TAPHONOMY:

A RESOURCE GUIDE

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Info 674 – Resources in Science / Tech

Fall, 2005

Submitted December 4, 2005
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INTRODUCTION TO TAPHONOMY

Discipline Overview

Taphonomy is the study of the processes impacting an organism between the time of its death and its later discovery. The term ‘taphonomy’ was first coined in 1940 by Russian paleontologist Ivan Efremov, and modern taphonomy is traditionally dated back to this time. It is best known as the branch of paleontology that examines fossilization processes, but also has application in archaeology, forensics and other sciences.

The two major sub-disciplines of taphonomy are biostratinomy and diagenesis. Biostratinomic studies address the necrolysis, disarticulation, body transportation and subsequent burial processes, while diagenesis focuses on the physical and chemical effects of burial on an organism’s remains.

The information derived from taphonomic studies can contribute to our knowledge of an organism’s morphology, geographic distribution and behavior patterns. It can also enhance our understanding of historical environments, and providing insights for many broader disciplines, including archaeology, paleontology and geology. Paleoecology, paleobotany, paleobiology and sedimentology are all examples of specializations that actively employ taphonomic studies.

Applied scientific methodologies include actualistic and comparative taphonomy. Actualistic taphonomists study contemporary taphonomic patterns in the biosphere, and attempts to extrapolate findings to the historic fossil record. Such studies can be observational or experimental/simulated in nature. Comparative taphonomy seeks an enhanced understanding of an organism through the comparison of cross-taxon taphonomic differences.

The first journal dedicated exclusively to the study of taphonomy debuted just two years ago, and the field is enjoying a resurgence thanks to a new emphasis on information that is gained rather than lost as a result of taphonomic processes. Despite this increased attention, taphonomy is still considered to be an emerging scientific discipline. Precise taphonomic methodologies for describing fossil assemblages are still needed, for example, and the field lacks a comprehensive bibliography. Further, because taphonomy is so inter-disciplinary in nature, taphonomic studies and data are widely scattered in resources relating to broader fields. It is therefore hoped that this subject resource guide will help fill an existing information gap, and prove useful to taphonomists and other interested scientists.

Resource Guide Scope

This resource guide emphasizes English-language taphonomy resources relating to paleontology, but also includes a small number of major taphonomic resources in the fields of archaeology and forensics. It is hoped that future editions of the resource guide will expand the number of taphonomic resources in these disciplines.
Additionally, because much taphonomic work involves fossil discovery and identification, relevant resources are included to assist the taphonomist with locating and classifying taphonomic materials, both in the field and within collections.

★ Particularly exceptional resources for the taphonomist are noted with a ★ symbol.

**Subject Keywords**

The following terms may prove useful when searching for resources in taphonomy:

<table>
<thead>
<tr>
<th>Term</th>
<th>Term</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abrasion</td>
<td>Fragmentation</td>
</tr>
<tr>
<td>Actualistic paleontology /</td>
<td>Incrustation / Encrustation</td>
</tr>
<tr>
<td>Actuopalaeontology</td>
<td>Laggerstätten</td>
</tr>
<tr>
<td>Actualistic taphonomy</td>
<td>Microtaphonomy</td>
</tr>
<tr>
<td>Articulation</td>
<td>Mineralization</td>
</tr>
<tr>
<td>Assemblages</td>
<td>Necrolysis</td>
</tr>
<tr>
<td>Bioerosion</td>
<td>Paleontology / Palaeontology (U.K.)</td>
</tr>
<tr>
<td>Biostratigraphy</td>
<td>Quantitative taphonomy</td>
</tr>
<tr>
<td>Biostratinomy</td>
<td>Soft-tissue preservation</td>
</tr>
<tr>
<td>Bioturbation</td>
<td>Sedimentology</td>
</tr>
<tr>
<td>Carbonization</td>
<td>Stratigraphy</td>
</tr>
<tr>
<td>Comparative taphonomy</td>
<td>Taphograms</td>
</tr>
<tr>
<td>Diagenesis</td>
<td>Taphonomy</td>
</tr>
<tr>
<td>Disarticulation</td>
<td>Taphofacies / Taphonomic facies</td>
</tr>
<tr>
<td>Dissolution</td>
<td>Trace Fossils</td>
</tr>
<tr>
<td>Forensic taphonomy</td>
<td>Time-averaging</td>
</tr>
<tr>
<td>Fossilization</td>
<td>Uniformitarianism</td>
</tr>
</tbody>
</table>

**Library Of Congress Subject Headings**

**Taphonomy**

<table>
<thead>
<tr>
<th>BT</th>
<th>NT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paleontology</td>
<td>Forensic taphonomy</td>
</tr>
</tbody>
</table>

**Fossils**

<table>
<thead>
<tr>
<th>RT</th>
<th>NT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paleontology</td>
<td>Amber fossils</td>
</tr>
<tr>
<td></td>
<td>Animals, Fossil</td>
</tr>
<tr>
<td></td>
<td>Plants, Fossil</td>
</tr>
<tr>
<td></td>
<td>Trace fossils</td>
</tr>
</tbody>
</table>
Library Of Congress Classification Numbers

Subject-specific classification numbers:

QE721.2.F6  Fossilization, Taphonomy
Z6033.P2  Fossils
RA1063.47  Forensic Taphonomy
QE721  Geology--Paleontology--Special aspects of the subject as a whole

Broader classes of interest:

QE640 - QE699  Stratigraphy
QE701 - QE760  Paleontology
QE760.8 - QE899.2  Paleozoology
QE901 - QE996.5  Paleobotany

Dewey Decimal Classification Numbers

<table>
<thead>
<tr>
<th>Class</th>
<th>Caption</th>
</tr>
</thead>
<tbody>
<tr>
<td>560</td>
<td>Paleontology and paleozoology</td>
</tr>
<tr>
<td>560.17</td>
<td>Stratigraphic paleontology, paleozoology (may be further classified by geological era)</td>
</tr>
<tr>
<td><strong>560.41</strong></td>
<td><strong>Fossilization (Taphonomy)</strong></td>
</tr>
<tr>
<td>560.43</td>
<td>Trace fossils</td>
</tr>
<tr>
<td>561.3-561.9</td>
<td>Fossils, specific plants and groups of plants</td>
</tr>
<tr>
<td>562-569</td>
<td>Fossils, specific taxonomic groups of animals</td>
</tr>
</tbody>
</table>

MONOGRAPHS (KEY TEXTS)


Not reviewed. A widely cited text of the early 1990’s.


