Discovering America's Natural History

The Story of the Lewis and Clark Expedition

Exhibit by David Saxe, USA Aloft, LLC

August 3 – August 31, 2012

Introduction

In 1804, in one of the first big science efforts undertaken by this new nation, Lewis and Clark set out to explore the Missouri and Columbia Rivers. Traversing some of the most rugged and beautiful terrain in North America, the expedition observed and recorded the natural history, surveyed the terrain, and made contact with the many Native American peoples along their route. In the exhibit before you, photographer David Saxe tells the expedition's story with aerial and ground based images from the present day Lewis and Clark Trail. Images sample the terrain, flora and fauna along the route from St Louis, Missouri to Astoria, Oregon.

To view the exhibit, follow the printed guide clockwise around the program room. If there are no copies of the printed guide below, please ask at the front desk. The numbers next to each image match the numbers in the guide. A map at image number 7, Along The Trail, has a key that marks the location of many of the images.

The exhibit is broken into three sections. The first section (on this wall and easels) provides some background for the expedition, the path taken, and the boats used on the Missouri River system. The second section (on the remaining walls) contains images from along the trail, showing the river and terrain along the route and replicas of the expedition's winter dwellings. In many cases, an aerial shot is matched with a ground-based image taken from the same spot. The third section (on a separate display stand) contains images of plant and animal life along the trail.

For more information on the collection, please refer to the section, About this Collection, at the end of the printed guide or visit the library for the talk when photographer David Saxe will present more pictures and discuss his own adventures recording the trail:

Talk by David Saxe

Thursday, August 16, 7:00 – 9:00 PM

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Preparations

1. 1814 Map. In early 1803, President Thomas Jefferson asked Congress for $2,500 to further his vision of the new country by exploring the Missouri River, cross the unknown mountains, find the Columbia River and follow it to the sea. The mission was to record scientific, geographic and demographic information from the route. Jefferson selected Meriwether Lewis, his secretary, to head the mission. Lewis chose William Clark to jointly lead. Their journals record their epic journey of the next three years. Although their journals were available to the scientific world, they were not published in full until 1904. However, in 1814, a two-volume summary published the map you see here. (The journals and original copper plate used for the 1814 printing reside with the American Philosophical Society in Philadelphia.) The 1814 book was prized for the map, which was the best guide in existence to the unknown lands of the west. In 2004, a copy of the two-volume set was available at a Portland, Oregon bookstore for only $60,000.

2. The Corps of Discovery. Lewis spent the early months of 1803 preparing for his mission. He traveled to the US armory at Harpers Ferry to arrange riles, tomahawks and knives, and to Lancaster and Philadelphia to study a variety of subjects including celestial navigation, surveying, medicine and natural history field and observational techniques. In addition to planning and arranging supplies for the expedition, he recruited his co-commander, William Clark. A military man with considerable frontier experience, Clark had commanded a rifle company in which Lewis had served in the mid 1790s. These commanders would later hire Toussaint Charbonneau as an interpreter. One of Charbonneau's wives, Sacagawea, accompanied the expedition, providing services as an interpreter and guide with native knowledge of plants and animals. Commemorating these three, this bronze by western artist Bob Scriver (1914-1999) stands in Ft. Benton, Montana. In total, the expedition, which has become known as the Corps of Discovery, or merely the Corps, consisted of about 42 during the first year trip from St. Louis to just north of present day Bismarck, North Dakota. From there, only 33 continued to the Pacific and back: Lewis, Clark, Sacagawea, her infant (Jean Baptiste, known as Pompey), Charbonneau, a second interpreter, Clark's slave (York), three sergeants and 23 privates. A Newfoundland dog, Seaman, belonging to Clark, also made the entire journey.

3. Keelboat 1. To carry their supplies, Lewis commissioned the construction of a keelboat in Pittsburgh, Pennsylvania and sailed it down the Ohio and up the Mississippi to St. Louis starting August 31, 1803. The keelboat shown here, a reconstruction by the Discovery Expedition of St. Charles, sailed up the Missouri during the bicentennial re-enactment. According to the Discovery Expedition of St. Charles website, the reconstruction took 10,000 hours and nearly two years to build.

