John Day Fossil Beds

National Monument
Oregon

National Park Service
U.S. Department of the Interior

Leaf Fossil Hill Trail Guide

Follow a 1/4-mile loop trail to a deposit of fossil - bearing shale, where you will see leaf impressions from trees that lived here 30 million years ago. Important specimens from this deposit are retrieved and preserved for study and display. Your help in protecting this resource insures that it will continue to yield its secrets.

PLEASE REMEMBER THOSE WHO WILL FOLLOW YOU. DO NOT REMOVE ANY ROCKS OR FOSSILS.

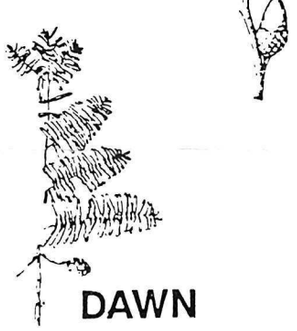
STOP 1

THE PRESENT SCENE

From this vantage point, you can see the modern landscape clearly. Annual rainfall is only about 12 inches a year, yet water exerts tremendous influence over this terrain. Rain and frost have broken through the thick lava layer which forms the present rimrock, exposing soft volcanic ash deposits below. The difference in hardness creates the sharp cliffs and gentle, rolling hills. The soft ash deposits make up the John Day Formation, of which the leaf bearing shales of the Painted Hills are a part. Most of the Painted Hills are mudstones, barren of fossils. But where marshes or ponds occurred in the ancient landscape, fossil-bearing shales were formed. As the present scene is carved by erosion, these shales are exposed. The plant types found in the shales are known to scientists as the Bridge Creek Flora.

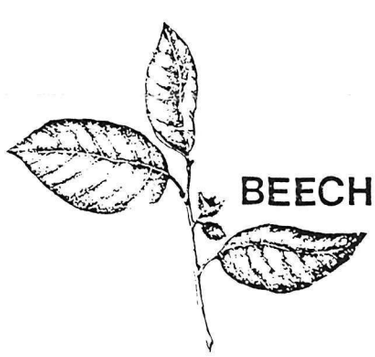
STOP 2

PLANTS UNDER PRESSURE

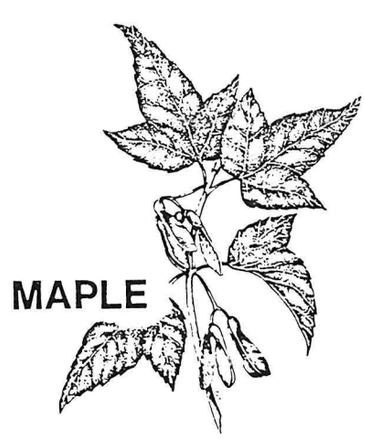


Leaves blown by the wind settled to the muddy bottom of a small pond here about 30 million years ago. Volcanic ash from the numerous eruptions of the ancestral Cascade Mountains to the west added fine-grained sediment in which the leaves became buried. The ash continued to accumulate for at least 10 million years. These ancient muds were then covered with over 1,500 feet of basalt lava.

Over time, tremendous pressure squeezed out much of the water, compressed the buried leaves, and cemented the volcanic ash into shale. Groundwater, passing through the shale, has removed the organic material of the leaves. All that remains are their imprints in what is now solid rock.



Maple, oak, alder, birch, beech, dawn redwood, ginkgo, sycamore, and katsura are among the trees that have been identified. It is an interesting mix of familiar and foreign plant types, indicating a climate similar to the southeastern United States today. Some of the fossil species found here have no modern descendants. Careful study continues to increase our understanding of this ancient forest scene.



STOP 3

BURIED TREASURE

From here, you can see how the hill fits into the surrounding terrain. As erosion progresses, new deposits of the Bridge Creek shale appear. Like ancient scrolls documenting the distant past, they offer us an opportunity to unravel the mysteries of the phantom forest that once grew here.

The warm - temperate hardwood forest that flourished here 30 million years ago is only one chapter in the story of life preserved at John Day Fossil Beds National Monument. Older deposits, found north of here at the Clarno Unit, preserve plant and animal remains indicating subtropical conditions 40 to 50 million years ago. At the Sheep Rock Unit, east of here, fossils from younger rocks document progressively drier, cooler, more seasonal climates. Visit them all for a unique glimpse of the buried treasures of the John Day Fossil Beds.