Part of a series entitled “Critical Moments and Perspectives in Earth History and Paleobiology”, this collection of research papers explores the taphonomic
significance of premiere marine Fossil Lagerstätten sites. Lagerstätten are deposits of exceptionally preserved fossils that still exhibit soft-tissue remains. Fewer than 1,000 such sites have been identified worldwide.


A highly cited taphonomic study of bone assemblages in African caves. Provides guidance on interpreting bone assemblages in caves, and presents an analysis and interpretation of Sterkfontein Valley Caves as a case study. Applicable to both the archaeological and paleontological disciplines.


Not reviewed. Forthcoming publication, to be released November 2005. Place of publication not provided.


Unique taphonomic conditions or ecological events can result in thin stratigraphic intervals of extraordinary fossil taxa. This collection of papers reviews Fossil Lagerstätten and epiboles, two particular types of stratigraphic events, and their significance for taphonomic studies.


Trace fossils are any fossilized evidence of an organism’s activities, including footprints, tracks and burrows. Whereas most studies of trace fossils emphasize a geological approach, this work examines the biological and taphonomic implications of the trace fossil record.


The collected essays in this book fall into two major sections – an overview of the history of taphonomic studies, and discussions of the distinct taphonomic processes of different categories of organisms, such as trilobites, plants, vertebrates and soft-bodied animals. A wealth of illustrations and extensive chapter references make this a useful starting point for exploring many topics in taphonomy.

A dated work, but one that contains an excellent section on biostratinomic processes.


Considered a primary textbook for many university courses on vertebrate taphonomy. The author provides comprehensive coverage of historical, theoretical and practical aspects of the discipline, as it relates to vertebrate organisms. Highly recommended as an introductory text to the subject.


This volume aims to cover the entire discipline of taphonomy, as it relates to both plant and animal fossils, in both oceanic and terrestrial environments. A process approach is emphasized, stressing its application in associated disciplines. A section devoted to taphonomic laws, rules and classification models is of particular interest, as it is a topic not treated in equal depth elsewhere.


Excerpt from author’s introductory synopsis: “This book provides a unique, synthetic treatment of postmortem change presented in a systematic fashion with attention to the relative chronologies of both physical and cultural factors that influence human and animal remains. The author integrates reports and observations in the anthropology/archaeology literature with material as appropriate from medicine, pathology, paleopathology, ethnography and the forensic sciences (cover)”


Not reviewed. A widely cited text on taphonomy. Still used in undergraduate taphonomy courses today.
REFERENCE WORKS

Atlases and Maps


Allows a user to plot the distribution of more than 5,000 kinds of marine fossils, using data and world maps from the GEOMAR Research Center for Marine Geosciences.


Created as a PhD project at the University of Chicago, these paleogeographical atlases are still developed and maintained by the original developer, Christopher Cortese. Provides animated models of plate tectonic and climactic reconstructions from all time periods. Useful in the understanding of fossil distribution patterns.


The U.S. Geological Survey, an agency of the U.S. Department of the Interior, provides reliable scientific information in the Earth Sciences, including numerous maps, publication and data relating to major fossils deposits. A large web site, resources of interest are most easily located using the web site's comprehensive search function.

Bibliographies


A taphonomic guide for researchers in the disciplines of archaeozoology, paleoanthropology, and paleontology. The guide provides more than 1,200 bibliographic entries, in addition to author and topical indexes.

An Internet-based bibliography maintained by April M. Beisaw, an independent zooarchaeologist with expertise in taphonomic analysis. Although the bibliography emphasizes zooarchaeological resources, it also includes resources related to paleontological and forensic taphonomy. Updated as recently as July 2005.


A web-based counterpart of a now defunct print series published by the Society of Vertebrate Paleontology. Contains 131,190 references to resources published between the years 1509-1968 and 1981-1993, including literature related to taphonomic studies. Site requires specialized query formation; instructions are provided.


**Catalogs**


Not reviewed. 487-page catalog with maps. The Tertiary period lasted from the end of the Cretaceous period about 65.5 million years ago to the start of the Quaternary period about 1.6 million years ago.

**Dictionaries and Glossaries**


Contains approximately 6,000 entries covering a wide range of earth science topics, including paleontology. Definition terms are hyperlinked, facilitating navigation. Available in both print and electronic formats.

Access: Oxford Reference Online Premium database is available via Drexel University's Hagerty Library subscription.

An excellent glossary of taphonomic terms is included in this text.


Not reviewed. This manuscript is held by the Smithsonian Institution in Washington, D.C. 701 leaves in length.


Text includes a 14-page glossary of taphonomic terms.


Includes more than 10,000 essential terms covering every discipline of the earth sciences, including paleontology. Synonyms, acronyms, and abbreviations are provided. Available in both print and electronic subscription form.


Includes major terms likely to be encountered in taphonomy resources.


A glossary of fossil terms.
Directories

Directories of Individuals


Directory includes active, employed scientists, as well retired but still-active Quaternary researchers who reside in the United States. Membership in AMQUA is not required for directory listing. Quaternary researchers include all scientists that study the last 2 million years of Earth history, including paleontologists and taphonomy specialists. Directory was originally published by Academic Press, Inc., in the July 1995 issue of Quaternary Research (v 44, no. 11). An up-to-date version of this print directory is now available electronically:

Web access:  [http://www3.nau.edu/amqua/search-db.html](http://www3.nau.edu/amqua/search-db.html)


A 447-page guide to professional paleontologists worldwide. Membership in the International Palaeontological Society is not required for inclusion in the directory. An up-to-date version of the directory is now available in electronic form:


Directories of Organizations


Not reviewed.


