

BASIC FIELD PREPARATION TIPS

Prospecting tips

- When prospecting stop often and look around you, noting landmarks. Look back in the direction from which you came as this is what you will see when you return.
- When first spotting what you think may be a chip of bone, look at it carefully using your loupe to distinguish it from rock. Things to look for are the grain of the bone, and the pattern of cancellous bone at breaks edges. If you have found a chip of bone:
 - Look carefully around the area, on hands and knees, if necessary. Try to ascertain the extent of the bone - you don't want to miss any of it and you don't want to step on something important.
 - Look first below the chip and then try to follow it. Many surface chips will have come from higher up.
 - You may want to circle around the site and look at it from the side or above, being careful not to cause rock from above to fall down over the area.
 - Don't pick up anything beyond the first chip or two yet.
- If you decide to explore this bone further, dig carefully, just a little, around with an ice pick or point and gently brush away the surface dirt. The idea at this point is just to see if this is a complete, sturdy bone or skeleton. You don't want to dig it up yet.
- If you are pretty sure that you have found either a good bone or skeleton:
 - Take a picture, noting the shot number.
 - If you are carrying a GPS, take a reading, otherwise take a mental picture of the site, noting some particular landmark, so that you can return.
 - You can use marking tape, or build a cairn, but you must be sure to return and remove it. No permanent markers should be left on any site.
- At this point you'll probably want to discuss this find with others. Since expeditions are often limited as to what can be dug up, you will want to surface collect only the best specimens.



Collecting tips

- If you decide to excavate this bone, or skeleton:

- Start by photographing the partly exposed areas. If there are a lot of fragments you can use a plastic letter or otherwise flag them to make them visible in the photo, making notes as to their relationship.
- Make notes about the location, landmarks, bone appearance, condition, angle, and anything else that might be important.
- Get a GPS reading.
- Start a field number form.



- Start by picking up all nearby surface float bone as it probably belongs to your specimen. Wrap each chunk in tissue paper and place it in a baggie with a field number slip. Often one field number is given to the whole specimen. Sometimes, though, each piece may bear different information about the site, such as direction of water flow, or extent and horizon of specimen. In that case, it's possible that each chunk could have a different field number noting its relationship to the whole.

- Make sure that you have the equipment on hand that you might need.
- Now you are ready to work on the specimen itself. Begin by outlining the area, working carefully. You will not want to completely expose the specimen in the field. Particularly with skeletons, the matrix is sometimes all that holds the bones together. The plan here is to find the extent of the bone or skeleton, uncovering the top and slightly over the edges of the bone, without digging too deeply.

Essential equipment:

- digging tools - points, chisels, rock hammer
- glue and consolidant (thick and thin Acryloid B-72, or Butvar B-76)
- brushes
- toilet paper
- baggies
- plaster bandage for large bones
- burlap & plaster for very large bones
- water

For a complete list download the Field Equipment Checklist

- Look carefully at the matrix that you are removing, many clues to the taphonomy of the site can be found. Keep an eye out for microfossils, skin impressions, and plant remains.

- At this point you will need to decide whether or not the bone needs consolidation. If the bone is very soft, crumbly, or very fractured (in other words if it seems liable to fall apart in an instant), you should use a pipette or dish soap bottle to squeeze some of the thin consolidant onto the bone. My preference is to use no consolidant in the field unless absolutely necessary, remember it will have to be removed later. If the bone seems strong it is much better to leave it as it is.



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Glues and consolidants

For the field Butvar B76 powder is useful for consolidant as it can be solubilized in a variety of solvents. For ease pre-measure into 75 g packets. This can be poured into 500g of solvent such as acetone in a mixing bottle to make a 15% solution. Shake the bottle, let dissolve fully (overnight is best). Shake again before use. The consolidant can be applied using a brush, pipette or dish soap bottle. Butvar can also be made into a glue using less adhesive. Acryloid B-72 can either be purchased in a tube or made into a viscous solution and inserted into empty metal [tubes for adhesives](#) (available from Conservation Resources product # TUB-1)

- If you excavating just a single small, sturdy bone, you can dig all around it, remove it and wrap it in tissue paper, placing it in a baggie with the field number slip and all pertinent information. Sometimes, you can wrap a medium sized, sturdy single bone in tissue and then several layers aluminum foil, which offers some support.



