertebrate	Intertidal	New Zealand	Growth	1	1
Sareyka <i>et al.</i> 2011	a	Aquatic	Invertebrate	Subtidal	Finland	Survival	1	1
Sareyka <i>et al.</i> 2011	b	Aquatic	Invertebrate	Subtidal	Finland	Survival	1	1
Schneider & Helmuth 2007	a	Aquatic	Invertebrate	Intertidal	California, USA	Survival	1	1
Schneider 2008	a	Aquatic	Invertebrate	Subtidal	Washington, USA	Growth	1	1
Schneider 2008	b	Aquatic	Invertebrate	Subtidal	Washington, USA	Growth	1	1
Sorte <i>et al.</i> 2010a	a	Aquatic	Invertebrate	Subtidal	California, USA	Survival	6	2
Sorte <i>et al.</i> 2010b	a	Aquatic	Invertebrate	Subtidal	California, USA	Growth	5	1
Sorte <i>et al.</i> 2010b	b	Aquatic	Invertebrate	Subtidal	California, USA	Survival	6	1
Steen & Rueness 2004	a	Aquatic	Seaweed	Subtidal	Norway	Survival	1	5
Zerebecki & Sorte 2011	a	Aquatic	Invertebrate	Subtidal	California, USA	Survival	6	2
Zukowski & Walker 2009	a	Aquatic	Invertebrate	Stream	Australia	Growth	1	1
Allen 1982	a	Terrestrial	Plant	Grassland	Wyoming, USA	Growth	1	4
Arnone <i>et al.</i> 2011	a	Terrestrial	Plant	Grassland	Oklahoma / Nevada, USA	Growth	2	14
Ashby & Hellmers 1959	a	Terrestrial	Plant	Shrubland	California, USA	Growth	2	4
Blumenthal & Perry <i>unpubl. data</i>	b	Terrestrial	Plant	Grassland	Wyoming, USA	Growth, Photosyn.	3	4
Blumenthal & Perry <i>unpubl. data</i>	c	Terrestrial	Plant	Grassland	Wyoming, USA	Growth, Photosyn.	3	4

Buckland <i>et al.</i> 2001	a	Terrestrial	Plant	Grassland	England	Growth	1	1
Duyck <i>et al.</i> 2006	a	Terrestrial	Insect	<i>n/a</i>	La Reunion, Indian Ocean	Survival	3	1
Engel <i>et al.</i> 2009	a	Terrestrial	Plant	Herbaceous	Tennessee, USA	Growth	5	2
Gray & Mogg 2001	a	Terrestrial	Plant	Wetland	England	Growth	1	1
Hellmers & Ashby 1958	a	Terrestrial	Plant	Forest	California, USA	Growth	21	6
Hely & Roxburgh 2005	a	Terrestrial	Plant	Grassland	Australia	Growth	1	1
Hely & Roxburgh 2005	b	Terrestrial	Plant	Grassland	Australia	Growth	1	1
Holway <i>et al.</i> 2002	b	Terrestrial	Insect	Shrubland	California, USA	Survival	1	5
Hoya <i>et al.</i> 2004	a	Terrestrial	Plant	Herbaceous	Japan	Growth	1	1
Janion <i>et al.</i> 2010	a	Terrestrial	Insect	Tundra	Marion Is., Southern Ocean	Reproduction	4	2
Kim & You 2010	a	Terrestrial	Plant	Herbaceous	Korea	Photosynthesis	1	1
Naumann <i>et al.</i> 2010	a	Terrestrial	Plant	Forest	Virginia, USA	Photosynthesis	1	1
Patterson 1993	a	Terrestrial	Plant	Grassland	Utah, USA	Growth	1	1
Patterson <i>et al.</i> 1986	a	Terrestrial	Plant	Grassland	Minnesota / Georgia, USA	Growth	1	1
Steiner <i>et al.</i> 2001	a	Terrestrial	Plant	Grassland	Oregon, USA	Growth	1	2
Tang & Yokomi 1995	a	Terrestrial	Insect	Forest	Florida, USA	Growth	2	1
Verlinden & Nijis 2010	a	Terrestrial	Plant	Herbaceous	Belgium	Growth	10	10
Williams <i>et al.</i> 2007	b	Terrestrial	Plant	Grassland	Tasmania, Australia	Growth	2	2
Williams <i>et al.</i> 2007	c	Terrestrial	Plant	Grassland	Tasmania, Australia	Growth	2	2
Wilson <i>et al.</i> 2004	a	Terrestrial	Plant	Herbaceous	Florida, USA	Growth	1	1
Zhang <i>et al.</i> 2006	a	Terrestrial	Plant	Herbaceous	China	Growth	1	1

