Aren M. Gunderson
Mammal Collection Manager, University of Alaska Museum
Arctos Advisory Committee

Link E. Olson
Curator of Mammals, University of Alaska Museum
Arctos Steering Committee (Chair)

arctosdb.org
About Arctos

Arctos is both a community and a comprehensive collection management information system. As a community, it is a collaboration among multiple scientific collections that serves data on over 3M natural history museum records. Approximately half of those records are in a shared instance hosted at the Texas Advanced Computing Center (view institutions and holdings). The remaining specimens and collections are in MCZBase, a single instance at the Museum of Comparative Zoology, Harvard University. Arctos users contribute to data standards, application enhancements, and improved data quality through sharing of authorities for taxonomy, geography, people names, part types, and other data.

Arctos’ multidisciplinary collection management information system integrates access to diverse types of collections (botany, entomology, herpetology, mammalogy, ornithology, paleontology, parasitology) and data, including specimen records, observations, tissues.
In addition to rigorously displaying all that is known about a museum record, Arctos provides solutions to managing and integrating collections data with object tracking (via barcodes or RFID tags), transactions (loans, borrows, accessions, permits), geospatial information (coordinates and descriptive data), agents (people and organizations), and usage (publications, projects, and citations).
Steering Committee:
• Link Olson (Chair), University of Alaska Museum
• Joe Cook, Museum of Southwestern Biology
• James Hanken, Museum of Comparative Zoology (external member)
• Michael Nachman, Museum of Vertebrate Zoology

Advisory Committee:
• Carla Cicero (Chair), Museum of Vertebrate Zoology
• Jon Dunnum, Museum of Southwestern Biology
• Linda Ford, Museum of Comparative Zoology (external member)
• Aren Gunderson, University of Alaska Museum
• Brendan Haley, Museum of Comparative Zoology (external member)
• Gordon Jarrell, Museum of Southwestern Biology
• Michelle Koo, Museum of Vertebrate Zoology
• Dusty McDonald, University of Alaska Museum
Arctos Governance

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• Gordon Jarrell, Museum of Southwestern Biology
• Michelle Koo, Museum of Vertebrate Zoology
• Dusty McDonald, University of Alaska Museum
25 institutions
88 collections
3.9 million records
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<th>Records</th>
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<td>projects</td>
<td>- &gt; EVERYTHING</td>
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arctosdb.org
Utility in Collections Management

Interface is entirely online (since 2002), accessible from any internet-connected computer or mobile device.

Data-editing permissions are customizable.

-> With great power comes great responsibility.
### Mammal Collection

**UAM:Mamm:87306**

**AF: 56167**

**Marmota broweri**

West side of Tupikchak Mountain.  
North America, United States, Alaska, Misheguk Mtn. Quad, National Petroleum Reserve-Alaska  
3 Jul 2007

#### Identification

- **Animalia**: Chordata; Mammalia; Rodentia; Sciuridae; Xeninae; Marmotini; Marmota broweri Hall & Gilmore, 1934
- Identified by Link E. Olson on 2007-07-03
- **Nature of ID**: student

#### Part Name

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<th>Part Name</th>
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<th>Disposition</th>
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<th>Label</th>
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<td>kidney (frozen)</td>
<td>4</td>
<td>on loan</td>
<td>1</td>
<td></td>
<td>UAM Mammals Parentless Void</td>
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<tr>
<td>liver (frozen)</td>
<td>4</td>
<td>being processed</td>
<td>1</td>
<td>120125</td>
<td></td>
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<tr>
<td>liver (frozen)</td>
<td>4</td>
<td>on loan</td>
<td>1</td>
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<tr>
<td>postcranial</td>
<td>complete</td>
<td>In collection</td>
<td>1</td>
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#### Citations

- voucher of *Marmota broweri*, page 75 in Gunderson et al. 2012
Utility in Collections Management

Media: publications, images, video, documents, audio, 3D scan, other?

