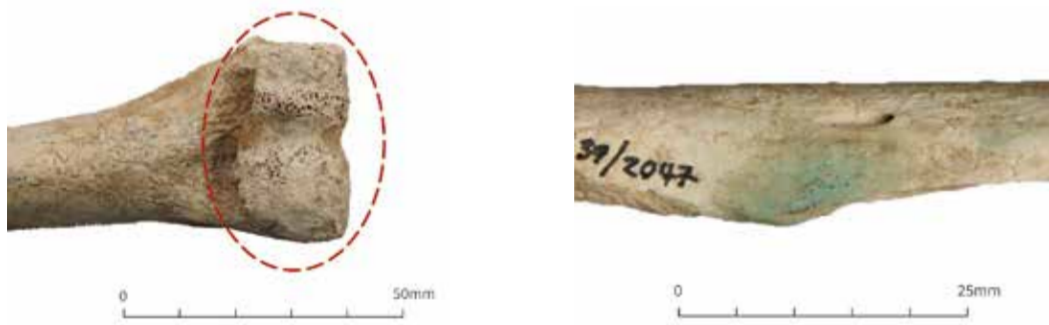


# Animal Bones and Archaeology: Guidelines for Best Practice.

## Supplement 3: Processing animal bone assemblages

	Mammals	Birds	Fish	Microfauna	
<b>Hand collection</b>	Most larger bones; largest cat-size bones (long bones, skulls)	Larger long bones of large birds	Bones of large fish		
<b>Processed whole-earth sample fractions</b>	>10mm	Most larger bones; largest cat-size bones (long bones, skulls)	Larger long bones of large birds; largest long bones of small birds	Bones and otoliths of large fish; some bones and otoliths of medium fish	Largest bones, eg long bones and larger vertebrae of amphibians
	4-10mm	Smaller bones, loose teeth; cat-size ribs, vertebrae, phalanges, carpals and tarsals	Long bones, vertebrae, ribs, carpals of large birds; most bones of small birds	Bones and otoliths of medium fish; some bones (eg cleithra, opercular bones, skull and vertebrae) of small fish	Large bones, eg long bones and skulls
	2-4mm	Foetal or perinatal bones; cat-size teeth, smallest phalanges, carpals and tarsals	Phalanges, ribs of large birds; some bones of small birds; wing and leg bones of tiny birds	Vertebrae, otoliths and dermal bones of small fish; most eel bones and herring vertebrae	Large bones of most species
	1-2mm		Few bones (including phalanges and tracheal rings) of small and tiny birds	Bones of tiny fish; tiny diagnostic dermal bones from small, medium and large fish	Small newts and lizards, juveniles of any species
	0.5-1mm				Smallest bones and teeth of any species; slow worm osteoderms
	Flot		Least dense bones, phalanges, skull fragments, tracheal rings of small and tiny birds	Scales and least dense cranial bones and vertebrae	Least dense bones, vertebrae
<b>Recovery:</b>	<b>Good</b> <b>Possible</b> <b>Unlikely</b>	Large birds: chicken size and above Small birds: below chicken size Tiny birds: below thrush size	Large fish: > 0.6m Medium fish: 0.3-0.6m Small fish: 0.15-0.3m Tiny fish: < 0.15m	Microfauna: squirrel size and smaller	

**Figure S3.1** The effect of collection strategy on the nature of a recovered bone assemblage. This figure indicates examples of material recovered in each fraction and therefore the evidence lost through the use of larger meshes and hand collection.



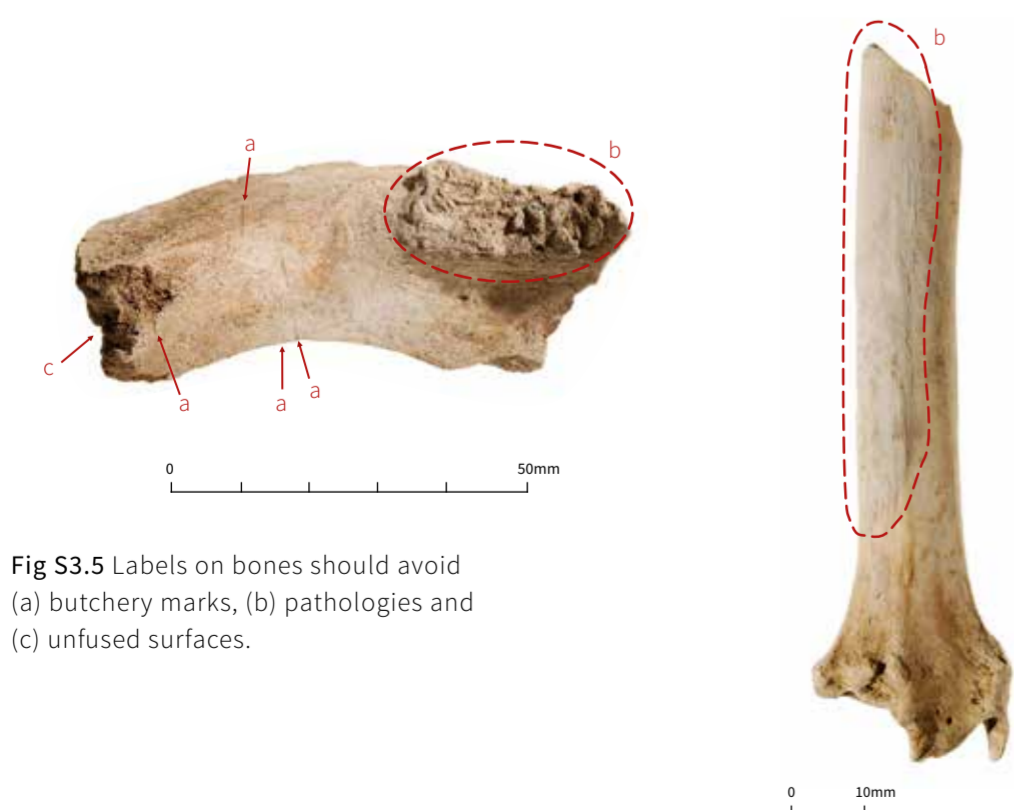
**Fig S3.2** Damage to a bone surface (circled) can remove evidence, including butchery marks, and prevent accurate measurement.

