



# ARCTOS FOR PALEONTOLOGY COLLECTIONS

**EXAMPLES FROM THE UNIVERSITY OF ALASKA MUSEUM  
EARTH SCIENCES COLLECTION DIGITIZATION PROJECT**

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# WHAT IS ARCTOS?

- Comprehensive, multidisciplinary collection management information system
- Serves data on over 3M natural history museum records
- Standardization of biodiversity data online
- Arctos community = 2 clones with parallel development

**Arctos**  
Multi-Institution, Multi-Collection Museum Database

Access to 1,786,012 records

Search [Clear Form] [Use Last Values] See results as: Specimen Records

Type: any [Require Tissues?]

**Identifiers** [Customize] [Show More Options]  
Collection: Alaska Lepidoptera COA Birds COA Eggs [Catalog Number:]

**Identification and Taxonomy** [Show More Options]  
[Current Identification CONTAINS:] [help]

**Locality** [Show More Options]  
Any Geographic Element: [Select on Google Map]

**Date/Collector** [Show More Options]  
[Collector or Preparator:]

**Biological Individual** [Show More Options]  
Part Name: [Define Add = for exact match]

**Usage** [Show More Options]  
Basis of Citation: [Define]

**Media** [Show More Options]  
Media Type: [Define]

**Relationships** [Show More Options]  
Relationship: [Define]

Search [Clear Form] [Use Last Values] See results as: Specimen Records

**Try something random** [Hide This]

Elizabeth L. Jockusch, Inigo Martinez-Solano, Robert W. Hansen, & David B. Wake. 2012. Morphological and molecular diversification of slender salamanders (Caudata: Plethodontidae: Batrachoseps) in the southern Sierra Nevada of California with descriptions of two new species. *Zootaxa* 3190: 1–30 (2012).

*Akodon olivaceus*  
Higher level phylogeny of salamanders and other vertebrates.

Jenny L. McGuire. 2011. Identifying California *Microtus* species using geometric morphometrics documents Quaternary geographic range contractions. *Journal of Mammalogy* 92(6):1383-1394.

Arctos logo: Data Providers | Report a bug or request support

**MCZbase: The Database of the Zoological Collections**  
Museum of Comparative Zoology - Harvard University

Access to 1747218 records. Holdings Details Search Tips

Search [Clear Form] [Use Last Values] See results as: Specimen Records

Include Observations? [Require Tissues?] [Require Media:]

**Identifiers** [Customize] [Show More Options]  
Institutional Catalog: [All] [Number:] [Include Other Identifiers in search (original number, previous number, etc.)]

**Identification and Taxonomy** [Show More Options]  
Any Taxonomic Element: [Include Unaccepted Id's (Tax. History)]

**Locality** [Show More Options]  
Any Geographic Element: [include known accent marks for optimal results] [Select on Google Map]

**Date/Collector** [Show More Options]  
[Collector:] [Year Collected:] [include known accent marks for optimal results] [Copy]

**Biological Individual** [Show More Options]  
Part Name: [Define Add = for exact match]  
Preserve Method: [Define Add = for exact match]

**Usage** [Show More Options]  
Basis of Citation: [Define]

Search [Clear Form] [Use Last Values] See results as: Specimen Records

Data Providers | Report Errors | System Administrator

A collaboration with multiple natural history collections

Distributed Databases:

Database content © Copyright 2013 President and Fellows of Harvard College  
• Privacy Statement  
• User Agreement

# ARCTOS

As of  
today, 1,786,124 specimens

67 collections  
17 museums/org  
anizations

Media hosted  
at Texas  
Advanced  
Computing  
Center

Get directions My places Save to My Places

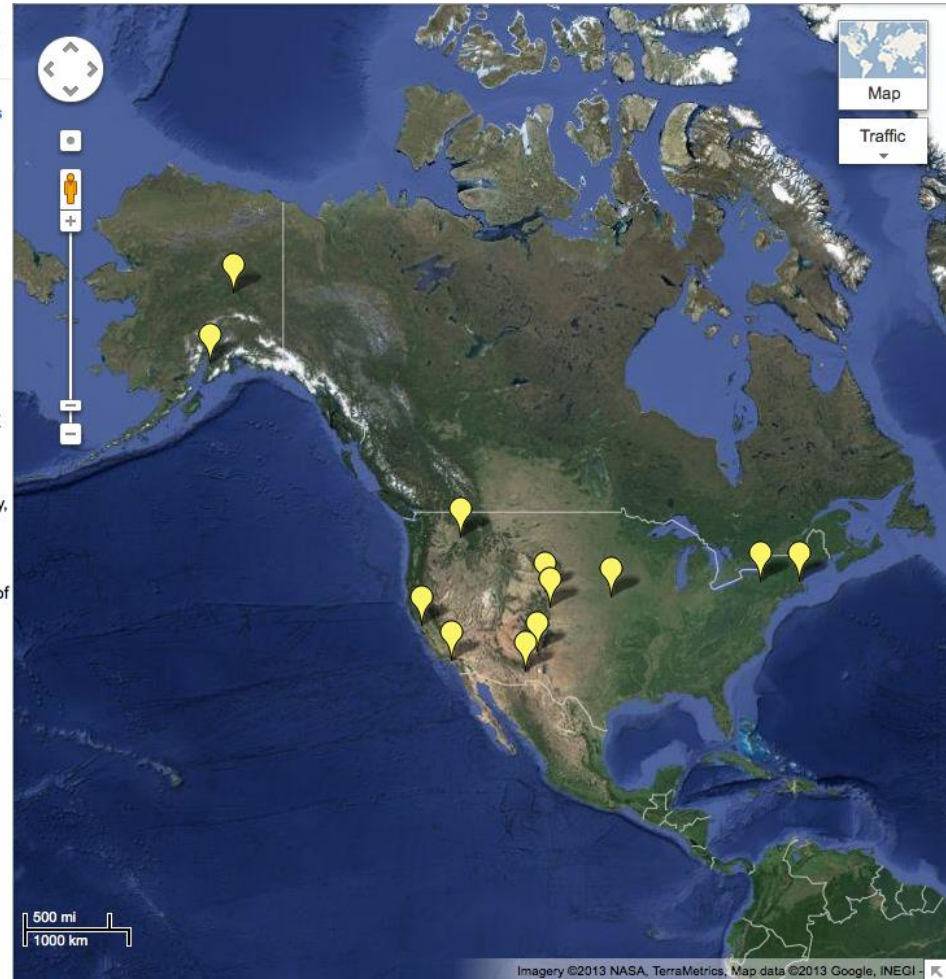
### Arctos institutions

The institutions whose collections are using the Arctos collection management system.

