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2007 Annual Report

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Museum of Southwestern Biology Annual Report for 2007

MSB Director's Summary

Highlights

As of December 31st 2007, I completed five months of a two-year term as Director of the Museum of Southwestern Biology beginning in August 2007. Former MSB Director, Don Duszynski, left to take a position as special advisor to UNM President Schmidly at the end of July 2007. The final phases of construction of the CERIA building were completed under Don's directorship, as was finalization of an MOU with the US Geological Survey (USGS) to integrate their collections into the MSB, which is now nearly complete. Don made enormous contributions to the MSB and his efforts moved the MSB immeasurably forward in many ways. He oversaw the hiring of two new curators who began their positions in 2007. For the first time in its history, the MSB is fully staffed with curators and collection managers who are all supported from state-funded lines, excepting the newly established Division of Parasitology. Our two newest curators, Chris Witt (Birds) and Kelly Miller (Arthropods) began their appointments in January 2007.

Tragically, UNM and the MSB lost the curator and founder of the Division of Genomic Resources, Dr. Terry Yates, in December 2007 after a battle with cancer. Terry's accomplishments were monumental and he is sorely missed by his colleagues and friends in the MSB. Prior to his death, Terry was awarded honorary membership in the American Society of Mammalogists, the highest honor that professional society bestows. Shortly after Terry's death, the MSB and the UNM Foundation worked together to establish the Terry Yates Endowment for Field Mammalogy. Today this fund has over \$100,000 to support young scientists in field and laboratory research in mammalogy. Dr. Joe Cook agreed to serve as interim Curator of Genomic Resources until a new curator can be found.

In August 2007, the Museum and UNM hosted the American Society of Mammalogists Annual Meeting in June 2007. This society has more than 1000 members and we were able to showcase MSB Facilities and Collections to this national scientific body. In addition, the MSB hosted Dr. Phyllis Johnson, Director of the USDA Beltsville Agricultural Research Center (USDA-BARC), the Chairman of Biology Dr. Sam Loker, and incoming Dean of Arts and Sciences Dr. Brenda Claiborne. Our goal was to propose and explore a plan to relocate the US National Parasite Collection to the MSB. This remains a major goal of the MSB and we continue to work with new USDA-BARC director Dr. Joseph Spence, curator of the USNPC Dr. Eric Hoberg, and Smithsonian curator of Entomology Dr. Scott Miller to pursue relocation and establishment of the collection here.

Significant Accomplishments in support of the College Mission

The MSB made substantive contributions to the education, research, and service missions of the College of Arts and Sciences and the University of New Mexico. Ten highlights for 2007 include:

Graduate and Undergraduate Training

- 1) MSB faculty and staff directly mentored and trained 40 graduate students and 55 undergraduate students in 2007. The MSB provides high quality, hands-on, student research training, research, and curatorial experience. This experience translates into placement into jobs in the academic, government, and non-government (NGO) sectors in biology, ecology, evolution, natural resource management and conservation, and natural history museum management.
- 2) In 2007, MSB faculty and staff generated \$1.1 million for a museum-centered undergraduate training program that focuses on nurturing our diverse students to professional careers in the sciences.
- 3) The MSB formed and led a consortium of researchers in A&S, COE, and HSC that led to a successful preproposal to the NSF aimed at developing an Integrative Graduate Education and Research Training (IGERT) program to be established at UNM. This program is unique in the country and would bring \$3M for graduate education if funded. Of 412 preproposals received by the NSF, the MSB-IGERT received the highest possible reviews and was placed in the 'high priority' for funding category. The full proposal is due 20 October 2008.
- 4) The MSB has been instrumental in working with the Maxwell and other UNM Museums to reinvigorate the Museum Studies program at UNM.

Classroom Teaching and Support

- 5) MSB faculty and staff taught 22 courses at UNM and contributed specimens to 25 courses across campus. Students consistently rate inclusion of biological specimens highly in their undergraduate coursework. The MSB also offers the only undergraduate certification in Conservation Biology in New Mexico. This program provides training and know-how to tackle environmental issues that face New Mexico and the world.

Research Productivity and Support

- 6) MSB Faculty and Staff published 50 papers in peer-reviewed scientific journals in 2007. MSB specimens were cited in 68 scientific papers by scientists outside of UNM, which more than doubles the impact of specimen-based research productivity supported by the MSB. A total of 140 specimen loans were made in 2007 in support of scientific inquiry worldwide.
- 7) MSB Faculty and Staff have \$8.8 million in new and in-force grants and contracts from a variety of agencies including the NIH and NSF. The MSB is the primary UNM liaison to

state and federal natural resource management agencies in research and advisory capacities, and serves a special role in open space planning in the City of Albuquerque.

Collections and Natural History Resources Development

- 8) The MSB cataloged over 550,000 new specimens and acquired three ‘orphaned’ collections from University of Illinois, the US Fish and Wildlife Service, and the New Mexico Department of Game and Fish. Relocation and curation of these specimens was supported by new grants from the NSF, USFWS, and NMDGF. Acquisition of these collections further enhances the MSB role as an internationally recognized repository for natural history collections. Major research expeditions to Africa and Central and South America were mounted by MSB personnel.
- 9) Through a cooperative agreement with the US Geological Survey, the MSB has integrated nationally known federal collections, making these specimens and associated data more visible and available to the scientific community.
- 10) In 2007, the MSB laid the groundwork for a new Division of Parasitology, dedicated to the concept of ‘integrated’ research collections that simultaneously provide information of pathogens, parasites, and hosts for comprehensive study of epidemiology, pathology, ecology and co-evolution of infectious diseases and hosts. This is an emerging area of research that will undoubtedly generate enormous student and researcher development at UNM.

Short and Long-term Goals for the MSB – At our annual retreat held in August 2007, and at a number of MSB executive committee meetings throughout the year, we identified a number of goals, programs and key resources we will strive to accomplish over the next five years. They are:

1. Establish a Division of Parasitology: In response to continued and unprecedented environmental change and the ongoing emergence and resurgence of infectious diseases, we propose the creation of the new Division of Parasitology in the Museum of Southwestern Biology. National and international research agendas aimed at elucidating the dynamic linkages between hosts, parasites, environmental change and human health will be pursued, leveraging existing strengths, strengthening intra-university relationships. The newly created Division of Parasitology at the MSB will be an international resource for systematics, taxonomy, identification, ecological and epidemiological research in parasitology and will diversify and leverage UNM’s continued leadership in these research arenas. The new Division of Parasitology represents the development of new capacity to address current and emerging challenges to science and society. As a recognized leader in collections-based research and biodiversity informatics, the MSB is uniquely positioned to bridge existing gaps between collection-based research and environmental and biomedical science: resources of the MSB have been critical for policy makers, natural resource managers, and government and business leaders because they support investigations and decisions related to human health, climate change, conservation, and land management. Moreover, the Division of Parasitology will move UNM to the leading edge of efforts to understand and combat emerging infectious diseases by facilitating efforts to assess the complex and dynamic linkages between hosts and parasites in a changing world. The Division of Parasitology was established in January 2008 with a substantial donation

of specimens from the Rausch collection and ongoing research initiatives at UNM (e.g., Beringian Coevolution Project, Center for Evolutionary and Theoretical Immunology). We are also working to relocate and transfer the US National Parasite Collection (USNPC) from Beltsville, Maryland to the MSB. Relocation, transition and consolidation of the USNPC will involve five critical components represented by (1) curation and integration of liquid and dry specimens collections; (2) developing cyber-infrastructure and catalogues; (3) housing literature resources including an extensive reprint collection extending back to the 1800's; (4) historical catalogues documenting diverse global collections of parasites since the late 1800's; and (5) critical instrumentation. As part of this package, we propose temporary reassignment for USDA curatorial staff to the MSB for 5 years to ensure a timely and effective transition of the collection. Proposed funding for this initiative is included in UNM's 2009 Federal Legislative Priorities; with an endowed faculty curator position provided UNM President David Schmidly.

2. Develop and launch an MSB-centered informatics program: This program would be charged with maximizing the visibility and utility of our extensive specimen-based databases and to enhance development of a number of initiatives at UNM including the National Tuberculosis Archive, the US National Parasite Collection, and genome and field data projects in the Department of Biology, to name a few. Most importantly, we ultimately aim to find resources for a faculty/curator of a Division of Informatics (DOI) would be a world-renowned scholar who develops data intensive mathematical models and algorithms for predicting decadal patterns of environmental change. We envision the DOI as a centralized, core resource that serves the UNM community at large but is based in the MSB. At minimum, we will seek to hire a full-time I/T systems administrator to implement the new database system. Our plan is to leverage this position through programmatic grant proposals like the proposed NSF IGERT grant.

2. Work to develop and establish integrated online database systems for all Divisions of the MSB. This will require substantial planning and collaboration among divisions and success will depend heavily on a new I/T systems administrative hire. This goal emerges naturally from the previous goal of establishing a formal informatics program in the MSB.

3. Implement an undergraduate training program afforded by recently awarded NSF-URM: Our first cohort of students was accepted into this program in fall semester 2007. Details about students, research projects, and faculty mentors can be found at <http://www.msb.unm.edu/mammals/UNO.html#mentors>.

4. Develop and submit a museum-centered interdisciplinary graduate training program through development of an NSF-IGERT proposal: In 2007, we assembled a team of faculty researchers at the University of New Mexico (Table 1) who are interested in developing a museum-centered graduate training proposal aimed at documenting and understanding how abiotic and biotic systems change from molecular to ecosystem scales. There are three major underlying research areas: (i) identifying and understanding relationships of environmental change and host-pathogen interactions focusing both on human and wildlife diseases (ii) using museum collections to uncover evolutionary and ecological change in biota that results from landscape and water use and global climate change in the American Southwest over decadal time scales and (iii) developing informatics and modeling approaches to both create and use integrated relational databases that link specimens, environmental, molecular and geographic information.

If successful, our MSB-IGERT program will prepare students to meet substantial environmental challenges and for the job market by providing a strong grounding in their respective disciplines

but also by providing a culture and infrastructure to allow them to tackle environmental and biotic changes in novel, integrative, and multidisciplinary ways. Most importantly, students will be equipped to bring time series data to bear on evaluating and predicting responses to environmental change over decadal time scales. Use of natural history collection specimens, data and materials will undoubtedly motivate new uses and ways of integrating databases in a reciprocally illuminating process that is likely to spark renewed interest in resources available in natural history collections.

5. Work to revitalize the museum studies program at UNM through MSB collaborations with other UNM Museums (e.g., Maxwell, Meteorite, and UNM Art Museums). The College of Arts & Sciences has recently hired a new director in the UNM Maxwell museum who is charged with revitalizing the Museum Studies program at UNM. The College has contributed significant resources including a new faculty position in addition to the new Director to coordinate this effort.

Significant Challenges to Growth and Development of the MSB

We face a number of challenges to implementation of our goals that mainly revolve around a general lack of resources for staffing and operational budgets. We address the following challenges below, and propose some solutions:

1. We Lack Two Critical Positions: The MSB is sorely lacking in not having financial resources to support two critical positions: (1) an IT/Systems Administrator to develop and maintain cyber-infrastructure, and (2) a building manager to take care of the day-to-day operation of the complexities of CERIA. At present, our database management plan is reactive rather than proactive; we deal with problems involving data security, data backup/management, systems maintenance, IT innovation, trouble shooting viruses/worms, purchasing hardware and software in highly piecemeal fashion using private contractors that vary tremendously in quality and service.