4. Keelboat 2. This image of reconstructions by a private shipwright shows the lockers and other structure that would have existed in the original keelboat. The replica on the left is to scale for the original. The boat on the right has a wider beam for more stability and capacity and is used for tourist trips. "I built that boat with the help of one teenager in 90 days." Referring to the larger craft, the shipwright was certain that his flat-bottomed reconstruction was authentic. With no surviving details of the original's keel shape, he opined that the rounded bottom of the reconstruction in Keelboat 1 would encounter difficulties. "I want to see what happens when they get their boat that draws 3 ½ feet up here where the river is only 2 ½ feet deep."

5. Pirogues. Before leaving Pittsburgh, in addition to the keelboat, Lewis acquired a pirogue, similar to this reconstruction by the Discovery Expedition of St. Charles. To facilitate carrying additional supplies, he purchased a second pirogue at Wheeling, West Virginia. The keelboat was too big for the upper Missouri and returned after the first winter carrying specimens and correspondence. The two pirogues continued on and were supplemented with canoes.

The Trail

6. Medal. In addition to food and shelter supplies, the expedition carried beads, metal tomahawks, fishhooks, tobacco, ribbon, other assorted trade goods and peace medals. Only a few of the original peace medals survive. This one is at the Nez Perce Cultural Interpretive Center in Spalding, Idaho.

7. Along the Trail. The accompanying key relates image numbers to the closest map symbol for an Historic Site (HS) or Expedition Event (EE).

8. Camp Dubois. (Also known as Camp Wood.) En route to St. Louis, Lewis picked up William Clark at Clarksville, across the river from Louisville. Together with a number of crew, they spent the next months traveling to an area just north of St Louis. There, at the mouth of the river Dubois (Wood River) on the east bank of the Mississippi, directly across from the mouth of the Missouri, Lewis assembled his party and spent the winter training and preparing for the journey ahead. A reconstructed Camp Dubois offers exhibits detailing those preparations.

9. Mouth of the Missouri. The expedition departed late in the day on May 14, 1803 and traveled about 4 miles up the Missouri. Here you see the mouth of the Missouri as it joins the Mississippi (in the foreground) just north of St Louis. Both rivers have changed course appreciably in the last 200 years. The site of the original Camp Dubois is now west of the Mississippi and several miles north of this site. A small park was constructed at the junction of the two rivers after this shot was taken. In August 2004, the swamps and marshes on the road to the park were filled with flocks of many wading birds, including the great egrets later in this exhibit.

10. Up the Missouri. The boats could be sailed in favorable winds, poled or rowed. But often, the only way to make headway was to push and pull the boats against the current past sawyers and over sand bars. The party learned as they went, repacking the riverboat after the first day to navigate snags safely. Here you can see the mud and an example of the type of logs and obstructions the expedition might have encountered. As they traveled, Lewis and Clark worked at collecting botanical and animal specimens and recording observations of the natural history and demographics of the regions. Remarkably accurate survey measurements were made over the entire route. Along with drawings and maps made en route, the surveys were used to construct the map shown in image 1.

11. Plains. The modern river is kept navigable by directing the current with weirs evident in this aerial shot taken near Rocheport, Missouri. The land traversed during their first year of travel was largely plains similar in character to the image shown. Initially during the upriver journey, the plains would still have had areas of deciduous forests reminiscent of those known to the expedition members. As they journeyed further west, however, the plains away from the riverbanks gave way to unending tall grass prairie.

12. Sgt. Floyd. On August 20, 1803, near present day Sioux City, Iowa, the Corps had its only fatality of the entire trip. After several days of illness, Sgt. Floyd died and was buried on a bluff overlooking the river. A modern obelisk marks his grave. A modern interpretation of his symptoms indicates he died of a ruptured appendix. The best Philadelphia hospital would not have been able to save him.

13. Spirit Mound. Located several miles north of the river near modern Vermillion, South Dakota, this glacial mound is one of several places along the trail that make the claim that you may stand precisely where Lewis and Clark stood. Indians had told Lewis and Clark that the mound was inhabited by fierce spirit warriors, 18 inches high, who had large heads and arrows that could kill at a great distance. Tasked by Jefferson with investigating indigenous peoples, Lewis and Clark promptly set out to see for themselves. They found no diminutive warriors, but the mound, as the only high spot for many miles, provided a magnificent view of the prairie and the herds of elk and buffalo. Today the area immediately surrounding the mound is a protected restored prairie.

14. Wide River. As the river proceeds north and west, it passes through plains and rolling hills. Multiple large dams, the first at Yankton, South Dakota, block the flow of the river. Occasionally, however, the river spreads out as in the past, producing large areas of marsh rich in wildlife. In areas like this, the river would have been quite shallow and would have presented great difficulty for the larger keelboat. This shot was taken at Niobrara State Park in Nebraska above the effect of the Gavins Point dam at Yankton.

