

Kelseya

Newsletter of the Montana Native Plant Society



Kelseya uniflora
ill. by Bonnie Heidel

Montana Has A State Arboretum *Do you know about it?*

By Beth Judy, Clark Fork Chapter

In 1991, the 52nd Montana legislature designated the University of Montana campus the State of Montana Arboretum. Senate Bill 320 directed the new arboretum “to facilitate the scientific study and public exhibition of many species of trees and shrubs.” The committee appointed to oversee the arboretum honed an additional mission: “To establish and maintain a living collection of plantings to provide public education, student instruction, scenic beauty, and a natural biological legacy for the citizens of Montana.”

Today, approximately 2,300 trees of 120 species grow on the 150-acre main UM campus. The arboretum emphasizes Montana natives, but in eight designated sections also showcases trees and shrubs of North America’s Great Plains, Central Hardwoods, Northeastern and Southeastern Mixed Forests, Northern and Southern Rockies, and Pacific Coast and Boreal Forests.

Obviously, arboreta are all about trees. To quote Joni Mitchell, “They took all the trees and put ‘em in a tree museum.” An arboretum is a living museum of trees and shrubs. But what does that mean? What purposes do and can arboreta—and in particular, this arboretum—serve? Arboretal history at the University of Montana illuminates some of those purposes. Others may lie in the future, particularly with climate-change challenges.

One of the earliest actions UM founders took, starting in 1896, was tree planting. The Missoula valley was naturally

a windy plain, not forested, but to UM’s founders, apparently, trees were a priority—for shading and sheltering students, yes, but also aesthetically, as if a green space and future old lofty trees would encourage thinking. The first tree species were selected for horticultural success and an aesthetic of sameness: for example, poplars, and in UM’s landscape centerpiece — the Oval — elms.

Yet early UM tree planters also established diversity. According to research by UM student Alia Floren, by 1925 the campus had 37 species of trees, including Douglas-fir, western larch, ponderosa and lodgepole pine, Engelmann, Norway, and blue spruce, ginkgo, red oak, swamp white oak, horse chestnut, and species of hawthorn, mountain-ash, walnut, and maple. Species planted but no longer found on campus include overcup oak (*Quercus lyrata*), wych elm (*Ulmus glabra*), and European spindletree (*Euonymus europaeus*). Some UM tree planters were informal, such as William “Daddy” Aber, UM’s first, beloved Greek and Latin professor, who loved trees and planting them. But early professors Morton Elrod and Joseph Kirkwood, responsible for many plantings, wanted a collection for teaching Biology, Botany, and Forestry. Over the decades, tree



Autumn color at the State of Montana Arboretum (the University of Montana campus).

Photo by Todd Goodrich



nurseries and small arboreta have been important parts of campus.

For 35 years, in fact, UM's Forestry School maintained a nursery which, in 1924, began providing shelterbelt trees for Montana farmers. Species included Russian olive, boxelder, willow, poplar, and elm species, and green ash. Long-lived trees on farms across the state today may have originated in Missoula, since by 1940 the Forestry nursery had sent 415,000 trees to 2,000 farms in 53 of Montana's 56 counties. (In 1939, a two-year-old tree sold for one cent!) In 1954, however, the nursery was moved. Space, especially for parking lots ("They paved Paradise, put in a parking lot"—Joni Mitchell), became a premium on campus. Acreage at Fort Missoula was purchased and the nursery moved across town, taking 370 transplanted trees with it. Another 100 trees were transplanted around campus, and remaining trees too large to move were destroyed. For arboreta located on college campuses, the tension between trees and human structures is never ending.

The place of arboreta in teaching still holds true today. The State of Montana Arboretum is a classroom where UM students in Biology, Forestry, and other disciplines learn about trees. Morton Elrod envisioned this in 1908 after transplanting 150 trees from the Upper Flathead: "This planting of trees," he said, "will, if they live, make possible the study of most of our native trees without long journeys into the woods..."—or, considering this arboretum's forest-region collection, without even longer journeys to other states.

