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Maximum Tree Age & Longevity

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The purpose of this Technical Forestry Bulletin is to provide a range of tree ages for frequently encountered angiosperms and gymnosperms across the Midwest and the eastern US—native, naturalized, and planted tree species. Principal data used in this bulletin are from professor George Hopper‡ (unpublished), eastern OLDLIST (2013), and Loehle (1988).

Maximum tree age and longevity are often difficult to confirm since detailed information about "maximum" tree age is commonly confounded by historical land uses and past management histories; initial and current forest conditions and stand dynamics; soils, site, topography, and environmental conditions; biological stressors; weather-related phenomena; genetics; and a myriad of other factors including false rings and missing rings. Despite these shortcomings, knowing average and maximum tree age is often very useful within the field of forestry and within allied fields such as restoration ecology and conservation biology.

Eastern OLDLIST and OLDLIST are excellent repositories of documented tree age data. Both of these databases are dynamic and subject to frequent updating by the website's database manger. Tree age data listed throughout the following pages are for illustrative purposes only and should not be interpreted as absolute.

An increment core extracted from a black cherry tree using a Suunto™ increment borer.

Longevity: Common age when individual tree species begin to decline in vigor and rate of growth. According to Loehle (1988), "few trees live beyond this age." This term is frequently referred to as biological senescence in the literature.

Maximum Age: Presumed "upper known maximum above which very few trees are found" (Loehle 1988). Please note maximum biological tree age data are under continuous refinement and updating.

Table 1. Reported tree age data based on species longevity and maximum biological age.

Species	Longevity (Average)	Longevity (Range)	Maximum Age (Average)	Maximum Age (Range)	Source	Source(s)
Acer negundo boxelder	75	60–75	100	75–100	Loehle 1988	Burns & Honkala 1990 Hardin et al., 2001
Acer nigrum black maple	—	—	247†	226–247†	E. OLDLIST 2013	
Acer rubrum red maple	106	50–175	203	100–300†	Hopper (n.d.)	Pederson et al., 2007 Hardin et al., 2001
Acer saccharinum silver maple	78	50–125	140	75–200	Hopper (n.d.)	Hardin et al., 2001
Acer saccharum sugar maple	162	75–225	230	228–315†	Hopper (n.d.)	E. OLDLIST 2013

Table 1. cont. (*Aesculus flava—Fraxinus quadrangulata*)

Species	Longevity (Average)	Longevity (Range)	Maximum Age (Average)	Maximum Age (Range)	Source	Source(s)
Aesculus flava yellow buckeye	—	60–80	287	200–410†	E. OLDLIST 2013	Hardin et al., 2001
Aesculus glabra Ohio buckeye	—	80–100	—	—	Elias 1980	
Betula alleghaniensis yellow birch	150	150–200	300	309–387†	E. OLDLIST 2013	Loehle 1988 Elias 1980
Betula lenta black birch	150	—	250	208–361†	Loehle 1988	Pederson et al., 2007
Betula nigra river birch	—	—	156	—	ENTS 2013	
Betula papyrifera paper birch	100	80–100	140	100–240†	E. OLDLIST 2013	Loehle 1988 Hardin et al., 2001
Carya cordiformis bitternut hickory	133	100–150	231	175–192†	Hopper (n.d.)	E. OLDLIST 2013
Carya glabra pignut hickory	117	60–200	228	217–325†	Hopper (n.d.)	E. OLDLIST 2013
Carya illinoinensis pecan	117	60–200	207	150–400	Hopper (n.d.)	
Carya laciniosa shellbark hickory	—	—	350	—	Loehle 1988	
Carya ovata shagbark hickory	137	80–200	238	160–354†	Hopper (n.d.)	Pederson et al., 2007
Carya tomentosa mockernut hickory	127	75–175	169	150–202†	Hopper (n.d.)	E. OLDLIST 2013 ENTS 2013
Celtis occidentalis hackberry	150	—	200	150–200	Loehle 1988	Elias 1980 Burns & Honkala 1990
Celtis laevigata sugarberry	—	—	—	125–150	Elias 1980	
Cornus florida flowering dogwood	—	—	125	—	Loehle 1988	
Diospyros virginiana persimmon	60	—	80	—	Loehle 1988	
Fagus grandifolia American beech	168	100–250	329	204–246†	Hopper (n.d.)	E. OLDLIST 2013 Hardin et al., 2001
Fraxinus americana white ash	129	80–150	136	110–198†	Hopper (n.d.)	E. OLDLIST 2013
Fraxinus nigra black ash	—	—	260	210–319†	E. OLDLIST 2013	Hardin et al., 2001
Fraxinus pennsylvanica green ash	98	60–150	162	110–225	Hopper (n.d.)	
Fraxinus quadrangulata blue ash	200	—	300	193–249†	E. OLDLIST 2013	Loehle 1988 Hardin et al., 2001