### Increased CO<sub>2</sub>

Reference	Exp.	System	Taxon	Habitat	Study location	Response type	$N_{\text{non-native}}$	$N_{\text{native}}$
Findlay <i>et al.</i> 2010	b	Aquatic	Invertebrate	Intertidal	England	Growth, Survival	1	1
Lenssen <i>et al.</i> 1993	a	Aquatic	Plant	Herbaceous	The Netherlands	Growth	1	1
Lenssen <i>et al.</i> 1993	b	Aquatic	Plant	Herbaceous	The Netherlands	Growth	1	1
Miller <i>et al.</i> 2009	a	Aquatic	Invertebrate	Wetland	Maryland, USA	Growth	1	1
Parker <i>et al.</i> 2010	a	Aquatic	Invertebrate	Subtidal	Australia	Growth	1	1
Parker <i>et al.</i> 2010	b	Aquatic	Invertebrate	Subtidal	Australia	Growth	1	1
Parker <i>et al.</i> 2010	c	Aquatic	Invertebrate	Subtidal	Australia	Survival	1	1
Sullivan <i>et al.</i> 2010	a	Aquatic	Plant	Wetland	Michigan, USA	Growth	1	1

Anderson <i>et al.</i> 2001	a	Terrestrial	Plant	Herbaceous	Texas, USA	Growth	2	1
Baruch & Jackson 2005	a	Terrestrial	Plant	Grassland	Venezuela	Growth	2	1
Baruch & Jackson 2005	b	Terrestrial	Plant	Grassland	Venezuela	Growth	2	1
Belote <i>et al.</i> 2004	a	Terrestrial	Plant	Herbaceous	Tennessee, USA	Growth	2	3
Blumenthal & Perry <i>unpubl. data</i>	a	Terrestrial	Plant	Grassland	Wyoming, USA	Growth, Photosyn.	3	4
Blumenthal & Perry <i>unpubl. data</i>	c	Terrestrial	Plant	Grassland	Wyoming, USA	Growth, Photosyn.	3	4
Dukes 2002	a	Terrestrial	Plant	Herbaceous	California, USA	Growth	1	1
Hättenschwiler & Körner 2003	a	Terrestrial	Plant	Forest	Switzerland	Growth	1	4
Huxman & Smith 2001	a	Terrestrial	Plant	Desert	Nevada, USA	Growth	1	1
Kim & You 2010	a	Terrestrial	Plant	Herbaceous	Korea	Photosynthesis	1	1
Manea & Leishman 2011	a	Terrestrial	Plant	Forest	Australia	Growth	14	14
Manea & Leishman 2011	b	Terrestrial	Plant	Forest	Australia	Growth	14	14
Nagel <i>et al.</i> 2004	a	Terrestrial	Plant	Desert	Nevada, USA	Growth	1	2
Naumann <i>et al.</i> 2010	a	Terrestrial	Plant	Forest	Virginia, USA	Photosynthesis	1	1
Perry <i>unpubl. data</i>	a	Terrestrial	Plant	Forest	Colorado, USA	Growth	3	2
Raizada <i>et al.</i> 2009	a	Terrestrial	Plant	Forest	India	Growth	2	4
Reich <i>et al.</i> 2001	a	Terrestrial	Plant	Grassland	Minnesota, USA	Growth	4	12
Sasek & Strain 1991	a	Terrestrial	Plant	Herbaceous	North Carolina, USA	Growth	1	1
Smith <i>et al.</i> 2000	a	Terrestrial	Plant	Desert	Nevada, USA	Reproduction	1	2
Song <i>et al.</i> 2009	a	Terrestrial	Plant	Forest	China	Growth	3	3
Song <i>et al.</i> 2010	a	Terrestrial	Plant	Forest	China	Growth	1	1
Williams <i>et al.</i> 2007	a	Terrestrial	Plant	Grassland	Tasmania, Australia	Growth	2	2
Williams <i>et al.</i> 2007	c	Terrestrial	Plant	Grassland	Tasmania, Australia	Growth	2	2