Elrod's words above—"If they live"—point to another purpose of arboreta: research. Arboreta are by definition research institutions. Most arboretum trees are planted with a question: Will this tree grow here—in this light/climate/soil/forest region? Can a Kentucky coffeetree grow in Montana? Will this limber pine, from east of the Continental Divide, thrive west of the mountains? How will this whitebark pine do at 3,000 feet? Like the shelterbelt trees, this experimentation may help citizens all over the state. For example, as the emerald ash borer works its way west, Montana towns with an urban forest of predominantly ash trees will see lots of die-off. What should cities replant? Nurseries and homeowners will want to know too.

Climate change elicits similar questions. Arboreta, especially through sharing experience, data, and even plants, can contribute to tree health and survival. Imagine a climate-related catastrophe—for example, a pest—affecting native beech in the Midwest. That species growing in the State of Montana Arboretum may become the seed source for future restoration. Additionally, research already happening at UM has found that strategically planted trees help cool and warm buildings. Trees sequester carbon, of course, and new thinking is returning to wood as a highly sustainable building material.

Growing non-native species can be risky, as the inclusion of invasive Russian olive in the shelterbelt tree program reminds us. Introducing non-native trees must be approached with research and caution. However, some scientists see towns and cities as "sacrifice"

University of Montana Campus, 1908.

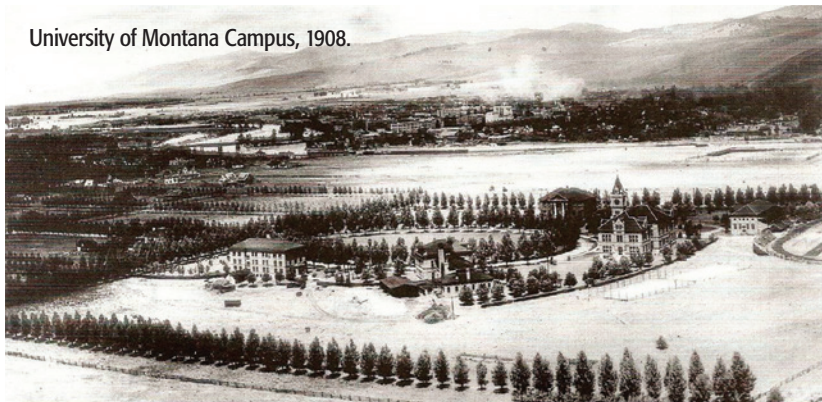


Photo courtesy of UM Mansfield Library,
Morton Elrod Collection

areas where trees that resist disease and reliably produce shade are valuable, native or not. In addition, people enjoy seeing trees from other places, especially since Montana only has about 30 native tree species.

Lastly, arboreta are beautiful green spaces that double as parks. Located in the middle of town, the State of Montana Arboretum becomes a resource for locals

and visitors alike, free and open all the time, inviting strolling, contemplating, playing, outside learning, or picnicking (just don't climb the trees). An extension of aesthetics, Kathleen Wolf's research at the University of Washington shows numerous physical and mental health benefits connected with trees—including air cleaning, a plus with wildfire smoke. Many trees memorialize people, offering a different kind of healing. Memorial Row, the Ponderosa pine alley planted to commemorate UM dead after World War I, is one example at the State of Montana Arboretum. If UM founders thought trees would help students do better, they were right, borne out by another study, in 2016, at the University of Illinois.

These factors—beauty, diversity, experimentation, knowledge—help fulfill the "biological legacy" portion of the State of Montana Arboretum mission. But the trees themselves are the main actual legacy, since part of what moves us so much about trees is that they outlast us, often by many generations.

A second article in this publication will examine in greater detail the tree, shrub, and complementary plant collections of the State of Montana Arboretum. Thanks to Kelly Chadwick, Peter Lesica, Karen Shelly, Alia Florens, and Ken Stolz for help with this one. For more information, please visit www.umt.edu/arboretum/.