Jacketing procedures for large bones or skeletons

- As you find the extent of the bone, extend your excavation straight out 2-3 inches all around the fossil and begin to dig down below it. If you encounter more bone, move to the outside of that piece and down. The idea is to create a little mushroom on a pedestal, with the bone on top.
- If the bone/matrix is very friable, you will need to start jacketing right away. Otherwise, wait until you have gone below the bone by about 6-8 inches (depending on the size of the fossil). The matrix should be cut under the fossil slightly. Loose single bones or fragments can be wrapped and bagged individually or wrapped and enclosed within the jacket. Make sure to mark their placement on the outside of the jacket.
- To prepare for jacketing:
 - Take the tissue paper/toilet paper and get ready a cup or bucket of water (depending on the size of the fossil) and a 1-2 inch brush. I sometimes have used cut-off liter soda bottles.
 - Wind the paper around your hand into a little packet and either quickly dip it in the water or brush the water on the surface. N.B. if you are working with a very water soluble matrix, you will need to consolidate the surface first.
 - Place the damp pad of paper on the fossil and dab the



brush onto it, pushing the paper tightly into the crevices of the surface. The paper serves two purposes: it prevents the plaster from sticking to the fossil and it also acts as a padding, smoothing the surface and filling in undercuts in the surface.

- The plaster jacket will protect the fossil, but it must be easily removed without damage to the fossil. Crush paper and use it to fill deep undercuts. The paper (and then the jacket) must be tight over the surface of the bone/matrix to prevent movement as the fossil is transported.
 - Cover the entire surface with paper, 2-3 layers deep.
- Once you have covered the entire surface with toilet paper and there are no more undercuts, it's time to make the jacket. There are two ways to do this - with plaster bandage or with plaster and burlap.



- Generally, if the fossil is small to medium sized it's easier to use plaster bandage.
 - Take the roll and tear it into 6-12" pieces.
 - Place several pieces into the water and let them soak for half a minute.
 - Taking one out at a time, squeeze it a little between your fingers to remove the excess water and to activate the plaster.
 - Place it onto the toilet paper, patting it well down onto the fossil.
 - Repeat while overlapping the bandage. It takes 2-3 layers before there is enough plaster to smooth. Once the plaster begins to build up you can smooth it with your fingers and work it into the pores of the fabric.
 - Cover the entire surface of the fossil bringing the bandage around and under the edge of the matrix. You may need 3-4 layers of bandage, the surface should be firm and hard, you shouldn't be able to dent it.
- For much larger fossils, and skeletons plaster bandage would be inadequate, instead use burlap and plaster.
 - Cut or tear the burlap into 3 - 4" by 12 - 15" strips. Roll the strips into small rolls.
 - Using a large plastic bowl, place the dry burlap rolls inside, and just cover them with water. This water will facilitate the plaster impregnating the roll.
 - Remove the rolls from the water and squeeze any excess water back into the bowl.
 - Sift handfuls of plaster into the water, don't put in big globs, sift it in evenly. Add plaster until the water is full of plaster, generally when the plaster comes to the surface of the water.
 - Allow the plaster to soak in the water for a minute, then mix with your hand.
 - Place the damp burlap rolls back into the plaster, take out one at a time and unroll to apply to the jacket. Use your hand to smooth the burlap/plaster tightly to the specimen. Two or at most three layers should be adequate. Sometimes a doubled layer is added at the edges of the jacket for extra strength. Additionally if the jacket is very large or long, tree branches,



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sticks or other material may be added for strength. Again the jacket should be smooth, remember you'll have to carry it out.

- Once the first side of the jacket is hard to the touch (very large jackets may need to sit overnight, make sure to protect them from possible rain), begin excavating under the lip of the “mushroom”. You will now be removing the pedestal.
 - Depending on the size of the jacket, and the nature of the matrix, you may have to remove quite a bit more material or you may be able to flip the jacket over right away.
 - If the matrix seems loose and begins to fall out of the jacket, you may need to add more bandage/burlap.
 - Once the fossil/matrix/jacket becomes loose, the scary part begins. You now have to quickly flip the jacket completely over without having the matrix (and fossil) fall out.
- Safely flipped, the extra matrix can be removed and the jacket capped with more toilet paper and plaster bandage or burlap and plaster.



Labeling

- Once the jacket has dried make sure to write the field number, identification, and any other important info on both sides of the jacket,
- Indicate which side of the jacket to open first.
- If this is a taphonomic study you will also need to include the direction of the bone as well.