Why Central Oregon Remained Botanically Unexplored during the Early Exploration of the Trans-Mississippi West (1786-1900)

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“The first botanical problem to be solved in a new country is of necessity the exploration of its different parts and the description of the native species.” William Gilson Farlow, Smithsonian Institution, 1896 (McKelvey 1955).

The earliest European access to the Pacific coast of North America (now Washington, Oregon, and California) involved long, hazardous round-trip journeys by sea. From the nation’s founding in 1776 until the creation of the Panama Canal in 1914, those who undertook the trip faced an extra 7,000 miles and months of arduous sea travel, including the perilous trip around South America, with the uncertainty of survival around Cape Horn. Only a few botanists came on European and Russian exploring expeditions looking for land to colonize or goods to trade, and even fewer ventured inland from the Columbia River and Oregon coast.

During the nearly sixty years between 1790-1850, all the lands west of the Mississippi River to the Pacific Ocean became part of the US national domain. However, at the time of acquisition, the vast lands were mostly unknown. Indeed, a map from 1860, the year after Oregon became a state, carried the label of “UNEXPLORED” across the entire southeastern third of the new state (Mitchell 1860).

The most complete compilation of the early botanical work in the Trans-Mississippi West is found in the works of the Arnold Arboretum at Harvard University. Published in 1956, the 1184-page work preserves details of the trips and travails of these times in exquisite detail. This much-annotated compendium of references adds depth and breadth to the early botanical work in this remote and challenging landscape (McKelvey 1955).

Twelve collectors left valuable data on the botanical bounty within the current borders of Oregon during the period from 1790-1850. Most of the earliest collections were of coastal or Columbia River provenances. Of those, only two record having entered and botanized in central Oregon. In the following 50 years (1850-1900), only two more botanists explored the region and left records of their findings. A primary reason was that, for decades, central Oregon remained isolated by lack of a transportation infrastructure after most of the rest of Oregon was already botanically well known.

Exploratory Expeditions along the Pacific Coast of North America 1786-1806

The first recorded botanical specimen from western North America was seed collected from the coast of California in 1786 by French gardener-botanist Jean Nicolas Collignon traveling with a scientific expedition commanded by eminent navigator Lapérouse (Ertter 1995). After the sand verbena seeds were sent to France, the ship sank and all aboard perished. Identified in 1789 as pink sand verbena (Abronia umbellata), it remains the first plant from western North America to be identified and published. A scientific expedition headed by Spanish explorer...
Alessando Malaspina reached California in 1791, carrying European botanists Thaddeus Haenke and Louis Née, who made the first collection of dried plants from California to reach Europe.

In 1792, American Robert Gray sailed his merchant vessel the Columbia Rediviva into the Columbia River entrance; his voyage was used to settle the boundary dispute of 1846 with Great Britain. In 1792, British navigator George Vancouver also sailed the Pacific coast of North America, including the shores of the current states of Oregon, Washington and California. The Scottish surgeon-naturalist Archibald Menzies, who was traveling with Vancouver, gathered many plants from the Washington coast and Puget Sound areas. Although he was unable to penetrate inland, when he returned to England his plant collection ignited an explosion of interest among British plant collectors (Dye 1906).

In 1803 Flora Boreali-Americana was published in Paris. Usually credited as the work of André Michaux, much of it was written by Louis Claude Marie Richard. Asa Gray was dismissive of the work, because it contained only 1,530 species in 528 genera. The same year this flora was published, the United States negotiated the Louisiana Purchase with France (April 30, 1803). At the time, this extensive territory was largely unknown. One of the assignments for Meriwether Lewis and William Clark during their 1804-1806 Voyage of Discovery was to collect plants in this botanically undocumented region. Their journey westward to the overwintering camp (Ft. Clatsop) on the northern Oregon coast followed the Columbia River, well north of central Oregon. Despite expedition members taking different routes on their return eastward, neither Lewis nor Clark ever entered central Oregon.