Not reviewed.
Directories of Collections


An Internet-based directory of worldwide fossil collections held by museums, academic institutions and departments, and other organizations. Directory may be searched geographically or by specific institution. There is no print equivalent.

Encyclopedias


Pertinent articles include but are not limited to ‘Taphonomy’ (author: Fiorillo, A.R.) and ‘Biostratigraphy’ (author: Lucas, S.G.). Entries include reference citations.


Devoted section on paleontology includes a bibliography, a topical study guide, biographies of paleontologists, a geological time scale, and encyclopedic articles on such topics as ‘Taphonomy’ and ‘Trace Fossils’.


Includes relevant entries entitled ‘Fossilization Processes’ (author: Davis, P.G.), ‘Taphonomy’ (author: Davis, P.G.), and ‘Sedimentology’ (author: Webb, M.W.). Entries include references citations and suggestions for further reading.
GUIDES AND HANDBOOKS

Fossil Guides


Introduction includes sections on fossilization processes and taphonomy. Provides 280 color photographs of significant plant and animal fossils, including their stratigraphic position and geographical distribution.


This field guide to fossil identification includes over 500 color photographs, with concise descriptions of fossil structure, stratigraphic and geographic distribution, and fossilization conditions. Includes introductory discussions on the formation, emplacement and preservation of fossils.


An all-photographic field guide to the fossils of North America (north of Mexico). Includes nearly 500 full-color photographs identifying fossils of all types, as well as fossil-bearing sediments and common fossil outcrop formations.

Regional Field Guides

Regional taphonomy field guides are often published as the outcome of field trips associated with a society’s annual meeting. A small sample of available guides.


Field trip associated with the Fifteenth annual Virginia Geologic Field Conference, November 12, 1983.


“Prepared for Field Trip Number 5 sponsored by the Geological Society of America and the Paleontological Society at their joint annual meeting, Phoenix, Arizona, 1987.”

“Prepared for the Geological Society of America, Rocky Mountain Section Meeting in Ogden, Utah, May 13-15, 1992.”

*Additional regional field guides and guidebooks may be located using:*


**Handbooks**


Illustrated guide to fossils collection and preservation techniques.


A process-oriented guide for fossil collection and site analysis that includes a chapter devoted to taphonomic methods in the field. Includes numerous flow charts and tables correlating field observations with stratigraphic and taphonomic implications. Taphonomy of trace fossils, plant fossils, soft-bodied and vertebrate animals are treated individually.


Illustrated guide to the palaeontological tools and methods used to collect, preserve and record fossil specimens.


Not reviewed.
ABSTRACTING AND INDEXING SERVICES


This extensive index covers a wide range of resource types. Although the index stresses the applied sciences, all areas of science and technology are included. Topic coverage includes paleontology, taphonomy, and other related areas. Covers more than 400 scientific journals.

Dates covered: 1983 to present
File size: Over 1.3 million records
Update frequency: Monthly (approximately 5,000 records per update)

Print counterparts: Wilson Applied Science & Technology Index


BioOne provides full-text access to nearly 70 academic journals in the biosciences, and emphasizes journals of small publishers that were previously only available in print form. Indexed journals of relevance include but are not limited to the Journal of Paleontology, Journal of Vertebrate Paleontology, Micropaleontology, Paleobiology,

Dates covered: 2000 to present (older publications will be gradually added)
Electronic access: Web-based access available via Drexel University’s Hagerty Library subscription.
**GeoArchive** – Oxon, U.K.: Geosystems. [subscription database]

GeoArchive is a comprehensive database covering multiple information sources in geoscience, hydroscience, and environmental science. Topic coverage includes paleontology and stratigraphy. Provides international coverage of over 5,000 journals, books from over 2,000 publishers, geological maps, and doctoral dissertations. Also includes conference proceedings, technical reports and maps.

- **Dates Covered:** 1974 to present
- **File Size:** Over 893,879 records as of September 2005
- **Update Frequency:** Monthly (approximately 1,000 records per update)
- **Print counterparts:**
  - Geotitles Weekly
  - Geocom Weekly
  - Geocom Bulletin
  - Geoscience Documentation
  - Bibliography of Vertebrate Palaeontology

**GeoBase** – Amsterdam, The Netherlands: Elsevier B.V, [subscription database]

GeoBase covers research literature in physical and human geography, earth and environmental sciences, ecology, and related disciplines, including paleontology and stratigraphy. Special emphasis is placed on international and non-English publications, providing access to information resources not available elsewhere. Database covers approximately 5,000 scientific and technical journals, with approximately 100,000 new records are added annually.

- **Dates Covered:** 1980 to present
- **File Size:** Over 1,311,101 records as of June 2004
- **Update Frequency:** Biweekly
- **Print counterparts:**
  - Geographical Abstracts: Physical Geography
  - Geographical Abstracts: Human Geography
  - Geological Abstracts
  - Ecological Abstracts
  - International Development Abstracts
  - Geomechanics Abstracts
  - Oceanographic Literature Review
**GeoRefS** – Alexandria, VA: American Geological Institute. [subscription database]

The premier database of bibliographic materials in geology and other earth sciences, including the paleontological sciences. GeoRefS was established by the American Geological Institute in 1966, and currently provides access to over 2.5 million references to articles, books, maps, conference papers, reports and theses. Over 25,000 individual sources are represented. All U.S. Geological Survey (USGS) publications are included.

- **Dates Covered:** 1785 to the present (North American material); 1933 to the present (worldwide material)
- **File Size:** Over 2.6 million records.
- **Update Frequency:** Biweekly (approximately 3,000 records per update)
- **Electronic Access:**
- **Print Counterparts:** Bibliography and Index of North American Geology, Bibliography of Theses in Geology, Geophysical Abstracts, Bibliography and Index of Geology Exclusive of North America, Bibliography and Index of Geology


**ISI Web of Science** – Philadelphia, PA: Thomson Scientific. [subscription database]

Web of Science provides access to approximately 8,700 research journals in the arts and humanities, sciences and social sciences. Unique to ISI, the citation index allows forward and backward citation searching. Result sets may be sorted by number of times an article is cited, allowing a researcher to quickly identify key research in their discipline of interest. A search on the term ‘taphonom*’ currently yields over 1,600 results.