Mammal Collection
University of Alaska Museum of the North

Marmota broweri

Animalia; Chordata; Mammalia; Rodentia; Sciuridae; Xerineae; Marmotini; Marmota broweri Hall & Gilmore, 1934
Identified by Link E. Olson on 2007-07-03
Nature of ID: student

Identifiers
AF: 56167
GenBank: JN024593
original identifier: LEO 312

Part Name | Condition | Disposition | Qty | Label | Remarks
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heart (frozen) | 4 | being processed | 1 | 117530 | 
kidney (frozen) | 4 | being processed | 1 | 120124 | 
kidney (frozen) | 4 | on loan | 1 | UAM Mammals Parentless Void | 
liver (frozen) | 4 | being processed | 1 | 120125 | 
liver (frozen) | 4 | on loan | 1 | 
postcranial skeleton | complete | In collection | 1 | Container 142659 | 

Citations
voucher of Marmota broweri, page 863 in Gunderson et al. 2009
voucher of Marmota broweri, page 75 in Gunderson et al. 2012
Utility in Collections Management

Media: publications

Mammal Collection

Marmota broweri
sensu Gunderson et al. 2012
Identified by Link E. Olson, Hayley C. Lanier, Aren M. Gunderson
Nature of ID: type specimen
Remarks: ID from citation in Gunderson et al. 2012.

Citations

voucher of Marmota broweri, page 863 in Gunderson et al. 2009
voucher of Marmota broweri, page 75 in Gunderson et al. 2012

Determination Type: accepted place of collection
assigned by Link E. Olson on 2007-07-03
Higher Geography: North America, United States, Alaska, Misheguk
Mitochondrial Barcode: Barcode

| Liver (frozen) | 4 | Processed | 1 | 2012 |
| Liver (frozen) | 4 | On loan | 1 |
| Postcranial skeleton | Complete | In collection | 1 | Container 142659 |

- Annotate
- 90 Cited Specimens
- [http://dx.doi.org/10.1644/08-MAMM-A-253.1](http://dx.doi.org/10.1644/08-MAMM-A-253.1)
- Edit
- Manage Citations
REVISED DISTRIBUTION OF THE ALASKA MARMOT, MARMOTA BROWERI, AND CONFIRMATION OF PARAPATRY WITH HOARY MARMOTS

AREN M. GUNDERSON,* BRANDY K. JACOBSEN, AND LINK E. OLSON
Department of Mammalogy, University of Alaska Museum, University of Alaska Fairbanks, 907 Yukon Drive, Fairbanks, AK 99775, USA (AMG, BJK, LEO)
Institute of Arctic Biology, University of Alaska Fairbanks, Fairbanks, AK 99775, USA (AMG, LEO)

The distribution and taxonomic status of the Alaska marmot (Marmota broweri) have been the subject of much debate and confusion since the taxon was 1st described as a subspecies of the hoary marmot (M. caligata). As a result of its early association with M. caligata and a lack of focused effort to determine its range, our current understanding of the distribution of M. broweri is vague at best and completely erroneous at worst. Through a review of all museum specimens and published accounts of this species, field surveys, and the identification of previously unidentified marmot specimens, we have determined that the current distribution of the Alaska marmot includes not only the Brooks Range, but also the Ray Mountains and Kokrines Hills of northern interior Alaska. We report the 1st confirmed records of this species outside of the Brooks Range and a commensurate range extension of 400 km southward. The Yukon River appears to form the current boundary between the parapatric distributions of M. broweri and M. caligata in Alaska, but additional fieldwork will be necessary to confirm that the 2 species are not allopatric.