15. River Bluffs. In November 1804, the expedition stopped for the winter across the river from a Mandan Indian village, roughly 40 miles north of Bismarck, North Dakota. The expedition chose a site near the river at a spot probably now located in the river near this spot. As today, the river would have been bordered with trees used for construction. The bluffs from which this picture was taken afforded some protection from the incessant winter winds. Bluffs above a flood plain with rolling hills behind were common to much of this section of the journey.

16. Ft. Mandan. Fort Mandan was completed in about six weeks, by Christmas day, 1804, but required habitable shelter was ready by the middle of November. The reconstruction shown here is located several miles south of the original and based on records of the era. The expedition spent the winter hunting for food, organizing the specimens, maps and observations of their journey and interacting with the Indians and traders of the local community. Toussaint Charbonneau and his wife, Sacagawea, joined the Corps at Ft. Mandan. Sacagawea, born Shoshone, was taken from her home as a young girl, traded or sold to the Hidatsa and then sold to Charbonneau. The keelboat was sent back to St. Louis in the spring of 1805 with collected materials and correspondence reporting to Jefferson. Lewis and Clark proceeded upstream with the pirogues and several canoes.

17. Rolling Hills. Above the bluffs along the Missouri, the rolling hills of the prairie began. Here, the Mandan and Hidatsa farmed during the summer months. Numerous sites provide evidence of large communities that lived in the region. The Indians raised several varieties of squash, corn, beans, sunflower, and tobacco. Hunting for game and fishing provided additional food resources.

18. Hidatsa Lodge. The Hidatsa and Mandan tribes occupied villages in proximity to Ft. Mandan. Their earthen lodges were built and owned by the women. Four large central posts arranged in a square support an umbrella-like structure of beams. The beams are then covered with mud. A hole in the roof at the center allows smoke from a fire to escape. Communities often had fortifications to protect against raiding parties from other tribes. These communities were used during the summer as they were near the farming areas. During the winter, families moved into teepees on the flood plain down near the river. Apparently, the winds of the plains made teepees below the bluffs preferable to earthen lodges on the plain. This Hidatsa lodge is near Knife River in North Dakota.

19. Lodge Interior. Entering the lodge, the visitor turns to the side and enters into a large open area behind this buffalo robe and centered on a fire pit. Sleeping platforms surround the outside of the lodge. In some lodges, a deep pit provides a cool dry food storage area. A Mandan reconstruction at Ft. Abraham Lincoln State Park, south of Bismarck, is very similar to this Hidatsa lodge

20. Yellowstone River - Aerial. On the return journey in 1806 the Corps split into several groups in Montana, some following the outbound route back, while others traveled cross-country to the Yellowstone River and then down to the Missouri. The two groups rejoined near the confluence shown. Later, several forts were built at the confluence, one military, the other by a fur trading company at the Ft. Union Trading Post. In this aerial image, the Yellowstone flows in from the left, while the Missouri continues upstream into the distance.

21. Yellowstone River - Ground. The same junction of the Yellowstone and Missouri rivers from a position roughly across from the island on the north bank of the Missouri as shown in the aerial Yellowstone view. At this point along the river, timber coverage along the banks of the river is less complete. The river's character has changed from the large muddy flow through muddy banks to a shallower but still large stream.

22. Eastern Montana – Aerial. The river has been dammed along much of its route. Vast reservoirs, sometimes hundreds of miles long and miles wide, occupy the once winding riverbed. Here, in Eastern Montana, above the waters of one of those reservoirs, Lake Sacagawea, the river reveals its original character as it begins to cut more deeply through the surrounding plain leaving higher extensive bluffs leading up to the arid plains.

23. Eastern Montana – Ground. In this area, the expedition first met the grizzly bear. The Corps had spotted grizzly as early as October 1804, but had had no direct encounters. They had heard stories of the "white bear" from the Indians, but discounted the tales of the fierce beast as exaggerations. Needing 10 bullets to kill a full-grown male, however, convinced them of the veracity of the reports.

24. Milk River. Flowing into the Missouri from the north, the Milk River was named for the color of its waters. Passing here, the expedition may have confused this river with the Indian's description of the Marias River. Just west of here the Fort Peck Reservoir, the fifth largest lake in the United States, is formed by one of the world's largest earthen dams.

