

**Table 8.1:** Estimates for canopy uptake of N from gaseous and wet deposition for the spruce forest at Waldstein, Germany.

	Case 1		Case 2	Case 3	Case 4
Uptake pathway	Up-scaling Chamber experiments at low and high N nutrition		Up-scaling Chamber experiments + canopy conductance experiments	Down-scaling Canopy conductance + lab experiments on bark and needle uptake	Down-scaling Canopy conductance + canopy through- fall
	[kg N ha <sup>-1</sup> yr <sup>-1</sup> ]		[kg N ha <sup>-1</sup> yr <sup>-1</sup> ]	[kg N ha <sup>-1</sup> yr <sup>-1</sup> ]	[kg N ha <sup>-1</sup> yr <sup>-1</sup> ]
<b>Stomatal uptake</b>					
NH <sub>3</sub>	3.02	6.29	21.7	0.53	
NO <sub>x</sub>	1.04	3.86	4.2	3.01	
Subtotal	4.06	10.19	25.9	3.54	2.66
<b>Needle surface</b>					
NH <sub>4</sub> <sup>+</sup>	4.45			4.45	
NO <sub>3</sub> <sup>-</sup>	0.15			0.15	
Bark					
NH <sub>4</sub> <sup>+</sup>	5.29			5.29	
NO <sub>3</sub> <sup>-</sup>	0.15			0.15	
Subtotal	10.05		31.5	10.05	32.9
Total uptake	14.11	20.2	57.4	13.59	35.56
<b>Annual N uptake by forest</b>	88.62		135.8	88.62	134.4
<b>% annual uptake</b>	15.9	22.8	42.2	15.3	26.5

The estimate by up-scaling from growth room experiments for case 1 is based on data by Gebauer et al. (1991), Gebauer and Bruckner et al., (1993) and for case 2 Bruckner (1995). The canopy conductance data for case 3 were supplied by Rebmann (1999). The canopy through-fall estimate for case 4 is based on data from Horn et al. (1989).