Public · 5 Collaborators · 3,158 views  
Created on Sep 27, 2011 · By Carla · Updated Jun 25  
Rate this map · 1 comments · KML

- Museum of Southwestern Biology, University of New Mexico, Albuquerque, NM
- Museum of Vertebrate Zoology, University of California, Berkeley, CA
- University of Alaska Museum of the North, Fairbanks, AK
- Western New Mexico University, Silver City, NM
- Charles R. Conner Museum, Washington State University, Pullman, WA
- Denver Museum of Nature and Science, Denver, CO
- Harold W. Manter Laboratory of Parasitology, University of Nebraska, Lincoln, NE
- Museum of Comparative Zoology, Harvard University, Cambridge, MA
- University of Wyoming Museum of Vertebrates, Laramie, WY
- Kenai National Wildlife Refuge  
Ski Hill Road P.O. Box 2139 Soldotna, AK 99669 E-mail: kenai@fws.gov Phone Number: 907-262-7021; toll free 1-877-285-5628 Visit the Refuge's Web Site: http://kenai.fws.gov
- Moore Lab of Zoology  
Moore Lab of Zoology, Occidental, CA
- Cornell Museum of Vertebrates  
Cornell Museum of Vertebrates

Report a problem



# THE UAM:ES COLLECTION

- ? specimens (>60,000)

Paleontology & Geology

- Digitization project from 2011

NSF-BRC funding

+ NPS, BLM, USFWS

Focus on vertebrates

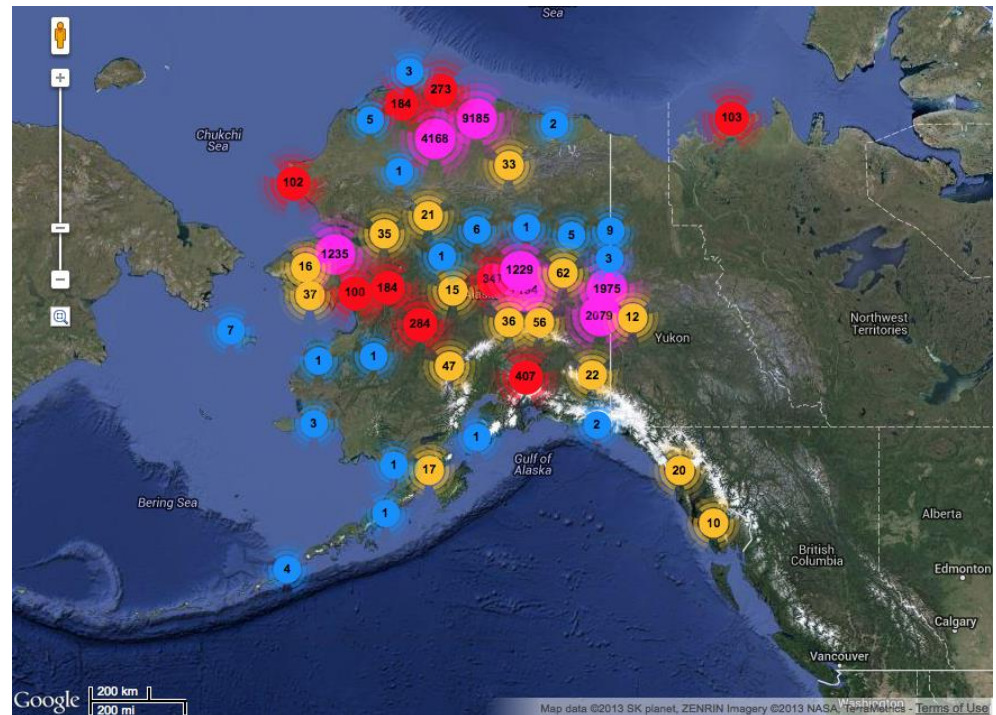
- 2 years later:

All accession cards digitized

All vertebrate and most invertebrate locality cards digitized

>31,500 databased specimens (>26,000 vertebrates)

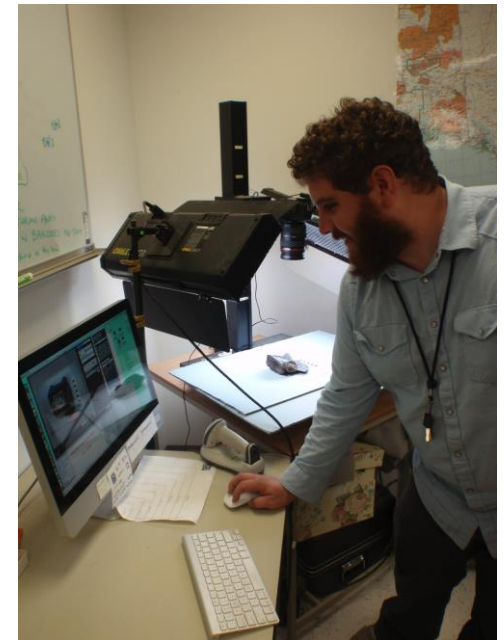
>40,600 specimen images online (85% of vertebrate specimens)



# ARCTOS IMPLEMENTATION

- **Minimum requirements:**
  - ✓ **Computer with Internet access**
  - ✓ **Collection metadata**
  - ✓ **Financial support to move your data**

- **Our project:**
  - + **Contribution to operational costs**
  - + **Barcodes and scanners**
  - + **Imaging station**



# ENTERING DATA

Migrate existing data → Bulkloader

Enter new specimens → “Green Screen”

The screenshot shows a complex web form for entering specimen data. The form is divided into several sections, each with a title and a link to documentation. The sections include:

- Cat Item IDs:** Fields for Inst, CCDE, Cat#, CustomID Type, CustomID, Autoinc?, and Accn. A red arrow points to the CustomID field, labeled "Required fields".
- Entered By:** A dropdown menu with the name "jrousseau".
- Agents:** A table with columns for Collector, Copy2All, and Collector. A red arrow points to the Collector column, labeled "Shared nodes".
- Other IDs:** A table with columns for ID Type, ID Number, and Relationship.
- Identification:** Fields for Scientific Name, ID By, Nature, ID of kin, Date, and ID Remk.
- Attributes:** A table with columns for Attribute, Value, Units, Date, Determiner, Method, and Remarks. A red arrow points to the Attribute column, labeled "Collection-specific attributes".
- Specimen/Event:** Fields for Event Determiner, Deter. Date, Specimen/Event Type, Coll. Src., Coll. Meth., Habitat, VerificationStatus, and Specimen/Event Remark.
- Collecting Event:** Fields for Event Nickname, Existing EventID, Verbatim Locality, VerbatimDate, and CollEventRemk.
- Locality:** Fields for Higher Geog, Locality, Existing LocalityID, Spec Locality, and Elevation (min-max).
- Coordinates (event and locality):** A field for Original lat/long Units.
- Geology (event and locality):** A table with columns for Geol Att., Geol Att. Value, Determiner, Date, Method, and Remark.
- Parts:** A table with columns for Part Name, Condition, Disposition, #, Barcode, Label, and Remark. A red arrow points to the Disposition column, labeled "Specimen vs. parts".

At the bottom of the form, there are buttons for "Save This As A New Record", "Edit Your Last Record", and a footer with links for "[AJAX]", "[SQL]", "[Java]", and "[download]", along with the text "0 records".

Shared nodes

Required fields

Collection-specific attributes

Specimen vs. parts

# UAMES PALEOIMAGER

“Shortcut” system designed for us

Barcode, database, photograph

1) accession cards

2) locality cards

3) specimens

JAM 1991 P012 10/01/81 NL  
Database Access # ACCESSION CARD

UNIVERSITY OF ALASKA MUSEUM

PALEONTOLOGY AND GEOLOGY ACC. NO. 1981 P 12

Collector Otto W. Geist Date 1959

Donor Same Date


Material Pleistocene vertebrate fossils

Provenience Cape Thompson, Alaska

Entered by Gary Selinger Date Entered July 7, 1981

BA 5-8-93 V-10

University of Alaska Museum Earth Sciences  
E21308

 Arctos  
Multi-Institution, Multi-Collection Museum Database

Log out jirousseau (Last login: 2013-09-16)

Search Enter Data Manage Data Manage Arctos Reports  
Portals My Stuff About/Help


[ enter more specimens for this card ] [ home ]


This card has specimens and cannot be deleted.