IT/Systems Administrator rationale and proposed solution: So much of the potential and promise for development of the MSB relies on enhancing our visibility and accessibility through electronic media such as the world-wide-web. We have enormous potential to provide integrated databases that could serve as tools to address questions of great societal import regarding emergence of pathogens and natural resource abundance and distribution. Our progress in this area has been seriously hampered by lack of personnel in computer systems administration. At minimum, we will seek to hire one full-time IT/ Systems Administrator to manage and implement database and server systems. Our plan is to leverage this position through programmatic grant proposals like the proposed NSF IGERT grant, and UNM legislative priorities like relocation and integration of the US National Parasite collection and creation of the National Tuberculosis Archive.

Building manager rationale and proposed solution: To address the shortfall in professional building management in the MSB and CERIA, we propose that UNM fund a 0.5 FTE assistant building manager, to assist the current Biology Facility Operations Manager (John Cox) in taking on building management of CERIA. This is a critical time for infrastructure support because

CERIA is now fully online, Biology has just constructed new undergraduate lecture and laboratory facilities, and Biology is in the early phases of construction of a new wing. The responsibilities of John Cox and the half-time assistant would be to manage Castetter Hall, The Biology Annex, CERIA, and new Castetter Wing.

This half time position is critically important for a number of reasons. First, there is no building manager in CERIA and these duties have fallen to our museum administrator, Cathy Osborn. Building management of a complex facility like CERIA is outside the scope of her duties and outside our collective areas of expertise. CERIA serves the Museum of SW Biology and all its specialized facilities, Media Arts in the College of Fine Arts, the LTER Network office and all associated telecom and computer software and hardware, and the Sevilleta LTER site offices and databases, and yet the entire burden for building management falls to the MSB. This is not an insignificant task. Cathy estimates that building and security issues occupy about 15 to 20 hours per week of her time. Admittedly, we are in the post-construction phase of ironing out problems; nevertheless we estimate about 10 hours per week will be spent on building management and security issues. We think this position could also be very cost effective and a good deal for the College. We envision a situation where the College, Biology, the MSB, and Fine Arts enter a cost-sharing deal to fund this position – perhaps with the potential to transfer to state funding in the future. This position could help protect the substantial investment that A&S and the University have made in this suite of buildings.

2. Critical Limitations on Fluid Collection Space: Since the 2003 occupation of the renovated old UNM bookstore by the Museum of Southwestern Biology (MSB), all of the MSB divisions have acquired additional collections not originally factored into the estimated growth figures of 1998-99 when designing collection storage space for the Museum. Especially for invertebrates and vertebrates there have been unanticipated acquisitions of specimens. Important additions to the MSB collections include a large backlog of ethanol-preserved New Mexico insect collections taken from pitfall sampling and an increasing number of collections from South America and Africa since the hire of a Curator of Arthropods. There is also the Rausch Collections of Parasites acquired by the Division of Mammals and strong support both within and outside of the MSB to acquire the US National Parasite Collections, currently located in Beltsville MD. All of these collections increase the importance of the MSB as a national and international resource for scientific research in ecology, systematics, molecular systematics, population studies, and emerging disease research. Currently, there are rooms/areas within the Museum facility that have been identified as potential collections space for the Museum. These areas, if minimally renovated, would make a big difference in specimen access and if important collections could be accepted (or not) by the MSB. The UNM Fire Marshal has mandated new collection space for fluid-preserved materials in the MSB, which makes this a health and safety issue.

Proposed Solution: CERIA 125 conversion from classroom space to fluid collection space. To alleviate shortfalls of fluid collections space, we propose a two phase plan. For **Phase I**, we propose that Room 125, a classroom on the lower level of CERIA Building 83, be used as a temporary storage area for select collections currently housed in the main fluid collection room, Room 145. These select collections include: large containers holding large specimens of fishes, reptiles, and mammals that are blocking the exit pathways, 165 boxes of a newly acquired collection of fishes from the New Mexico Department of Game and Fish in the main hallway of lower floor of CERIA Building 83, and jars of specimens that must be removed from select

mobile carriages so that these units can be retrofitted for pull out tank shelves. Once these collections are stored in Room 125, the reconstruction of Room 145 can begin. This phase will add 45 roll out shelves, manufactured to hold stainless steel tanks (“coffins”) for large specimens of vertebrates, to the lowest shelf spaces on 3 of the mobile carriages currently holding collections specimens in jars. A stationary unit of roll out shelves and linear shelving will also be built along the south wall in the back of Room 145. **Phase II** construction will involve the complete reconstruction of Room 125 to accommodate fluid-preserved specimens. This reconstruction will involve bringing the room up to code for storage of specimens in 70% ethanol. The room is already equipped with an emergency sprinkler system. With other infrastructure in place, the renovation of the floor, walls, and HVAC system can be done in a cost effective manner.

4. Operating Budgets for Collection Care/Improvement: The operational budget for the Museum of Southwestern Biology is just under \$50,000 for collections care, curation of new material, databasing, etc. This money is allocated to divisions at the beginning of the state fiscal year. There is considerable disparity among divisions in operating funds. Among the best supported divisions are Mammals, the Herbarium, Fishes, and Amphibians and Reptiles. Budget increases in these divisions have usually been negotiated as part of grant proposal packages that have a large curatorial component. The divisions of Arthropods and Birds are inadequately supported with operating budgets that are \$2000 and \$3000, respectively, for the entire year (not including a 1% university-imposed tax to support computerization of contract and grant accounting, etc.). Both divisions are headed up by new, highly motivated curators who are preparing research grants, and we plan to request budget increases commensurate with scholarly and curatorial activity in these divisions as a part of grant proposal packages. In general, total allocations to the MSB have remained static and have not kept pace with inflation over the last five years despite rising costs of curation, shipping, electronic infrastructure, etc.

5. Faculty Curator Credit/Compensation – In December 2007, the entire faculty of the Biology Department ratified a document entitled “Codifying Responsibilities for MSB Curators” which lays out the expectations and duties of faculty curators in the MSB. This constitutes important recognition that faculty curators have duties that exceed the normal responsibilities of UNM Biology Department Faculty members. We have yet to consider reallocation of teaching responsibilities and summer compensation for faculty curators. The MSB will work with the chairman of Biology and the Dean of Arts and Sciences to consider reallocation of duties and summer compensation to rectify this situation. The codification of curator duties document also requires that each faculty curator meet the general expectations of the MSB laid out there. Curators will be assessed each year by the Director in a letter to the Biology Department Chair that indicates whether faculty curators meet these standards. We propose that 0.25 FTE for faculty curators reside in a museum line (resulting in a one course per year reduction in teaching), and that faculty curators receive a \$4000 summer SAC for uncompensated work in summer.

MSB DIVISIONAL REPORTS

DIVISION OF AMPHIBIANS AND REPTILES

DIVISION HIGHLIGHTS

Collection growth in 2007 has increased considerably when compared to the annual number of specimens catalogued in previous years (60% increase from last year). Staff at the division increased collecting efforts in the field, as part of a project that aims to improve distribution maps for New Mexico reptiles and amphibians. Work on this project and the associated voucher collection, funded in early 2007 by a grant from the New Mexico Department of Game and Fish, will remain the focus of divisional activities in 2008. Currently our total collection consists of 71,447 specimens. The number of specimens will soon increase since we have started the process of integrating the USGS collection, which will add nearly 13,000 specimens to the collection.

The number of requests for information from both scientists and the general public was similar to the previous year. During 2007, the website for the division averaged over 400 unique hits per month. Access to our collection's data via other online avenues (HERPNET, INRAM, GBIF, etc) averages over 2,400 hits a month (these are hits of our data within those other sites, not just hits to the sites). Online publications, including a list of New Mexico species and a bibliography related to them, have been downloaded, on average, over 100 times per month. Other means of communication, including phone and email, have resulted in the Curator and the Collection Manager handling 165 requests for information. These various accesses of our collection's data and information come from countries across the globe.

Throughout the year, we continued our outreach and collaboration with other scientists. We organized and hosted a regional meeting on conservation issues related to amphibians and reptiles (Southwest Partners in Amphibian and Reptile Conservation <http://chelydra.unm.edu/swparc>). We also worked with collection managers at other universities on an electronic survey of herpetological collections in the USA. We presented those findings at the annual meeting of ichthyologists and herpetologists in June. Using data gathered for the survey, we compared MSB's herpetological collection to other collections. Most notably, the number of specimens added to the MSB collection per year is on par with other collections, but the rate is above average when only public institutions are considered. We have continued working closely with the New Mexico Department of Game and Fish and we're starting new initiatives with the City of Albuquerque regarding Urban Biological Diversity.

TABLE OF COLLECTION USE

Collection Growth (specimens catalogued & entered in collection)	Loans/# specimens (outgoing)	Loans (incoming)	Visitors (not including tour groups)	Information Requests Personally Responded to	Publications Citing MSB Specimens
1244	6	6	189	165	6

Direct Website Access² (“Hits”) 5,000
Indirect Collection Access³ (“Hits”) 28,800
Downloads of Division Documents 1,200

¹Research Visitors are those visiting the collection as part of research activities, Outreach visitors are those visiting as part of tours.

²Direct Website access represents access to our Division’s webpages.

³Indirect Collection Access represents access to data associated with our specimens via other websites such as HERPNET, INRAM, GBIFF, etc.

COURSES USING THE COLLECTIONS

BIOL. 204, Animal Form and Function, Spring and Fall semesters, 264 students
BIOL. 386, General Vertebrate Zoology, Spring and Fall semesters, 65 students

COURSES TAUGHT BY MSB PERSONNEL

A. Faculty/Collection Managers

Snell, H.L.

Spring BIOL. 379 – Conservation Biology, 38 students.
 BIOL. 699 – Dissertation, 3 students
 BIOL. 551 – Research Problems, 1 student

Summer BIOL. 699 – Dissertation, 1 student

Fall BIOL. 386 – General Vertebrate Zoology, 30 students
 BIOL. 551 – Research Problems, 1 student
 BIOL. 699 – Dissertation, 2 students

Poe, S.

BIOL. 203 – Beginning evolutionary biology, 190 students
BIOL. 436 – Phylogenetics, 4 students
BIOL. 536 – Phylogenetics, 11 students
BIOL. 502 – Philosophy of Biology, 5 students

B. Graduate Students

Phillips, R.B.

BIOL. 248, Human Anatomy & Physiology Lab I, Spring, 90 students (3 sections)
BIOL. 247, Human Anatomy & Physiology Lab II, Fall, 90 students (3 sections)

COLLECTION MANAGEMENT

During 2007, 20 accessions resulted in over 1200 new specimens added to the main collection. The majority of these new specimens came from our divisional project aimed at increasing knowledge of the distribution of New Mexico amphibians and reptiles through the New Mexico Department of Game and Fish (see Awards section below).

Because last year we greatly improved our electronic resources and updated our administrative files, during 2007 we concentrated on our library resources. We have obtained and installed shelving to accommodate our growing library of publications and donated journals. In addition, we established databases of our library holdings, as well as databases of citations either related to collection staff or specimens.

