Lesson 10 - C

Plants of the Hell Creek Formation

In this activity, you will work with photographs of plant fossils from the Hell Creek Formation. You will try to distinguish what types of plants were growing, why they grew where they grew, and the relationship between plants and animals.

1. Look at the nine photos, which illustrate seven different plants (Images 4, 7, and 9 are from the same plant, though two different specimens). Which do you think are broad-leaved trees, such as oak, elm, or maple? Which do you think are conifers, such as pine, fir, or spruce? Which ones are something else? Which two most look like modern plants?

1, 3, 6, and 8 are classic broad leaved, or angiosperms
4, 7, 9 is a palm tree, which is a type of broad-leaved tree
5 is a conifer, or gymnosperm
2 is a gingko, which is a gymnosperm but an unusual variety
2 and 5 are plants that have changed little since 67 million years ago. The others are all extinct.

2. Judging by the size of the leaves do you think that most of the fossils came from large or small plants? Why?
   All were good sized plants, trees versus shrubs.

3. What do you think would account for the variety of plants?

Some grew in wetter areas such as near streams or ponds. Some grew in drier localities. There probably wasn't much elevation difference in this ecosystem, or at least not enough to generate a great variation within the plants.

4. The types of plants illustrated in this lesson gives a relatively close approximation of the ratio of types of plants (angiosperm to gymnosperm) found in the Hell Creek. How would you describe this ecosystem (meaning what types of plants dominated)?

   Since most are broad-leaved, it lets you know that they were dominant type of plant with a small scattering of conifers.

5. How did the animals use this ecosystem? (circle all that apply)
   a. Plants provided a good food source for the many large, herbivorous dinosaurs.
   b. Animals might have taken advantage of the dense foliage to escape predators.
   c. Mammals and birds lived in the trees.
   d. Dinosaurs ate the wood for fiber as part of a healthful diet.
   e. Animals moved away during colder times when the plants dropped their leaves.
   All could apply though we don't have evidence for all of them.

6. On the other side of this piece of paper draw your favorite fossil plant specimen. Include measurements and a scale bar, and list five characteristics that help distinguish this specimen from the fossil plant material of other species.