25. Missouri Breaks – Aerial 1. The 250-mile section of river upstream from the Fort Peck Reservoir to near the Marias River is as close to its natural state as any portion of the river. Few roads exist and those that do are passable only by high clearance vehicles. Rain can make those roads too dangerous to travel even with a jeep by forming a mix of mud and gravel known as "gumbo". Several inches of gumbo make traction and turning impossible. This aerial shot is just west of the Fort Peck Reservoir.

26. Missouri Breaks – Auto Tour. A few roads exist that cross the river and allow a peek at the game rich bottomlands along portions of this stretch. Here US 191 crosses the river at a bridge. The tranquil scene is home to herds of (camera elusive) elk and hordes of small insects.

27. Missouri Breaks – Aerial 2. The expedition made good time in this area, but with great effort. Many times, they had to pull the boats across sandy shoals using ropes made of elk skin. Submerged sharp rocks fallen from the cliffs above required a constant vigilance. Float trips and airplanes are the best way to view the section of river west of US 191, but at a few locations, dirt roads lead to lonely ferry crossings.

28. Marias River – Aerial. The expedition continued up the Missouri, following directions from the Native Americans they encountered. The Marias, however, was not part of those directions. They had been told to travel upstream to the falls at Great Falls, but which stream to follow? The somewhat clearer water of the Missouri indicated the better route to Lewis and Clark, but upstream exploration found no falls. The crew, consulted in an unusually democratic manner for a military expedition, thought the Marias was the better choice. Eventually, the Captains prevailed and several days later, they found the Great Falls.

29. Marias River – Ground. This view looks east across the small island that is just visible at the mouth of the Marias in the aerial view. The red pirogue was cached in this area with supplies for the return trip and the expedition continued with the white pirogue and canoes.

30. Great Falls. Five major falls blocked the progress of the expedition. This view looks down over one of the smaller of the original falls. Dams obscure much of the original grandeur in this 20-mile section. A laborious portage up to and across the plains and around the falls took nearly a month. Using crude wheels made from sections of large cottonwood trees and mounted to canoes, the crew hauled everything around the falls. Moccasins were no match for the pervasive fields of prickly pear (See "Prickly Pear".) and were reported to have lasted about a day.

31. Great Falls Portage. The white pirogue was left at the river about two miles down this canyon. Supplies were carried up to this point and then up the hillside to the plains above. At the end of the portage, Lewis oversaw the construction of his "Experiment." A 36-foot iron frame, built at the Harper's Ferry Armory, was assembled and covered with animal skins. It floated wonderfully, but because there were no pine trees, no pitch was available for sealing the seams. A substitute made from tallow, wax and charcoal failed to keep the craft afloat and it was buried near the portage camp. Archeologists continue to hunt for it.

32. Wolf Creek. It must have been a good feeling to be underway again. Leaving the plains, the river winds through this area of foothills prior to entering the mountains.

33. Gates of the Mountains. In a spectacular canyon which Lewis and Clark called the Gates of the Mountains, the expedition traveled into a wide high mountain valley near modern Helena, Montana. At that point, had they traveled west, they would have arrived at modern Missoula, but their information indicated that a pass to the west lay further south.

34. Beaverhead Rock – Aerial. The expedition traveled south, choosing the southwestern stream, the Jefferson River, at modern Three Forks toward modern Dillon, Montana. Just north of Dillon, Sacagawea, who had been taken from her native Shoshone tribe when she was about 12, recognized this promontory from her youth. This was good news for Lewis who hoped to find and trade with the Shoshone for horses for the crossing of the mountains. Note the mountains in the distance. Beaverhead Rock sits in the middle of this wide plain between ragged mountains.

35. Beaverhead Rock – Ground. This view of the promontory looks north or from left to right on the aerial view above.

36. Lemhi Pass – Aerial. South of Dillon at present day Clark Canyon Reservoir, Lewis and a few men went ahead on foot, turning west and climbing over gentle hills to 7500-foot Lemhi Pass. Here, on August 11, 1805, they finally met a group of Shoshone. After obtaining horses, they returned to fetch the main party. The modern reservoir covers the site of Camp Fortunate where the canoes were left and the arduous crossing of the mountains began.

37. Lemhi Pass – Ground. A small spring in the trees beneath this alpine meadow on the continental divide marks the beginnings of the Missouri River. As you descend westward into the dry valleys, the hills become barren. The streams were not navigable and the tangle of dead trees and swarms of insects made travel on the ridges preferable.