- **Electronic Access:** Via Drexel University’s Hagerty Library subscription.
- **Print Counterparts**
  - Arts & Humanities Citation Index (DU Indexes 1977-1984)
  - Social Sciences Citation Index (Hagerty does not have)
  - Science Citation Index (DU Indexes 1961-1994)
ACADEMIC JOURNALS

Core Journals

_A source title analysis conducted via the ISI Web of Science Citation database suggests the following journals are core publications for the field of taphonomy. Journals are listed in suggested order of significance._

★★ _PALAIOS._ Tulsa, OK: Society for Sedimentary Geology. ISSN: 0883-1351. Publication frequency: bi-monthly. 1986-

A multidisciplinary journal dedicated to emphasizing the impact of life on Earth history as recorded in the paleontological and sedimentological records.

Indexed in:

- BioOne

_Palaeogeography, Palaeoclimatology, Palaeoecology._ Amsterdam: Elsevier. ISSN: 0031-0182. Publication frequency: varies. 1965-

An international journal of the geo-sciences. A multidisciplinary journal, it includes original studies and comprehensive reviews in the field of paleo-environmental geology.

Indexed in:

- AESIS
- AGI's Bibliography and Index of Geology
- BIOSIS
- Bulletin Signalétique
- Current Contents
- ESRISAT
- Elsevier BIOBASE
- GEOBASE
- Meteorological and Geophysical Abstracts
- PASCAL/CNRS
- Petroleum Abstracts
- Scopus


A journal covering advances in the application of scientific techniques and methodologies to all areas of archaeology.

Indexed in:

- Abstracts in Anthropology
- Art and Archaeology Technical Abstracts
- British & Irish Archaeological Bibliography
- Current Contents/Arts & Humanities
- Geological Abstracts
- Research Alert
- Scopus
- Social Sciences Citation Index
**Lethaia.** London: Taylor and Francis Ltd. ISSN 0024-1164. Publication frequency: quarterly. 1968-

An international journal of palaeontology and stratigraphy.

Indexed in:
- AESIS
- Abstracts in Anthropology
- Biological Abstracts
- British Geological Literature
- Coal Abstracts
- Current Contents
- Deep Sea Research
- Ecological Abstracts
- Geographical Abstracts
- Physical Geography
- Geological Abstracts
- GeoREF
- Life Sciences Collection
- Petroleum Abstracts
- Research Alert
- Science Citation Index

**Paleobiology.** Lawrence, KS: Paleontological Society. ISSN: 0094-8373. Publication frequency: quarterly. 1975-

Dedicated to providing a forum for the greater integration of paleontology and biology.

Indexed in:
- BioOne
- JSTOR Ecology and Botany

**Journal of Paleontology.** Tulsa, OK: Society of Economic Paleontologists and Mineralogists. ISSN: 0022-3360. Publication frequency: bi-monthly. 1927-

Publishes original research on the systematics of fossil organisms and its implications for all aspects of paleobiology and stratigraphic paleontology. Emphasizes specimen-based research.

Indexed in:
- BioOne
- JSTOR Biological Sciences
- ProQuest Research Library

The journal covers all aspects of paleoanthropology, including discoveries and interpretive analysis of human and primate fossils.

Indexed in:  
- EMBiology  
- IBBS  
- Scopus

Other Significant Journals  

Publication frequency: quarterly. 2003-.  

This two-year old publication is the first journal devoted exclusively to taphonomic research. The peer-reviewed journal aims to better promote taphonomy as a full-fledged discipline within the paleontological sciences.

More information:  
http://www.journaltaffonomy.com/  

Indexed in:  
- Zoological Record (Dialog File: 185).

Palaeontologia electronica. College Station, TX: Coquina Press. ISSN: 1094-8074.  
Publication frequency: quarterly. 1998-.  

An electronic publication covering all topics in paleontology. Emphasizes digital graphics, modeling, databases and data analysis tools. Includes a wide range of taphonomic studies.

Web access:  
http://palaeo-electronica.org

Additional journals of interest:

- American Journal of American Anthropology  
- American Journal of Physical Anthropology  
- Cretaceous Research  
- Facies  
- Geology  
- Journal of Forensic Sciences  
- Journal of Vertebrate Paleontology  
- Paleontology  
- Quaternary International
SELECTED ARTICLES

Highly Cited Articles

*These journal articles are among the most highly cited articles in the ISI citation databases from 1990 to present for keyword “taphonom*”. Articles are listed in descending order of citation frequency.*


Research article examines the age, taphonomic condition and stratigraphic position of shells from Mexican tidal flats. A key study of time-averaging processes (temporal resolution, an important taphonomic method).


Presents a model of the stratigraphic distribution of fossils.


Research linking the incompleteness of the fossil record to loss of fossiliferous rock, as opposed to failure of a species to enter the fossil record in the first place.


Detailed taphonomic examination of the organic preservation processes of non-mineralizing animals.

*Two additional highly cited articles are noted in the Key Literatures Review Section, directly below.*

Key Literature Reviews


A thorough review of the literature covering developments in taphonomic processes of leaves, woody tissues, spores, pollen and diasporas, as well as the biostratinomic processes affecting plant accumulation and burial. 11 areas are identified for future research. Extensive 4 ½ page bibliography.


A review of taphonomic studies on the postmortem behavior of organic remains in modern environments. Concludes that such experimental and actualistic taphonomic studies are providing new insights into information that can be gained from the fossil record. A highly cited article.


A recent review of the literature, covering necrobiotic, biostratinomic, and lithospheric processes on plant material.

**Background and Seminal Articles**


Excellent background article on the utility of comparative taphonomic methodologies.