Table 1. cont. (*Gleditsia triacanthos—Pinus virginiana*)

Species	Longevity (Average)	Longevity (Range)	Maximum Age (Average)	Maximum Age (Range)	Source	Source(s)
Gleditsia triacanthos honeylocust	82	40–150	169	120–250	Hopper (n.d.)	Hardin et al., 2001
Gymnocladus dioicus Kentucky coffeetree	—	—	100+	—	Elias 1980	
Halesia carolina Carolina silverbell	100	—	197†	—	Elias 1980	ENTS 2013
Juglans cinerea butternut	75	50–150	154	90–250	Hopper (n.d.)	Hardin et al., 2001
Juglans nigra black walnut	131	75–200	214	150–400	Hopper (n.d.)	
Juniperus virginiana eastern redcedar	150	—	300	294–940†	E. OLDLIST 2013	Loehle 1988
Liquidambar styraciflua sweetgum	112	80–125	202	150–350	Hopper (n.d.)	
Liriodendron tulipifera yellow-poplar	136	80–300	281	150–509†	Hopper (n.d.)	E. OLDLIST 2013
Magnolia acuminata cucumbertree	80	80–150	250	166–348†	Pederson et al., 2007	Loehle 1988 Hardin et al., 2001
Nyssa aquatica water tupelo	123	90–175	217	150–300	Hopper (n.d.)	
Nyssa sylvatica blackgum	116	80–150	222	150–679†	Hopper (n.d.)	E. OLDLIST 2013
Ostrya virginiana eastern hophornbeam	—	50–70	230	281†	E. OLDLIST 2013	Hardin et al., 2001
Paulownia tomentosa royal paulownia	60	25–150	110	40–250	Hopper (n.d.)	
Platanus occidentalis sycamore	200	—	250	136–412†	E. OLDLIST 2013	Loehle 1988
Pinus banksiana jack pine	80	60–100	150	100–246†	E. OLDLIST 2013	Loehle 1988
Pinus echinata shortleaf pine	110	75–150	209	254–324†	Hopper (n.d.)	E. OLDLIST 2013
Pinus resinosa red pine	200	—	400	340–500†	E. OLDLIST 2013	Loehle 1988
Pinus rigida pitch pine	110	75–200	190	100–398†	Hopper (n.d.)	E. OLDLIST 2013
Pinus strobus eastern white pine	149	75–200	309	147–408†	Hopper (n.d.)	E. OLDLIST 2013
Pinus taeda loblolly pine	110	75–100	218	191–246†	Hopper (n.d.)	E. OLDLIST 2013
Pinus virginiana Virginia pine	76	40–125	126	75–126†	Hopper (n.d.)	E. OLDLIST 2013

Table 1. cont. (*Populus balsamifera—Quercus stellata*)