Locality Card

Locality ID	AK-10-V-
Accession	1981 P012
Card Barcode	ES39059
Coordinates	68.145/-165.97833333333332 ±
Era	Quaternary
Age	
Series Epoch	
System Period	Quaternary
Formation	
Who/When	ASEDGAR@2011-09-22 15:33:13.0

[ Create media ]

  
image (image/jpeg)  
License: CC BY-NC-ND

  
68.103, -165.789; Elevation not recorded

- get a DOI
- UAM ES AK-10-V-: Ovibos  
barcode: ES43372
- derived from media  
[http://web.corral.tacc.utexas.edu/UAF/es/2012\\_07\\_06/ES43372\\_1.dng](http://web.corral.tacc.utexas.edu/UAF/es/2012_07_06/ES43372_1.dng)
- shows cataloged item UAM Earth Science 28485 (Ovibos)

[ edit media ] [ add or edit TAGS ]

UNIVERSITY OF ALASKA MUSEUM

PALEONTOLOGY — LOCALITY

Age Pleistocene

State AK Map Point Hope Edition & Scale 1955 1:250,000 Acc. No. 1981 P-12

Survey Coordinates or Grid 68° 08.7N, 165° 58.7W Formation unspecified

Collected By Otto Geist Date 1959

Organisms Loc. Deser. Seven miles E. of Cape Thompson on the Chukchi Sea.

Mammalia  
Mammoth  
Musk ox  
Caribou

See list of elements on file # 10 2147158

University of Alaska Museum Earth Sciences

Entered By Gary Selinger Date 7/14/81  
Additions by: R.A. Gangloff 1/25/90  
BA 5-8-92

specimens need renumbering

Specimens

ID	Barcode	TaxonName	PartName	Who	When	
AK-10-V-	ES38214	Mammuthus	scapula	hmori	2012-10-07 00:03:12.0	DELETE
AK-10-V-	ES43372	Ovibos	atlas vertebra	eiblake	2012-06-20 15:05:03.0	DELETE
AK-10-V-	ES38242	Mammalia	unknown	hmori	2012-10-10 13:40:15.0	DELETE
AK-10-V-	ES38237	Mammalia	rib	hmori	2012-10-09 23:30:51.0	DELETE
AK-10-V-	ES38238	Mammalia	rib	hmori	2012-10-09 23:35:59.0	DELETE
AK-10-V-	ES38386	Mammalia	rib	hmori	2012-11-01 18:36:20.0	DELETE
AK-10-V-	ES43490	Ovibos	molar tooth	asedgar	2012-06-27 15:53:32.0	DELETE
AK-10-V-	ES43491	Ovibos	molar tooth	asedgar	2012-06-27 16:09:31.0	DELETE
AK-10-V-	ES43492	Ovibos	molar tooth	asedgar	2012-06-27 16:10:19.0	DELETE
AK-10-V-	ES43493	Ovibos	molar tooth	asedgar	2012-06-27 16:10:59.0	DELETE
AK-10-V-	ES43494	Ovibos	tooth	asedgar	2012-06-27 16:11:46.0	DELETE
AK-10-V-	ES43495	Ovibos	molar tooth	asedgar	2012-06-27 16:12:59.0	DELETE
AK-10-V-	ES43496	Ovibos	molar tooth	asedgar	2012-06-27 16:13:55.0	DELETE
AK-10-V-	ES43497	Ovibos	molar tooth	asedgar	2012-06-27 16:14:47.0	DELETE
AK-10-V-	ES38393	Mammalia	unknown	hmori	2012-11-23 16:23:47.0	DELETE

# SPECIMEN RECORD

**UAM Earth Science 28485**

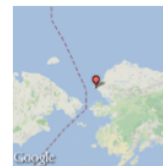
**UAM:ES:**

**Ovibos**

[<< Return to results](#)  
[get a DOI](#)

**7 miles East of Cape Thompson on the Chukchi Sea**  
North America, United States, Alaska, Point Hope Quad  
1959 (1959-09-21 - 1959-10-04)

atlas vertebra



[\[ Report Bad Data \]](#)  
[Earth Sciences](#)

first prev next last  
Record 8 of 67

[Taxa](#) [Accn](#) [Locality](#) [Agents](#) [Parts](#) [Part Locn.](#) [Attributes](#) [Other IDs](#) [Media](#) [Encumbrances](#)

**Ovibos**

Animalia Chordata Mammalia Artiodactyla Ruminantia Bovidae Caprinae Ovibos  
muskoxen

Identified by unknown

Nature of ID: field

Determination Type: accepted place of collection

assigned by Julie Rousseau on 2013-03-20

Higher Geography: North America, United States, Alaska, Point Hope Quad

Specific Locality: 7 miles East of Cape Thompson on the Chukchi Sea

Event Remarks: Part of Geist expedition under ONR grant #247.

Collecting Source: wild caught

Event Date: 1959 (1959-09-21 - 1959-10-04)

Verification Status: unverified

Event Coordinates: 68d 8.7m N/165d  
58.7m W

Datum: World Geodetic  
System 1984

Original Coordinate degrees dec.

Format: minutes

Error: 1787 m

Georeference Source: GeoLocate

Georeference Protocol: GeoLocate

System/Period: Quaternary

Determined by unknown



Collectors

Otto William Geist, Baxter Adams

Identifiers

original identifier: AK-10-V-059

Part Name	Condition	Disposition	#	Label	Remarks
atlas vertebra	unchecked	in collection	1	ES43372	

Entered By: Erica Blake on 2012-06-21

Last Edited By: UAM on 2013-03-21

Accession

1981 P012



image (image/jpeg)

[Media Details](#)

UAM/AK Locality ID AK-10-V-  
Locality card

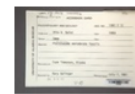


image (image/jpeg)

[Media Details](#)

UAM ES accession 1981 P012  
accession card

Media



image (image/jpeg)

[Media Details](#)

UAM ES AK-10-V-: Ovibos



image (image/jpeg)

[Media Details](#)

UAM ES AK-10-V-: Ovibos



# PLANT FOSSIL

UNIVERSITY OF ALASKA MUSEUM

VERTEBRATE PALEONTOLOGY - LOCALITY

LOC. NO. AK-308-V-01 to 04  
 ACC. NO. 1994-P-30 + 2003-P-06  
 Age LATE CRETACEOUS (MAASTRICHTIAN)  
 Formation PRINCE CREEK - KOSOLOKOVA TERRACE  
 State AK Map Hagerstrom Bay 4-3 Edition & Scale 1985 SCALE 1:63360  
 Latitude / Longitude 70° 5' 12" N, 151° 52' Survey Coords. SW 1/4, SEC 36, T. 9 N., R. 2 E.  
 Collected By ROBERT GANGLOFF Field No. & Date 8/93 + 7/2002

Organisms: 1 HADESANA PISONA PARAHMONT ? 2 FEET OF FOSSILIFEROUS WOOD  
1 piece of hardened matrix containing cross section of skeleton.