The Fur Trade Era 1804-1843

Forts operated by fur companies provided critical sites for respite and re-supply for botanists and other explorers of this newly opened area of the continent. When Fort Astoria was established as the headquarters of the Pacific Fur Company in 1811 by the ambitious American financier John Jacob Astor, ownership of the region was being disputed by Spain, Great Britain, Russia and the new United States. It was the first non-indigenous “permanent” settlement site on the Oregon coast. From Fort Astoria, American fur traders worked their way up the Columbia River into the Rocky Mountains. Under the Pacific Fur Company, the fort was short-lived; diseases were problematic, and the onset of the War of 1812 caused it to fold. The North West Company bought Astor out in 1813 and renamed the post Fort George in honor of King George III of England. It was absorbed in 1821 by the Hudson’s Bay Company, which operated Fort Vancouver (located near the present city of Vancouver, Washington, nearly 110 miles upstream from the mouth of the Columbia River) that was completed in 1829 and staffed by Dr. John McLoughlin.

One of the earliest explorers through central Oregon was fur-trader Peter Skene Ogden. The son of Isaac Ogden of Montreal, Chief Justice of Canada, he might have pursued a career in law, except that he had a high falsetto voice. Instead, he headed west for a life of adventure. He passed through central Oregon heading south in 1813, as attested by a rock he inscribed that year near Tumalo. He returned again in December 1825 with Finian McDonal and Thomas McKay, trappers from the Hudson’s Bay Company out of Ft. Vancouver. However, botany was not one of his interests and he left no record of the plant life in winter.

In 1810-12 the young British printer-turned-botanist, Thomas Nuttall, collected in North America and returned to England before the War of 1812 made such travel impossible. He published his Genera of North American Plants in 1818, fueling the interest of Europeans in North American plants (McKelvey 1955). In 1819-20, he was the first to make plant collections in what are now known as Arkansas and Oklahoma and in 1834-36 he joined an expedition to the California coast organized by Nathaniel Wyeth, a Massachusetts ice merchant with visions of becoming a fur baron (Townsend 1999). Wyeth traversed northern Oregon during the 1834-35 expedition, and again in 1843, a winter journey with no significant botanical notations (McKelvey 1955). Neither Wyeth nor Nuttall reached central Oregon.

From 1820-1830, the botanist Karl Andreas Geyer collected nearly 600 plants in the Rocky Mountains and westward, but not in central Oregon. In 1820-40 John Scouler (1825) collected along the Lower Columbia River
and the North Pacific Coast. Meredith Gairdner (1833-35) collected from the Columbia River to Ft. Walla Walla, Washington. Richard Brinsley Hinds (1839) collected along the Columbia River, and south down along the Oregon and California coasts to San Francisco.

Scottish botanist David Douglas was dispatched to the United States as a botanical collector in 1823 after a promising apprenticeship to the Botanical Gardens at Glasgow University where Sir H. J. Hooker was Professor of Botany (Carmany 1871). It was Hooker who named Douglas to the rank of Explorer for the Horticultural Society in London. Douglas' second trip took him to the Columbia River (1824-27). Using Fort Vancouver as a home base, he took three trips during the summers: one to Fort Dalles, another to Multnomah Falls, and a third to the grand rapids of the Columbia, now called Celilo Falls. Over a two-year period, he sent home hundreds of specimens. The closest he came to central Oregon was a trip south through the Willamette Valley to the Umpqua River, where he collected the sugar pine (*Pinus lambertiana*) cones that he sought (Harvey 1947).

Emigrants, Missionaries, and US Government-Sponsored Exploratory Expeditions (1843-1860)

“Although, over the years, the United States government had permitted plant collectors to accompany some of the expeditions which it has sent into the field, it had not approached the problem of scientific participation (botanical participation certainly) in what might be called a generous spirit.”