Intensive field work by collection staff also resulted in significant amounts of time dedicated to cataloging the incoming specimens. Additionally, during fall we have begun the process of integrating the USGS collection into MSB. An agreement with USGS will ultimately result in nearly 13,000 specimens added to the MSB collection. We anticipate integration to be complete by fall 2008.

AWARDS, GRANTS, AND CONTRACTS

\$15,000. New Mexico Department of Game & Fish, Share with Wildlife Program. Banner #048817. Distribution of New Mexico's Amphibians and Reptiles. H.L. Snell PI and J.T. Giernakowski co-PI. May 2007 – Jun 2008. \$15,000 (F&A, \$1,364).

H.L. Bateman, A. Chung-MacCoubrey (Co-Principal Investigators). Grant from the Bosque Initiative Group, USDI U.S. Fish and Wildlife Service. \$11,000.

PUBLICATIONS

A. Books, Book Chapters, Edited Volumes

None.

B. Journal Articles

Hulebak, E.P., S. Poe, R. Ibañez, E. E. Williams. 2007. A striking new species of *Anolis* lizard from Panama. *Phyllomedusa* 6:3-8.

Milinkovitch, M.C., D. Monteyne, M. Russello, J.P. Gibbs, H.L. Snell, W. Tapia, C. Marquez, A. Caccone and J.R. Powell. 2007. Giant Galápagos tortoises; molecular genetic analyses identify a trans-island hybrid in a repatriation program of an endangered taxon. *BMC Ecology* 7(2): 1-7. (<http://www.biomedcentral.com/1472-6785/7/2>)

Phillips, R.B., C.S. Winchell, and R.H. Schmidt. 2007. Dietary overlap of an alien and native carnivore on San Clemente Island, California. *Journal of Mammalogy* 88:173-180.

Phillips, R.B., D.B. Harris and H.L. Snell. 2007. Bait Stations for Detection and Control of Alien Rats in Galapagos. *The Journal of Wildlife Management* 71(8): 2736-2742.

Poe, S. and C.Y. Miranda. 2007. A new species of phenacosaur *Anolis* from Peru. *Herpetologica* 63:219-223.

Poe, S. and R. Ibañez. 2007. A new species of *Anolis* lizard from the Cordillera de Talamanca of western Panama. *Journal of Herpetology* 41:263-70.

Poe, S., J. R. Goheen, E. P. Hulebak. 2007. Convergent exaptation and adaptation in solitary island lizards. *Proceedings of the Royal Society of London Series B* 274:2231–2237.

C. Web-Based

None.

D. Technical Reports

None.

E. Theses/Dissertations Completed

Bateman, Heather L. 2007. Ecological restoration: Examples from the Middle Rio Grande. [Ph.D. Dissertation]. Albuquerque: University of New Mexico, Dept. of Biology. July.

F. Work In Progress

Poe, S., C. Y. Miranda, E. Lehr. In press. Notes on variation in *Anolis boettgeri* Boulenger 1911, assessment of the status of *A. albimaculatus* Henle and Ehrl 1991, and description of a new *Anolis* (Squamata: Iguania) similar to *A. boettgeri*. *Journal of Herpetology*.

Poe, S. and C. Y. Miranda. In press. Another new species of green *Anolis* from the eastern Andes of Peru. *Journal of Herpetology*.

Poe, S., J. Velasco, E. E. Williams. Accepted pending revision. New or problematic *Anolis* from Colombia VIII: Descriptions of two *nomen nudum* species. *Breviora*.

Schaad, E. and S. Poe. In review. Evolution of venom toxicity in pitvipers. *Journal of Herpetology*.

G. Publications/Reports Based on MSB Specimens/Data by Outside Researchers

Benavides, E. 2007. Molecular Phylogenetics of the Lizard Genus *Microlophus* (Squamata: Tropiduridae): Aligning and Retrieving Indel Signal from Nuclear Introns. *Systematic Biology* 56:776-797.

Christman, B.L., J.M. Christman, and M.R. Cummer. 2007. Geographic distribution. *Lampropeltis triangulum celaenops*. USA:NM: Luna Co. *Herpetological Review* 38:104.

Christman, B.L., and M.R. Cummer. 2007. Geographic distribution. *Scaphiopus couchi*. USA:NM: Guadalupe Co. *Herpetological Review* 38:1.

Cole, C.J., C.W. Painter, H.C. Dessauer, and H. L. Taylor. 2007. Hybridization Between the Endangered Unisexual Gray-Checkered Whiptail Lizard (*Aspidoscelis dixonii*) and the Bisexual

Western Whiptail Lizard (*Aspidoscelis tigris*) in Southwestern New Mexico. American Museum Novitates 3555:1-31.

Hill, M.T., T.B. Cotten, and C.D. Crowder. 2007. Geographic distribution. *Bufo woodhousii*. USA:NM: Lea Co. Herpetological Review 38.

Hill, M.T., and M.D. Hill. 2007. Geographic distribution. *Rana blairi*. USA:NM: Doña Ana Co. Herpetological Review 38:216.

ACTIVITIES IN LEARNED SOCIETIES

A. Invited/Plenary Talks and/or Seminars

Poe, S. University of New Mexico. Evolution in solitary island lizards.

B. Contributed Talks/Posters (*presenter)

Bateman, H. L.*, M. J. Harner, and A. Chung-MacCoubrey. Toads respond to spring flooding along the Middle Rio Grande, New Mexico. 40th Joint Annual AZ/NM Meeting of The Wildlife Society and AFS. Albuquerque, NM. February.

Bateman, H.L.*, A. Chung-MacCoubrey, and H.L. Snell. Effects of non-native plant removal on lizard abundance along the Middle Rio Grande in New Mexico. Joint Meeting of the Ecological Society of America and Society of Ecological Restoration. San Jose, CA. August.

Giermakowski J.T.*, CA Wolfe, NE Rios. An Ongoing Online Survey of Ichthyological and Herpetological Collections: Identifying Current Issues in Collections. Poster presentation. Joint Meeting of the American Society of Ichthyologists and Herpetologists (ASIH), Herpetologists' League (HL), and Society for the Study of Amphibians and Reptiles (SSAR), St. Louis, MO. June.

Giermakowski J.T.*, Snell H.L. Covariation of Size and Vegetative Productivity in Galapagos Tortoises. Oral presentation. Joint Meeting of the American Society of Ichthyologists and Herpetologists (ASIH), Herpetologists' League (HL), and Society for the Study of Amphibians and Reptiles (SSAR), St. Louis, MO. June.

Giermakowski J.T.*, Snell H.L. Where to look? Maps of likely occurrence and absence for the herps of New Mexico. Poster presentation. Southwestern Partners in Amphibian and Reptile Conservation. Albuquerque, NM. May.

C. Attendance at Professional Meetings

H.L. Bateman

40th Joint Annual AZ/NM Meeting of The Wildlife Society and AFS. Albuquerque, NM. February.

Joint Meeting of the Ecological Society of America and Society of Ecological Restoration. San Jose, CA. August.

J.T. Giermakowski

First Annual Meeting of the Southwest Partners in Amphibian and Reptile Conservation.
Albuquerque, NM. May.

Joint Meeting of the American Society of Ichthyologists and Herpetologists (ASIH),
Herpetologists' League (HL), and Society for the Study of Amphibians and Reptiles (SSAR), St.
Louis, MO. June.

H.L. Snell

First Annual Meeting of the Southwest Partners in Amphibian and Reptile Conservation.
Albuquerque, NM. May.

D. Service as Editor or on Editorial Board of a Journal

H. L. Snell, Chair of the Museum of Southwestern Biology Publications Committee

E. Service as Officer of Professional Society/Organization

None.

OTHER PROFESSIONAL ACTIVITIES

A. Presentation to General Audience in a Scholarly Capacity

None.

**B. Presentations in a Scholarly Capacity at Hearings, Workshops, Legislative Committees,
etc.**

None.

**C. Scholarly Service as a Member of a Local/State/Regional/National Committee, Panel,
etc.**

H.L. Snell.

New Mexico Department of Game & Fish Species Recovery Board.

Conservation Fellow of the Saint Louis Zoo.

Service with the City of Albuquerque Councilors and City administrators on Urban Biological
Diversity initiatives.

J.T. Giermakowski.

Member of Collections Committee for the American Society of Ichthyologists and
Herpetologists.

Chair of Survey Subcommittee for the American Society of Ichthyologists and Herpetologists.

Member of New Mexico Department of Game & Fish Species Recovery Board. Local organizing
Chair. 2007 meeting of the Southwest Partners in Amphibian and Reptile Conservation.
Albuquerque, NM. May.

Collection Manager Representative to the Museum of Southwestern Biology Executive Committee.

D. Journal Referee

H.L. Bateman. Journal of Restoration Ecology (1).

S. Poe. American Naturalist (1). Proceedings of the Royal Society of London (1). Zoologica Scripta (1). Herpetologica (2). Copeia (1).

H.L. Snell. Journal of Wildlife Management (1). Frontiers in Ecology and the Environment (1).

R.B. Phillips. Folia Zoologica (1).

E. Hosting Professional Colloquia and Groups

None.

SERVICE

A. Symposia, Workshops, Conferences etc. Sponsored, Organized, Held, etc.

J.T. Giermakowski.

Local organizing Chair. 2007 meeting of the Southwest Partners in Amphibian and Reptile Conservation. Albuquerque, NM. May.

B. Public Service

H.L. Snell

Work with New Mexico Department of Game & Fish on Species Recovery issues.

Reviewed two NSF Proposals.

R.B. Phillips.

Judge for the 2007 Intel International Science and Engineering Fair.

ADVANCED STUDY, HONORS, AWARDS, FELLOWSHIPS, ETC.

H.L. Bateman

Grove Dissertation Scholarship, Department of Biology, UNM, \$9,000.

New Mexico Graduate 3% Scholarship Tuition Award, UNM; \$2,500.

DONATIONS AND GIFTS RECEIVED

None.

CURRENT STAFF

A. Faculty/Staff

Snell, H.L. Professor and Curator

Degenhardt, W.D., Curator and Professor Emeritus

Poe, S., Assistant Professor and Curatorial Associate

Giermakowski, J.T. Collection Manager

B. Graduate students

Bateman, H.L., Ph.D./Snell

Giermakowski, J.T., Ph.D./Snell

Huleback, E.P., M.S./Poe

Latella, I.M., M.S./Snell and Poe

Phillips, R.B., Ph.D./Snell

Ryan, M.J., Ph.D./Poe

Schaad, E., Ph.D./Poe

C. Undergraduate Student Workers and Volunteers

Reichert, S.

MUSEUM ASSOCIATES

A. Curatorial Associates

Painter, C.W., New Mexico Dept of Game & Fish

Stuart, J.N., New Mexico Dept of Game & Fish

B. Research Associates

Fitzgerald, L., Texas A&M University

Fritts, T.H., retired

DIVISION OF ARTHROPODS

DIVISION HIGHLIGHTS

Collecting trips to Zambia, Bolivia, Alaska, British Columbia
Setup of Curator Miller's molecular lab
New student associates (Hodson, Telles, Edelman, Tafoya)
Teaching of Entomology 485

TABLE OF COLLECTION USE

Specimens Accessioned	Loans (outgoing)	Loans (incoming)	Visitors	Information Requests	Publications Citing MSB Specimens
12000	4	0	91	200	2

COURSES USING THE COLLECTION

A&S 198-602, Freshman Learning Community (FLC), 22 students
BIOL. & HONORS 324L, Natural History of the Southwest, 12 students
BIOL 485, Entomology, 17 students

COURSES TAUGHT BY MSB PERSONNEL

A. Faculty/Collection Managers

Brantley, S.L.

