

Table S1. Details of wood $\delta^{15}\text{N}$ citations, including species and time periods analyzed, regions sampled, category assignment for this review and data collected.

Citation	Species	Time Period	Region	Category	Reported Data*								
					Wood [N]	Wood $\delta^{15}\text{N}$	Leaf [N]	Leaf $\delta^{15}\text{N}$	Soil [N]	Soil $\delta^{15}\text{N}$	Ring Width	Wood $\delta^{13}\text{C}$	Other
Balster <i>et al</i> 2009	<i>Pseudotsuga menziesii</i>	1976-1994	Washington, Oregon, Idaho, Montana, USA	Fertilizer & Tracer	X	X	X					X	
Battipaglia <i>et al</i> 2010	<i>Pinus pinea</i>	1939-2005	Italy	Pollution Input		X						X	^{14}C of rings (bomb carbon)
Beghin <i>et al</i> 2011	<i>Pinus sylvestris</i>	1985-2005	Italy	Natural Abundance	X	X					X	X	
Bukata & Kyser 2005	<i>Quercus alba</i> <i>Quercus rubra</i> <i>Ulmus rubra</i>	1950-2000 1935-1995 1935-1995	Ontario, Canada	Natural Abundance	X	X							
Bukata & Kyser 2007	<i>Betula alleghaniensis</i> <i>Betula papyrifera</i> <i>Quercus alba</i> <i>Quercus rubra</i>	1920-2000 1920-2000 1860-2000 1880-2000	New Brunswick, Canada Ontario, Canada Ontario, Canada	Pollution Input		X				X		X	$\delta^{13}\text{C}$, C:N of leaves and soil
Choi <i>et al</i> 2005	<i>Pinus densiflora</i>	1936-2001	South Korea	Pollution Input	X	X					X	X	
Choi <i>et al</i> 2007	<i>Larix laricina</i> <i>Picea mariana</i>	1976-2003	Alberta, Canada	Natural Abundance	X	X	X			X	X	X	$\delta^{13}\text{C}$, C:N of soil and leaves
Cuoto-Vázquez & González-Prieto 2010	<i>Pinus pinaster</i>	1992-2004	Spain	Natural Abundance	X	X	X						[N] and $\delta^{15}\text{N}$ of bark
Doucet <i>et al</i> 2010	<i>Fagus grandifolia</i> <i>Picea rubens</i>	1925-1995 1915-2000	Quebec, Canada	Pollution Input	X	X							
Doucet <i>et al</i> 2012	<i>Picea rubens</i>	1880-2007	Quebec, Canada	Pollution Input	X	X							
Drake <i>et al</i> 2011	<i>Pinus ponderosa</i> <i>Thuja plicata</i> <i>Tsuga heterophylla</i>	1800-1980 1994-2004 1993-2003	Oregon & Washington, USA	Marine Input	X	X		X					
Elhani <i>et al</i> 2003	<i>Fagus sylvatica</i>	1987-2001	France	Fertilizer & Tracer	X	X							Ring C:N
Elhani <i>et al</i> 2005	<i>Fagus sylvatica</i>	1956-1993	France	Fertilizer & Tracer		X					X	X	
Emmett <i>et al</i> 1998	<i>Picea abies</i> <i>Picea sitchensis</i> <i>Pinus sylvestris</i> <i>Pseudotsuga menziesii</i>	Not reported	Sweden/Denmark Wales, UK Netherlands Netherlands	Fertilizer & Tracer	X	X	X			X	X		[N] and $\delta^{15}\text{N}$ of branches, twigs, roots. $\delta^{15}\text{N}$ of bulk precipitation,