Species	Longevity (Average)	Longevity (Range)	Maximum Age (Average)	Maximum Age (Range)	Source	Source(s)
Populus balsamifera balsam poplar	100	80–120	150	100–207†	E. OLDLIST 2013	Loehle 1988
Populus deltoides eastern cottonwood	79	50–100	143	75–200	Hopper (n.d.)	
Populus grandidentata bigtooth aspen	70	—	150	70–113†	E. OLDLIST 2013	Loehle 1988 Hardin et al., 2001
Populus tremuloides quaking aspen	70	50–90	200	70–213†	E. OLDLIST 2013	Loehle 1988
Prunus serotina black cherry	115	70–175	198	100–300	Hopper (n.d.)	
Quercus alba white oak	194	90–250	357	200–464†	Hopper (n.d.)	E. OLDLIST 2013
Quercus bicolor swamp white oak	157	100–200	296	200–285†	Hopper (n.d.)	E. OLDLIST 2013
Quercus coccinea scarlet oak	105	65–150	173	95–212†	Hopper (n.d.)	E. OLDLIST 2013
Quercus falcata southern red oak	127	80–150	220	80–141†	Hopper (n.d.)	E. OLDLIST 2013
Quercus imbricaria shingle oak	—	—	107†	—	ENTS 2013	
Quercus lyrata overcup oak	135	80–163	217	160–218†	Hopper (n.d.)	E. OLDLIST 2013
Quercus macrocarpa bur oak	181	125–250	310	200–401†	Hopper (n.d.)	E. OLDLIST 2013
Quercus marilandica blackjack oak	100	—	200	—	Loehle 1988	Leahy 2008
Quercus michauxii swamp chestnut oak	100	—	200	—	Loehle 1988	
Quercus montana chestnut oak	141	75–200	256	150–427†	Hopper (n.d.)	E. OLDLIST 2013
Quercus muehlenbergii chinkapin oak	150	100–200	250	200–429†	E. OLDLIST 2013	Leahy 2008
Quercus pagoda cherrybark oak	139	90–200	243	180–300	Hopper (n.d.)	
Quercus palustris pin oak	116	80–170	195	140–300	Hopper (n.d.)	
Quercus rubra northern red oak	151	90–200	260	134–326†	Hopper (n.d.)	E. OLDLIST 2013
Quercus shumardii Shumard oak	128	90–200	245	175–350	Hopper (n.d.)	
Quercus stellata post oak	137	70–190	231	130–395†	Hopper (n.d.)	E. OLDLIST 2013

Table 1. cont. (*Q. texana—Ulmus rubra*)

Species	Longevity (Average)	Longevity (Range)	Maximum Age (Average)	Maximum Age (Range)	Source	Source(s)
Quercus texana Nuttall oak	125	80–163	191	160–250	Hopper (n.d.)	
Quercus velutina black oak	129	75–200	211	150–257†	Hopper (n.d.)	E. OLDLIST 2013
Robinia pseudoacacia black locust	86	15–120	134	90–200	Hopper (n.d.)	
Salix nigra black willow	65	40–100	105	65–150	Hopper (n.d.)	
Sassafras albidum sassafras	69	30–175	132	75–173†	Hopper (n.d.)	E. OLDLIST 2013
Taxodium distichum baldcypress	264	150–500	1090	314–1622†	Hopper (n.d.)	E. OLDLIST 2013
Thuja occidentalis northern white–cedar	300	200–400	400	231–1653†	E. OLDLIST 2013	Loehle 1988
Tilia americana American basswood	100	90–140	140	122–242†	Loehle 1988	ENTS 2011 Hardin et al., 2001
Tsuga canadensis eastern hemlock	197	125–300	356	200–555†	Hopper (n.d.)	E. OLDLIST 2013
Ulmus alata winged elm	—	—	—	186†	E. OLDLIST 2013	
Ulmus americana American elm	175	—	300	175–217†	Loehle 1988	E. OLDLIST 2013
Ulmus rubra slippery elm	200	—	300	103†– 200	E. OLDLIST 2013	Loehle 1988 Elias 1980

† Maximum biological age reported and *verified* via crossdating techniques and/or tree ring counts (*source*: E. OLDLIST, 2013).

‡ Hopper's unpublished data were assembled via experts in silviculture from Maine all the way down to Georgia, USA.

Note: Please use caution when interpreting these tree age data as some of these data may be atypical. For example, the maximum tree ages listed on the previous pages may be artificially low or extremely high for a particular species. Therefore, the author strongly encourages users of this information to exercise good professional judgment and sound science—along with appropriate biological, physical, and environmental variables—when making generalities or forest management recommendations based on these reported tree age data. These data are by no means exhaustive or absolute.

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