A&S 198 (FLC 602), Freshman Learning Community Program, University College, "It IS a Bug's Life: People in an Insect's World," 22 students

Larkin, L.L.

BIOL 402/502, Plant/Insect Interactions, 10 students

Lightfoot, D.C.

BIOL 550, Ecological Research Design and Statistical Analysis, 1 student.

Along with Sandra Brantley, extensive mentoring in insect identification for graduate students Hilary Lease, Alaina Pershall, and Robin Warne for their projects involving movement of carbon and nitrogen through food webs.

McIntyre, J.L.

BIOL 402/502, Plant/Insect Interactions, guest lecture on her dissertation research

Miller, K.B.

BIOL 485L, Entomology, 17 students

COLLECTION MANAGEMENT

With more undergraduate and graduate students working in the division, we increased our efforts to curate and relabel older specimens (pinned and alcohol) in preparation for database entry. We also received x specimens from Kelly Miller and Gino Nearn to accession and curate. With some of Kelly Miller's startup money we purchased drawers to accommodate the newly processed specimens but continue to be limited by lack of cabinet space. The teaching collection was reorganized and expanded, and additional field equipment purchased, to be able to better support the needs of the Entomology class.

AWARDS, GRANTS, AND CONTRACTS

\$332,235. NSF/REVSYS. DEB # 0344288. A holistic approach to a holarctic group: subgeneric relationships within the genus *Andrena* Fabricius (Hymenoptera: Andrenidae) with a revision of the subgenus *Callandrena* Cockerell. L.L. Larkin, PI. 04/04-03/07. \$111,005 (F&A \$37,002).

\$41,000. FWS/Middle Rio Grande Bosque Initiative. Grant no. 201815G933. Development and publication of a field guide to bosque plants and animals. J.-L. E. Cartron, D.C. Lightfoot, S.L. Brantley, T. Lowrey and J. Mygatt, co-PIs. 09/05-08/07. \$41,000 (F&A \$0).

\$5,000. USGS/BRD contract order #06FTSA0059. Continuation of long-term monitoring of ground-active arthropods at Bandelier National Monument. S.L. Brantley and D.C. Lightfoot. 07/06-06/07 \$5,000 (F&A \$0).

\$5,000. Universidad Autonoma de Mexico / University of New Mexico. Ana Davidson. Separate and combined effects of prairie-dogs and cattle on a desert grassland in northern Mexico. Ground-arthropod and grasshopper component managed by D.C. Lightfoot and S.L. Brantley. 08/07-08/08 (F&A \$0).

National Geographic Society. R.M. Shelley and M.F. Medrano. Travel grant to document the biodiversity of the arthropod class Diplopoda (millipedes) in southern coastal Alaska. (F&A \$0).

PUBLICATIONS

A. Books, Book Chapters, Edited Volumes

None.

B. Journal Articles

Bergsten, J. & K.B. Miller. 2007. Phylogeny of diving beetles reveals a coevolutionary arms race between the sexes. *PLoS ONE*, 2(6): e522.

Davidson, A. D. and D. C. Lightfoot. 2007. Interactive effects of keystone rodents on the structure of desert grassland arthropod communities. *Ecography* 30:515-525.

Miller, K.B., Alarie, Y. & M.F. Whiting. 2007. Description of the Larva of *Notaticus fasciatus* (Coleoptera: Dytiscidae) Associated with Adults Using DNA Sequence Data. *Annals of the Entomological Society of America*, 100(6): 787-797.

Miller, K.B., Bergsten, J. & M.F. Whiting. 2007. Phylogeny and classification of the diving beetle tribe Cybistrini (Coleoptera: Dytiscidae). *Zoologica Scripta*, 36: 41-59.

Lingafelter, S.W. & E.H. Nearn. 2007. Five new species of longhorned beetles (Coleoptera: Cerambycidae) from Dominican Republic in genera *Ataxia* Haldeman, 1845; *Atimiola* Bates, 1880; *Drycothaea* Thomson, 1868; *Eburia* Lepeletier & Audinet-Serville, 1830; and *Hormathus* Gahan, 1830. *The Coleopterists Bulletin*, 61(2): 177-191.

Woodley, N.E. & E.H. Nearn. 2007. The type material of Buprestidae (Coleoptera) in the Fernando de Zayas collection, Havana, Cuba. *The Coleopterists Bulletin*, 61(3): 334-338.

C. Web-Based

None.

D. Technical Reports

Brantley, S.L., D.C. Lightfoot 2006. Long-term studies of ground-dwelling arthropod biodiversity at Bandelier National Monument. Submitted to USGS, Jemez Mountains Field Station.

E. Theses/Dissertations Completed

None.

F. Work in Progress (Only in press and already submitted)

Carton, J.-L.E., Lightfoot, D.C., Mygatt, J., Brantley, S.L. and Lowrey, T. 2007. A field guide to the plants and animals of the Middle Rio Grande Bosque. UNM Press. Due Fall 2008.

Lightfoot, D.C., S.L. Brantley and C.D. Allen. Geographic patterns of ground-dwelling arthropods across multiple ecoregion transitions in the North American Southwest. In press, *Western North American Naturalist*.

Medrano, M. 2007. Paper accepted for the Proceedings of the Richard Hoffman 80th Birthday Symposium.

Pendleton, R.L., B.K. Pendleton, K.R. Wetherill and T. Griswold. In press. Reproductive biology of *Larrea tridentata*: a preliminary comparison between core shrubland and isolated grassland plants at the Sevilleta National Wildlife Refuge, New Mexico. In: Kitchen, S.L., R.L. Pendleton and T.A. Monaco, comps. 2007 *Shrublands under fire: disturbance and recovery in a changing world*: 2006 June 6-8, Cedar City UT. Proceedings RMRS – P-xx. Fort Collins, CO, USDA, Forest Service, Rocky Mountain Research Station.

Weissman, D. B. and D. C. Lightfoot. In press. Techniques for the Field Capture and Captive Rearing of Jerusalem Crickets. Sonoran Arthropod Studies Institute. 2007 *Invertebrates in Captivity Conference Proceedings*.

G. Publications/Reports Based on MSB Specimens/Data by Outside Researchers

None.

ACTIVITIES IN LEARNED SOCIETIES

A. Invited/Plenary Talks and/or Seminars

Miller, K.B. 2007. Females who play hard-to-get are for suckers: Mating systems in diving beetles, Syracuse University.

Miller, K.B. 2007. Females who play hard-to-get are for suckers: Mating systems in diving beetles, Arizona State University.

B. Contributed Talks/Posters (*presenter)

Brantley, S.L.* and Lightfoot, D.C.* 2007. New Mexico biodiversity and MSB tour. Oral presentation, The New Mexico Network for Women in Science and Engineering: Expanding Your Horizons in Science and Mathematics, Albuquerque. March

Nearns, E.* 2007. A preliminary morphological study of *Oncideres c. cingulata* (Say) (Coleoptera: Cerambycidae: Lamiinae: Onciderini). Poster presentation, Entomological Society of America, San Diego. December.

Hodson, A.M.* and Larkin, L.L. 2007. Using molecular techniques to identify flower hosts in bees. Poster presentation, UNM Department of Biology Annual Research Day. April.

Kennedy, T.L*. and Turner, T.F. 2007. The role abiotic processes on the temporal dynamics of the macroinvertebrate community in the Rio Grande. Poster presentation, UNM Department of Biology Annual Research Day. April.

Miller, K.B.* 2007. The phylogeny of whirligig beetles (Coleoptera: Gyrinidae): Stopping the spin. Oral Presentation, Entomological Society of America, San Diego. December.

Noll, B.* and Brantley, S.L.* 2007. Getting students to take ownership of their learning. Oral presentation, UNM Office of Support for Effective Teaching Success in the Classroom. February

Parker, C.* and Larkin, L.L. 2007. The phylogenetic history of host plant choice in *Andrena* bees. Poster presentation, UNM Biology Research Day. April.

Weissman, D. B. and D. C. Lightfoot.* 2007. Techniques for the Field Capture and Captive Rearing of Jerusalem Crickets. Sonoran Arthropod Studies Institute. 2007 Invertebrates in Captivity Conference, Tucson, AZ. July

Wetherill, K. 2007. Reproductive biology of *Larrea tridentata*: a comparison of core and isolated bushes. Poster presentation, Sevilleta LTER/Jornada LTER Joint Symposium, July

C. Attendance at Professional Meetings

Brantley, S.L., Miller, K.B. and Nearns, E. 2007. Entomology Collections Network Meeting, San Diego, CA. November

Nearns, E. 2007. Beetle Families of the World Workshop, Bozeman, MT. June

Nearns, E. 2007. Larval Coleoptera Workshop, Bozeman, MT. June

Nearns, E. 2007. North American Workshop in Cladistics Methods, Columbus, OH. July

D. Service as Editor or on Editorial Board of a Journal

None.

E. Service as Officer of Professional Society/Organization

None.

OTHER PROFESSIONAL ACTIVITIES

A. Presentation to General Audience in a Scholarly Capacity

None.

B. Presentations in a Scholarly Capacity at Hearings, Workshops, Legislative Committees, etc.

None.

C. Scholarly Service as a Member of a Local/State/Regional/National Committee, Panel, etc.

Gaines, K.H.

2005-present. Member, Society for Conservation Biology Freshwater Working Group.

2001-present. Member, North American Benthological Society Conservation and Environmental Issues Committee.

Larkin, L.L.

2006-2007. UNM Department of Biology Research Day Committee.

Larkin, L.L.

2006-2007. Member, task force for peer-review of interactive keys, www.discoverlife.org.

D. Journal Referee

Brantley, S.L. 2007. Reviewed paper for Collection Forum. February.

E. Hosting Professional Colleagues and Groups

None.

SERVICE

A. Symposia, Workshops, Conferences etc. Sponsored, Organized, Held, etc.

MSB hosted the 21st annual meeting of the Society for the Preservation of Natural History Collections and the Natural Science Collections Alliance, 23-27 May 2006.

David Lightfoot and Sandra Brantley led field trip to the Sandia Mountains, to visit the plants and animals associated with the 4 life zones there.

B. Public Service

Brantley, S.L. and D.C. Lightfoot

Provided specimens and information on venomous arthropods to Dr. Arthur Mares for the UNM Student Health Center health fair, September.

McIntyre, J.L.

Presentation on Arthropods to St. Timothy's Montessori School students, May 2007. 4-6 year olds, 3 merged classes, total of students.

Science Fair Judge at Monte Vista Elementary School, December 2007.

Presentation on Arthropods to Monte Vista Elementary School students, December 2007. 2 5th grade classes, total of 60 students.

Wetherill, K.

Guest speaker on Native Bees at Festival of the Cranes, Bosque Del Apache NWR. November 2007

ADVANCED STUDY, HONORS, AWARDS, FELLOWSHIPS

None

DONATIONS AND GIFTS RECEIVED

Richard Holland, 3000 specimens: moths, butterflies, other insect taxa collected in NM.

