The Process of Paleontology

List and Explanations of Major Steps in the Process of Paleontology

1. Fossil Discovery
2. Contact a paleontologist
3. Determine if the fossil should be excavated
4. Bring in a Field Crew
5. Fossil Excavation
6. Field Jacket
7. Transportation
8. Opening of Field Jacket
9. Fossil Preparation
10. Cataloging
11. Collections and Storage
12. Research and Study
13. Museum Exhibit/Display

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1. Fossil Discovery—someone finds a fossil in the field (in the ground somewhere), all land is owned by someone, and you have to have permission to hunt or even walk on someone else's land—you need to ask and/or fill out forms for a permit before hunting
2. Contact a paleontologist—to make sure any fossil is collected properly and scientifically contact a paleontologist before you move it or dig at all. Make observations, take notes and record exactly where you found it. Contact a museum or university to tell a paleontologist about a fossil discovery. Digital pictures are great.
3. Determine if the fossil should be excavated—a paleontologist will be able to determine whether or not the fossil should be excavated. Sometimes fossils are in bad condition and not worth the time to excavate compared to others.
4. Field Crew—if the fossil is to be excavated, a field crew will come and set up camp. In Montana, the field season is limited to the summer because of the weather. Field crews do the fossil excavation, field jacketing and transportation. Many of the people on the field crew also work in the museum during the rest of the year or are students. This is a hard and dirty job with long hours.
5. Fossil Excavation—the fossil is removed from the ground. Sometimes tons of rock has to be removed from above the fossil and large tools such as jackhammers are used. When working close to the fossil tools such as rock hammers, chisels and brushes are used. Some rock and dirt are left around the fossil for protection. Field crews also do not have the time or equipment in the field to completely clean the bones.
6. Field Jacket—to protect the fossil during transport, a jacket made of burlap strips soaked in wet plaster is applied to the rock and dirt surrounding the fossil. When dry, this jacket creates a hard protective shell. The jacket is carefully labeled so it is clear what is inside and where it came from.
7. Transportation—the fossil has to be transported from the field site to the lab or museum. If a vehicle cannot be driven to the field site, it must be carried out to the

truck. Sometimes field jackets are so large, and sites so remote that helicopters are needed to move the fossils.

8. Opening the Field Jacket—back at the lab or museum, saws, such as a cast cutter, are used to cut open the plaster jacket. Chisels and even larger tools like crowbars are sometimes necessary to pry the top of the jacket off.
9. Fossil Preparation—skilled workers carefully remove the extra rock and dirt matrix from around the fossil using small tools like dental picks and toothbrushes and gentle techniques.
10. Cataloging—every fossil is given a number so that it is easy to locate and refer to later.

At this point the fossil may be placed directly into collections, or it may be researched and then placed in collections, or be put on display. There are many different possibilities for the end of the process of paleontology for a particular fossil.

11. Collections and Storage—fossils are put inside a cabinet or on a shelf in a carefully controlled collections area where they can be stored and studied by researchers in the future.
12. Research and Study—important fossil finds may be studied by paleontologists as soon as they are cleaned. Paleontologists observe the fossils directly, using microscopes, CAT scans and x-rays. They might even cut the fossil open to study the inside.
13. Museum Exhibit/Display—an important or impressive fossil might go on display as part of a museum exhibit. Workers create mounts and text explaining the fossil and add it to the exhibit.