Bluefish Caves References and Research Methods

Bluefish Caves References

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Comparative Collections & Osteological Identification

- **Primary Physical Collections Accessed**

Cornell University Museum of Vertebrates, Lab of Ornithology, Ithaca NY, United States, 2021-2024

Zooarchaeology Lab, Dept. of Anthropology, University of Montreal, Montreal QC, Canada, 2012-2017

- **Additional Collections Consulted (Brief Visits and Loaned Specimens)**

American Museum of Natural History, New York NY, United States

Canadian Museum of History, Gatineau QC, Canada

Canadian Museum of Nature, Hull QC, Canada

Kansas University Natural History Museum, Lawrence KS, United States

Smithsonian National Museum of Natural History, Washington DC, United States

- **Virtual Collections**

ArchéoZoothèque, https://www.archeozoo.org/

Avian Osteology, Royal BC Museum, https://rbcm.ca//Natural_History/Bones/homepage.htm

Idaho Virtual Museum, https://virtual.imnh.iri.isu.edu/

Max Planck Institute 3D Skeletons, https://www.eva.mpg.de/evolution/

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- **Osteological Atlases and Identification Manuals**

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Taphonomic Methods & Interpretive Framework

- **Distinguishing Cutmarks from Other Bone Surface Modifications**

Bone surface modifications can result from multiple, sometimes overlapping processes. When different agents or mechanisms produce visually similar marks – a problem known as equifinality – distinguishing between them and identifying true cutmarks requires close attention to specific diagnostic features. The table below focuses specifically on linear striations, summarizing the criteria used to distinguish stone-tool cutmarks from metal-tool damage, carnivore and rodent marks, sedimentary abrasion and trampling, rockfall, and root etching.

Mark Type	Key Diagnostic Criteria	References
Stone tool cutmarks	Isolated or multiple and parallel; usually straight, sometimes curved; thin and deep, with V-shaped cross-section; internal microstriations; groove color matches the surrounding outer bone surface; orientation and location correspond to butchery tasks (e.g., on long bones, cutmarks are transverse near epiphyses, and longitudinal on diaphyses)	Walker & Long 1977; Greenfield 1999; Binford 1981; Olsen & Shipman 1988; Lyman 1994; Bello & Soligo 2008; Boschin & Crezzini 2012; Merritt 2012; Hockett & Jenkins 2013; Monnier & Bischoff 2014; Braun et al. 2016
Metal tool marks (e.g., excavation trowel)	Lighter color than the surrounding outer bone surface (fresh exposure); typically flat-bottomed (⊔-shaped) rather than V-shaped; base and walls slightly shiny/polished where steel compressed the bone	Greenfield 1999
Carnivore tooth and claw marks	Adult carnivore tooth marks show uneven edges and U-shaped profiles; tooth marks from younger animals (sharper, less worn teeth) or claws can more closely mimic cutmarks, but they are usually not isolated and rather accompanied by other, less ambiguous marks; orientation and location correspond to feeding behavior (e.g., on long bones, tooth marks are concentrated on epiphyses, and oriented transversely on diaphyses)	Haynes 1980; Haynes 1983a; Haynes 1983b; Burke 2013; Binford 1981; Duches et al. 2016 (morphometric differentiation)
Rodent tooth marks	Occur in parallel pairs or sets; broad, shallow, flat-bottomed grooves; closely and evenly spaced; typically concentrated on bone edges, margins, or projecting areas	Rabinovitch & Horwitz 1994
Abrasion / trampling marks	Can mimic cutmarks, but often more numerous and shallower; randomly oriented and distributed, not confined to anatomical locations expected for butchery	Behrensmeyer et al. 1986; Olsen & Shipman 1988; Fiorillo 1989; Domínguez-Rodrigo et al. 2009
Rockfall damage	Differ from cutmarks based on width, depth, cross-section, volume, and surface area, plus presence/absence of associated fractures	Litynski & Pante 2023
Root etching	Smooth, sinuous, U-shaped grooves; randomly distributed across the bone surface	Behrensmeyer 1978; Binford 1981; D'Errico & Villa 1997

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