Eric Metzler, 2000 specimens

Kelly Miller, 2000 specimens

Eugenio Nearn, 6 books, 1000 specimens

CURRENT STAFF

A. Faculty/Staff

Kelly Miller, Assistant Professor, Curator

Manuel Molles, Professor Emeritus, Curator Emeritus

Clifford Crawford, Professor Emeritus, Curator Emeritus

Sandra Brantley, Research Assoc. Professor, Senior Collection Manager

David Lightfoot, Research Assoc. Professor, Senior Collection Manager

B. Graduate Students

Julieta Bettinelli, Ph.D. candidate

Lauren Cleavall, Masters student

Karen Gaines, Ph.D. candidate

Eugenio Nearn, Ph.D. candidate

Traci L. Grzymala, Masters student

Tom Kennedy, Ph.D. candidate

Ondrea Lindereth-Hummel, Ph.D. candidate
Julie McIntyre, Ph.D. candidate
Michael Medrano, Ph.D. candidate

C. Undergraduate Student Workers and Volunteers

Sharyn Davidson, volunteer
William C. Edelman, undergraduate
Alicia M. Hodson, undergraduate
Emily P. Hodson, undergraduate
Nicole D. Telles, undergraduate

MUSEUM ASSOCIATES

A. Research Associates

Ana Davidson, postdoctoral fellow, UNM and UNAM
Leah Larkin, Research Asst. Professor
Eric Metzler, Ohio State University, retired
Karen Wetherill, Research Scientist II, Sevilleta LTER

DIVISION OF BIRDS

DIVISION HIGHLIGHTS

We established a five-year convenio with an NGO in Peru, CORBIDI, that is dedicated to biodiversity studies and collecting. We accomplished two major expeditions to Peru that collected 1841 specimens of over 300 species in just under 3 months of field time. Once accessioned to MSB, our avian tissue collection will jump from 19th to 15th largest in the world in terms of both diversity and number of specimens. We successfully renewed our permits with the Peruvian government to continue our work there in 2008.

We accessioned a world-class series of Sandhill Cranes (397 specimens) that was received from Greg Schmitt of Kirtland, NM. Greg collected this series of specimens when he was an Endangered Species Biologist in the NM Dept. of Game and Fish, running a hunter check station. Greg spent many hours preparing these specimens as skeletons and flat skins. These crane specimens represent all three breeding populations that winter in New Mexico and many have tissue samples associated with them for genetic analysis.

Seven custom-built, low-profile specimen cases were added to the collection to maximize space utilization in the dry collections while maintaining compliance with fire codes with respect to clearance below sprinklers.

We established a Synoptic Series of New Mexico Birds within the main series to be used for demonstration, teaching, or inter-specific comparative studies. To date, this sub-collection consists of 287 specimens that provide an overview of New Mexico bird diversity. In 2008, we will work to make this collection comprehensive, with over 500 species represented.

TABLE OF COLLECTION USE

Specimens Accessioned	Loans (outgoing)	Loans (incoming)	Visitors	Information Requests	Publications Citing MSB Specimens
897	10	6	67	30	7

COURSES USING THE COLLECTIONS (2)

BIOL. 486L, Ornithology: Fall semester, 18 students

BIOL. 386, General Vertebrate Zoology: Fall semester, 36 students

COURSES TAUGHT BY MSB PERSONNEL

A. Faculty/Collection Managers (7)

Witt, C. C. and B. O. Wolf: BIOL 486, Ornithology: Fall semester, 18 students.

Witt, C. C.: Spring and Fall semesters: BIOL 502: Molecular Systematics Discussion, 2 enrolled students, many participants.

Witt, C. C.: Guest Lecture, "Biology of Tropical Birds," BIOL 461L: Tropical Biology, 15 students.

Wolf, B. O.: Fall 2007, Ecology Graduate Core: team-taught with Felisa Smith, Scott Collins & Jeff Nekola. Biol. 516. (ca. 20 students)

Wolf, B. O.: Spring 2007, Graduate Field Biology, field ecology course held in Bahia Kino, Sonora, Mexico, Biol. 515. (ca. 10 students)

Wolf, B. O.: Spring/Fall 2007 Animal Physiological Ecology: lab seminar. Biol. 402/502. 1 unit, 15 students

COLLECTION MANAGEMENT

The data proofing project continued this year, with about half of the nonpasseriform birds completed, mostly by work-study student Keith Adams. Specimen records have not been updated in the database yet, but are in an excel spreadsheet that needs to be reincorporated into the main database.

We continue to use the Arctos Database as a data management tool for our collection. It is continuing to be developed, but the data entry process has now been improved enough that we are satisfied with the system.

United States field work this year took us to all corners of New Mexico in search of Vesper Sparrows, and also into Colorado. A large portion of our time is dedicated to obtaining and maintaining collecting permits. We received specimens from six accessions this year, with most of our specimens, as usual, coming from wildlife rehabilitators in the state. These are generally received from Kathleen Ramsay, of The Wildlife Center, Espanola, Penny Elliston of Wildlife Rescue, Inc, Albuquerque, and from Shirley Kendall, Corralles. Other major accessions were frozen pheasants received from the Kalij Conservatory and a tremendous series of Sandhill Crane specimens immaculately prepared by C. Gregory Schmitt of Kirtland, NM, as mentioned previously in Highlights (above). Large accessions of specimens that we have collected in Peru will be imported in 2008.

AWARDS, GRANTS, AND CONTRACTS

Title: REU Supplement: The Phylogenetic and Biogeographic History of High Altitude Adaptation in Hummingbirds: Selection on Hemoglobin Proteins as a Function of Oxygen Supply and Demand; *PI:* J. A. McGuire, (written and carried out by Christopher C. Witt); *Funding agency:* National Science Foundation; *Amount:* \$15,940.

Wolf, B. O. A preliminary investigation of the use of wildlife water developments by the bird and bat community on the KOFA National Wildlife Refuge, Arizona Game and Fish Department. 6/1/2007-2/1/2008, \$55, 900.

PUBLICATIONS

A. Books, Book Chapters, Edited Volumes

None.

B. Journal Articles

Gilman, C. A., and B. O. Wolf. 2007. Use of portable ultrasonography as a nondestructive method for estimating reproductive effort in lizards. *Journal of Experimental Biology* 210:1859-1867.

McGuire, Jimmy A., Christopher C. Witt, Douglas L. Altshuler, J. Van Remsen, Jr. 2007. Phylogenetic systematics and biogeography of hummingbirds: Bayesian and maximum likelihood analyses of partitioned data and selection of an appropriate partitioning strategy. *Systematic Biology* 56: 837-856.

Williams, Sartor O. III. 2007. A January Specimen of the Flammulated Owl from Northern New Mexico. *The Wilson Journal of Ornithology* 119: 764-76

Williams, Sartor O. III. 2007. Fifth report of the New Mexico Bird Records Committee. *New Mexico Ornithological Society Bulletin* 35: 61-86.

Witt, Christopher C. and Satya Maliakal-Witt. 2007. Why are diversity and endemism linked on islands? *Ecography* 30: 331-333.

C. Web-Based

None.

D. Technical Reports

Johnson, A. B., and C. C. Witt. 2007. A Survey of Birds of the Western Andean Cordillera above Incahuasi, Lambayeque, Peru, 28 June – 13 July, 2007. Technical Report to the Centro de Ornitología y Biodiversidad, Lima – Peru. 16 pages.

Witt, C. C. 2007. Informe final a INRENA (Lima-Peru) del proyecto con título: “Evolución de los picaflores y otras aves en la Cordillera de los Andes”. Autorización No 76-2005-INRENA-IFFS-DCB. Submitted July 4, 2007.

E. Theses/Dissertations Completed

None.

F. Work In Progress

Dickerman, R. W. Notes of the Elf Owls of western Texas, adjacent Coahuila, and southeastern New Mexico, with description of a new subspecies. *Western Birds*. In press.

Dickerman, R. W. 1950's Tabasco, A zip trip (collecting redwings in Central America in 1968). In *A fleeting moment of perfect flavor: Biological explorations in Middle America* (Kevin Winker, ed.). in press, University of Florida Press.

Williams, S. O. III, P. Mehlhop and D. A. Zimmerman, in September 2006 signed a publication agreement with UNM Press to produce a comprehensive book “Birds of New Mexico.”

Dickerman, R. W., and A. B. Johnson. 2008a. Notes on Great Horned Owls nesting in the Rocky Mountains, with a description of a new subspecies. *Journal of Raptor Research* 42:20-28.

Dickerman, R. W., and A. B. Johnson. 2008b. Wing-tail measurements of *Bubo virginianus* from Texas. *Southwestern Naturalist* 53:128-129.

Hackett, S. J., R. T. Kimball, S. Reddy, R. C. K. Bowie, E. L. Braun, M. J. Braun, J. L. Chojnowski, W. A. Cox, K. L. Han, J. Harshman, C. J. Huddleston, B. D. Marks, K. J. Miglia,

W. S. Moore, F. H. Sheldon, D. W. Steadman, C. C. Witt, and T. Yuri. 2008. A phylogenomic study of birds reveals their evolutionary history. *Science* 320:1763-1768.

Johnson, A. B., and K. Winker. 2008. Autumn stopover near the Gulf of Honduras by Nearctic-Neotropic migrants. *Wilson Journal of Ornithology* 120:277-285.

G. Publications/Reports Based on MSB Bird Division Specimens/Data

Brant, S. V. 2007. The occurrence of the avian schistosome *Allobilharzia visceralis* Kolarova, Rudolfova, Hampl et Skirnisson, 2006 (Schistosomatidae) in the tundra swan, *Cygnus columbianus* (Anatidae), from North America. *Folia Parasitologica* 54:99-104.

Kerr, K. C. R., M. Y. Stoeckle, C. J. Dove, L. A. Weigt, C. M. Francis, and P. D. N. Hebert. 2007. Comprehensive DNA barcode coverage of North American birds. *Molecular Ecology Notes* 7:535-543.

McGuire, J. A., C. C. Witt, D. L. Altshuler, and J. V. Remsen. 2007. Phylogenetic systematics and biogeography of hummingbirds: Bayesian and maximum likelihood analyses of partitioned data and selection of an appropriate partitioning strategy. *Systematic Biology* 56:837-856.

Shepherd, T. M., and K. J. Burns. 2007. Intraspecific genetic analysis of the summer tanager *Piranga rubra*: implications for species limits and conservation. *Journal of Avian Biology* 38:13-27.

Williams, S. O. III. 2007. A January specimen of the Flammulated Owl from Northern New Mexico. *Wilson Journal of Ornithology* 119:764-766.

Willoughby, E. J. 2007. Geographic variation in color, measurements, and molt of the Lesser Goldfinch in North America does not support subspecific designation. *Condor* 109:419-436.

Yuri, T., R. T. Kimball, E. L. Braun, and M. J. Braun. 2008. Duplication of accelerated evolution and growth hormone gene in passerine birds. *Molecular Biology and Evolution* 25:352-361.

ACTIVITIES IN LEARNED SOCIETIES

A. Invited/Plenary Talks and/or Seminars

Witt, C. C. 2007. Hummingbird evolution into the Andes: History revealed by the integration of molecular systematics and physiology. Invited Seminar, Institute of Arctic Biology, University of Alaska, Fairbanks, March, 2007.

Witt, C. C. 2007. Hummingbird evolution into the Andes: History revealed by the integration of molecular systematics and physiology. Invited Seminar, Louisiana State University Museum of Natural Science, October 19, 2007.