Loc. Descr. BEACH FLOAT FROM AREA BELOW UAF 91-2 + below Byers Bonebed  
Permit # AA-76725/76726

University of Alaska Museum Earth Sciences

Entered By GARY GRASS Date 11/20/94  
R.A. Gangloff 6/26/03

UAM Earth Science 17188

UAM:ES:

Plantae

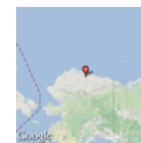
<< Return to results  
get a DOI

no specific locality recorded  
no higher geography recorded  
before 2011-10-27 (1800-01-01 - 2011-10-27)

stem

[ Report Bad Data ]  
Earth Sciences

first prevnext last  
Record 10 of 34



Taxa Accn Locality Agents Parts Part Locn. Attributes Other IDs Media Encumbrances

Plantae

Plantae

Identified by unknown

Nature of ID: field

Determination Type: accepted place of collection

assigned by unknown on 2011-10-26

Higher Geography: no higher geography recorded

Verbatim Locality: no verbatim locality recorded

Specific Locality: no specific locality recorded

Collecting Source: wild caught

Event Date: before 2011-10-27 (1800-01-01 - 2011-10-27)

Verification Status: unverified

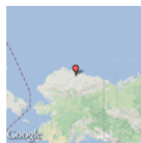
Event Coordinates: 70.0866666667-151.533333333

Datum: unknown

Original Coordinate Format: decimal degrees

Georeference Source: locality card

Georeference Protocol: not recorded



Stage/Age: Maastrichtian

Determined by unknown

formation: Prince Creek Formation

Determined by unknown

Identifiers

Locality ID: AK-308-V-

original identifier: AK-308-V-003

Part Name	Condition	Disposition	#	Label	Remarks
stem	unchecked	in collection	1	ES50125	

Remarks: Tree stem

Entered By: Todd Jacobus on 2011-10-27

Last Edited By: UAM on 2012-08-29

Accession

[1994 P030](#)

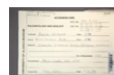


image (image/jpeg)  
Media Details

UAM ES accession 1994 P030  
accession card



image (image/jpeg)  
Media Details

UAM/IAK Locality ID AK-305-V-  
Locality card



image (image/jpeg)  
Media Details

UAM/IAK Locality ID AK-306-V-  
Locality card



image (image/jpeg)  
Media Details

UAM/IAK Locality ID AK-307-V-  
Locality card



image (image/jpeg)  
Media Details

UAM/IAK Locality ID AK-308-V-  
Locality card

Media



image (image/jpeg)  
Media Details

UAM ES AK-308-V-003:  
Plantae



image (image/jpeg)  
Media Details

UAM ES AK-308-V-003:  
Plantae

# VERTEBRATE FOSSIL

UAM Earth Science 12505

UAM:ES:

**Tyrannosauridae**

<< Return to results

get a DOI

Liscomb Bone Bed  
North America, United States, Alaska, Harrison Bay Quad  
1987-08-02 (1987-07-31 - 1987-08-10)

tooth

UCMP University of California Museum of Paleontology Specimen 154453

UCMP Collection Vertebrates

Other Cat. Num

Accn No 4493

Field No UAM-AK83.V90

Remarks

Type Status FIG

Num. Indiv 1

Element tooth

Duplicate CAST

Fate

Provenience

Donor

Island

Phylum

Class Reptilia

Subclass

Order Saurischia

Suborder

Superfamily

Family Tyrannosauridae

Subfamily

Genus

Subgenus

Species

Subspecies

Modifiers

Other ID

Author

Loc ID V85091

Loc Name Poverty Bar - General

Cont/Ocean North America

Country United States

State/Prov Alaska

County North Slope Borough

Island Group

Island

Era/Eon Mesozoic

Period Cretaceous

EPOCH Late Cretaceous

Stage

Storage Age Maastrichtian

Flora/Fauna

Formation Prince Creek

Rack Bay

Other Storage

Loan

Slide No.

Orig Slide No.

Slide Type

Slide X Y

Link to Archives

Public Access yes

Identified by Erickson, G.M. 1995

Collector UCMP/UAM Field Party

Date Collected Jul 1987

Publications

Author/Date

Last modified: Pat Hoadly 2007-12-03 13:54:04

Notice: Please read the UCMP copyright notice and disclaimer before using UCMP records in analyses or reports.

Taxa Accn Locality Agents Parts Part Locn. Attributes Other IDs Media Encumbrances

Tyrannosauridae

Animalia Chordata Reptilia Saurischia Tyrannosauridae

sensu Erickson 1995

Identified by Gregory M. Erickson

Nature of ID: expert

Remarks: Tyrannosaurid lateral tooth crown with split carina.

Tyrannosauridae

Animalia Chordata Reptilia Saurischia Tyrannosauridae

Identified by Roland Gangloff

Nature of ID: expert

Remarks: Initial field identifications by Clemens et al. not necessarily correct

Identifiers

UCMP: University of California Museum of Paleontology: V154453

original identifier: AK-83-V-090

Part Name Condition Disposition # Label Remarks

tooth partial in collection 1 ES23180 Tyrannosaurid tooth crown, carina shows anterior basal split

Remarks: Tyrannosaurid tooth crown; published as Figure 1A in Erickson 1995: "Split carinae on tyrannosaurid teeth and implications for development", JVP vol 15 #2, p. 268-274. Current location (as of 3/10/2011): Collections in the process of being researched" lane case, UAM Earth Science Lab, drawer 1

Entered By: Kevin Stack on 2011-03-10

Last Edited By: JIROUSSEAU on 2013-09-16

Publication Details

Full Citation

Gregory M. Erickson. 1995. Split carinae on Tyrannosaurid teeth and implications of their development. Journal of Vertebrate Paleontology 15: 268-274.

Italicized selected text  
bold selected text  
superscript selected text  
subscript selected text  
Proper Case selected text

Short Citation

Erickson 1995

Publication Type Peer Reviewed? Published Year

journal article | yes | 1995

Digital Object Identifier (DOI)

PubMed ID (PMID)

Storage Location

http://www.jstor.org/stable/4523630

Remark

Current Authors

Role	Name
author	Gregory M. Erickson

Add Authors

Role	Name
author	
author	
author	

Add Media:

Yellow cells are only required if you supply or create a URL. You may leave this section blank.

Find Media and create a relationship to link existing Media to this Publication.

Media URI

Upload

Preview URI

MIME Type

Media Type

Media Description

save Delete Publication

Citations

basis of illustration of Tyrannosauridae, page 269 in Erickson 1995

Determination Type: accepted place of collection

assigned by William Clemens on 1985-07-01

Higher Geography: North America, United States, Alaska, Harrison Bay Quad

Verbatim Locality: Observation Point, west bank of Colville River AK

Specific Locality: Liscomb Bone Bed

Locality Remarks: This locality contains specimens collected in place and as float from the Liscomb Bone Bed at "Observation Point" along the Colville River, AK. This is a generic locality containing specimens from several different collecting events.

Collecting Source: wild caught

Event Date: 1987-08-02 (1987-07-31 - 1987-08-10)

Verification Status: unverified

Event Coordinates: 70d 5m 0s N/151d 32m 54s W

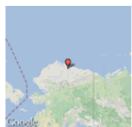
Datum: North American Datum 1927

Original Coordinate Format: deg. min. sec.