(McKelvey 1955)

In 1843 American settlers started swarming to the Willamette Valley along routes shown on early maps as the Emigrant Trail. They diligently sought and claimed the fertile arable lands in the floodplains of western Oregon. The US Government responded to the westward flood of emigrants with a series of exploratory expeditions to determine potential routes for transcontinental railroads. The first was in 1843-45, led by John C. Frémont (son-in-law to Senator Thomas Hart Benton), who explored and mapped routes from Oregon into California. By joining an organized group of emigrants, his expedition traveled safely with a herd of cattle, 14 wagons of supplies, and

Mount Jefferson and Black Butte from Camp S. Here the Pacific Railroad Survey Expedition of 1855 is camped at Indian Ford Meadow. Lithograph by John J. Young, as Expedition artist. (Abbot 1857, between pages 90 and 91.)
one cast iron cannon, which he abandoned somewhere east of Fort Rock (Dye 1906). Though Frémont was not a trained botanist, he offered to collect plants during his western explorations. He was the first to traverse and map the passage from the Columbia River through the Great Basin, where knowledge of the location of water was critical. He was in eastern Oregon mostly in the late fall and early winter, as shown by places he named, such as Christmas Valley and Winter Ridge (Stewart 1999). During that trip, Frémont also named Abert Rim and Abert Lake on December 20, 1843, after Colonel John James Albert, his commanding officer (Preuss 1958). Frémont was faithfully accompanied by Charles Preuss, a German cartographer, and their efforts led to much more accurate mapping of the western lands. Preuss, however, spared nothing in his diaries, calling Frémont “moody and temperamental” (Preuss 1958).

McKelvey’s voluminous work ends with 1850. If she had continued the history for another fifty years, she would have written about the early botanical exploration of central Oregon.

Newberry and Pacific Railroad Survey of 1855

After 1850, Congress authorized an appropriation into the War Department budget to allow Secretary of War Jefferson Davis to send out surveying parties into the pre-Civil War western frontier (Carmany 1871). These Pacific Railroad Surveys were launched to ascertain the best route westward (and one route northward) for railroad transportation between the Atlantic and Pacific Oceans. Published between 1853 and 1858, they produced twelve volumes of maps and reports on botany, paleontology, geology. From the perspective of central Oregon, the most important is Volume VI, printed in 1857, which covered an anticipated railroad route from Sacramento north along the east side of the Cascade mountains to the Columbia River. This exploration was led by U. S. Topographical Engineer, Lieut. R. S. Williamson, with Lieut. Henry L. Abbot as second Lieutenant. The report provided a rich compendium, including a complete plant list for all the specimens collected by Dr. John Strong Newberry, a physician with a strong background in geology and botany. He was a visionary of his time, as seen in his 1855 quote: “We

Cañon of Psuc-see-que Creek near Camp 41A. From Newberry’s geology report: “These tufaceous strata are, in many places, cut by the Des Chutes and its tributaries to the depth of more than a thousand feet without exposing the basis on which they rest.” Lithograph by John J. Young, Expedition artist. (Abbot 1857, between pages 84 and 85).
are charged with understanding… that which has controlled the radiation of species from their original centers of creation” (Abbot 1857).

Despite incredible hardships, the surveyors from the Railroad Survey entered Oregon Territory on August 9, 1854 following “the old Oregon [Indian] Trail which was very distinct.” They reached Fort Dalles on September 10, where “in the foreground, our national flag was waving over the little town of the Dalles” (Abbot 1857). Mostly following John Frémont’s 1842-44 route in reverse, the party frequently mentioned that the “regions of this route are unsettled…and the country is unfitted to support a civilized population” (Abbot 1857). They further noted that “The route down the Des Chutes valley to the Columbia River is considered utterly impracticable for a railroad” (Abbot 1857). Henry L. Abbot’s personal journal from that trip describes the many side trails that the group examined to find a final route for the railroad to reach Fort Dalles. In doing so, they crossed the Cascades along what is now Willamette Pass, as well as both north and south of Mt. Jefferson, and also south of Mt. Hood. Food and water were scarce; they resorted to fishing, roasting snakes, and at times, feeding their hard bread to the mules when grass was unavailable (Sawyer 1932).