Wolf, B. O. 2007. Are saguaros a “keystone” resource for consumers? An isotopic view of a plant- animal interaction, Department of Biology, University of California, Riverside.

Wolf, B. O. 2007. Seasonal and annual shifts in pathways of carbon flow through an arid grassland-shrubland food web, Department of Biology, University of California, Riverside.

B. Contributed Talks/Posters

Witt, C. C. 2007. Resistance to environmental hypoxia by Andean hummingbirds. The Conference of the Guild of Rocky Mountain Ecologists and Evolutionary Biologists, (GREEB), Abiquiu, New Mexico, September 22.

Murray, I., and B. O. Wolf 2007. Nutritional ecology of chelonians via stable isotope analysis, 2007 Joint Meeting of Ichthyologists and Herpetologists, St. Louis, MO, 11-16 July.

Pershall, A., R. Warne and B. O. Wolf. 2007. Small mammal utilization of pulsed resources quantified through stable isotope analysis. , 87th Annual Meeting of the American Society of Mammalogists, Albuquerque, NM, 6-10 June.

Mathiasen, C. C., I. Murray, B. O. Wolf, F. A. Smith. 2007. Portable ultrasonography: developing non-destructive techniques for quantifying reproductive effort under field conditions, 87th Annual Meeting of the American Society of Mammalogists, Albuquerque, NM, 6-10 June.

Pershall, A. D., Warne, R., Wolf, B. O. Small mammal utilization of pulsed resources quantified through stable isotope analysis. Abstract with poster. Society for Integrative and Comparative Biology Annual Meeting, January 2007, Phoenix, Arizona.

Wolf, B. O., R. Warne, S. Engel and I. Murray. 2007. Using stable isotope approaches to trace pathways of carbon flow through a food web; responses to short and long-term climate variability, Joint symposium on Long Term Ecological Research Programs in New Mexico, New Mexico State University, 12 July.

Wolf, B. O. The use of stable isotope approaches to answer questions about avian movements, physiology, behavior and ecology, 77th Annual meeting of the Cooper Ornithological Society, Moscow, Idaho, 20-23 June.

C. Attendance at Professional Meetings

Witt, C.C.

Conference of the Guild of Rocky Mountain Ecologists and Evolutionary Biologists, (GREEB), Abiquiu, New Mexico, September 22.

Wolf, B. O.

Society for Integrative and Comparative Biology Annual Meeting, January 2007, Phoenix, Arizona. 87th Annual Meeting of the American Society of Mammalogists, Albuquerque, NM, 6-10 June.

D. Service as Editor or on Editorial Board of a Journal

Williams, S. O. III

New Mexico Editor, North American Birds (USA). Editor, New Mexico Ornithological Society Field Note

Wolf, B. O.
Editorial Board, Oecologia (USA)

E. Service as Officer of Professional Society/Organization

Wolf, B.O.

Chair, Publications Committee, The Cooper Ornithological Society; Elected member, Board of Directors, The Cooper Ornithological Society; SORA (Searchable Ornithological Research Archive) Coordinator (elibrary.unm.edu/SORA).]

OTHER PROFESSIONAL ACTIVITIES**A. Colloquium Presentations**

None.

B. Presentation to General Audience in a Scholarly Capacity

Christopher C. Witt. May 2007. Hummingbird Science Day -- a daylong series of presentations and interactive activities. Truman Middle School, Albuquerque, NM.

Johnson, A. B., and C. C. Witt, 2007. Hummingbirds of the High Andes: Can hummingbirds fly higher than Mt. Everest? Invited lecture to the Central New Mexico Audubon Society, Albuquerque, NM.

Pershall, A. D., Warne, R., Mathiasen, C., Wolf, B. O. Quantifying the importance of seasonal resource pulses to a small mammal community and influence of these pulses on consumer population dynamics through stable isotope analysis. Poster presentation at Seville/Jornada Research Symposium July 2007.

Pershall, A. D., Warne, R., Mathiasen, C., Wolf, B. O. Quantifying the importance of seasonal resource pulses to a small mammal community and influence of these pulses on consumer population dynamics through stable isotope analysis. Poster presentation UNM Research Day, April 2007, Albuquerque, NM.

C. Presentations in a Scholarly Capacity at Hearings, Workshops, Legislative Committees, etc.

None.

D. Scholarly Service as a Member of a Local/State/Regional/National Committee, Panel, etc

None.

E. Journal Referee

Williams, S. O. III

Wilson J. Ornithology

Witt, C. C.

Ecography, Molecular Ecology

Wolf, B.O.
Condor, Auk, Functional Ecology

SERVICE

A. Symposia, Workshops, Conferences etc. Sponsored, Organized, Held, etc.

Wolf, B. O., Workshop organizer. The use of stable isotope approaches to answer questions about avian movements, physiology, behavior and ecology, 77th Annual meeting of the Cooper Ornithological Society, Moscow, Idaho, 20-23 June, 2007.

B. Public Service

Williams, S.O. III

Secretary of the New Mexico Bird Records Committee

New Mexico Coordinator of the North American Breeding Bird Survey (BBS)

Wolf, B.O.

Associate Editor, Oecologia (USA)

Chair, Publications committee, The Cooper Ornithological Society, 1999-present.

Institutional Animal Care and Use Committee

ADVANCED STUDY, HONORS, AWARDS, FELLOWSHIPS, ETC.

None

DONATIONS AND GIFTS RECEIVED

Sandhill Cranes from C. Gregory Schmitt

Pheasants from Kalij Conservatory

7 state-of-the-art low profile specimen cabinets from Robert W. Dickerman

2000 4WD Ford Ranger, donated as Division field vehicle by Robert W. Dickerman

CURRENT STAFF

A. Faculty/Staff

Christopher C. Witt, Curator of Birds

Andrew B. Johnson, Collection Manager

Blair O. Wolf, Associate Curator

B. Graduate students

Alison Boyer, Ph.D. Graduate Assistant

C. Undergraduate Student Workers and Volunteers

Tamara Aragon, Work Study

Keith Adams, Work Study

Zachary Hanna, REU

Jessica Castillo, REU

Theresa Hyde, Undergraduate worker (UNM)

Dora Susanibar, Undergraduate worker (PERU)

Miriam Torres, Undergraduate worker (PERU)

Jano Nunez, Undergraduate worker (PERU)

Daniel Eche copar, Undergraduate worker (PERU)
Aylissa Corbet, Summer 2007, NSF REU.
Hagit Salomon, 2007- honors thesis
David Adrian Garcia, fall 2007-, NSF UNO student

Volunteers:

William A. Talbot
Raymond VanBuskirk
Cole Wolf
Michael Hilchey
C. Gregory Schmitt
Ben Cook
Carrie McAtee
Christopher L. Merkord
Linday Breen
Mary Walker
Stacey Peters
Kim Villescas
Charlotte Jutila
Matthew Baumann

MUSEUM ASSOCIATES

A. Curatorial Associates

Robert W. Dickerman
John P. Hubbard

B. Research Associates

Sartor O. Williams, III
Hira A. Walker

DIVISION OF FISHES

DIVISION HIGHLIGHTS

Thomas F. Turner, Curator of Fishes was chosen to be Director of the Museum of Southwestern Biology for two to four years.

In 2007, 8,648 lots of fishes (504,300 specimens) were cataloged by the Museum of Southwestern Biology (MSB) Division of Fishes. Currently, there are 63,241 cataloged lots of fishes (3,426,311 specimens). In July 2007, the New Mexico Department of Game and Fish, State Reference Collections were moved from the facility in Santa Fe to the MSB. Division student employees and staff packed and loaded ca.300 boxes of fishes into a 14 foot moving truck. To date, 3,500 of 9,000 jars of specimens have been processed for integration into the main cataloged collections of MSB fishes.

\$747,601 in grants and contracts was available for ichthyological and aquatic studies by MSB Division of Fishes staff, students, and associates during 2007. \$24,942 awarded by US Bureau of Reclamation for curation of fish collections received from the San Juan River Recovery Implementation Program. Proposal submitted for a New Mexico Department of Game and Fish, USFWS State Wildlife Grant \$60,000 for curation and integration of the NM State Reference Collections of Fishes.

Outreach Summary: Tours of collections and lab were given to the attendees of the New Mexico Advanced Placement Instructors Annual Conference, 14 June 2007; students and instructor from the Southwestern Indian Polytechnic Institute, in the Natural Resources Program, 24 October 2007. MSB Division of Fishes staff and associates serve on advisory panels and recovery teams for various programs (local, State, and Federal) that serve in the conservation of several New Mexico endangered or threatened species.

TABLE OF COLLECTION USE

Collection Growth (specimens catalogued)	Loans (outgoing)	Loans (incoming)	Visitors	Information Requests	Publications Citing MSB Specimens
504,300	18 ¹	0 ²	33/42 days ³	55 ⁴	0 ⁵

¹Specimen loans, return of loans, gifts, exchanges, and tissue (consumptive) transfers

²Loans or tissue transfers from other institutions

³research, accessing specimens, or info exchange (not tour groups)/number of visitor days

⁴email, letters, telephone (not tour groups)

⁵publications in peer review journals

COURSES USING THE COLLECTIONS

BIOL. 204L, Plant and Animal Function and Form: Spring 2007, 32 students

BIOL. 240L, Plant and Animal Function and Form: Fall 2007, 87 students

BIOL. 386L, General Vertebrate Zoology: Fall 2007, 37 students

COURSES TAUGHT BY MSB PERSONNEL

A. Faculty/Collection Managers

Turner, T. F.

BIOL. 402/502 Ecology and Evolution of Fishes, Spring 2007, 4 undergraduate students, 4 graduate students

BIOL. 203L Ecology and Evolution, Spring 2007 135 undergraduate students

BIOL. 203L Ecology and Evolution, Fall 2007 165 undergraduate students

B. Graduate Students

BIOL. 203L Ecology and Evolution, Fall 2007 165 undergraduate students

COLLECTION MANAGEMENT

Nine accessions of specimens were received during 2007. Contributors included U.S. Fish and Wildlife Service-Fishery Research Office, New Mexico Department of Game and Fish, the Wyoming Department of Game and Fish, New Mexico Environment Department, and American Southwest Ichthyological Researchers. The largest accession received was the NM State Reference Collections of fishes from the New Mexico Department of Game and Fish. This collection consists of approximately 9,000 lots of New Mexico fish specimens, collected between 1982 and 2003 from all major river drainages in New Mexico. 1,190 pages of field notes for all accessions, except NMDGF, have been received and digitized. The NMDGF field note collections (ca. 4,500 pages) were digitized prior to moving the specimen collections.

