APPENDIX 3

Shading Coefficients

The average shading coefficients for various species (from McPherson 1984) are shown in Table 12. The shading coefficient is an estimate of the percentage of sunlight striking a tree crown that is not transmitted through gaps in the crown.

Table 12.—Average shading coefficients by species (McPherson 1984)

Species	Coefficient	Species	Coefficient
<i>Acer ginnala</i>	0.91	<i>Juglans nigra</i>	0.91
<i>Acer platanoides</i>	0.88	<i>Koelreuter bipinnata</i>	0.90
<i>Acer rubrum</i>	0.83	<i>Koelreuter paniculata</i>	0.81
<i>Acer saccharinum</i>	0.83	<i>Liquidambar styraciflua</i>	0.82
<i>Acer saccharum</i>	0.84	<i>Liriodendron tulipifera</i>	0.90
<i>Aesculus hippocastanum</i>	0.88	<i>Malus spp.</i>	0.85
<i>Albizia julibrissin</i>	0.83	<i>Parkinsonia aculeata</i>	0.85
<i>Amelanchier arborea</i>	0.77	<i>Pistacia chinensis</i>	0.85
<i>Betula pendula</i>	0.82	<i>Platanus x acerifolia</i>	0.86
<i>Carya ovata</i>	0.77	<i>Platanus racemosa</i>	0.91
<i>Catapla speciosa</i>	0.76	<i>Populus deltoides</i>	0.85
<i>Celtis australis</i>	0.92	<i>Populus tremuloides</i>	0.74
<i>Celtis occidentalis</i>	0.88	<i>Pyrus communis</i>	0.80
<i>Crataegus x Lavalley</i>	0.89	<i>Quercus alba</i>	0.75
<i>Crataegus oxyacantha</i>	0.86	<i>Quercus palustris</i>	0.77
<i>Crataegus phaenopyrum</i>	0.76	<i>Quercus robur</i>	0.81
<i>Elaeagnus angustifolia</i>	0.87	<i>Quercus rubra</i>	0.81
<i>Fagus sylvatica</i>	0.88	<i>Sapium sebiferum</i>	0.83
<i>Fraxinus excelsior</i>	0.85	<i>Sophora japonica</i>	0.78
<i>Fraxinus holotricha</i>	0.78	<i>Tilia cordata</i>	0.88
<i>Fraxinus pennsylvanica</i>	0.83	<i>Ulmus americana</i>	0.87
<i>Ginkgo biloba</i>	0.81	<i>Ulmus pumila</i>	0.85
<i>Gleditsia triacanthos</i>	0.67	<i>Zelkova serrata</i>	0.80
<i>Gymnocladu dioicus</i>	0.86		

Appendix 3 in: Nowak, David J. 2020. **Understanding i-Tree: Summary of programs and methods**. General Technical Report NRS-200. Madison, WI: U.S. Department of Agriculture, Forest Service, Northern Research Station. <https://doi.org/10.2737/NRS-GTR-200-Appendix3>