Seminal article that coined the term ‘taphonomy’, and called for the establishment of taphonomy as a separate branch of paleontology. The modern discipline of taphonomy is typically dated from the publication of this article.

Overview of the research themes and strategies associated with actualistic taphonomy.


A concise article defining taphonomy and its major sub-disciplines, and describing its modern emphases on information gain vs. information loss.

**Dedicated Journal Issues**

These special issues of the below journals were entirely dedicated to taphonomic research.


Contains 30 research articles covering a wide range of taphonomic subjects, including marine research, taphonomic comparisons, experimental taphonomy, and environmental data that can be derived from taphonomic studies. A full list of articles can be accessed at: [http://www.sciencedirect.com/science?_ob=IssueURL&_tockey=%23TOC%235821%231999%23998509998%2395109%23FLA%23&_auth=y&view=c&acct=C0000050221&version=1&_urlVersion=0&_userid=10&md5=b216b79a682e9c80e1429f8e76228846](http://www.sciencedirect.com/science?_ob=IssueURL&_tockey=%23TOC%235821%231999%23998509998%2395109%23FLA%23&_auth=y&view=c&acct=C0000050221&version=1&_urlVersion=0&_userid=10&md5=b216b79a682e9c80e1429f8e76228846)


This special issue of the journal PALAIOS includes eight case studies representing a diverse cross-section of the research themes of modern actualistic taphonomy. Themes cover necrolysis, biostratimetry, comparative taphonomy, fidelity and methodology of taphonomy.

A full list of articles can be accessed at: [http://www.bioone.org/bioone/?request=get-toc&issn=0883-1351&volume=019&issue=05](http://www.bioone.org/bioone/?request=get-toc&issn=0883-1351&volume=019&issue=05)

This special issue of the journal PALAIOS includes 6 research reports presented at the 7th International Organization of Paleobotany Conference, held March 21-26, 2004 in Bariloche, Argentina.

A full list of articles can be viewed at: http://www.bioone.org/bioone/?request=get-toc&issn=0883-1351&volume=020&issue=05

CONFERENCES AND CONFERENCE PROCEEDINGS

Major Conferences and Associated Proceedings

This section includes recent professional gatherings of taphonomists, including conferences, meetings, workshops and symposia. Associated resources, including published proceedings and conference web sites, are provided where available.

★ TAPHOS - The premier international conference devoted to the field of taphonomy. The next scheduled conference will be held in Granada, Spain in 2008 (contact Julio Aguirre at jaguirre@ugr.es). Prior TAPHOS conferences and published proceedings:


Web site:   [http://www.ub.edu/taphos05/](http://www.ub.edu/taphos05/)
Proceedings: To be published in a forthcoming issue of Geobios (journal published by Elsevier. ISSN: 0016-6995)


Proceedings: None located.

International Meeting on Bone Diagenesis - This conference brings together specialists from multiple disciplines, to discuss and explore the processes of diagenesis and fossilization on bone tissue.

2005 – Fifth International Meeting on Bone Diagenesis. Held August 28-31, 2005, at University of Cape Town, Cape Town, South Africa.

Proceedings: No publication intentions announced as of this time. Possibly forthcoming.


Proceedings: Published in a dedicated issue (August, 2002) of Archaeometry, 44(3).


Proceedings: None located.
**International Workshop on Plant Taphonomy** - This international conference has been held annually since 1989. Its purpose is to “stimulate scientific research and to promote contacts among scientists engaged in the study of plant taphonomy including living and fossil plants of all geological periods” (retrieved November 11, 2005, from [http://www.uni-wuerzburg.de/mineralogie/tapho/tapho1.html](http://www.uni-wuerzburg.de/mineralogie/tapho/tapho1.html)).

Although most of the papers presented at these workshops have not been published as consolidated proceedings, many papers have been published individually in academic journals. Many of these papers can be located using OCLC’s PapersFirst subscription database (available via Drexel University’s Hagerty Library). Additionally presentation abstracts are available on the below-listed conference web sites.

**16th International Plant Taphonomy Meeting.** Held September 16-18, 2005, in Pilsen, Czech Republic.

- Proceedings: No publication intentions announced as of this time. Possibly forthcoming.

**15th International Plant Taphonomy Meeting.** Held November 12-13, 2004 in Leiden, Netherlands.

- Web site: [http://www.uni-wuerzburg.de/mineralogie/tapho/leiden.html](http://www.uni-wuerzburg.de/mineralogie/tapho/leiden.html)

**14th International Plant Taphonomy Meeting.** Held November 8, 2003 in Chemnitz, Germany.


**13th International Plant Taphonomy Meeting.** Held November 9, 2002 in Bonn, Germany


**12th International Plant Taphonomy Meeting.** Held October 26, 2001 in Altlengbach, Austria.

- Web site: [http://www.uni-wuerzburg.de/mineralogie/tapho/vienna.html](http://www.uni-wuerzburg.de/mineralogie/tapho/vienna.html)

**11th International Plant Taphonomy Meeting.** Held November 11, 2000 in Barcelona, Spain.

- Web site: [http://www.uni-wuerzburg.de/mineralogie/tapho/barcelona.html](http://www.uni-wuerzburg.de/mineralogie/tapho/barcelona.html)
10th International Plant Taphonomy Meeting. Held November 20-21, 1999 in Leeds, United Kingdom.

Web site: http://www.uni-wuerzburg.de/mineralogie/tapho/leeds.html


Additional Published Proceedings


Part of a published series on “Prehistoric Archeology and Ecology”, this volume brings together papers presented at a symposium held in July, 1976, entitled “Taphonomy and Vertebrate Paleocology, with Special Reference to the Late Cenozoic of Sub-Saharan Africa” (Burg Wartenstein Symposium No. 69). Papers fall into a range of categories, including the history of taphonomic studies, implications for studies of modern ecology, archaeological taphonomy, taphonomic methodology, and applications in paleoecology.


A dedicated collection of bone studies in archaeology and palontology. Reviews methods of interpreting various physical forces on bone, and tools used to examine and catalog bone modifications. Text includes eleven archaeological case studies Papers were originally presented at the first International Conference on Bone Modification, held in Carson City, Nevada in 1984.