38. Lost Trail Pass – Aerial. After an abortive attempt to follow the Salmon River to the Columbia, the expedition turned north across this pass to the wide valley and Bitterroot River leading toward modern Missoula, Montana.

39. North along the Bitterroot River. This view west from Lee Metcalf National Wildlife Refuge just south of Travelers Rest shows the rugged mountains blocking the expedition's westward journey.

40. Travelers Rest – Ground. Finding adequate game, the expedition rested here, just south of Missoula, before climbing up this valley (see next aerial image) along Lolo Creek toward the Bitterroots. Archeological digs along the creek have located the camp from mercury found in the soil. One of the medicinal compounds used by the expedition contained mercury and would have marked the location of the latrines used during the stay here.

41. Travelers Rest – Aerial. The path west from Travelers Rest provided a gentle ascent into the Bitterroot Mountains.

42. Lolo Pass. The expedition traveled west and up Lolo Creek through Lolo Pass. They intended to follow the Nez Perce Trail along the ridges across the Bitterroots but their Shoshone guide, Old Toby, got lost and they spent an agonizing time climbing back up to regain the high trail.

43. Bitterroot Mountains, Indian Post Office – Aerial. Rock cairns and culturally modified trees are still visible along the Nez Perce Trail. (A Culturally Modified Tree (CMT) is a tree that has been altered by aboriginal people as part of their traditional use of the forests.) You can drive this pristine area on the Lolo Motorway, a rocky, narrow, one lane road that follows the Nez Pierce Trail for about 100 miles. No gas, no water, no facilities. Expect to spend several days making the trip.

44. Bitterroot Mountains, Indian Post Office – Ground. The expedition camped here in 8" of new snow at just over 7000 feet in mid September. There was no game to be found and the expedition survived by eating their horses and "portable soup." This formulation of condensed soup was sealed in lead containers and has been credited by some as an indication that in addition to malnutrition, expedition members may have suffered lead poisoning. This view from the Lolo Motorway was taken from just above Lolo Lake, visible in the aerial picture.

45. Down to the Clearwater River – Aerial. Finally descending from their Bitterroot crossing, the expedition followed this ridge down to the Clearwater River near Orofino, Idaho.

46. Down to the Clearwater River – Ground. This view looks across the Clearwater River and back up the ridge of the aerial view. Near this spot, the expedition built canoes and returned to traveling on the water at a site called Canoe Camp. They traveled down the Clearwater to join the Snake River at modern Lewiston, Idaho.

47. Snake River – Aerial. The Snake River cuts a deep channel through semi-arid plains and rolling hills. The river has been dammed with locks that allow barges to move grain from extensive wheat fields to the world market. The hills on the right of this view had just burned at the time the picture was taken. A year later, no evidence of the burn was visible. The island at this turn in the river just west of Lewiston, Idaho, was the home of a Nez Perce community for 8000 years.

48. Snake River – Ground. The journey down the Snake to the Columbia was rapid. The dugout canoes were in constant danger of damage or swamping, but traveling downstream for the first time in two years must have seemed a relief. Game was still scarce, but some food was purchased from the Indians. The need to purchase food made the trade goods that they still carried all the more valuable.

49. Down the Columbia River. After pausing at the mouth of the Snake and exploring the Columbia upstream for several miles, the expedition proceeded downstream toward the ocean. The Columbia today has been dammed to facilitate barge travel and for hydroelectric power and would not have appeared as a wide placid lake. A sequence of falls and rapids made the downstream travel treacherous. The Indians of the area waited beneath the falls expecting disaster to accompany the passage of the expedition. Remarkably, the dugouts made the passage without significant loss.

50. Mt. Hood. West of the Cascade Mountain range, the land is mainly desert and plain created by the volcanoes of the region. One of the Cascades, 11,239-foot Mt. Hood is shown here from the northeast above the Columbia. Less than 50 miles east of Portland, active Mt. Hood poses a threat to the area like its neighbor, Mt. St. Helens, to the north.

51. Columbia River Cliffs. The Columbia has cut its channel through the layers of volcanic material to form steep cliffs. Above the cliffs, large irrigation circles dot the plain and provide wheat and other crops.

52. Columbia River Gorge – Aerial. The Columbia cuts a spectacular gorge as it traverses the Cascades. The area is known for its spectacular waterfalls, steep ravines, lush rainforest and scenic vistas. As they passed through this area, the expedition began to see manufactured trade goods from sailing vessels, indicating that the sea could not be far. The first roadway, completed in the early 1900s, is still available as a scenic drive or bike path through much of the gorge.

