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**Supplementary table 1:** Definitions of an arboretum arranged from oldest to youngest

Arboretum definitions	Reference
“It embraces as comprehensive a collection of arboreal species, varieties and forms, both exotic and indigenous, as the conditions of any one locality will permit...”	Chipp <sup>1</sup>
“...a collection of living trees and other plants having woody or ligneous stems above ground...”	Jack <sup>2</sup>
“An arboretum is a living collection of winter hardy, woody plants; for the tropics this definition would, of course, be different taking the climatological conditions into account.” (own translation)	Venema <sup>3</sup>
A large collection of living plants landscaped according to particular principles, forming the nucleus of a botanical or horticultural centre, serving the needs of several groups of the regional population.	Verdoorn <sup>4</sup>
“An arboretum or botanical garden...is an ample area set aside for the growing and effective display of all the different kinds of worthy ornamental trees, shrubs, vines and other plants...their maintenance, proper labelling and study.”	Wyman <sup>5</sup>
“Public gardens with a strong emphasis on collections consisting exclusively or predominantly of woody plants.”	Correll <sup>6</sup>
“By definition an arboretum is a plot of land where trees are grown for scientific or educational purposes, or popular interest.”	Evans <sup>7</sup>
A landscape reserved for the cultivation and effective exhibition of tree and shrub species, including other plants that can be grown in a particular region. This includes the organised maintenance of such scientifically planned collections (own translation).	Bredenkamp & Smith <sup>8</sup>
“Botanic gardens and arboreta are collections of plants...”	Downing & Roberts <sup>9</sup>
“An arboretum is a specialized form of woodland which is designed for a different end-use than a woodland of forest required for the production of timber or for conservation/environmental purposes.”	Popham & Neil <sup>10</sup>
“...their purpose is to collect, study, cultivate, display and conserve plants for public benefit.”	Casey <sup>11</sup>
“...botanic institutions holding documented collections of living plants for purpose of scientific research, conservation, display and education. ”	Wyse Jackson <sup>12</sup>

Arboretum definitions	Reference
"While an arboretum,..., is a representative and effective display of all the different kinds of woody tree species maintain for the purpose of reference and as a convenient source of seed for trial plantations. "	Soekotjo <sup>13</sup>
A botanical tree garden	Concise Oxford Dictionary English Dictionary <sup>14</sup>
"More commonly today, an arboretum is a botanical garden containing living collections of woody plants intended at least partly for scientific study."	Hasan et al. <sup>15</sup>
"An arboretum is a collection of living woody plants."	Idžojić et al. <sup>16</sup>
"...in an arboretum (a botanical garden focussed on trees)."	Zimmerman et al. <sup>17</sup>
"An arboretum is a collection of trees, identified and labelled as to species, to provide enjoyment, relaxation and education."	Great Lakes Forestry Centre <sup>18</sup>
"A place where an extensive variety of woody plants are cultivated for scientific, educational and ornamental purposes."	American Heritage Dictionary of the English Language <sup>19</sup>
"An arboretum is a type of botanical garden dedicated to the collection and study of 'woody' plants (trees and shrubs)"	Awbury Arboretum <sup>20</sup>
"An arboretum is a living museum of trees and shrubs."	Cylburn Arboretum Friends <sup>21</sup>
"An arboretum is defined as a place grown with trees or a place where trees, shrubs and herbaceous plants are cultivated for scientific education and/or aesthetic purposes"	Marywood Arboretum <sup>22</sup>
"An arboretum is a botanical garden where trees and shrubs are cultivated for scientific, conservation educational and ornamental purposes."	Sherwood fox Arboretum <sup>23</sup>
"An arboretum is a living museum established for the growing and effective display of trees, shrubs and vines. The specimens are maintained, labelled and mapped. "	Allegheny Arboretum <sup>24</sup>
"...a place where trees, shrubs and herbaceous plants are cultivated for scientific and educational purposes."	Penn State Arboretum <sup>25</sup>