Key words: Alaska marmot, climate change, hoary marmot, Marmota broweri, Marmota caligata

Alaska marmots (Marmota broweri) inhabit boulder fields, talus slopes, and rock outcrops in the alpine tundra of northern Alaska (Bee and Hall 1956). They are locally abundant and generally occur in loose communities (Bee and Hall 1956). M. broweri was 1st described by Hall and Gilmore (1934) based on 4 specimens collected by Charles D. Brower from Native residents of Point Lay and Cape Thompson on the northwestern coast of Alaska. Based on cranial morphology and pelage characters, Hall and Gilmore (1934) concluded that those 4 specimens constituted a new subspecies (M. caligata broweri) of the hoary marmot, previously known from southern Alaska, western Canada, and alpine areas of Washington, Idaho, and Montana. Since its description, the taxonomy and distribution of this marmot have been the subject of much debate and confusion. With relatively few voucher specimens available for morphological analyses, the taxonomic status of M. broweri was tentative for more than 30 years after its discovery. The distributions of M. broweri and M. caligata have been published erroneously due to this taxonomic confusion and speculation surrounding M. broweri, and those errors have been perpetuated through the literature.

Montane and alpine-restricted small mammals, including marmots, were among the 1st taxa suggested as being particularly sensitive to climate change (McDonald and Brown 1992), and alpine marmots are increasingly recognized as potential harbingers thereof (e.g., Krajick 2004; Parmesan 2006). Although relatively few studies have addressed the effects of recent climate change on the distribution of any Alaskan mammal, the state includes the northernmost records of more than 40 species of terrestrial North American mammals (Patterson et al. 2007; Wilson and Ruff 1999), making it an ideal, albeit logistically challenging, venue for such studies. In contrast to the lack of knowledge surrounding their distributional stability, Alaskan mammals appear to be responding to climate change via changes in body size, as suggested by recent studies on Alaskan shrews (Sorex cinereus—Yom-Tov and Yom-Tov 2005), lynx (Lynx canadensis—Yom-Tov et al. 2007), and martens (Martes americana—Yom-Tov et al. 2008). As the only mammal species purportedly endemic to the Brooks Range (the northernmost mountain range in North America), and given its apparent reliance on rocky alpine tundra habitats, the Alaska marmot may be uniquely susceptible to the ongoing upslope and northward encroachment of the tree- and shrubline in Alaska.
Utility in Collections Management

Media: images
Utility in Collections Management

Media: images
Utility in Collections Management

Media: video

UAMObs:Mamm:228
AF:
Lynx canadensis
May 31, 2014

Lynx canadensis
Animalia; Chordata; Mammalia; Carnivora; Felidae; Lynx canadensis Kerr, 1792
Identified by Dennis Tinker on 2014-05-31
Nature of ID: field

Determination Type: observation
assigned by Dennis Tinker on 2014-05-31
Higher Geography: North America, United States, Alaska, Chignik Quad
Verbatim Locality: a couple miles from camp (Peter Pan Sea foods plant) about a 1/2 mile up the road to the old military sight on top of the hill
Specific Locality: a couple miles from camp (Peter Pan Sea foods plant) about a 1/2 mile up the road to the old military sight on top of the hill
Event Date: 2014-05-31
Verbatim Date: May 31, 2014
Verification Status: unverified
Coordinates: 56.007294 / -160.543452
Verbatim Coordinates: 56.007294/-160.543452
Datum: World Geodetic System 1984

Part Name: observation
Condition: excellent
Disposition: in collection
Qty: 1
Label:
Remarks:

sex: unknown
Dennis Tinker, 2014-05-31

Entered By: Michelle M. Cason on 2015-03-23
Last Edited By: AREN on 2015-05-04

Accession
2015.003.Mamm
No Media Found

Showing Media results 1 - 1 of 1 [ view details ]

video (video/mp4)
Media Details
Utility in Collections Management

Media: 3D scans

UAM: Mamm: 87306
AF: 56167
Marmota broweri

West side of Tupikchak Mountain.
North America, United States, Alaska, Misheguk Mtn.
Quad, National Petroleum Reserve-Alaska
3 Jul 2007