53. Columbia River Gorge – Ground. This view of the north bank shows the hill visible in the aerial view on the right. The Bonneville dam lies just downstream and raises the level of the water to cover islands, rapids and falls present when the expedition traveled this route.

54. Cape Disappointment – Ground. One hundred and fifty miles beyond the gorge, the expedition traveled along the north shore of the tidewater Columbia. They spent more than a week battered by high winds and seas, unable to move forward toward the ocean or return upstream. When the weather finally broke, they explored further, reaching the ocean on November 16, 1805. However, this exploration of the north bank of the estuary revealed no good landing and over wintering site. Traveling north along the Pacific coast shown here was equally disappointing. Hopes of finding a trading post or sailing vessel were dashed.

55. Cape Disappointment – Aerial. You are looking from this point of land in southern Washington across the Columbia toward Oregon with the Pacific Ocean to the right. The spits of land on the near and far shores are manmade, dating to the early 1900s. Voting by the entire expedition resulted in consensus that the southern shore should be explored for a winter site. Unable to cross the three to four miles of open water, the expedition had to travel 20 miles back up river to cross to the southern side.

56. Ft. Clatsop. Exploration of the southern shore led to establishment of a winter camp at Ft. Clatsop, near modern Astoria, Oregon. The site had a small stream with a landing that led north to the Columbia, ample game and access to a system of inland waterways leading south. These were important as a path to a salt making site 15 miles further down the Pacific coast, near modern Seaside, Oregon. (The ocean was too diluted by the flow from the Columbia to attempt boiling saltwater nearer their position.) A month's effort boiling saltwater yielded between three and four bushels of salt to be used to cure foods for the return trip.

57. Seaside. This view of the weather, looking south from the headlands just south of Seaside, must have been undesirably normal to the expedition members. Of 109 days spent at Ft. Clatsop, it did not rain on only 12 days, and only half of those days were clear. They failed to contact a sailing ship to help in re-supply or to send materials home. They had no whiskey and limited tobacco. Everything was damp. Food spoiled and materials mildewed. Insect pests, including fleas, were pervasive.

58. The Return. On March 23, 1806, the expedition departed for home. They took an overland path across Washington to avoid an arduous trip up the Snake River. This view is from that so-called "Forgotten Trail" across Washington. The hillside still bears signs of an ancient Indian trail. Ignoring warnings that the Bitterroots would be snow covered, they made an abortive attempt to cross before being forced to turn around. When they did finally cross in late June, they were able to make the crossing to Travelers Rest in 6 days, half the time of their westward journey. From Travelers Rest, Lewis and a small party went across the pass from Missoula to Gt. Falls, avoiding the long southward detour. He then turned northward to explore the Marias River. In an unfortunate encounter with a party of Blackfeet, two Indians were killed at daybreak after they attempted to steal rifles and horses. (In spite of some tense moments at other times, this was the only violent encounter of the entire journey.) Fearing retaliation, the Lewis party covered 100 miles by 2:00 am the following morning. Lewis returned down the Marias to rejoin the main party. Meanwhile, Clark's party that had taken the outbound route, split into two. Clark led a group, including Sacagawea, east past modern Boseman and down the Yellowstone River. The other ten men, led by Sgt. Ordway, followed the outbound route, picking up cached supplies as they traveled. Lewis's weary group, reaching the Missouri on the run from possible Blackfeet retaliation fortuitously encountered the Ordway group at the Marias and proceeded down the Missouri with them. The Lewis party later caught up with the Clark party on August 12, 1806 and continued downriver, reaching St. Louis on September 23, 1806, 2 years, 4 months, 10 days and some 7000 miles after they left.

The Impact

59. Contemplation. The expedition had surveyed a route to the Pacific. Soon trade up and down the Missouri River system would open up the Louisiana territory, spurred in large part by the expedition's reports of the rich lands. Jefferson's vision of a continental destiny for the young nation would be realized. To fully appreciate the ensuing growth, consider that a 90 or 100-year-old person today has lived nearly half of the time since this wild untamed land was first explored by the expedition. In that spirit, this picture of a Lewis and Clark re-enactor at Ft. Clatsop, taken during a break from describing flint and steel fire making, is entitled "Contemplation."

Flora and Fauna

60. Indian Pony. On an Indian reservation near Fort Yates, North Dakota, this pony recalls the land of two hundred years ago. Horses had only been known in this region for about 100 years when Lewis and Clark traveled the region.