Beth Judy is host and producer of "The Plant Detective" on Montana Public Radio. Her most recent book is "Bold Women in Montana History."



Tulip tree (*Liriodendron tulipifera*), in the magnolia family, occurs naturally from southern New England into northern Florida. See it in the State of Montana Arboretum.

Photo by Ken Stolz

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Montana's Arboretum – Part 2

By Beth Judy, Clark Fork Chapter



Siberian larch (*Larix sibirica*)

Photo by Ken Stolz

The 150 acres of the main University of Montana campus = the State of Montana Arboretum (SMA), and scattered across that space grow about 2,300 trees of 119 species. Designated by the Montana legislature in 1991, the SMA has been developing ever since—slowly, just like a tree.

The intention with which arboretums are planted is reflected in specific “collections” of trees and plants. This article, the second of two on the SMA, describes the arboretum’s collections, with some highlights. The SMA is physically divided into eight forest regions of North America. Each one of these, really, is a collection. They are:

Boreal Forest—representing the cold northern reaches of the continent, where spruce, pine, fir, and species of poplar and larch dominate. At the SMA, look for paper-birch (*Betula papyrifera*), a standout species also called canoe birch. A source of wood, medicine, and other products, it is New Hampshire’s state tree.

Northern Rockies—mountain ecosystems shaped by fire, dominated by conifers. At the SMA, western larch; ponderosa,

lodgepole, limber, and whitebark pines; subalpine fir; and Engelmann spruce represent this region. An especially unusual species is a natural hybrid larch from the Bitterroot Mountains, offspring of *Larix occidentalis* and *L. lyallii*, species that usually occur at separate altitudes.

Southern Rockies—Wyoming and south. SMA trees from this region include white fir, Colorado blue spruce, Gambel’s oak, and bristlecone and southwestern white pines. One bristlecone at SMA, in front of the Forestry Building, is probably Montana’s largest. MNPS member John Pierce’s father, UM professor William Pierce, collected the seeds from which it grew. Bristlecones are one of the longest-lived tree species.

Pacific Coast Forests—areas west of the Cascade Mountains, represented at SMA by Alaska yellow cedar, western hemlock, western redcedar, and more. Western redcedar (*Thuja plicata*), the largest tree in the cypress family, lives 400 to 1,000 years. Its rot-resistant, aromatic wood is appreciated in decks, boats, and paneling, and its bark had many uses, including medicinal ones.

FURTHER READING

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WELCOME ABOARD!

The Montana Native Plant Society welcomes the following new members:

Calypso Chapter:

Jarrett Payne, and the James Doyle Family
(renewing as a lifetime member)

Clark Fork Chapter

Jennifer Waltz, Barbara Tilton, Stephen Slocomb, Susan Ballinger, Claire Shady, Peter Donati, Ellen Lomega, Valerie Bayer, David Renn, Ruby Kikkert, John and Karen DiBari, Laurie Kurth (new lifetime member), and Mary Lawrence and Sara Anderson
(renewing as lifetime members)

Eastern-At-Large

Sandra Carpenter
(renewing as a lifetime member)

Flathead Chapter

Jennifer Doolan, and Rosella Mosteller
(renewing as a lifetime member)

Valley of Flowers Chapter

Jake Milligan, Shannon Brightman, Megan Martinez, Christopher Nixon, Ann Engstrom, and Aliesha Perkins

Western-At-Large

Ann Ross



Eastern redbud (*Cercis canadensis*)

Photos by Ken Stolz

Great Plains—from the Western Midwest into the plains, at SMA represented by green ash, boxelder, and other species. Bur oak (*Quercus macrocarpa*), the farthest-north-occurring oak species, is Montana's only native oak. One stand grows in Montana's southeast corner near the tiny crossroads of Alzada—the species's westernmost reach.