Newberry, even with his deep interest in geology, found the ubiquitous lavas boring, using the term “exceedingly monotonous” numerous times to describe the volcanic landscape. O’Connor (2018) found it ironic that the Newberry Volcano and Newberry National Volcanic Monument in central Oregon were named for him, when Newberry himself appeared more interested in fossils and the effects of water carving the landscape than in lava flows and ashfalls.

Despite the lateness of the season, Newberry was relentless in his pursuit of botanical specimens, gathering from the lowest banks of the Deschutes River to the alpine regions of the ‘Three Sisters and Mt. Jefferson. Finding yet a new specimen, Newberry named a tree for the group’s leader Abies Williamsonii (Tsuga mertensiana), stating that it “rises in denser and more symmetrical cones than any other conifer” (Abbot 1857). His description is accompanied by one of the many lithographs created by expedition artist John J. Young, whose work in the botany section alone includes 16 full-page plates and 26 individual Newberry encountered mountain hemlock, which he named Abies Williamsonii, near Mt. Hood: “I have given this beautiful tree the name of the commanding officer of the expedition, as a slight acknowledgment of the unremitting kindness which I received in my official capacity while connected with the party.” Lithograph by John J. Young, Expedition artist. (Abbot 1857, between pages 54 and 55).
sketches. The index to the Botanical Report is particularly useful and lists over 600 individual species by the region where they were first or mostly found (Abbot 1857).

John Bernard Leiberg in the High Lava Plains

John Leiberg (1853-1913) was the first to come to central Oregon exclusively for botanical exploration. Unlike previous explorers, he wasn’t tied to another project and having to meet someone else’s schedule. Born in 1853 in Malmö, Sweden, Johan Bernhard Liberg was the son of a sea merchant. In 1868, when he was 15 years old, he emigrated to the United States and changed his name to John Bernard Leiberg. Despite having little formal education, he became an avid plant collector, publishing his first plant collections at age 17. He came west with his future wife, physician Carrie Marvin, and homesteaded at the south end of Lake Pend Oreille in the Idaho Panhandle. There he labored as a prospector from 1885-92 while continuing his horticultural collections. He developed both a special interest in mosses and a connection with Elizabeth Britton at the nascent New York Botanic Garden that led to seasonal field work.

Following a successful US Department of Agriculture plant survey of eastern Washington’s Columbia Basin over the summer of 1893, Leiberg was re-hired for a similar excursion in eastern Oregon. Leiberg differed from early botanists who focused on trees, shrubs with edible berries, and showy wildflowers, all of which would be of interest to horticulturists. Leiberg shared Newberry’s interest in geology, but while Newberry’s aim was to learn about the evolution of species over space and time, Leiberg had an eye for the productivity of forests and grazing lands. Thus, Leiberg collected a variety of grasses and sedges; he also was passionate about mosses. He collaborated with Frederick Coville, Chief Botanist for the US Department of Agriculture at the Smithsonian Institution, and helped lay the groundwork for a National Forest system. Following the Homestead Act of 1862, many Euro-Americans settled in central Oregon; the towns of Prineville and Heppner were founded in 1877. In his botanical surveys of eastern Oregon (1894 and 1896), Leiberg consulted frequently with local residents.

When Leiberg came to central Oregon in 1894, he traveled by train south to Heppner, Oregon, where the railroad ended. At that point he loaded the sturdy wagon he had ordered from Portland designed to cover rugged ground carrying a ton and a half of gear. Even so, he shipped half of his collecting supplies ahead to Prineville. As a solo explorer, he hired a local man as camp tender. His route south to Klamath Falls retraced parts of Newberry’s route near Newberry Crater and Walker Rim.

John Leiberg collected tall woolly buckwheat (Eriogonum elatum) on top of Grizzly Mountain between Prineville and Madras on September 2, 1894 on his return trip from exploring the High Lava Plains.

