Equipment

1. Low-power microscope (x5-x40)
2. Staining blocks
3. Glass lids for staining blocks
4. Petri dishes
5. Spoons
6. Sieve stacks with lid, base, 500micron, 1mm, 2mm, 4mm (mesh sizes optional)
7. Soft tweezers
8. Large plastic tray
9. Sink with silt trap
10. Distilled water
11. Refrigerator for storage

Consumables

1. Plastic bags
2. Fine pen marker
3. Biocide
4. Glass vials

Personal Protective Equipment

Lab coat
Gloves (optional)

Protocol

This should all be carried out in the Penn Paleoecology Lab

NB- Before starting check with the field archaeologist that no hazardous chemical or biological contamination is present in sediment samples.

Charred plant macrofossils:

1. Use the sink or a plastic collection tub as a working space.
2. Rinse the flot through the sieve stack, to make sorting easier.
3. Start with the larger fraction, scooping all or part of it into a Petri dish.
4. Add water to the Petri dish so that all the contents are submerged – if items are sticking up through the water, reflected light from the surface will make it hard to sort through.
5. Set the microscope to its lowest magnification (usually x4 to x6)
6. Use the soft tweezers to move fragments across the microscope view, working systematically from one side of the petri dish.
7. Collect any grain, chaff or seeds into the staining blocks with distilled water – subdividing as desired. If this is just an assessment (rather than full analysis), you may instead want to just note the presence and relative abundance of different classes of plant material. There may be other important material classes for your research, such as leaves, wood and invertebrates.
8. Once the larger fraction is sorted, return it to the flot bag (now labelled ‘sorted’, with your initials and the date).
9. Repeat stages 5 to 7 for all of the size fractions, increasing the magnification as required.
10. Work through the identifications separately for each staining block; tipping them into a petri dish to subdivide and quantify.
11. If there is a temporary break in sorting, make sure you put a lid on the sieve stack, and cover any Petri dishes or staining blocks to prevent the sample drying out.
12. Quantification of items must be linked to your research objectives – why are you analysing these samples? Students should discuss methodology with their supervisor before commencing full sorting and quantification.

13. Sorted items can be stored securely in glass tubes with stoppers and distilled water. Label by using 3M Scotch tape to wrap a paper label around the outside of the tube. The label should include site code, sample number, context number, sample volume.
14. It is usually best to store the tubes of sorted items together in a new minigrip bag, with the remainder of the flot stored separately until no longer required; this must be in a 'fridge.
15. Clear away any debris with biocide.
16. The entire process should be recorded, either on a data sheet or in lab book.