Central Hardwoods—Midwest into southern New England, represented at SMA by red maple, white and red oaks, linden, and shagbark hickory. Red oak ranges from Quebec to Georgia, west to Mississippi and Oklahoma. A northern red oak at SMA is probably Montana's largest. The bark of shagbark hickory peels off in long plates as it grows, hence the name. Its nuts provide food; its wood is extremely hard; its woodsmoke, fragrant.



Cockspur hawthorn (*Crataegus crus-galli*)

Northeastern Mixed Woods—Cool mountain reaches (and the SMA) host sugar maple, beech, and eastern white pine. Sugar maple, found in the Great Lakes and Mid-Atlantic states, New England, and eastern Canada, produces both syrup and timber.

Southeastern Mixed Forest—not including southeastern coastal plains. SMA trees from this region include tulip poplar, baldcypress, smoke tree, chestnut oak, yellowwood, northern catalpa, and black gum. Trees from this region are especially interesting, growing in Montana. Yellowwood is rare, even in the eastern U.S. Baldcypress generally likes wet soil, but is a great urban tree because it tolerates other drainage conditions.

OTHER SMA COLLECTIONS INCLUDE:

Larch (*Larix*) species: Only ten to 12 species of larch exist in the world. The SMA has five of them, ranging from Siberian to Japanese to Western to natural hybrids.

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North American Paleo Trail: Species that, the fossil record shows, inhabited North America before the Ice Age. Included are *Ginkgo* (again, the state's largest), *katsura*, *Metasequoia* (dawn redwood), *Zelkova*, *Pseudolarix*, species of magnolia, oak, maple, pine, and more.

The Montana Walk: Emphasizes and celebrates Montana native trees and plants.

Centennial Planting: In 1993, a tree or shrub representing each of the 56 Montana counties and seven Indian reservations was planted. However, this collection needs updating.

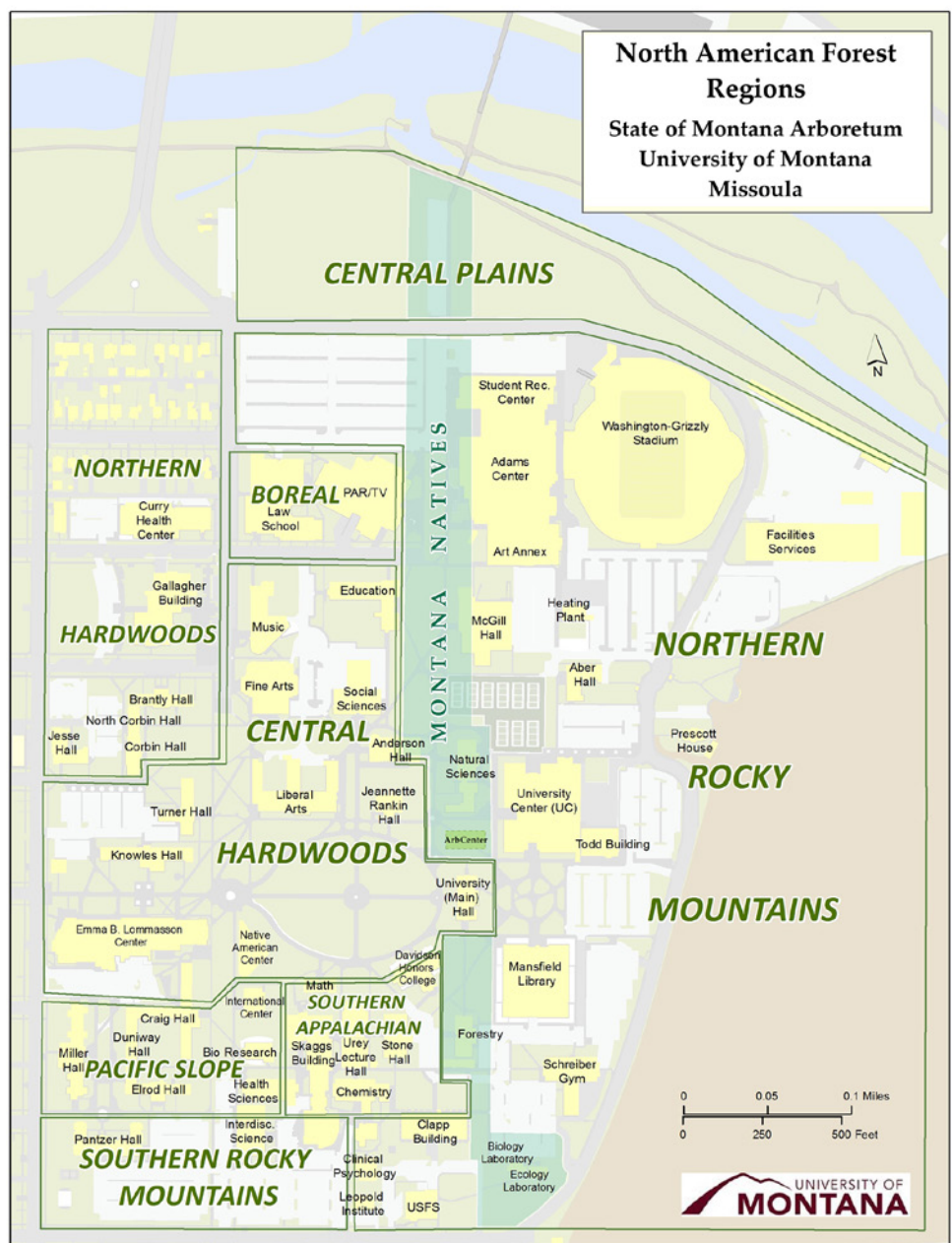
Mini-habitats: In the planning stages so far, these areas will emphasize dominant tree species plus the plants that usually grow alongside them in the wild.