Error: 2 km

Georeference Source: USGS 1:63,360 topo Map Harrison Bay A-3

Georeference Protocol: BioGeoMancer



System/Period: Late Cretaceous

Determined by unknown

Collectors

William A. Clemens, Dr. Carol W. Allison

# VERTEBRATE FOSSIL

## UAM Earth Science 2414

UAM:ES:  
*Mammut americanum*  
[<< Return to results](#)  
[get a DOI](#)

Ikpikpuk River  
North America, United States, Alaska  
01-Jul-1999 (1999-07-01 - 1999-07-31)

tooth

[Taxa](#) [Accn](#) [Locality](#) [Agents](#) [Parts](#) [Part Locn.](#) [Attributes](#) [Other IDs](#) [Media](#) [Encumbrances](#)

### *Mammut americanum*

Animalia Chordata Mammalia Proboscidea Mammutidae Mammut americanum  
American mastodon; mastodon  
**sensu Rohland et al. 2007**  
Identified by Paul Matheus  
Nature of ID: expert

### *Mammut*

Animalia Chordata Mammalia Proboscidea Mastodontidae Mammut  
**sensu Mann et al. 2013**  
Identified by Grant D. Zazula  
Nature of ID: expert  
Remarks: Personal communication

### *Mammut americanum*

Animalia Chordata Mammalia Proboscidea Mammutidae Mammut americanum  
American mastodon; mastodon  
Identified by Paul Matheus  
Nature of ID: expert  
Remarks: Also known as Mastodon

### Citations

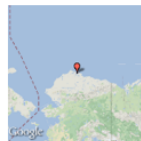
basis of illustration of *Mammut americanum*, page 3 in [Rohland et al. 2007](#)  
basis of illustration of *Mammut* in [Mann et al. 2013](#)

Determination Type: accepted place of collection  
assigned by Amanda Hanson on 2009-07-03

Higher Geography: North America, United States, Alaska  
Verbatim Locality: Collected as float along the Ikpikpuk River on the North Slope of Alaska  
Specific Locality: Ikpikpuk River  
Collecting Source: wild caught  
Event Date: 01-Jul-1999 (1999-07-01 - 1999-07-31)  
Verification Status: unverified

Event Coordinates: 70.819754/-154.3096288  
Datum: North American Datum 1983

Original Coordinate Format: decimal degrees  
Error: 42 km  
Georeference Source: BioGeomancer  
Georeference Protocol: BioGeoMancer



Stage/Age: Pleistocene  
Determined by unknown

Collectors  
Bureau of Land Management

SEQUENCE: COI-SP [Funding Source: N/A]

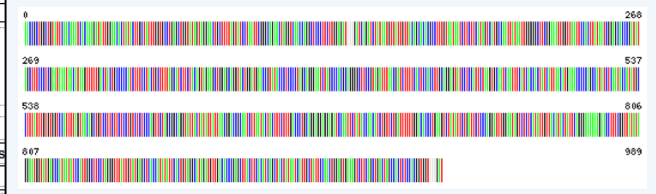
Sequence ID: GBMA839-07.COI-5P GenBank Accession: [EF632344](#)  
Last Updated: 2013-09-12 Genome: Mitochondrial  
Locus: Cytochrome Oxidase Subunit 1 5' Region  
Nucleotides: 990 bp

```
AACCGTGGCTGATTCAACAATCACAAGATATGGAACACTACTTGTCTATTTGGTGCCTGAGCTGGTATA
GTAGGAACCTGTTTAGTATCCTAATTCGGGAGAACTAGGTCACACAGGCTCCCTCTGGAGAT--GATCAG
ATCATAAAGTATATGTTACAGCAGCAGCCTTGTATATATCTCTCTCAGTACATGCCAATATATAATGGGGC
TTCGAAATATGTTATGCTTCACTATAATCCGGAGCAGCCGATATGCTTCCCTCGAATAATACATAGTPTT
TGACTACTGCCCCATCTTCTACTGCTTTAGCACTCTTACAGTAGAAGCTGGAGCAGTACTGGTAGCC
GTATACCTCCCTAGCAGGGAATAGCCACGAGGGGCTCCGTAGATTTAACGATCTTTTCACTCACCTT
GCAGGAGTATCCCTCATCTTAGTGAATCAATTCATACCACTATCATTAACATGAACCCAGCCATATCT
CAATACCATAGGCTTTATGCTTGTAGAGGCTCTTTGTAAGAGCTCTCTCTCTCTGCTCCCTCACTTCA
GGCGAGGTATTAATAATTAACGAGCCCACTTAATACTACTTTCTTTGACCTCGAGGAGGAGAT
CCAATTCATACCAACATCTGTTCTGATTTTGGACACCTGAAGTCTATATTCGATTCCTCCAGGATTTGGA
ATGCTCTCATATTTGTACACTATTTACACTATTTAGGAAATGGTATGAGCCATA
ATATCCATTTGGCTTCCAGGGTTTATTCATAGAGCTCACTATATTCAGTGTAGCAATGATTTGGAGCCGA
GCTTACTTACATCAGCTACTAATCATTTGCTTCCAACTGGAATGAACTTCACTGACAGCAGCCACTC
CACGGTGT--GAT
```

### Amino Acids:

```
RWLYSTNHKIDIGTLLYLLGAWAGMVGTAFLIRLAELGGQSPQLLGD-DQIYVNIYTAHAFVHIFMFMVIMIIGF
GHWLPLMIGDPAFRFRNMYLPPDFLLLASVYVAGAGTGYVYFPLAGNLRHAGLSVDLITPSLHLA
GVSSLSAINFITITINMKPAMSYHMLFVWSILVAVLLLSLPLVLAAGITMLLDRNLNTFFDPAGGGD
ILYQHLFWFGHPEVYLLLLPGFMVSHIYTYSGKPEFGYMGVMWAMSIGLFGIYVAHMFTVQMDVDTRA
YFTSATMIIAIPYGVKVFSLATLHGG-D
```

### Illustrative Barcode:



### Identifiers

BoLD barcode ID: [GBMA839-07](#)  
GenBank: [EF632344](#)  
collector number: IK-99-237

Part Name	Condition	Disposition	#	Label	Remarks
tooth	partial	being processed	1	ES 014085	

Remarks: Part of the root has been removed for mitochondrial DNA analysis (Rohland et al. 2007).  
Entered By: Amanda Hanson on 2009-02-09  
Last Edited By: JIROUSSEAU on 2013-09-16

### Accession

2009.001.ESCI

### Media



image (image/jpeg)  
Media Details

UAM:ES:2414: Mammut



image (image/jpeg)  
Media Details

UAM:ES:2414: Mammut

NCBI Resources | How To | Sign In to NCBI

Nucleotide | Limits | Advanced | Search | Help

Display Settings: GenBank | Change region shown | Customize view | Analyze this sequence | Run BLAST | Pick Primers | Highlight Sequence Features | Find in this Sequence | LinkOut to external resources | UAM Earth Science 2414 | BOLD Link [GBMA839-07] | Related information | Full text in PMC | Gene | Genome | Identical RefSeq | Protein | PubMed | PubMed (Weighted) | Taxonomy | Recent activity | Turn Off | Size