**Fig S3.3** Staining from corroding copper alloys.

Information	Bones and teeth	Bags and labels	Boxes
Project	✓	✓✓	✓✓
Context number (or range)	✓	✓✓	✓✓
Specimen identifier	✓	✓	
Sample number (or range)	✓	✓✓	✓
Fraction (or range)		✓✓	✓
Small find number (or range)	✓	✓✓	✓
Material type		✓✓	✓✓
Related action* identifier		✓	
Quantification		✓	
ABG identifier/detail		✓✓	
Box identifier			✓✓

✓often recorded; ✓✓essential if applicable; \*eg illustrations and specialist samples

**Figure S3.4** Information often recorded on specimens, their bags and boxes.



**Fig S3.5** Labels on bones should avoid (a) butchery marks, (b) pathologies and (c) unfused surfaces.

## Processing whole-earth samples for animal bones (see Section 3.1.2.1)

- ✓ Process whole-earth samples as part of the excavation programme and feed information back to excavators and the zooarchaeologist to allow modification of the excavation strategy.
- ✓ Use appropriate methods (flotation/sieving) and mesh sizes (see Fig S3.1).
- ✓ Keep bones from different processing methods and mesh sizes separate and clearly labelled (context, sample and mesh size).
- ✓ Look out for bones and teeth of very young and small animals, and modify your method if necessary (eg mesh sizes).
- ✗ Don't process very fragile remains. Keep them separate and labelled with context and sample number. Seek advice from the zooarchaeologist.
- ✓ Dry-sieved bones should be cleaned.
- ✓ Slowly and thoroughly air dry sample residues that include bones. Don't bag them up when damp.
- ✓ Ensure all bones from a sample are submitted for assessment and analysis with hand-collected bones.

## Cleaning bones (see Section 3.1.7.1)

- ✓ Unless fragile or from a waterlogged context, bones and teeth should be cleaned with fresh water as soon as possible, preferably before they have dried out. Seek conservation advice for desalination, where appropriate.
- ✗ Don't scrub or soak bones and be careful not to damage the bone surface (Fig S3.2). Don't remove concretions or push tools into cavities as this can cause damage.
- ✗ Bones may discolour from burning or staining from metals and minerals (eg copper and its alloys, iron or manganese; Fig S3.3). Don't attempt to remove this discolouration.
- ✓ The bones must be slowly and thoroughly air dried before they are bagged up. Bones from waterlogged contexts will need careful drying. Drying bones too quickly or in direct light may lead to cracking or loss of bone surface.
- ✓ Keep block-lifted bones cool and damp, following the advice of the conservator.

## Labelling and marking (see Sections 3.1.7.2 and 3.1.7.3)

See Fig S3.4 for suggested label information but follow the project methods.

- ✓ Always use indelible ink, not biro. Use Indian ink for marking bones.
- ✗ Don't write on bones intended for biochemical analysis (radiocarbon, DNA, isotopes).
- ✓ Writing on bones and teeth should be legible but discrete and avoid the following features (eg Figs S3.3 and S3.5):
  - fragile surfaces
  - butchery or bone working marks, eg cuts, scrapes, saw marks or decoration
  - pathologies, eg raised or roughened areas (often grey coloured), creases, indented or polished areas
  - patches of staining or burning
  - unfused or porous surfaces of juvenile bones
  - diagnostic features, eg areas of complex topography, ridges, holes or roughness.

## Bagging-up and boxing bones (see Section 3.1.7.3)

- ✓ Pierce bags with pin-prick sized holes. Small bones can be lost through bigger holes.
- ✗ Don't ever seal damp bones in bags – they'll grow mould.
- ✗ Don't over-fill bags or boxes – bones are fragile and boxes can be heavy!
- ✓ Bag the following categories of bones and teeth as discrete groups, clearly labelled with context, small find, sample and mesh size, and record why they are bagged separately. The bag may then be stored with other associated bones.
  - Bones and teeth from an animal bone group (ABG). These are usually bagged by area of the skeleton (see also Section 3.1.5.1).
  - All teeth and pieces of bone from a single jaw, if the teeth may fall out.
  - Individual fragments from a single bone, if the bone was broken *in situ* or during excavation.
  - Fragile bones – these may be boxed rather than bagged.