AWARDS, GRANTS, AND CONTRACTS

CAREER: Museum-based Approaches to Ecology and Evolution of Aquatic Systems: An Integrated Research and Educational Program. Principle Investigator: Thomas F. Turner. National Science Foundation. Total Award: \$500,000 Date: 1 May 2002 to 30 April 2008 Annual expenditure: \$100,000

REU Supplement to CAREER: Museum-based Approaches to Ecology and Evolution of Aquatic Systems: An Integrated Research and Educational Program. Principle Investigator: Thomas F. Turner. National Science Foundation. Total Award: \$12,000 Date: 15 May 2007 to 30 April 2008 Annual expenditure: \$12,000

Dissertation: Local adaptation and gene flow in a fragmented host system: *Crepidostomum farionis* (Digenea) and *Oncorhynchus clarki virginalis* (Salmonidae) in New Mexico. Principal Investigator: Thomas F. Turner; Co-Principle: Wade D. Wilson. National Science Foundation. Total Award: \$11,958 Date: 30 May 2006 to 30 April 2008 Yearly expenditure: \$6,000

Assessment of Diversity at the Major Histocompatibility Complex in the Rio Grande Silvery Minnow (*Hybognathus amarus*). Principal Investigator: Megan J Osborne; Co-Principle: Thomas F. Turner. US Fish & Wildlife Service Total Award: \$96,000 Date: 21 September 2006 to 30 August 2009 Yearly expenditure: \$48,000

Community responses to river drying in an arid-land ecosystem: a field and experimental study. Principal Investigator: Thomas F. Turner. National Science Foundation. Total Award: \$345,000 Date: 15 August 2007 to 1 August 2010 Annual expenditure \$115,000

Effects of nutrient availability on periphyton growth and diversity in the Middle Rio Grande: top-down and bottom-up factors. Principal Investigator: Rebecca J. Bixby; Co-Principal: Ayesha S. Burdett. US Bureau of Reclamation. Total Award: \$126,077 Date: 1 July 2007 to 30 December 2008. Annual expenditure: \$126,077

Collaborative research and monitoring: Evaluation of the Rio Grande silvery minnow health in relation to changes in water quality, pathogens and other environmental stressors : Genetics Component. Principle Investigator: Megan J. Osborne; Co-Principal Investigators: Thomas Turner and agency biologists. US Fish and Wildlife Service. Total Award: \$47,811 Date: 2007. Annual expenditure: \$47,811

Conservation Genetics of the Rio Grande Silvery Minnow (*Hybognathus amarus*): Baseline population genetics of wild stocks and monitoring genetic effects of captive-propagated stocks. Principle Investigator: Thomas F. Turner. US Bureau of Reclamation. Total Award: \$550,000 Date: 1 July 2002 to 30 September 2007 Annual expenditure: **\$114,000**

Genetic monitoring of the threatened Pecos Bluntnose shiner (*Notropis simus pecosenis*). Principle Investigator: Megan J. Osborne; Co-Principle: Thomas F. Turner. Total Award: \$24,000. Dates: 1 January 2006 to 30 June 2009. New Mexico Department of Game and Fish. Annual expenditure: \$8,000

Assessment and monitoring of Rio Grande silvery minnow genetics. Principal Investigator: Thomas F. Turner; Co-Principal: Megan J. Osborne. US Bureau of Reclamation, Middle Rio Grande ESA Collaborative Program. Total Award: \$144,544 Date: 1 October 2007 to 30 September 2008. Annual expenditure: \$144,544. (Renewed for 1 Oct 2008 - 30 Sep 2009)

Curatorial services at the Museum of Southwestern Biology for the San Juan River Recovery Implementation Program Collections. US Bureau of Reclamation, Upper Colorado Regional Office. Principle Investigator: Alexandra M. Snyder; Co-Principle: Thomas F. Turner. Total Award: \$125,000 Date: 1 August 2005 to 30 September 2010. Annual expenditure: \$24,942 (Renewed for 1 Oct 2008-30 Sep 2010)

Research Project and Travel Grant. Awarded to Trevor J. Krabbenhoft by the University of New Mexico, Office of Graduate Studies. Date: 17 October 2007 Annual expenditure: \$727.00

Student Research Allocations Committee Grant. Awarded to Trevor J. Krabbenhoft by the University of New Mexico, Graduate and Professional Student Association. Date: 10 November 2007 Annual expenditure: \$500.00

PUBLICATIONS

A. Books, Book Chapters, Edited Volumes

None

B. Journal Articles

Dudley, R.K., and S.P. Platania. 2007. Flow regulation and fragmentation imperil pelagic-spawning riverine fishes. *Ecological Applications* 17:2074-2086.

Peterson, M. S., M. R. Weber, M. L. Partyka, and S. T. Ross. 2007. Integrating *in situ* quantitative geographic information tools and size-specific laboratory-based growth zones in a dynamic river-mouth estuary. *Aquatic Conservation: Marine and Freshwater Ecosystems* 17:602-618.

Turner, T. F., T. E. Dowling, and P. C. Marsh. 2007. Effective size, census size, and genetic monitoring of the endangered razorback sucker, *Xyrauchen texanus*. *Conservation Genetics* 8: 417-425.

Turner, T. F. 2007. Book review: The evolution of evolutionary genetics. Review of *Evolutionary Genetics: Concepts and Case Studies*. Charles W. Fox and Jason B. Wolf, eds. *Bioscience* 57: 375-376.

C. Web-Based

Appendices: Dudley, R.K., and S.P. Platania. 2007. Flow regulation and fragmentation imperil pelagic-spawning riverine fishes. *Ecological Applications* 17:2074-2086. Ecological Archives A017-082-A1 & A017-082-A2 (<http://www.esapubs.org/archive>)

D. Technical Reports

Dudley, R.K., G.C. White, S.P. Platania, and D.A. Helfrich. 2007. Rio Grande silvery minnow (*Hybognathus amarus*) population estimation program results from October 2006. Report to the Middle Rio Grande Endangered Species Act Collaborative Program and the US Bureau of Reclamation, Albuquerque, NM. 84 pp.

Dudley, R.K. and S.P. Platania. 2007. Rio Grande silvery minnow (*Hybognathus amarus*) population monitoring program results from October 2005 to October 2006. Report to the Middle Rio Grande Endangered Species Act Collaborative Program and the US Bureau of Reclamation, Albuquerque, NM. 195 pp.

Dudley, R.K. and S.P. Platania. 2007. Rio Grande silvery minnow (*Hybognathus amarus*) population monitoring monthly trip reports and analyses. Nine reports to the Middle Rio Grande Endangered Species Act Collaborative Program and the US Bureau of Reclamation, Albuquerque, NM. 9 @ 30 pp.

Turner, T.F. and M.J. Osborne. 2007. Genetic monitoring of the Rio Grande silvery (*Hybognathus amarus*) minnow: genetic status of wild and captive stocks in 2007. Annual Report to the US Bureau of Reclamation, September 2007. 82pp

E. Theses/Dissertations Completed

None

F. Work In Progress

Burdett, Ayesha S. and Watts, Robyn J. Modifying living space: An experimental study of the influences of vegetation on aquatic invertebrate community structure. *Hydrobiologia*

Kennedy, Thomas L. (2007) Predicting future threats to the long-term survival of Gila Trout using a high-resolution simulation of climate change. *Climatic Change*

Kennedy, Thomas L. (2007) The effects of nitrate loading and *Hydrilla verticillata* in freshwater communities and implications for future management. *Biological Invasions*

Kennedy, Thomas L. (2007) The invasive plant *Hydrilla verticillata* and the feeding preference of Florida Apple Snails (*Pomacea paludosa*). *Veliger*

Krabbenhoft, T.J., F.C. Rohde, and J.M. Quattro. (2007) Concordant nuclear and mitochondrial DNA partitions define evolutionarily significant units in the imperiled pinewoods darter, *Etheostoma mariae* (Pisces:Percidae). *Copeia*.

Krabbenhoft, T.J., M.L. Collyer, and J.M. Quattro. (2007) Comparative morphological divergence across phylogenetically disparate taxa: convergent evolution of endemic fishes of Lake Waccamaw, North Carolina.

Krabbenhoft, T.J., F.C. Rohde, and J.M. Quattro. (2007) Threatened Fishes of the World: *Fundulus waccamensis* Hubbs and Raney, 1946 (Fundulidae).

McPhee, M. V., M. J. Osborne, and T. F. Turner. 2008. Genetic diversity, population structure and demographic history of the Rio Grande sucker, *Catostomus plebeius*, in New Mexico. *Copeia* 2008: 189-197.

Peters, M. B., and T. F. Turner. 2008. Genetic variation of the major histocompatibility complex (MHC class II β) in the threatened Gila trout, *Oncorhynchus gilae gilae*. *Conservation Genetics*. Online First. doi 10.1007/s10592-007-9336-9 2007.

Ross, S. T. and W. J. Matthews. (2007) Evolution and ecology of North American freshwater fish assemblages. In: *North American Freshwater Fishes: Ecology, Evolution, and Behavior*. R.L. Mayden and B.M. Burr (eds.). Johns Hopkins University Press.

Ross, S T., W. T. Slack, R. J. Heise, M. A. Dugo, H. Rogillio, B. R. Bowen, P. Mickle, and R. W. Heard. 2007. Estuarine and coastal habitat use of Gulf sturgeon (*Acipenser oxyrinchus desotoi*) in the north-central Gulf of Mexico. Submitted to *Estuaries and Coasts*.

Ross, S.T. (2007). Native fishes. In: *Mississippi Encyclopedia*. C.R. Wilson (ed). University Press of Mississippi.

Ross, S.T. (2007) Ecology of North American Freshwater Fishes. Textbook. In preparation. University of California Press.

Snelson, F.F, T.J. Krabbenhoft, and J.M. Quattro. (2007) *Elassoma* : A new species of pygmy sunfish from Florida.

Wilson, W.D. and T.F. Turner. (2007) A phylogenetic analysis of the Pacific salmon and trout (Salmonidae: *Oncorhynchus*) based on partial ND4 sequence: A closer look at the highly fragmented inland species. Molecular Phylogenetics and Evolution.

Wilson, W.D. and T.F. Turner. (2007) Comparative analysis of the MHC DAB in *Oncorhynchus*: Functional patterns in the peptide binding pockets. Journal of Heredity.

Wilson, W.D. and T.F. Turner. (2007) Twelve microsatellite markers from the salmonid trematode *Crepidostomum farionis* (Trematoda: Allocreadiidae). Molecular Ecology Notes.

G. Publications/Reports Based on MSB Specimens/Data by Outside Researchers

None

ACTIVITIES IN LEARNED SOCIETIES

A. Invited/Plenary Talks and/or Seminars

R.K. Dudley, G.C. White, S.P. Platania, and D.A. Helfrich. Rio Grande silvery minnow population estimation program. Invited Symposium: Middle Rio Grande Endangered Species Act Collaboration Program, University of New Mexico, Albuquerque, NM. 16-17 April 2007.

R.K. Dudley and S.P. Platania. Rio Grande silvery minnow population monitoring (1993-2007). Invited Symposium: Middle Rio Grande Endangered Species Act Collaboration Program, University of New Mexico, Albuquerque, NM. 16-17 April 2007.

M.J. Osborne and T. F. Turner. Conservation genetics of the Rio Grande silvery minnow (*Hybognathus amarus*): genetic monitoring program, 2007. Invited Symposium: Middle Rio Grande Endangered Species Act Collaborative Program. University of New Mexico, Continuing Education. April 16-17, 2007.

A.M Snyder and S.P. Platania. 2007. Case study for university research museums: design for storage of fluid preserved collections. Invited Plenary Session. 22nd Annual Meeting of the Society for the Preservation of Natural History Collections, Saint Paul MN. 21-26 May 2007

B. Contributed Talks/Posters

A.S. Burdett and T.F. Turner. River food webs during summer dry-down in the Middle Rio Grande: a study using stable isotope analysis. North American Benthological Society Annual Meetings. Columbia, South Carolina, 3 June 2007.