GenBank: EF632344.1

**Mammut americanum mitochondrion, complete genome**

FASTA Graphics | Go to |

LOCUS EF632344 16469 bp DNA circular MAM 19-SEP-2007  
DEFINITION Mammut americanum mitochondrion, complete genome.  
ACCESSION EF632344  
VERSION EF632344.1 G1:148540928  
KEYWORDS  
SOURCE mitochondrion Mammut americanum (American mastodon)  
ORIGIN Mammut americanum  
Eukaryote; Notosau; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Afrotheria; Proboscidea; Elephantidae; Mamm. 1 (base 1 to 16469)  
AUTHORS Rohland, M., Malaspinas, A.S., Pollack, J.L., Slatkin, M., Matheus, P. and Hofreiter, M.  
TITLE Proboscidean mitogenomics: chronology and mode of elephant evolution using mastodons as outgroup  
JOURNAL PLoS Biol. 5 (8), E207 (2007)  
PMID 17676972  
REFERENCE 1 (base 1 to 16469)  
AUTHORS Rohland, M., Malaspinas, A.-S., Pollack, J.L., Slatkin, M., Matheus, P. and Hofreiter, M.  
TITLE Direct Submission  
JOURNAL Submitted (14-MAY-2007) Molecular Ecology, MPI EVA, Deutscher Platz 6, Leipzig 04103, Germany  
FEATURES  
source 1..16469  
/organism="Mammut americanum"  
/organism2="mitochondrion"  
/mol\_type="genomic DNA"  
/db\_xref="taxon:29552"  
1..49  
/product="18S rRNA-Phi"  
70..1032  
/product="12S ribosomal RNA"  
1033..1100  
/product="18S rRNA-Val"  
1101..2467

# TRACE FOSSIL

UAM Earth Science 3352

UAM:ES:

Theropoda

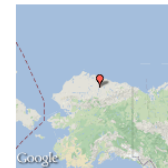
<< Return to results  
get a DOI

Colville River near Uluksrak Bluff

North America, United States, Alaska, Harrison Bay Quad

21-Aug-2009 (2009-08-19 - 2009-08-30)

trace fossil; trace fossil



[ Report Bad Data ]  
Earth Sciences  
first prev next last  
Record 101 of 104

Taxa Accn Locality Agents Parts Part Locn. Attributes Other IDs Media Encumbrances

Theropoda  
Animalia Chordata Reptilia Saurischia Theropoda  
Identified by Patrick Druckenmiller  
Nature of ID: field

Determination Type: accepted place of collection

assigned by Patrick Druckenmiller on 2009-08-08

Higher Geography: North America, United States, Alaska, Harrison Bay Quad

Verbatim Locality: The Uluksrak Bluff is on the NW side of the Colville River.

Specific Locality: Colville River near Uluksrak Bluff

Collecting Source: wild caught

Event Date: 21-Aug-2009 (2009-08-19 - 2009-08-30)

Verification Status: unverified

Datum: North American Datum 1927

Original Coordinate Format: degrees dec. minutes

Error: 500 m

Georeference Source: USGS 1:63,360 topo Map Harrison Bay A-3

Georeference Protocol: BioGeoMancer

Collectors

Patrick Druckenmiller, Kevin C. May

Identifiers

collector number: KCM CR09-05

Part Name	Condition	Disposition	#	Label	Remarks
trace fossil	single track	in collection	1	ES 012004	peel
trace fossil	single track	being processed	1	ES 012004	natural cast

Entered By: Amanda Hanson on 2009-10-01

Last Edited By: HMORI on 2013-05-07

Encumbrances: mask coordinates by Patrick Druckenmiller on 17 Dec 2009. Expires to be determined.

Accession

2009.014.ESCI

Media



image (image/jpeg)

Media Details

UAM:ES:3352: Theropoda



image (image/jpeg)

Media Details

UAM:ES:3352: Theropoda

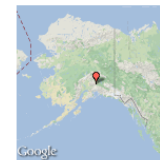
# INVERTEBRATE FOSSIL

UAM Earth Science 2016

UAM:ES:  
*Otoites pauper* cf.  
[<< Return to results](#)  
[get a DOI](#)

**Cameron Pass**  
North America, United States, Alaska, Talkeetna Mts. Quad  
Aug 2008 (2008-08-13)

exoskeleton



[ [Report Bad Data](#) ]  
[Earth Sciences](#)

first prev next last  
Record 1 of 1

[Taxa](#) [Accn](#) [Locality](#) [Agents](#) [Parts](#) [Part Locn.](#) [Attributes](#) [Other IDs](#) [Media](#) [Encumbrances](#)

***Otoites pauper* Westermann cf.**

Animalia Mollusca Cephalopoda Ammonoidea Otoitidae *Otoites pauper*  
**sensu Imlay 1964**  
Identified by Julie Rousseau  
Nature of ID: student

**Cephalopoda**

Animalia Mollusca Cephalopoda  
Identified by Patrick Druckenmiller on 2008-08-13  
Nature of ID: expert  
Remarks: ammonite

Edit

Identifiers

collector number: PSD-08-11-08-Lot

Edit

Part Name	Condition	Disposition	#	Label	Remarks
exoskeleton	partial	in collection	1	ES 012144	

Edit

Entered By: Carrie Lynn Yardley on 2008-12-16

Last Edited By: HMORI on 2013-04-14

Encumbrances: mask coordinates by Amanda Hanson on 22 Dec 2008. Expires Specimens are encumbered per the BLM until further notice..

Edit

Accession

2008.001.ESCI

Edit

Usage

~~Contributed By Project:~~ [Description of a Middle Jurassic \(Bajocian\) ophthalmosaurid \(Reptilia, Ichthyosauria\) from the Tuxedni Formation, Talkeetna Mountains, Alaska.](#)

Media

Edit



image (image/jpeg)

[Media Details](#)



image (image/jpeg)

[Media Details](#)

UAM:ES:2016: *Otoites pauper* UAM:ES:2016: *Otoites pauper* cf.

**Determination Type: accepted place of collection**

assigned by Patrick Druckenmiller on 2008-08-10

Higher Geography: North America, United States, Alaska, Talkeetna Mts. Quad

Specific Locality: Cameron Pass

Locality Remarks: Tuxedni ichthyosaur and invertebrates

Collecting Source: wild caught

Event Date: Aug 2008 (2008-08-13)

Verification Status: unverified

Datum: North American Datum 1927

Original Coordinate Format: degrees dec. minutes

Error: 134 m

Georeference Source: USGS Topo Map 1:63,360 Talkeetna Mtns. A-1

Georeference Protocol: BioGeoMancer

Series/Epoch: Middle Jurassic

Determined by unknown

formation: Tuxedni Formation

Determined by unknown

Edit

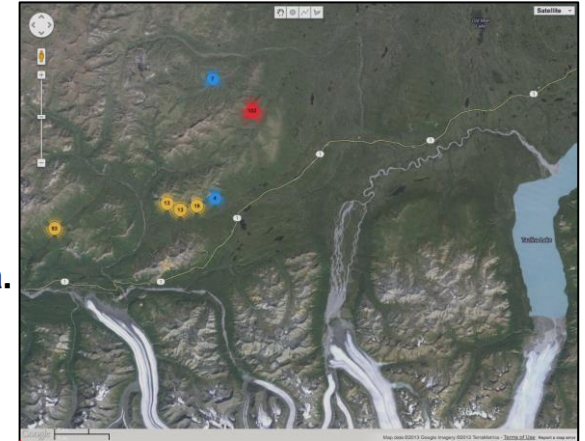
Collectors

Patrick Druckenmiller

# PROJECT PAGE

## Description of a Middle Jurassic (Bajocian) ophthalmosaurid (Reptilia, Ichthyosauria) from the Tuxedni Formation, Talkeetna Mountains, Alaska.

