

Mastodon Matrix Instructions

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In the lab today, we have a bucket of “matrix” from a fossil mastodon skeleton site in Dutchess County, New York (given to us by the Paleontological Research Institution, or PRI, Cornell University). Everything in the bucket is *at least* 11,000 years old. Some of the twigs, leaves, and shells look very recent. They have been well preserved by being sealed in an acidic bog for 11,500 years. In the bucket there is likely to be a mixture of *peat*, which is brown, organically rich material, and *marl*, a gray, clay-like material containing small shells.

Supplies per Group: newspapers, 1 blue plastic divided plate, 1 black plastic plate, 1 Petri dish ½ filled with water, toothpicks, 1 magnifying “Sherlock Holmes” glass, 1 triplex hand lens.

1. Cover your table with newspaper. Examine reference collections (in clear boxes by the window) of items you might find in your section of the matrix.

2. Each group will receive one cup or chunk of matrix on the black plastic plate. The peat (brown material) may be broken up with your fingers and sorted through. The marl (gray, clay-like material) should be inspected for visible shells, which should be carefully removed from the marl with toothpicks. Next, place the chunks of marl in a Petri dish ½ filled with warm water and cover with the lid. Set this aside to soak, occasionally swirling the water and matrix around gently until the material has completely fallen apart. In the meantime, sort the rest of the material into 4 piles on the divided plate. Your piles should be labeled as follows:

A. Wood, cones, and leaves

C. Shells

B. Rocks

D. Everything else

3. One group member should report the number of items found in each of the above categories (example: 4 plant parts, 5 rocks, 2 shells, and 3 of everything else). Your data will be recorded on the classroom board.

3. Examine the wood, cones, and leaves. You may find a group of twigs of similar length (½"–1½"). Some of these may be crushed on one end and broken on the other. We believe mastodons ate spruce twigs this way, grabbing the short green twigs, and breaking them off. This group of twigs, which you have on your desk, most likely passed through the stomach and intestines of a mastodon!

4. How many different kinds of snail shells did you find? How many different kinds of clams? Did you find any charophytes? Any ostracodes?

5. When the marl in the Petri dish is completely separated, take it to the sink and pour it over a fine sieve. Dry on paper and treat as above.

6. After your matrix data is sorted and recorded on the board, bring your divided plate up to the front and we will place the samples into bags. Finally, place the remainder of the matrix back into the bucket and clean up your table.