61. Buffalo. More correctly, the American Bison, had ranged almost to the Atlantic Ocean, but was first seen by the expedition in western Missouri in June. These were photographed near Bismarck, North Dakota on the Triple U Ranch. Home to over 3500 head of buffalo, Triple U was the location for *Dances with Wolves*.

62. Deer. "…Where the deer and the antelope play…" Lewis and Clark described the mule deer whose range did not include the eastern forests. Known for its large ears, the mule deer does not run like its eastern cousin, the white-tailed deer. Instead, as seen here, it springs aloft, landing on all fours in an action called "stotting". Clark first notes "Deer with black tales" on September 5, 1804.

63. Antelope. First seen in September 1804 in South Dakota, the pronghorn antelope is the fastest land animal in North America. Not a true antelope, the pronghorn has no living close relatives.

64. Wapato – Great Blue Heron. This great blue heron was photographed at Squawk Creek national Wildlife Refuge, about 30 miles north west of Saint Joseph, Missouri. The green plant with the arrow shaped leaves is arrowhead, also known as wapato or duck potato. The tubers were harvested for food by working them loose with toes as reported by Lewis and Clark. Once free, the tuber would float to the surface.

65. Pelican. Photographed on the Missouri River in western Montana, white pelicans exist today (and probably during Lewis and Clark's time as well) all along the Columbia, Snake and Missouri Rivers.

66. Prairie Hen. This bird, probably a sharp tailed grouse, is often known as a prairie hen and was reported by Lewis and Clark beginning in September 1804 in South Dakota. This individual was hiding in the brush on the western slopes of Lemhi Pass.

67. Great Egret. National Wildlife Refuges and parks along the route provide magnificent venues for bird photography. This flock was in the marshland seen near the mouth of the Missouri River in image 9.

68. Prickly Pear. Prickly pear was the bane of the expedition. Particularly during the portage at Great Falls, the spines caused serious foot injuries. Apparently, a pair of moccasins lasted about one day when walking through the fields of this pest. Prickly pear fruit and leaves are used as food. Varieties grow throughout both the east and west.

69. Juvenile Hawks. Life adapts. With no tall trees visible within miles, a hawk family chose to use the tallest piece of available scrub. These two juveniles, probably close to fledging, are most likely Red Tail or Swainson's hawks.

70. Cedar Grove. As you travel Lolo Pass today, you can stop at a small grove of virgin growth cedar that has escaped fire for hundreds of years. The three to four hundred year old trees in the deep forest pictured were only one to two hundred when Lewis and Clark passed.

71. Osprey. The Columbia River is home to a wide array of wildlife, including many bird populations dependent on the fresh waters. Just minutes from the bustle of downtown Portland, Oregon, the extensive marshes, lakes and fields of Sauvie Island are home throughout the year to many of those populations. This osprey, fish-in-talon, decided that the photographer (leaning out of the passenger side window upside down as the driver proceeded at a walking pace down a gravel road) was too close. A fortuitous press of the shutter captured this wonderful image.

72. Mixed Flowers. The tall spike is prairie blazing star (Liatris pycnostachya) and was used by Indians for various medicinal purposes. Lewis first described it in September 1804 near Chamberlain, South Dakota. The black eyed susan (Rudbeckia hirta) which was not described by Lewis and Clark also had various Indian medicinal uses. Both of these are native prairie flowers and were photographed near the Sgt. Floyd memorial.

73. Prairie Dog? On September 6, 1804, the expedition saw the first prairie dog. Shooting one was easy. However, to collect a live specimen to send back to Jefferson, they tried digging a six-foot hole before abandoning that tactic in favor of pouring more than five barrels of water down the burrow to literally flush out the animal. This individual, while it looks similar to a prairie dog, is actually a ground squirrel photographed at Ft. Union near the mouth of the Yellowstone River as it enters the Missouri.

74. Sunflowers. Sunflowers of many varieties provided the Indians with food ranging from the seeds of the large sunflower varieties commonly seen in gardens, to stems and roots of varieties like arrowleaf balsamroot and to the tubers from varieties like Jerusalem artichoke. This specimen, probably Jerusalem artichoke, was photographed in the restored tallgrass prairie at Spirit Mound.

75. Beaver. Beaver were abundant along much of the expedition's route. Trapped for its fur, the animal also provided a food source. The fat-rich tail was a delicacy. On April 17, 1805 Lewis wrote, "there were three beaver taken this morning by the party. the men prefer the flesh of this anamal, to that of any other which we have or are able to procure at this moment. I eat very heartily of the beaver myself, and think it excellent; particularly the tale, and liver."