### Increased Precipitation

Reference	Exp.	System	Taxon	Habitat	Study location	Response type	$N_{\text{non-native}}$	$N_{\text{native}}$
Bakker & Wilson 2001	b	Terrestrial	Plant	Herbaceous	Saskatchewan, Canada	Growth	1	1
Bakker & Wilson 2001	d	Terrestrial	Plant	Herbaceous	Saskatchewan, Canada	Growth	1	1
Blicker <i>et al.</i> 2003	b	Terrestrial	Plant	Grassland	Montana, USA	Growth	1	3

Blumenthal <i>et al.</i> 2008	a	Terrestrial	Plant	Grassland	Wyoming, USA	Growth	3	group
Brock & Galen 2005	a	Terrestrial	Plant	Tundra	Colorado, USA	Photosynthesis	1	1
Cabin <i>et al.</i> 2002	a	Terrestrial	Plant	Forest	Hawaii, USA	Growth	3	7
Coffman <i>unpubl. data</i>	a	Terrestrial	Plant	Forest	California, USA	Growth	1	3
Garcia-Serrano <i>et al.</i> 2004	a	Terrestrial	Plant	Grassland	Spain	Survival	2	1
Garcia-Serrano <i>et al.</i> 2004	b	Terrestrial	Plant	Grassland	Spain	Survival	2	1
Garcia-Serrano <i>et al.</i> 2004	c	Terrestrial	Plant	Forest	Spain	Survival	2	1
Geng <i>et al.</i> 2006	b	Terrestrial	Plant	Herbaceous	China	Growth	1	1
Gutiérrez 1992	a	Terrestrial	Plant	Grassland	Chile	Growth	4	3
Gutiérrez 1992	b	Terrestrial	Plant	Grassland	Chile	Growth	2	3
Hill <i>et al.</i> 2006	b	Terrestrial	Plant	Grassland	Montana, USA	Photosynthesis	1	2
Holway <i>et al.</i> 2002	a	Terrestrial	Insect	Shrubland	California, USA	Survival	1	1
Leishman & Thomson 2005	a	Terrestrial	Plant	Shrubland	Australia	Growth, Survival	group	group
Levine <i>et al.</i> 2010	b	Terrestrial	Plant	Grassland	California, USA	Growth	1	1
Maron & Marler 2008	a	Terrestrial	Plant	Herbaceous	Montana, USA	Growth	3	10
Naumann <i>et al.</i> 2010	a	Terrestrial	Plant	Forest	Virginia, USA	Photosynthesis	1	1
Nernberg & Dale 1997	b	Terrestrial	Plant	Grassland	Saskatchewan, Canada	Growth	1	5
Rao & Allen 2010	b	Terrestrial	Plant	Herbaceous	California, USA	Growth	1	1
Reynolds & Cooper 2010	b	Terrestrial	Plant	Forest	Colorado, USA	Growth, Survival	2	1
Reynolds & Cooper 2010	d	Terrestrial	Plant	Forest	Colorado, USA	Growth, Survival	2	1

### Decreased Precipitation

Reference	Exp.	System	Taxon	Habitat	Study location	Response type	$N_{\text{non-native}}$	$N_{\text{native}}$
Bahrani <i>et al.</i> 2010	a	Terrestrial	Plant	Grassland	Iran	Growth	3	7
Bakker & Wilson 2001	a	Terrestrial	Plant	Herbaceous	Saskatchewan, Canada	Growth	1	1
Bakker & Wilson 2001	c	Terrestrial	Plant	Herbaceous	Saskatchewan, Canada	Growth	1	1
Baruch & Jackson 2005	a	Terrestrial	Plant	Grassland	Venezuela	Growth	2	1
Baruch & Jackson 2005	b	Terrestrial	Plant	Grassland	Venezuela	Growth	2	1