																			throughfall, soil water	
Guerrieri et al 2009	<i>Picea abies</i> <i>Quercus cerris</i>	1945-2005 1980-2005	Switzerland Italy	Pollution Input	X	X	X	X	X	X	X	X	X	X	X	X	X	X	$\delta^{18}\text{O}$ of rings	
Guerrieri et al 2010	<i>Quercus cerris</i>	1980-2004	Italy	Pollution Input		X												X	WUE, $\delta^{18}\text{O}$	
Guerrieri et al 2011	<i>Picea sitchensis</i>	1995-2009	Scotland, UK	Fertilizer & Tracer		X				X								X	Ring $\delta^{18}\text{O}$, WUE, leaf $\delta^{13}\text{C}$	
Hårdt et al 2013	<i>Fagus sylvatica</i>	1848-2007	Luxembourg	Pollution Input	X	X												X	DBH	
Hart & Classen 2003	<i>Pinus ponderosa</i>	1984-1998	California, USA	Fertilizer & Tracer	X	X												X		
Hietz et al 2010	<i>Cedrela odorata</i> <i>Swietenia macrophylla</i>	1850-2000 1880-2000	Brazil	Natural Abundance	X	X														
Hietz et al 2011	<i>Chukrasia tabularis</i> <i>Melia azedarach</i> <i>Toona ciliata</i>	1925-2010 1965-2010 1910-2010	Thailand	Natural Abundance	X	X														[N] and $\delta^{15}\text{N}$ of leaves of 340 other species
Holdaway et al 2007	<i>Dacrydium cupressinum</i> <i>Prumnopitys taxifolia</i>	1750-2000	South Island, New Zealand	Marine Input		X												X	-	
Jung et al 2013	<i>Pinus banksiana</i> <i>Populus tremuloides</i>	1962-2010	Alberta, Canada	Pollution Input	X	X												X	pH, $\delta^{13}\text{C}$, [C], C:N, cations of soil, [C], Ca:Al of rings	
Koopmans et al 1996	<i>Pinus sylvestris</i>	1992-1994	Netherlands	Fertilizer & Tracer	X	X												X	[N] and $\delta^{15}\text{N}$ of bark and twigs	
Kranabetter et al 2013	<i>Pseudotsuga menziesii</i>	1900-2009	British Columbia, Canada	Natural Abundance		X												X		
Kwak et al 2009	<i>Pinus densiflora</i>	1992-2005	South Korea	Pollution Input	X	X												X	Ca:Al of rings	
Kwak et al 2011	<i>Pinus densiflora</i>	1966-2005	South Korea	Pollution Input	X	X												X	Ca: Al of rings	
Leonelli et al 2012	<i>Larix decidua</i>	1950-2008	Italy	Pollution Input	X	X												X	$\delta^{18}\text{O}$ of rings	
Lopez et al 2010	<i>Pinus thunbergii</i>	1938-2009	Japan	Marine Input	X	X														
Lopez et al 2011	<i>Pinus thunbergii</i>	1990-2010	Japan	Marine Input		X														
McLauchlan & Craine 2012	<i>Acer saccharum</i> <i>Carya ovata</i> <i>Fagus grandifolia</i> <i>Quercus alba</i>	1900-2005	Indiana, USA	Natural Abundance	X	X												X		
McLauchlan et al 2007	<i>Acer saccharum</i> <i>Betula papyrifera</i> <i>Fagus grandifolia</i>	1835-2000	New Hampshire, USA	Natural Abundance		X												X	[N], $\delta^{15}\text{N}$, [C], $\delta^{13}\text{C}$, C:N of lake sediment	

Thompson 2000	<i>Pseudotsuga menziesii</i>																	
Stock <i>et al</i> 2012	<i>Pinus pinaster</i>	1965-2005	Australia	Natural Abundance														
Sun <i>et al</i> 2010	<i>Pinus massoniana</i>	1950-2005	China	Pollution Input														
Weber <i>et al</i> 2008	<i>Pinus sylvestris</i>	1998-2008	Scotland, UK	Natural Abundance														
Wolfe <i>et al</i> 2013	<i>Picea engelmannii</i>	1914-1994	Colorado, USA	Natural Abundance														

*For Reported Data column, 'X' indicates data collected and reported in publication, '-' indicates data collected but not reported.

Abbreviations: [N] is nitrogen concentration, [C] is carbon concentration, C:N is ratio of carbon to nitrogen, Ca:Al is ratio of calcium to aluminum, WUE is water use efficiency, DBH is diameter at breast height,