Identifiers

Part Name | Condition | Disposition | Qty | Label |
--- | --- | --- | --- | --- |
heart (frozen) | 4 | being processed | 1 | 117530 |
kidney (frozen) | 4 | being processed | 1 | 120124 |
kidney (frozen) | 4 | on loan | 1 | UAM Mammals Parentless Void |
liver (frozen) | 4 | being processed | 1 | 120125 |
liver (frozen) | 4 | on loan | 1 |
postcranial skeleton | complete | in collection | 1 | Container 142659 |

Citations

voucher of Marmota broweri, page 863 in Gunderson et al. 2009
voucher of Marmota broweri, page 75 in Gunderson et al. 2012
Utility in Collections Management

Media: 3D scans

and collared pika in Alaska:
Loan History: Click for loan list

Media

Showing Media results 5 - 7 of 7 [ view details ]
<<Previous

image (image/jpeg)
Media Details

image (image/jpeg)
Media Details

image (application/pdf)
Media Details
Utility in Collections Management

Media: 3D scans

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Media: 3D scans
Cryptogramma crispa (L.) R. Br.


July 25, 1968

Ilmari Kause
University of Alaska Herbarium (ALA)
Museum of the North

H1201093
TURUN `fi.iOPISTON KLSVIMUSEO
(Turku University Herbarium)
Cryptogramma ccrspa (L.) R. Br.
Norway Troms fyike. Lyngen herad.
Lyngenfjord, Furuflaien. Rocky
slopes on the upper course of
Lyngselva river.
July 25, 1968 Ilmari Kause
Queryable by OCR output:
Since 2011 the UAM Herbarium has imaged, with OCR, 207,372 specimens.

UAM Herbarium Curator Steffi Ickert-Bond
(NSF funded project)
**Utility in Collections Management**

### Media: accessions and loans

#### Edit Accession

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<th>How Obtained</th>
<th>Status</th>
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<td>gift</td>
<td>in process</td>
<td>2013-10-2</td>
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**Nature of Material:**
Gray whale skeleton parts from 2 individuals collected by Jon Fish of Palmer. The whales were beachcast in the summer of 2000 and recovered in 2001 from the beach on Kodiak Island, Narrow Cape.

**Agent Name**
- John Fish
- Add Agent: associated with agency

**Remarks:**
Bones consist of the skull, vertebrae, and one humerus from a juvenile and 2 scapula and one vertebra from another, larger individual. Registration of Marine Mammal Parts forms, numbers 01 0076 through 01 0110 and 07 002, from the registration by NMFS in 2001 are in the accession file.

**Entered by Arem M. Gunderson on 2013-10-30**

**Projects associated with this Accn:**
- None

**Media associated with this Accn:**
- Create Media ~ Link Media

Showing Media results 1 - 1 of 1

[View Details]

**ACCN 2013.060**

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Utility in Collections Management

Object tracking using barcodes

University of Alaska Museum Genomic Resources Collection
Object tracking using barcodes
This parent container is:
Label: C55693
Barcode: C55693
Type: freezer box

Use this form to:
- Scan cryovials into freezer boxes
- Turn cryovial labels into cryovials while scanning them into freezer boxes
- Turn slide labels into slides while scanning them into slide boxes
- Scan slides into slide boxes

Save happens when you tab out of a cell. You can set your scanner to send a tab after data.
Object tracking using barcodes

The Universe
- UAM Mammals 87306 liver (collection object)
- University of Alaska Museum (institution)
- UAM Mammals Parentless Void (box)
- UAM Mammals 87306 kidney (collection object)
- UAM Genomic Resources rm 20 (room)
  - Nitrogen Freezer 2 (freezer)
    - LN2 Frzr2 C-6 (position)
    - C54073 (freezer rack)
      - 5th slot (position)
      - C44012 (freezer box)
        - 54 (position)
        - 120124 (cryovial)
- UAM Mammals 87306 kidney (collection object)
  - 56 (position)
  - 120123 (cryovial)
- UAM Mammals 87306 spleen (collection object)
  - 44 (position)
  - 117530 (cryovial)
- UAM Mammals 87306 heart (collection object)
  - 55 (position)
  - 120125 (cryovial)