Threadleaf fleabane (Erigeron filifolius). John Leiberg collected this species at Pine Creek in Wheeler County on 7 June 1894.
We can track Leiberg’s route by his plant collections as well as a surviving plant catalog and extensive correspondence with Frederick Coville. The first week of May he collected near Lexington in Morrow County. The next specimens come from near Lone Rock in Gilliam County, then from Fossil, Crown Rock and Pine Creek in Wheeler County during the first week of June. He picked up some plants at Hay Creek in Jefferson County before setting up a camp in mid-June near Grizzly Butte between Madras and Prineville (Crook County), where he collected 61 specimens. He spent the rest of the summer exploring the high lava plains, starting at Farewell Bend where he collected 36 specimens, including Antennaria geyeri on July 13 and Calamagrostis stricta on July 16. He collected at Paulina Lake in Newberry Crater and followed the old wagon road south from Prineville through Button Springs to Silver Lake, where he collected 16 specimens. After collecting in the Klamath Basin as far north as Walker Ridge, he returned by the same route, collecting Eriogonum elatum at the top of Grizzly Butte on September 2, 1894.

In a letter back to Coville on June 22, 1894, Leiberg wrote: “We are now fairly upon the desert of E Oregon. It is most emphatically not a desert however. Except in the scarcity of surface water.” He noted that while all the precipitation draining from the upper elevations sank into the ground, the coarse pumice soils held a vast volume of water. The spring of 1894 had been “uncommonly wet,” and Leiberg commented that he “could dig down a few inches into the pumice and almost press the water out of the mass with his hand.” His insight into the nature of the shrub steppe is in sharp contrast to that of the Newberry and the Railroad Survey party, who called the area “unsuited to support a civilized population,” or emigrants in search of farmland, who called it a “desert.” Appraisals of the terrain were necessarily biased, depending always on “the eye of the beholder.”

Leiberg returned in 1896 to explore the Basin and Range habitats of southeastern Oregon, where he collected the type specimen of Poa leibergii in the Barren Valley on May 31. He passed through central Oregon again that fall as he returned home (to northern Idaho) from Crater Lake. His labors in Oregon left a legacy of nine new plant species bearing the name leibergii. As a bryologist, forester and botanical explorer, his travels brought him in touch with many of the important explorers of the West. He contributed many publications related to botany and geology, forestry. He died near Eugene, Oregon, at the age of 60 (Nisbet 2018).

The Perils of Being a “Botanist in the Wilderness”

Botanical work is highly seasonal, when plants are in flower or fruit. Few of the early collectors worked in ideal conditions or collected in a methodical manner. Asa Gray, writing to missionary Spaulding in the late 1830s, specified that collecting paper be “soft, bibulous” and “plants should be dried between numerous thicknesses.” Finding or carrying blotter paper with which to press the plants and a sufficiently stiff cover for preserving the dried plants was fraught with difficulty (McKelvey 1955). In a land of plentiful rain, David Douglas found that the making of his herbarium necessitated much drying and changing of paper, not once but many times—preferably daily—until the plant was in proper condition for shipment. Newspapers, standard material for modern collectors, did not exist in the Pacific Northwest in Douglas’ day, and great quantities of paper had to be brought from England and a certain amount carried wherever the collector went. On Douglas’ trip into the interior in March 1826, he records that “By the kindness of Mr. McLoughlin I was enabled to pack up thirty quires of paper weighing 102 lbs., which, with the whole of my other articles, is far more than I could expect when the difficulty and labour of transportation is taken into consideration” (McKelvey 1955). Many times, after the effort of drying the specimens was successful, all
was lost in a subsequent accident. On a later trip north up to the Fraser River, Douglas' canoe overturned and was trashed, along with all 400 specimens he had collected. He walked back to Fort Vancouver and finally was able to board a boat home to Scotland. In a provisioning stop at the Sandwich Islands (now Hawai'i) he fell into a 'bullock trap' and died. Twenty years later, in 1857, John Strong Newberry, in his survey reports, was still bemoaning Douglas' premature death.