Epilogue

Remember that estimate of $2500? Even in 1803, large government projects, once funded, expanded to overrun original expectations. The final bill was around $38,000 on the books with yet another $38,000 estimated to have been spent off the books.

About the Photographer

David Saxe is a systems architect, pilot and photographer with a strong background in scientific programming and systems design. Working for fifteen years at the Institute for Advanced Study in Princeton, NJ, he created software for analysis, reduction and graphical presentation of astrophysics images, including data from Hubble Space Telescope. David formed USA Aloft, a New Hampshire based software and photography company whose initial project was to document the Lewis and Clark Trail. When he is not working on the Lewis and Clark project, he records nature, adding to one of his fine art portfolios.

"I try to represent nature as-is. Because my images are meant to accurately reflect the world, I keep the post-processing of images to a minimum. Images have only been cropped and color adjusted to present the subject as I saw it when capturing the image. Accurate depiction of the world should not interfere with a different perspective. I strive to find fresh views and to convey the mood and outlook of that approach to the audience. If, after viewing my images, you gain one new way of looking at some aspect of nature, then I have achieved my purpose. Of course, I also hope you simply enjoy the images." - David Saxe

About this Collection

The goal of USA Aloft's Lewis and Clark Project is to document the trail in its present day condition with images and other material for use in the classroom, by the enthusiast or for serious research. David began by photographing the trail from the air in detail using twin-mounted cameras to provide stereo views of the topography. While the data collected is not survey-grade, the position and orientation of each image is known with an error on the order of tens of meters or less. This makes the database an ideal companion to cartographic works describing the route. A reconstruction by Martin Plamondon of the survey points taken by Lewis and Clark was used as a guide for much of the flight path. During the summer and fall of 2002, David designed and constructed a camera system for taking aerial stereo views along a GPS assisted route. In October, during an initial attempt to collect images along the Lewis and Clark route, weather closed in and limited collection to areas of Missouri. During the summer of 2003, flights were made to collect forward-looking stereo images over almost the entire westbound route. The return flight collected side looking views over the same route. Some initial ground based photography was done along the Columbia River, from the Gorge out to Astoria, including Fort Clatsop. The winter was spent performing initial processing to build a database that describes each image's position in space and time. Starting in late June 2004 and traveling for nearly two months, a ground based photographic trip collected images from along the entire trail. Additional visits to selected areas have brought the total to nearly 60,000 images.

As you may imagine, selection of only a few images to represent nearly three years of the expedition's experience was difficult. The boat pictures were felt to be necessary for understanding the expedition's effort itself. The image of the medal, a minor item of supplies and trade goods, was included as depicting the spirit with which Jefferson sent forth the expedition. The main portion of the exhibit was selected to represent the terrain and river conditions encountered by the expedition while not totally abandoning the human story of this incredible effort. In order to give the viewer a greater appreciation of the overall conditions, aerial photographs were chosen, many times from the same spot as a ground-based image. A sampling of a few of the plants and animals from the trail concludes the exhibit.

The signed works are ones that David has shown in the past as art. While some of the other images may also end up in this category, interest to the audience, not artistic merit, was a more important selection criterion for all of the images. So, for example, very pretty pictures of badlands that were not representative of a wider area were abandoned in favor of a more mundane, but representative view. Similarly, hundreds of miles of reservoirs, completely atypical of the Lewis and Clark experience, were ignored in favor of pictures more in keeping with the historical reality.

For a wider look at the trail, consider attending the talk given by David Saxe here on August 16 from 7 – 9 PM. Both the exhibit and talk are available for school and other groups. Please contact USA Aloft or visit www.usaaloft.com for details.

Prints

The images have been color corrected and digital sensor blemishes have been touched up. In some cases, the aerial photographs have been rotated to level the horizon line. In many cases, an unsharp filter has been applied. No other editing of the images has been performed. If a telephone wire crosses the image or a fence post is in the original image, it will still be there. Images are printed using pigmented inks on an Epson 2200 photo printer on Epson velvet fine art paper.

All of the images are available from USA Aloft. Signed and titled works are available as matted prints, ready for framing, in the sizes shown for $55. Other images in the collection are available in the sizes shown as unsigned prints with acid free foam board but without a mat for $35. Contact USA Aloft for other pricing options.