Improving the discoverability of taphonomy collections through

Holly Little ¹, Anna K. Behrensmeyer ¹, Jarod Hutson ¹, Stephen Maikweki ², Briana Pobiner ³, Lindsay Walker ⁴







Taphonomy Collections

Comparative materials for scientists to interpret taphonomic evidence preserved in modern and fossil bone assemblages. These collections offer new insights about the past, present, and future.

Taphonomy Collections can include:

Single bones



USNM PAL 725705. Goat mandible from East Fork River





NMK OT-01. Bushbuck skeleton from leopard kill (image cropped)

Assemblages



USNM PAL 725064. Owl pellet with various rodent skeletons

Vocabulary

Requirement: Create a data structure for taphonomic information that isn't available elsewhere

1) Develop a consistent list of terms for key taphonomic features ⁵ 2) group terms into classes 3) leverage Symbiota's Traits module to structure this vocabulary for data entry.

- Trait: Distinct Marks -

Channeling

Puncture

Gouge

Chop mark

Curation damage

Features are organized by class. Multiple features may be selected within and across classes.

Trait: Surface Damage

Abrasion

☐ Cracking

Dissolution

Exfoliation

Flaking

Polishing

☐ Thinning

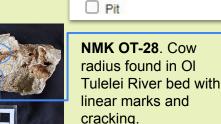
Scrape (multiple)



USNM PAL 724319. Wildebeest atlas from Hyena Den in Amboseli National Park with notch.



Hole Linear mark U-shape Linear mark V-shape ☐ Notch



Bone flake Deformation, faulting ☐ Flake scar ☐ Fracture edge rounding Peeling ☐ Spiral Fracture Splitting

- Trait: Fracture Features -

The vocabulary is hierarchical, first listing features by observed modification↑ and then providing options for possible agents↓

Trait: Fracture Features-

Bone flake

Human

☐ Injury

☐ Flake scar

Spiral Fracture

Peeling

Splitting

Carnivore

☐ Trampling

Sediment pressure

Fracture edge rounding

Deformation, faulting

Challenge

Current information systems used for managing and sharing specimen data often lack the necessary structures for clearly documenting the associated taphonomic information. In addition, the vocabulary used to describe taphonomic features can be variable between reference textbooks, datasets, researchers, and institutions.

Requirement: Collaborative curation and data management, including opportunities for shared stewardship of related collections or reconnecting collections digitally

Symbiota

- Enables collaborative, community development and management
- Centrally supported, shared portal for multiple collections
- Built-in publishing tools enabling data discoverability of partner collections at different institutions



Redesigned by the Symbiota Support Hub		
Specimens		
✓ Select/	✓ Select/Deselect all collections	
ALCO MACHINA	National Museums of Kenya, Osteology (NMK-OST) more info	
SOURCE AND MANAGEMENTS	National Museums of Kenya, Palaeontology (KNM-PAL) more info	
NATIONAL MUSEUM of NATURAL HISTORY Gustesin	Smithsonian Institution, National Museum of Natural History, Paleobiology (U	

Smithsonian National Museum of Natural History, ¹ Department of Paleobiology and ³ Department of Anthropology



WS-0 ☐ WS-1

WS-2 ☐ WS-3

☐ WS-4 WS-5

☐ WS-Indeterminate

☐ WS-Not applicable



NMK OT-34. Bones collected from the same Amboseli National Park zebra skeleton over 15 years. Plains Zebra died in 1975. Image indicates year collected and weathering stage of each bone.





Sum bioto



(Fernandez-Jalvo and Andrews)

⁴ Symbiota Support Hub, Arizona State University

² National Museums of Kenya

NMK Specimen images provided by NMK (CC-BY-NC) = USNM specimen images provided by the Smithsonian (CC0) = All other content (CC-BY 4.0)