In the 1820s, botanist Thomas Drummond traveled to Canada and to eastern portions of Texas. He leaves a diary of the arduors of being a botanist in the wilderness, describing his daily collection schedule: "The plan I pursued for collecting was as follows. When the boats stopped for breakfast, I immediately went on shore with my vasculum...taking care to join the boats at their encampment for the night. After supper, I commenced laying down the plants gathered in the day's excursion, changed and dried the papers of those collected previously. Which occupation generally occupied me until daybreak." He did this daily until they reached Edmonton House in Canada, 400 miles distant (McKelvey 1955).

In his Narrative of a Journey Across the Rocky Mountains to the Columbia River, John Kirk Townsend related in his diary of 1834 the difficulties in collecting scientific specimens while on the march. He and Thomas Nuttall often traveled ahead to gather plants before "they would be crushed by the hooves of the horses" as their caravan consisted of 70 men and 250 horses, followed by a band of missionaries and their herd of horned cattle (Townsend 1999).

Abbot related the trials of overland travel through the broken volcanic landscapes of central Oregon (both the arid and the heavily forested areas) in 1854; after a hard day's bushwhacking, he commented, "We were all fully convinced that wandering amid 'forest primeval' in poetry, and among the Cascade Mountains, are two essentially different things" (Abbot 1857). His comment gives us an 1800s version of contrasting virtual reality with actual conditions.

Even as late as the 1890s, botanical collection was arduous work, as evidenced by Leiberg's sturdy wagon built to carry a ton and a half of equipment over rugged ground. Rail service did not reach Bend until 1911; Heppner was the closest he could travel by train to Farewell Bend. (Even today, the closest passenger service by rail is 75 miles south of Bend in Chemult.) The condition of wagon roads at the time left much to be desired, and some places were treacherously steep, such as the Cow Canyon grade south from Shaniko. As always, wet weather confounded efforts to keep specimens dry. By chance, the year that Leiberg collected in the "desert" of central Oregon was one with above normal precipitation, in which he was "treated to rainstorms every other day during the month of June."

Summary

As demonstrated in central Oregon, botanical exploration in the West tended to occur with European exploration and settlement. Thus, because botanists relied on fur trading posts for supplies and support, they explored coastal areas and along the water transportation routes first. Next in line were locations near military forts, missions, and prime agricultural areas like the Willamette Valley, and adjacent to railroad transportation. Areas lacking these attributes, especially with rugged terrain, tended to remain unexplored by botanists until hardy emigrants built wagon roads and founded their ranches.

References

Susan E. Schneider, daughter of Richard and Marjorie Ettinger, was born in Chicago; she moved to Bend with her parents 6 years later (in 1954). She enjoyed the life of an active central Oregon child of the time: horseback riding, skiing, birding, canoeing and traveling throughout the West on family trips. She attended college in Portland, Oregon, and spent her senior year abroad, studying in Austria. After college, she returned to Bend in 1977 with her young family. Shortly thereafter, she began volunteering at the new High Desert Museum. During her time at the Museum she earned her MScEd degree from an OSU program offered in Bend at the time. After fifteen years at the Museum, six of which she was the Curator of Exhibits, she took leave to write a book, *Native Arts of the Columbia Plateau*. Published by University of Washington Press in 1998, the book features donor Doris Bounds and her Native American collection. Schneider’s other publications include an article with her mother in *Kalmiopsis* in 1995 and multiple articles about the Doris Bounds collection in local and international magazines. Next, Schneider led the funding for the remodel of Reid School and the Deschutes Historical Society. Once those projects were completed, she became COCC Foundation’s Executive Director for its 50th anniversary campaign. Her last venture was to oversee the opening of the Bend office of the Oregon Community Foundation, where she was Charitable Gift Planner for nearly eleven years. She has served on the boards of the Deschutes Historical Society and the Museum at Warm Springs. Since retiring, she continues to research the historical context for scientific explorations of central Oregon during the past two centuries.