Trees Associated with History:

“Memorial Row,” an allee of ponderosa pines planted in 1919, honors 32 UM war dead. “The Hanging Tree,” a cottonwood, is named for a short story (also made into a film) by Montana writer and UM journalism professor Dorothy Johnson. A small grove of lindens honors beloved radio personality Kim Williams. A double ring of sugar maples and red and bur oak emulates the historic planting of the Oval, originally all American elm.

International Trees: In addition to some aforementioned species, SMA trees not native to North America include English oak, Norway spruce, several Japanese *Prunus* species, and, inside the University Center, a kapok and a false monkey puzzle tree or bunya-bunya.

Gardens: The Montana Native Plant Gardens, which encircle the Natural Sciences building, feature approximately 300 plant species from various Montana habitats, including Aspen Woodland, Mesic Forest, Mixed Conifer Forest, Foothill Shrubland, Montane Parkland, Prairie, Alpine, Cedar Forest, and Wet Meadow. Here you can see bitterroot, twinberry, Rocky Mountain iris, red globemallow, and many others. The SMA also features ethnobotanical, medicinal, and Native American gardens.



Many trees at the SMA predate the arboretum designation and could be said to be growing in the “wrong” place—outside of their correct forest region. The SMA’s policy is not to remove but to replace them after their natural lives. Doubling as a college campus presents challenges for SMA trees, including their removal during construction; protection of existing trees during the same; vandalism and other injury; piled snow during winter; and soil compaction from foot traffic. Advantages include, among others, abundant watering, thanks to turf care; protected spaces for delicate species, created by buildings; and

the potential for many interested visitors and volunteers to enjoy and care for them.

Lists of specific tree and plant species at SMA may be available in future for visitors and/or appear in another issue of *Kelseya*. Thanks to Kelly Chadwick, Adam Coe, Caroline Kurtz, Karen Shelly, Peter Lesica, Ken Stolz, and Madeline Mazurski for help with this article. 

Beth Judy is host and producer of “The Plant Detective” on Montana Public Radio. Her most recent book is “Bold Women in Montana History.”