Erin E Maxwell: Principal Investigator  
Patrick Druckenmiller: Principal Investigator



[Edit Project](#)

### Description

Abstract from Druckenmiller and Maxwell, 2012: Ophthalmosauridae is a clade of derived thunniform ichthyosaurs that are best known from Callovian (late Middle Jurassic) to Cenomanian-aged (Late Cretaceous) deposits in both the Northern and Southern Hemispheres. Ophthalmosaurids arose prior to the Early–Middle Jurassic boundary, however, very little is known about their diversity and distribution in the earliest phase of their evolutionary history during the Aalenian–Bathonian (Middle Jurassic) interval. Here we describe new diagnostic ophthalmosaurid material from the Early Bajocian (Middle Jurassic) of Alaska. The specimen, UAMES 3411, is a partial disarticulated skull that was discovered in the Middle Jurassic Tuxedni Formation, which was deposited in shallow marine settings outboard of the then-accreting Wrangellia composite terrane. The new material is significant in that it is the first Jurassic ichthyosaur described from Alaska, one of the oldest ophthalmosaurids known and the only Middle Jurassic ophthalmosaurid described from the Northern Hemisphere. The new material adds to a rapidly growing data set on ophthalmosaurid diversity and suggests that the clade was geographically widespread by the Early Bajocian, very early in its evolutionary history.

### Publications

This project produced 1 publications.

Patrick S. Druckenmiller and Erin E. Maxwell. 2013. A Middle Jurassic (Bajocian) ophthalmosaurid (Reptilia, Ichthyosauria) from the Tuxedni Formation, Alaska and the early diversification of the clade. *Geological Magazine*: 1-8.

1 Cited Specimens

- <http://dx.doi.org/10.1017/S0016756813000125>
- [Details](#)

### Specimens Contributed

- 253 UAM Earth Science [Specimens \[ BerkeleyMapper \]](#)

GUID	UAM:ES	Identification	Other Identifiers	Accession	Country	State	Specific Locality	Verbatim Date	Parts	Part Detail	Sex	Dec. Lat.	Dec. Long.	Max Error (m)
<a href="#">UAM:ES:3411</a> <a href="#">basis of illustration</a>		<a href="#">Ophthalmosaurinae</a>	collector number=KCM-02-HM-01	2002 P011	United States	Alaska	Southern flank of Horn Mountains at head of Willow Cr.	01-Jul-2002	supraoccipital basioccipital exoccipital quadrate unknown	basioccipital {2; in collection; complete; NO BARCODE} exoccipital {2; in collection; Complete; NO BARCODE} quadrate {2; in collection; Complete; NO BARCODE} supraoccipital {1; in collection; Partial; NO BARCODE} unknown {6; in collection; Partial; NO BARCODE}		62.0284722222	-147.3018333333	50

# GEOREFERENCING

## Locality

### Higer Geography

North America, United States, Alaska, Mt. Hayes Quad

[Change](#) [Edit](#)

### Specific Locality

Yardang Site, Ruby Creek

[Locality Nickname](#)

create GUID

Min. Elev. TO Max. Elev. Elev. Unit

Min. Depth. TO Max. Depth. Depth Unit

### Locality Remarks

ca. 29 miles south of Delta Junction

Decimal Latitude: 63.6525  
 Decimal Longitude: -145.90889

### Convert to decimal degrees

LatDeg	LatMin	LatDec	LatDir	<a href="#">convert to decimal</a>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	
LongDeg	LongMin	LongSec	LongDir	<a href="#">convert to decimal</a>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	

LatDeg	DeclatMin	LatDir	<a href="#">convert to decimal</a>
<input type="text"/>	<input type="text"/>	<input type="text"/>	
LongDeg	DeclongMin	LongDir	<a href="#">convert to decimal</a>
<input type="text"/>	<input type="text"/>	<input type="text"/>	

Max Error Max Error Units

210 m

### Datum

World Geodetic System 1984

[georeference\\_source](#)

GeoLocate

Georeference Protocol

GeoLocate

[Save](#) [Delete](#) [Clone Locality](#) [Add Collecting Event](#) [Georeference](#)

[\[ Find all Collecting Events \]](#) [\[ Georef Calculator \]](#) [\[ lat\\_long h](#)

The screenshot displays a georeferencing application interface. At the top, it shows a topographic map with a red dot indicating a location. A tooltip provides coordinates: Lat: 63.6525, Lon: -145.90889, Uncertainty: 210 meters, Edit uncertainty, and Parse pattern: RUBY CREEK. Below the map is a 'Workbench' section with a '21 possible locations found' header. It includes a 'Georeference' button and several radio buttons for 'Options', 'Draw polygon', 'Place marker', and 'Measure'. The 'Locality String' is 'Yardang Site, Ruby Creek'. The 'Country' is 'UNITED STATES OF AMERICA', 'State' is 'Alaska', and 'County' is blank. Checkboxes are checked for 'latitude: 63.6525', 'longitude: -145.90889', 'uncertainty: 210 m', and 'error polygon'. A 'Save To Your Application' button is at the bottom. Below this is a satellite map showing the same location with several red dots. A second 'Workbench' section is visible at the bottom, with 'Locality String: Yardang Site, Ruby Creek', 'Country: UNITED STATES OF AMERICA', 'State: Alaska', and 'County:'. It also has checked boxes for 'latitude: 65.44389', 'longitude: -165.4225', 'uncertainty: 210 m', and 'error polygon', and a 'Save To Your Application' button.

# SPECIMEN USAGE DATA

## UAM Earth Science 21402

UAM:ES:  
*Ornithomimidae*  
← Return to results  
get a DOI

Old Bone Beach, W bank of Colville River downstream of permafrost tunnel  
North America, United States, Alaska, Harrison Bay Quad  
7/7/1998 (1998-01-01 - 2000-01-29)

right metatarsal; right metatarsal sample

### Ornithomimidae

Animalia Chordata Reptilia Saurischia Ornithomimidae  
sensu [Watanabe et al. 2013](#)

Identified by Patrick Druckenmiller, Gregory M. Erickson, Aki Watanabe on 2013  
Nature of ID: expert

### Theropoda

Animalia Chordata Reptilia Saurischia Theropoda  
Identified by Roland Gangloff on 1998-07-07  
Nature of ID: expert

### Citations

basis of illustration of [Ornithomimidae](#), page 1170 in [Watanabe et al. 2013](#)

Collecting Source: wild caught  
Event Date: 7/7/1998 (1998-01-01 - 2000-01-29)  
Verification Status: unverified

Event Coordinates: 70d 5.338m N/161d 30.445m W  
Datum: World Geodetic System 1984

Original Coordinate Format: degrees dec. minutes  
Georeference Source: Harrison Bay A-3 topo map, scale 1:63,360  
Georeference Protocol: BioGeoMancer



### Identifiers

Locality ID: AK-458-V-  
original identifier: AK-458-V-010

Part Name	Condition	Disposition	#	Label	Remarks
right metatarsal	partial	in collection	1	ES33864	Metatarsal IV, right pes.
right metatarsal	Plaster cast	on loan	1		



### UAM Earth Science 431.2008.Paleo (3 items)

Recipient: Gregory M. Erickson  
Theropod partial metatarsal, AK-458-V-10; Mold and cast of AK-458-V-10. Hadrosaur tooth crown and root, AK-138-V-129; Hadrosaur tooth crown and root, AK-233-V-009; Hadrosaur tooth crowns (2), AK-144-V-001

Type: returnable  
Status: in process  
Due Date: 2010-06-09 00:00:00.0  
Transaction Date: 2008-06-09  
Instructions: All results must be returned to the Earth Science department.  
Authorized By: Patrick Druckenmiller  
Entered By:  
Remarks: All specimens are to be returned with minimal damage.  
Description: This is a loan for destructive analysis.  
Project: None

[ Review Items ] [ Add Items ] [ Add Items By Part Container Barcode ] [ Edit Loan ]

### UAM Earth Science 491.2012.ESCI (1 items)

Recipient: Aki Watanabe  
Nature of Material: Cast of an ornithomimid metatarsal, UAMES 21402 (AK-458-V-010).