Articles presented at the 1993 annual conference of the Association for Environmental Archaeology, held at Durham University, September 18-21, 1993.

Proceedings of the 16th annual short course of the Paleontological Society, held at the 105th Annual Meeting of the Geological Society of America, Boston, Massachusetts, October 1993.


A collection of papers presented at the Taphonomy Symposium, held April 28-30, 1995, in Canberra, Australia.


OTHER PUBLICATIONS

Dissertations and Theses

Digital Dissertations. Ann Arbor, MI: ProQuest Company. [Subscription database]

Contains more than 1.5 million doctoral dissertations and master’s theses of all topics, dating from 1861 to present. Abstracts available for those published after 1980, and full text is available for two-thirds of all entries. Nearly 300 results were returned on a query for keywords ‘taphonomy OR taphonomic’.

Electronic access: Via Drexel University’s Hagerty Library subscription.
More info: http://www.library.drexel.edu/resources/dbinfo/digdiss.html

NDLTD is an international organization dedicated to promoting the adoption, creation, use, dissemination and preservation of electronic theses and dissertations. It is a free resource for accessing the increasing number of theses and dissertations available electronically. The NDLTD’s browse and search page provides a number of tools for discovery of and access to electronic dissertations. A query using just one of these tools, Scirus ETD Search, yielded 263 results for a search on the keyword ‘taphonom*’.

Government Publications


GPO Access is a service of the U.S. Government Printing Office that provides free electronic access to a wealth of publications of the federal government, including agencies such as the U.S. Geological Survey. The site’s subject bibliography lists 160 resources in the earth sciences (not a comprehensive listing).


This database consists of summaries of U.S. government-sponsored research publications of many types, prepared by federal agencies, their contractors, or grantees. It is the means through which unclassified, publicly available, unlimited distribution reports are made available for sale from approximately 240 federal agencies. Additionally, some state and local government agencies now contribute summaries of their reports to the database. Includes publications relating to the earth sciences.

Dates Covered: 1964 to present
File Size: Over 2.2 million records.
Update Frequency: Weekly
Print counterparts: Government Reports Announcements & Index
Government Inventions for Licensing
E-print and Preprint Repositories

Taphonomists do not make as extensive use of preprint resources as some other scientific disciplines. To some extent, this is due to the limited amount of taphonomic research being conducted, and the site-oriented nature of paleontological and archaeological fieldwork. It is unlikely that multiple researchers will be working on a similar problem or location without being aware of each other. E-print resources for taphonomists are also limited, but gradually growing.


This web site provides “one-stop browse/search access to more than 18,200 Web sites containing e-prints, full text searching of over 660,000 e-print documents indexed from Web sites, deep Web searching across 39 major databases containing close to 20 million pages of searchable full text, and links to more than 2,700 professional scientific societies” (retrieved November 22, 2005, from http://www.osti.gov/eprints/about.html) An alerting service is available.

ORGANIZATIONS AND INSTITUTIONS

Associations And Professional Societies

There is currently no specific professional association dedicated to taphonomy and the advancement of taphonomic studies. Professional taphonomists can be found as active members in the following paleontological associations:

International Paleontological Association (IPA) - Paleontological Institute, University of Kansas, Lawrence, KS.

Meetings: Sponsors multiple meetings annually, in partnership with other international congresses.
Web site: http://ipa.geo.ku.edu/index1.html
The Paleontological Association – Institution of Geography and Earth Sciences, University of Wales, Aberystwyth, Ceredigion, SY23 3DB, U.K.

The association was founded in 1957 to promote the study of paleontology and its allied sciences.


Web site: http://palass.org/index.html


The Paleontological Society is an international organization devoted exclusively to the advancement of all branches of the science of paleontology. The Society was founded in 1908 in Baltimore, Maryland, and disseminates research through publications and meetings.

Publications: Numerous research articles on taphonomy can be found in their official newsletter, Priscum, published twice annually, and their peer-reviewed Journal of Paleontology, published six times annually.

Meetings: Annual.

Web site: http://www.paleosoc.org/

The Society of Vertebrate Paleontology (SVP) - 60 Revere Dr., Suite 500, Northbrook, IL 60062

Founded in 1940 by thirty-four paleontologists, the Society now has over 2,000 members representing professionals and students interested in all aspects of vertebrate paleontology. It is organized exclusively for educational and scientific purposes, with the object of advancing the science of vertebrate paleontology.


Web site: http://www.vertpaleo.org/
Email: svp@vertpaleo.org
Government Agencies


A multi-disciplinary science organization of the United States federal government. Emphasis on earth and environmental sciences, including paleontology. Resources include research reports, maps and publications. The USGS search engine retrieves relevant results across multiple federal and state web sites.

Private Research Centers

*Haskin Shellfish Research Laboratory* - Rutgers University - 6959 Miller Avenue, Port Norris, NJ 08349-3167.

Research Initiatives: *Shelf and Slope Environmental Taphonomy Initiative (SSETI).* A long-term taphonomic study of undersea fossilization rates. Research centered at the Caribbean Marine Research Center, Lee Stocking Island, Bahamas. A federally funded research project involving multiple academic institutions.

Lead scientist: Dr. Eric Powell, Director.
Web site: [http://vertigo.hsrl.rutgers.edu/SSETI.html](http://vertigo.hsrl.rutgers.edu/SSETI.html)

*Paleontological Research Institution*. 1259 Trumansburg Road, Ithaca, NY 14850.

Research: Ongoing research in multiple areas of paleontology, including a current study on a variety of Problematica fossils (fossils of organisms with no known living counterpart).

Collections: Recently opened the *Museum of the Earth*, an 18,000-foot facility adjoining the research center, housing one of the nation's largest fossil collections.

Publications: PRI publishes two paleontological research journals, the peer-reviewed *Bulletin of American Paleontology*, published 2-3 times annually, and the non-specialist quarterly *American Paleontologist*.