**Supplementary table 2: Milestones in arboretum research applications over time**

Year	Milestone	Nature of the research	Location	Reference
1738	Painshill arboretum established where many North American species were introduced	Species introduction	United Kingdom	Symes <sup>26</sup>
1821	Arboretum des Barres, first forestry arboretum & acclimatisation trials started	Species introduction	Europe (France)	Baas-Becking <sup>27</sup> ; Pourtet <sup>28</sup>
1848	Schovenhorst arboretum established for forestry trials	Selection studies	Europe (Netherlands)	Gratama-Oudemans <sup>29</sup>
1848	Scone palace pinetum established at Perth	Species introduction	United Kingdom	Anonymous <sup>30</sup>
1845	Arboretum formally established at Royal Botanic Gardens, Kew. The Royal Botanic Gardens itself established in 1759.	Species introduction, research, conservation, recreation	United Kingdom	Hartley <sup>31</sup>
1845	Arderne Gardens established	Species introduction	Africa (South Africa)	Lith <sup>32</sup>
1851	Durban Botanic Gardens established on its current site	Species introduction	Africa (South Africa)	McCracken <sup>33</sup>
1869	Arboreta of Vallombrosa established for forestry research and education (the first of four arboreta)	Selection studies, education	Europe (Italy)	Sanesi et al. <sup>34</sup>
1872	Arnold Arboretum established	Conservation, education, research	North America (US)	Hetman <sup>35</sup>
1886	Arboretum forestry trials start in South Africa with Tokai arboretum	Selection studies	Africa (South Africa)	Zahn & Neethling <sup>36</sup>
1887	Dominion Arboretum established for forestry trials for colder climates	Selection studies	North America (Canada)	Elliott et al. <sup>37</sup>
1889	Benvie Gardens established	Species introduction	Africa (South Africa)	J. Robinson, pers. comm.
1892	Arboretum trials by Los Angeles County Department of Forestry in San Gabriel mountains	Selection studies	North America (US)	Burns & Sauer <sup>38</sup>
1892	Mlyňany Arboretum established as display collection of evergreen species	Species introduction & display	Europe (Slovakia)	Anonymous <sup>39</sup>
1898	First Plant Introduction Garden established in the USA	Selection studies	North America (US)	Hodge & Erlanson <sup>40</sup>
1912	Exotic tree trials started in the Pacific Northwest with Wind River Arboretum	Selection studies	North America (US)	Silen & Olsen <sup>41</sup>
ca. 1920	First arboretum trials with forestry species in Puerto Rico	Selection studies	Caribbean (Puerto Rico)	Harris <sup>42</sup>
1922	Bogor arboretum established, first of three arboreta, by Indonesian Forest Research Institute	Conservation	Asia (Indonesia)	Soekotjou <sup>13</sup>
1922	Morton Arboretum established	Research, conservation, recreation	North America (US)	Ware <sup>43</sup>
1922	Tropical Industries Research Institute plant introduction centre started	Species introduction	Oceania (Palau)	Ragone et al. <sup>44</sup>

Year	Milestone	Nature of the research	Location	Reference
1925	First arboretum forestry trials in Tasmania	Selection studies	Oceania (Australia)	Gaughwin <sup>45</sup>
1927	US National Arboretum established for testing and propagating new cultivars	Selection studies	North America (US)	Pooler <sup>46</sup>
1928	First species trials in Australian Capital Territory and New South Wales	Selection studies	Oceania (Australia)	Shirley <sup>47</sup>
1937	Minnesota's Woody Landscape Plant Breeding Program	Horticulture	North America (US)	Hokanson & McNamara <sup>48</sup>
1940	Association of Botanical Gardens & Arboreta established (name changed to American Public Garden Association)	Horticulture	North America (US)	Weatherington <sup>49</sup>
1957	Arboretum forestry trials established in Tunisia	Selection studies	Africa (Tunisia)	Rejeb et al. <sup>50</sup>
1958	Douglas fir arboretum established at Lake Cowichan, Vancouver Island	Selection studies	North American (Canada)	Orr-Ewing <sup>51</sup>
1958	Street Tree Evaluation Group established at Morton Arboretum	Urban forestry	North America (US)	Ware <sup>43</sup>
1960	First arboretum trials with conifer species in New Caledonia	Selection studies	Oceania (New Caledonia)	Crémère & Ehrhart <sup>52</sup>
1971	US national arboretum programme initiated	Horticulture	North America (US)	Egolf <sup>53</sup>
1980	Central American and Mexican Coniferous Resources Co-operative established	Conservation	Global	Anonymous <sup>54</sup>
1987	Botanic Gardens Conservation International established	Conservation	Global	BGCI <sup>55</sup>
1988	North American Plant Collections Consortium established	Collections research	North America	Beitel <sup>56</sup>
2000	Municipal Tree Restoration Program in Virginia, USA, initiated to guide selection of trees for overhead utility lines	Urban forestry	North America (US)	Appleton <sup>57</sup>
2003	Investing in Nature campaign initiated to link Canadian arboreta and botanical gardens	Conservation, education	North America (Canada)	McIvor <sup>58</sup>
2012	Réseau Infrastructure de recherche pour le suivi et l'adaptation des Forêts au Changement climatique (REINFFORCE) established	Climate change, conservation	Europe	Prieto-Recio et al. <sup>59</sup>
2013	International Plant Sentinel Network established	Biosecurity	Global	Barham et al. <sup>60</sup>

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