Type: returnable  
Status: open  
Due Date: 2013-10-24 00:00:00.0  
Transaction Date: 2012-10-24  
Instructions:  
Authorized By: Patrick Druckenmiller  
Entered By: Julie Rousseau  
Remarks: Please use the UAMES number to refer to the specimen.  
Description:

Project: None  
[ Review Items ] [ Add Items ] [ Add Items By Part Container Barcode ] [ Edit Loan ]

Review Loan Items for UAM Earth Science 491.2012.ESCI (returnable)

[Download \(csv\)](#) - non-data loans only!

[back to Edit Loan](#)

There are 1 non-data loan items from 1 specimens in this loan.

Change disposition of all these items to:  [Update Disposition](#)

View [Part Locations](#) or [Print Freezer Locations](#)

GUID	UAM:ES	Scientific Name	Item	Condition	Subsample?	Item Instructions	Item Remarks	Disposition	Encumbrance	partLastScanDate
UAM:ES:21402		Ornithomimidae	right metatarsal	Plaster cast	yes		cast on loan	on loan		

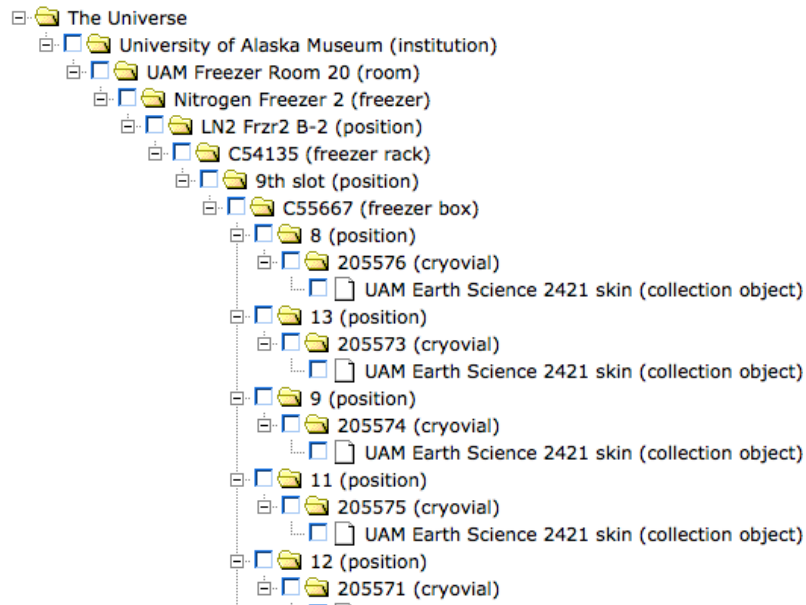
Usage

Loan History: [Click for loan list](#)



# COLLECTION MANAGEMENT APPLICATIONS

- Loans
- Reports and collection statistics
- Permits / Accession agencies
- Tracking system using barcodes



# WHY LOVE ARCTOS

- Web-based, accessibility
- Modularity, customizable
- Dynamic system
- Community of users
- External links

## Arctos Collection Management Information System

Information for Natural History Collections



Home Search Arctos Data Licensing Documentation Governance Outreach Contacts Join Arctos FAQ

### How To

Procedures are here, but also scattered around in documentation and wherever. Search is your friend – use it wisely.

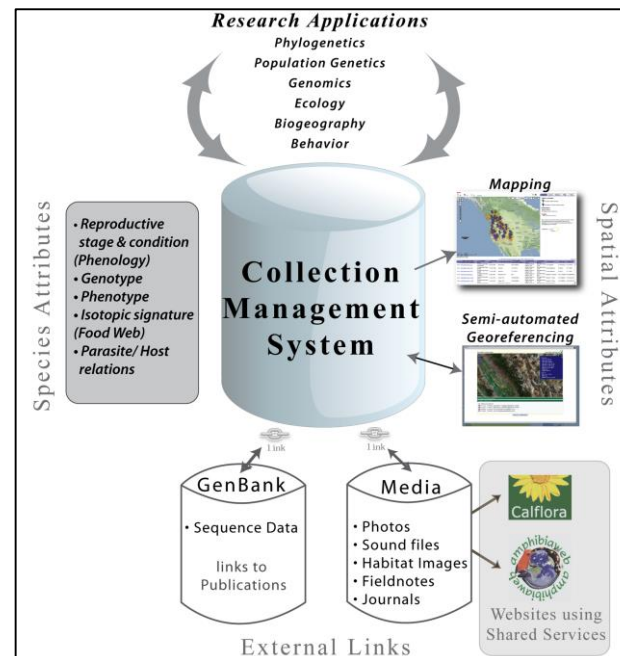
**Arctos Tweets**

- Arctos just added over 7500 specimens from the herpetology collection of the Burke Museum, University of Washington ([burke-museum.org/herpetology](http://burke-museum.org/herpetology)) 8 months ago

[Follow @arctosdb](#)

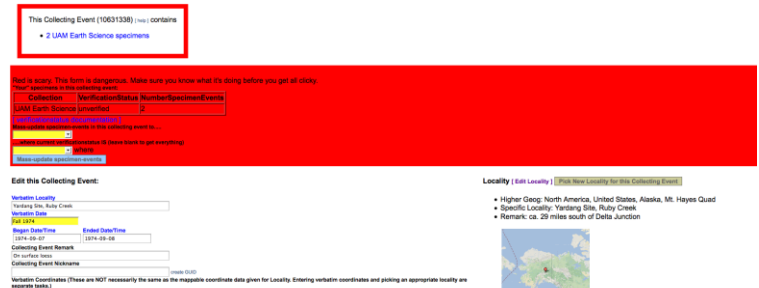
**Recent Posts**

- Locality Update
- Scheduled TACC work (Arctos down) on Tues, May 22, 10am-12pm Central Time
- Scheduled DIGIR outage: 2012-05-05
- Arctos network issues
- How to use DOI/PMID to create Arctos publications



# KEEP IN MIND...

- Crashes happen.
- Downtimes happen.
- Changes happen.



Red is scary. This form is dangerous. Make sure you know what it's doing before you get all clicky.  
"Your" specimens in this locality:

Collection	VerificationStatus	NumberSpecimenEvents
UAM Earth Science	unverified	2

Update Verification Status for ALL specimen\_events in this collecting event to....

.....where current verificationstatus IS (leave blank to get everything)

Update Verification Status for all of your specimen\_events in this locality to value in pick above

## Coming soon to Arctos:

- Radiometric age as an attribute
- "Taxonomy" system for geological specimens

# ACKNOWLEDGEMENTS

Special thanks to:

- iDigBio
- Chris Jordan (Texas Advanced Computing Center)
- Jessica D. Cundiff (Museum of Comparative Zoology)



More information?

- Arctos database: <http://arctos.database.museum>
- Arctos blog: <http://arctosdb.org/>
- Presentations and tutorials: <http://arctosdb.org/home/outreach/>
- MVZ Arctos demo (2008): <http://youtu.be/1-ku5QRM800>