CURRENT AWARENESS

Electronic Newsletters


An Internet-based newsletter dedicated to current events in the study of vertebrate taphonomy and vertebrate diagenesis. Maintained by a French group of academic paleontologists. Publication frequency: irregular.


A publication of the Paleontological Association. Contains a mixture of palaeontological news, book reviews, reviews of past meetings, details of forthcoming meetings and regular discussion features. Issue 26 to present is also available electronically. Also available in print format, with association membership.

ISSN: 0954-9900.
Publication frequency: 3-4 times annually.
Web access: http://palass.org/index.html


A publication of the Paleontological Society, containing articles, book reviews, announcements and notes. Newsletters can be downloaded in PDF format. Also available in print format, with association membership. Publication frequency: bi-annual.

Web site: http://www.paleosoc.org/publications.html
Table Of Contents Service


This resource, available in both print and database formats, is a weekly service that reproduces the tables of contents from current issues of leading journals in the sciences, social sciences, and arts and humanities. Covers approximately 6,500 journals representing virtually every discipline within the sciences, social sciences, arts, and humanities.

- Dates Covered: 1990 to present
- File Size: 13,707,664 records as of November 2003
- Update Frequency: Daily (approximately 4,000 records per update)

Print counterparts include: Current Contents - Physical, Chemical and Earth Science

**Grants**


Not reviewed. A print guide to the funding programs of government agencies, private foundations, businesses and other grant-providing organizations.

**Community of Science Funding Opportunities.** Baltimore, MD: Community of Science, Inc. [subscription database]

The most comprehensive source of funding information available on the Web, with more than 22,000 records, representing over 3,500 grant-giving organizations, and 400,000 funding opportunities, worth over $33 billion. Includes access to numerous grants relating to paleontology.

Access: Available via Drexel University’s Hagerty Library subscription.

The National Science Foundation promotes and advances scientific progress in the United States by competitively awarding grants and cooperative agreements for scientific research and education. Their Division of Earth Sciences includes targeted funding opportunities for paleontological research and projects. The NSF encourages electronic dissemination of information, but print publications are also available. Note: NSF grant information also available via Grants.gov (see below listing).


*Grants* – Phoenix, AZ: Oryx Press. [subscription database]

This database provides information on more than 10,000 available grants offered by federal, state, and local governments, commercial organizations, associations, and private foundations. Covers all academic disciplines.

- Dates Covered: Currently available grants
- File Size: Approximately 9,573 records as of February 2004
- Update Frequency: Monthly
- Print counterparts: Directory of Research Grants
  Directory of Biomedical and Health Care Grants
  Directory of Grants in the Humanities
  Funding Sources for Community and Economic Development
  Funding Sources for K-12 Schools and Educational Organizations and Operating Grants for Nonprofit Organizations


A single point of access for federal funding information. Includes programs sponsored by 26 federal grant-making agencies and over 900 individual grant programs that award over $400 billion in grants each year.
Employment


Current career opportunities across the earth science disciplines. Includes separate section for student work opportunities. Hosted by The American Geological Institute, a not-for-profit federation of 44 geoscientific and professional associations.


A service of PaleoNet, an electronic communication resource for paleontological professionals and graduate students. Lists paleontological work opportunities worldwide, as well as links to further earth science employment resources.


A service of the Society of Vertebrate Paleontology, a non-profit organization dedicated to professional vertebrate paleontology. Lists work and grant opportunities worldwide.
DISCUSSION GROUPS

Discussion groups are interactive, electronic communication forums on defined subjects or topics. They are available in two principle formats: listservs and USENET newsgroups. Listservs operate via e-mail transmission, while USENET newsgroups communicate on Internet-based bulletin boards. The distinction between the two formats is declining, as many listservs now also archive ongoing email discussions in an Internet format.

Listservs

Listservs utilize several different e-mail addresses:
- **Server address** - Used only for posting messages to the listserv.
- **Listserver management address** - Primarily used to subscribe and unsubscribe. Other commands can also be used with this address; i.e., to obtain lists of subscribers, obtain listserv descriptions, and perform other subscription management functions.
- **Moderator address** - A personal e-mail address. Should only be used for questions, technical difficulties, concerns, or suggestions about the listserv.

★ **DDDNet** – Dedicated to the discussion of taphonomy and other fossil preservation issues.

- **Server address:** dddnet@uicvm.cc.uic.edu
- **Moderator:** Roy E. Plotnick, University of Chicago at Illinois. Moderator contact info:
  - Web: [http://tigger.uic.edu/~plotnick/plotnick.htm](http://tigger.uic.edu/~plotnick/plotnick.htm)
  - E-mail: plotnick@uic.edu
- **To subscribe:** Send e-mail message to listserv@uicvm.cc.uic.edu with no subject line. Include “SUBSCRIBE DDDNET (your name)” in body of message.

**Paleonet** – An active discussion forum for the paleontological community.

- **Server address:** paleonet@nhm.ac.uk
- **Moderator:** Norman MacLeod, Dept. of Palaeontology, The Natural History Museum, London, U.K. Moderator contact info:
  - Web: [http://www.nhm.ac.uk/hosted_sites/paleonet/](http://www.nhm.ac.uk/hosted_sites/paleonet/)
  - E-mail: N.MacLeod@nhm.ac.uk
- **To subscribe:** Send e-mail message to PaleoNet-Request@nhm.ac.uk with no subject line. Include “SUBSCRIBE PALEONET” in body of message.
**VRTPALEO** - Primarily serves the vertebrate paleontology community.

- **Server address**: vrtpaleo@usc.edu
- **Moderator**: Dr. Sam McLeod, Vertebrate Paleontologist, Los Angeles County Museum of Natural History. Moderator contact info: E-mail: smcleod@usc.edu
- **To subscribe**: Send e-mail message to listproc@usc.edu with “subscribe VRTPALEO in body of message, followed by your name, all written on a single line.