Blicker <i>et al.</i> 2003	a	Terrestrial	Plant	Grassland	Montana, USA	Growth	1	3
Boschma <i>et al.</i> 2003	a	Terrestrial	Plant	Herbaceous	Australia	Growth	4	2
Buckland <i>et al.</i> 2001	b	Terrestrial	Plant	Grassland	England	Growth	1	1
Bunting <i>et al.</i> 2011	a	Terrestrial	Plant	Forest	Arizona, USA	Growth, Survival	1	1
Bunting <i>et al.</i> 2011	b	Terrestrial	Plant	Forest	Arizona, USA	Growth, Survival	1	1
Cox & Conran 1996	a	Terrestrial	Plant	Shrubland	Australia	Reproduction	1	1
Domènech & Vilà 2008	a	Terrestrial	Plant	Grassland	Spain	Growth	1	2
Duyck <i>et al.</i> 2006	b	Terrestrial	Insect	<i>n/a</i>	La Reunion, Indian Ocean	Survival	3	1
Funk & Zachary 2010	a	Terrestrial	Plant	Shrubland	California, USA	Photosynthesis	2	2
Geng <i>et al.</i> 2006	a	Terrestrial	Plant	Herbaceous	China	Growth	1	1
Hill <i>et al.</i> 2006	a	Terrestrial	Plant	Grassland	Montana, USA	Photosynthesis	1	2
Horton & Clark 2001	a	Terrestrial	Plant	Forest	Arizona, USA	Survival	1	1
Hwang & Lauenroth 2008	a	Terrestrial	Plant	Herbaceous	Colorado, USA	Growth	1	2
Ignace <i>et al.</i> 2007	a	Terrestrial	Plant	Herbaceous	Arizona, USA	Growth	1	1
Ignace <i>et al.</i> 2007	b	Terrestrial	Plant	Herbaceous	Arizona, USA	Growth	1	1
Levine <i>et al.</i> 2010	a	Terrestrial	Plant	Grassland	California, USA	Growth	1	1
Mangla <i>et al.</i> 2010	a	Terrestrial	Plant	Shrubland	Oregon, USA	Growth	2	1
Morecroft <i>et al.</i> 2008	a	Terrestrial	Plant	Forest	England	Growth	1	2
Nernberg & Dale 1997	a	Terrestrial	Plant	Grassland	Saskatchewan, Canada	Growth	1	5
Rao & Allen 2010	a	Terrestrial	Plant	Herbaceous	California, USA	Growth	1	1
Reynolds & Cooper 2010	a	Terrestrial	Plant	Forest	Colorado, USA	Growth	2	1
Reynolds & Cooper 2010	c	Terrestrial	Plant	Forest	Colorado, USA	Growth, Survival	2	1
Schumacher <i>et al.</i> 2008	a	Terrestrial	Plant	Forest	Republic of Seychelles	Growth	group	group
Sun <i>et al.</i> 2010	a	Terrestrial	Plant	Herbaceous	China	Growth	1	1
Werner <i>et al.</i> 2010	a	Terrestrial	Plant	Shrubland	Portugal	Growth	1	2
Williams & Black 1994	a	Terrestrial	Plant	Grassland	Hawaii, USA	Growth	1	1
Willis <i>et al.</i> 2003	a	Terrestrial	Plant	Grassland	Australia	Growth, Reprod.	1	1
Wu <i>et al.</i> 2009	a	Terrestrial	Plant	Shrubland	China	Growth	1	1
Xu <i>et al.</i> 2006	a	Terrestrial	Plant	Herbaceous	China	Growth	1	1
Yazaki <i>et al.</i> 2010	a	Terrestrial	Plant	Forest	Japan	Photosynthesis	1	1