**Usenet Newsgroups**

*There are currently no newsgroups specifically dedicated to discussions of taphonomy. Relevant conversations can be found, however, in the following broader newsgroups:*

- **sci.bio.palaontology** A USENET group devoted to all topics related to paleontology, with the exception of Creationism discussions. High membership level, and frequent discussion activity. Information and subscription to newsgroup can be accessed via:
  
  [http://groups.google.com/group/sci.bio.paleontology/about](http://groups.google.com/group/sci.bio.paleontology/about)

- **sci.archaeology** High membership level and frequent discussion activity. Information and subscription to newsgroup can be accessed via:
  
  [http://groups.google.com/group/sci.archaeology/about](http://groups.google.com/group/sci.archaeology/about)

- **sci.anthropology.paleo** Newsgroup dedicated to discussion of the evolution of man and other primates. High membership level and frequent discussion activity. Information and subscription to newsgroup can be accessed via:
  
  [http://groups.google.com/group/sci.anthropology.paleo/about](http://groups.google.com/group/sci.anthropology.paleo/about)

- **sci.geo.geology** Newsgroup for the discussion of all solid earth science topics. High membership level, medium discussion activity. Information and subscription to newsgroup can be accessed via:
  
  [http://groups.google.com/group/sci.geo.geology/about](http://groups.google.com/group/sci.geo.geology/about)

**Paleontontology and Fossil Talk.** This newsgroup welcomes individuals of all levels of interest and ability into an open discussion group on plant, invertebrate and vertebrate fossils. Low membership, low activity. Information and subscription to newsgroup:

[http://groups.google.com/group/Paleontology-and-Fossil-Talk/about](http://groups.google.com/group/Paleontology-and-Fossil-Talk/about)
INTERNET RESOURCES

Informative Web Sites


Web site providing excellent introduction to experimental taphonomic methods. Developed by University of Bristol, U.K. graduate student. Includes bibliography and glossary.


A web tutorial covering taphonomic processes of plant fossils, environmental conditions of ancient plant preservation and types of plant fossils.


An extensive and growing collection of high-quality fossil images, presented in multiple contexts of geological history, the tree of life, paleobiology and evolution. Images are donated by a variety of contributors under editorial guidance, and provided to the public as an educational resource.


Site hosted by the College at Cortland, State University of New York. Excellent overview of taphonomic processes and types of fossil preservation modes.

Museum Collections


The museum’s regional vertebrate fossil collections feature rich samples of all classes, mainly from the Cenozoic Era. Included are about 400,000 specimens, of which more than 235,000 are catalogued and 220,000 are currently on a searchable computer database.

The paleontology collections of the museum can be searched by locality, taxon, rock unit, or time unit. Includes regional fossil vertebrates, invertebrates, and plants.


A rich resource detailing the museum’s microfossil, invertebrate, vertebrate and plant fossil collections, and providing databases of fossil specimen data and images. Sponsored by the UC Berkeley Digital Library Project, sponsored by the National Science Foundation’s Digital Libraries Initiative.

**Databases**

In 2000, Jocelyn Kaiser noted that the paleontological sciences lag behind other disciplines in the creation of Internet database resources. Challenges include the sharing of privately held specimens maintenance of rapidly changing taxonomic data. The situation has improved in the intervening 5 years, however, and several excellent paleontological databases now exist. A small sampling is provided here. Although not specifically geared to taphonomic studies, specialists will nonetheless find the specimen identification and stratigraphic data these resources contain to be useful.


A database listing sites with exceptional fossil preservation, worldwide. Details of each paleontological deposit include a section on the site’s taphonomy, often with images. Site listing can be ordered for browsing stratigraphically.


A “near-complete listing of the diversity of life through time”. Data is searchable by family, order, or phyla, and results can also be plotted onto paleogeographic maps.


This database of European fossil mammals includes data of interest to taphonomists, including stratigraphic and environmental interpretation information for fossil specimens. Maintained by the University of Helsinki’s Department of Geology, Finland, and overseen by a large advisory board that includes two taphonomy specialists. Guests may log into the database server on a read-only basis.

Server requirements: Java Runtime Environment (JRE) 1.4.x


Provides fossil taxa data and images from two marine fossil sampling programs, one hosted by the Smithsonian Institution. Although the database is primarily designed “for use in research and education in systematics and evolutionary paleontology”, taphonomists will find the database a useful resource for marine fossil identification.


A public resource for the scientific community, organized and operated by a multi-disciplinary, multi-institutional, international group of paleobiological researchers. Its purpose is to provide global, collection-based occurrence and taxonomic data for marine and terrestrial animals and plants of any geological age, as well as web-based software for statistical analysis of the data. Currently funded by the National Science Foundation.


A collection of fossil images that can be searched by either time frame or taxon. A joint project of the University of California’s Museum of Paleontology, the Paleontological Society, the Society of Vertebrate Paleontology, and the United States Geological Survey. Site funded by a grant from the National Science Foundation.

This database includes descriptions and occurrences of more than 10,000 extinct plant genera. Modern genera with fossil species are also included in the description database. Names, places and ages can be searched and the occurrences are instantly plotted on palaeogeographic maps.


An understanding of stratigraphy is essential to the work of taphonomists. This dynamic timescale database currently provides approximately 60 tables of the earth’s stratigraphic layers, including lithostratigraphic and biostratigraphic views. Site is expected to grow to approximately 100 interrelational tables. A non-profit project, maintained by a group of German geologists.


Provides computer-generated and photographic images of marine currents, and resulting stratigraphic bedforms. An essential tool to assist taphonomists with understanding diagenetic patterns (bone dispersal) and stratigraphic consequences.

**Gateways and Search Engines**


A gateway to high quality Internet resources in the physical sciences, including paleontology and taphonomy. The project is funded by the United Kingdom government. Each resource is selected by information professionals and subject to ensure relevance and quality. A full description of each resource is provided, together with a range of other information and direct access to the resource itself.


A comprehensive search engine for the sciences. Covers 200 million science-specific Web pages, and filters out non-scientific sites. Enables the user to quickly locate scientific, scholarly, and technical data on the Internet. Retrieves articles, reports, patents, and other resource types.