T.L. Kennedy. Complex temporal patterns in the macroinvertebrate community of an arid river. Guild of Rocky Mountain Ecologists and Evolutionary Biologists. Ghost Ranch, NM

T.J. Krabbenhoft, M.L. Collyer, J.M. Quattro. Convergent evolution of phylogenetically-disparate, endemic fishes of Lake Waccamaw, North Carolina. Joint Meeting, American Society of Ichthyologists and Herpetologists, St. Louis, MO, 11-16 July 2007.

M.J. Osborne and T.F. Turner. 2007. Long-term genetic studies in the Rio Grande silvery minnow: An examination of effects of population decline and supportive breeding. Middle Rio Grande Endangered Species Act Collaborative Program Second Annual Symposium. University of New Mexico, Continuing Education. 16-17 April 2007.

M. J. Osborne and T.F. Turner. Multi-locus MHC and parasite diversity in an endangered non-model cyprinid. Society for the Study of Evolution Annual Meeting, Christchurch, New Zealand, 12 - 16 June 2007.

D. Swenton-Olson, A. Kodric-Brown, T.F. Turner, M.J. Osborne, and W.D. Wilson. Behavioral and molecular evidence for hybridization between *Gambusia nobilis* and *Gambusia affinis*. Desert Fishes Council, Ventura, California, 14th -18th November 2007.

T.F. Turner, M.J. Osborne, G. R. Moyer, M.A. Benavides, and D.Alo. Life history and environmental variation interact to determine effective size to census size ratio. Symposium on Evolution in Human-Altered Environments, University of California, Los Angeles, CA. 8 – 10 February 2007.

T.F. Turner and M. J. Osborne. Lessons from multigenerational genetic monitoring in an endangered species. Society for the Study of Evolution Annual Meeting, Christchurch, New Zealand, June 12 – 16, 2007.

W.D. Wilson and T.F. Turner. Phylogeny of the Pacific salmon and trout (*Oncorhynchus*) based on partial ND4 sequence. The 40th Joint Annual Conference of the Arizona and New Mexico Chapters of the Wildlife Society and American Fisheries Society, Albuquerque, NM. 6-8 February 2007.

W.D. Wilson and T.F. Turner. Major Histocompatibility Complex (MHC) Patterns in salmonids: A phylogenetic and functional analysis. Annual meeting of the Society for the Study of Evolution, Christchurch, NZ. 12-16 June 2007.

C. Attendance at Professional Meetings

A.S. Burdett

American Society of Limnology and Oceanography Aquatic Sciences Meeting. Santa Fe, NM 2-9 February 2007

Middle Rio Grande Endangered Species Collaborative Program: Second Annual Symposium Albuquerque, NM 16-17 April 2007

North American Benthological Society 55th Annual Meeting. Columbia, SC 3-8 June 2007

R.K. Dudley

Middle Rio Grande Endangered Species Collaborative Program: Second Annual Symposium Albuquerque, NM. 16-17 April 2007

T.J. Krabbenhoft

American Society of Ichthyologists and Herpetologists 87th Annual Meeting. St. Louis, MO. 11-16 July 2007

M.J. Osborne

Middle Rio Grande Endangered Species Collaborative Program: Second Annual Symposium
Albuquerque, NM 16-17 April 2007

Society for the Study of Evolution Annual Meeting. Christchurch, New Zealand 12-16 June 2007

S.T. Ross

Desert Fishes Council 39th Annual Meeting. Ventura CA 14-18 November 2007

A.M. Snyder

Society for the Preservation of Natural History Collections 22nd Annual Meeting. Saint Paul MN
21-26 May 2007

T.F. Turner

Symposium on Evolution in Human-Altered Environments, University of California, Los Angeles, CA. 8-10 February 2007

Middle Rio Grande Endangered Species Collaborative Program: Second Annual Symposium
Albuquerque, NM 16-17 April 2007

Society for the Study of Evolution Annual Meeting. Christchurch, New Zealand 12-16 June 2007

W.D. Wilson

The 40th Joint Annual Conference of the New Mexico and Arizona Chapters of the Wildlife Society and American Fisheries Society. Albuquerque NM 6-8 February 2007

Society for the Study of Evolution Annual Meeting. Christchurch, New Zealand 12-16 June 2007

D. Service as Editor or on Editorial Board of a Journal

T.F. Turner

Occasional Papers of the Museum of Southwestern Biology.

E. Service as Officer of Professional Society/Organization

S.T. Ross

Board of Governors, American Society of Ichthyologists and Herpetologists, Class of 2002-07.
Chair, Endowment Committee, American Society of Ichthyologists and Herpetologists, 2007-2009.

Member, Executive Committee, American Society of Ichthyologists and Herpetologists, 2007-2009.

Member, Long Range Planning and Policy Committee, American Society of Ichthyologists and Herpetologists, 2007-2009.

T.F. Turner

Board of Governors, American Society of Ichthyologists and Herpetologists, Class of 2007.

OTHER PROFESSIONAL ACTIVITIES

A. Presentation to General Audience in a Scholarly Capacity

A.S. Burdett Lecture BIOL 203 *An Introduction to Ecology and Terrestrial Biomes*

16 October 2007

R.K. Dudley Rio Grande silvery minnow population estimation program. U.S. Bureau of Reclamation, Albuquerque Area Office, Albuquerque, NM. April 2007.

R.K. Dudley Rio Grande silvery minnow population estimation program. U.S. Fish and Wildlife Service, New Mexico Ecological Services Field Office, Albuquerque, NM. July 2007.

T.L. Kennedy The role of abiotic processes in the temporal dynamics of macroinvertebrates in the Rio Grande. University of New Mexico, Department of Biology 16th Annual Research Day Albuquerque April 2007

T.J. Krabbenhoft Morphological divergence of endemic Lake Waccamow, North Carolina fish fauna. University of New Mexico, Department of Biology 16th Annual Research Day Albuquerque April 2007

T.F. Turner The ichthyofauna of New Mexico. University of New Mexico, Biology Honors Program in Natural History of the Southwest. October 2007

T.F. Turner Reef fishes of the Caribbean. University of New Mexico, Department of Biology , Tropical Biology. March 2007

T.F. Turner Lessons from long-term demographic and genetic monitoring of an endangered species. Oklahoma State University, Stillwater OK. October 2007

T.F. Turner Lessons from long-term demographic and genetic monitoring of an endangered species. Texas A&M University, Corpus Christi TX. December 2007

Wilson, W.D. and T.F. Turner. Phylogeny of the Pacific salmon and trout (*Oncorhynchus*) based on partial ND4 sequence: A robust phylogeny compared to MHC patterns. University of New Mexico, Department of Biology 16th Annual Research Day Albuquerque April 2007

B. Presentations in a Scholarly Capacity at Hearings, Workshops, Legislative Committees, etc.

None

C. Scholarly Service as a Member of a Local/State/Regional/National Committee, Panel, etc.

W. H. Brandenburg

Member, Advisory Committee for Restoration of roundtail (*Gila robusta*) and Gila chub (*Gila nigra*).

Member, San Juan River Biology Committee.

Coordinator, New Mexico Area Native Fishes Report for Desert Fishes Council.

A.S. Burdett

Judge / Panel Member:

Central New Mexico Science and Engineering Research Challenge.15-17 March 2007

Intel International Science and Engineering Fair 13-19 May 2007

North American Benthological Society 55th Annual Meetings 3-8 June 2007

Reviewer for panel, National Science Foundation Ecosystem Science Cluster, 1 proposal

R.K. Dudley

Technical Advisor, Recovery Team for Rio Grande silvery minnow (*Hybognathus amarus*), U.S. Fish and Wildlife Service.

Technical Advisor, Middle Rio Grande Endangered Species Act Collaborative Program.

Invited Panelist, Rio Grande silvery minnow monitoring plan development, Middle Rio Grande Endangered Species Collaborative Program: Second Annual Symposium Albuquerque, NM 16-17 April 2007.

M. A. Farrington

Member, Advisory Committee for Restoration of roundtail (*Gila robusta*) and Gila chub (*Gila nigra*).

Member, San Juan River Biology Committee.

M.J. Osborne

Member, Rio Grande silvery minnow (*Hybognathus amarus*) Propagation and Genetics Workgroup. US Fish and Wildlife Service, Albuquerque NM.

Member, Population viability analysis of Rio Grande silvery minnow (*Hybognathus amarus*) US Fish and Wildlife Service, Albuquerque NM.

S.P. Platania

Member, Committee on Endangered and Threatened Fish Species, American Fisheries Society.

Member, Recovery Team for Rio Grande silvery minnow (*Hybognathus amarus*), US Fish and Wildlife Service.

S.T. Ross

Member, Peer Review Panel, San Juan River Basin Recovery Implementation Program.

T.F. Turner

Panel, National Science Foundation Ecological Biology, 18 proposals reviewed

Ad Hoc Reviewer, National Science Foundation, 2 proposals reviewed

Advisor, Genetics issues for the Rio Grande Fishes Recovery Team, US Fish and Wildlife Service, Albuquerque NM

Member, Gila trout (*Oncorhynchus gilae*) Recovery Team, US Fish and Wildlife Service, Albuquerque NM.
Member, Rio Grande silvery minnow, (*Hybognathus amarus*) Propagation and Genetics Workgroup. US Fish and Wildlife Service, Albuquerque NM.
Invited Panelist, National Science Foundation Ecological Biology Cluster, October 16-22, 2007.
Invited Panelist, Rio Grande silvery minnow monitoring plan development.
Invited participant, Population viability analysis of Rio Grande silvery minnow
Invited Reviewer, Apache Trout (*Oncorhynchus gilae apache*) Broodstock Management Plan, US Fish and Wildlife Service
Invited Reviewer, Apache Trout (*Oncorhynchus gilae apache*) Recovery Plan Update, US Fish and Wildlife Service

W.D. Wilson

Representative, University of New Mexico, Department of Biology Graduate Policy Committee (2007-2008)

Full member, Sigma Xi

D. Journal Referee

A.S. Burdett, *Limnology and Oceanography* (1), *Hydrobiologia* (1), *Marine and Freshwater Research* (1)

R.K. Dudley, *Ecography* (1)

T.J. Krabbenhoft, *Copeia* (1), *Environmental Biology of Fishes* (1), *Journal of Freshwater Biology* (1)

M.J. Osborne, *Evolution* (1), *Marine Biology* (1)

S. T. Ross, *Copeia* (1)

T.F. Turner, *Proceedings of the Royal Society, Series B* (1), *Journal of Heredity* (1), *Journal of Freshwater Biology* (1), *Limnology and Oceanography* (1), *Molecular Ecology* (2) *Molecular Ecology Notes* (1) *Journal of Fish Biology* (1), *Journal of Applied Ecology* (1)

E. Hosting Professional Colloquia and Groups

None

SERVICE

A. Symposia, Workshops, Conferences etc. Sponsored, Organized, Held, etc.

None.

B. Public Service

A.S. Burdett

National Science Foundation, Research for Undergraduate Education two students January to December 2007

R.K. Dudley

Technical and scientific advisory role for the conservation and management of threatened and endangered native fishes for the New Mexico Department of Game and Fish, U.S. Army Corps of Engineers, U.S. Bureau of Reclamation, and the U.S. Fish and Wildlife Service.

A.M. Snyder

Continue to assist in loan acquisitions and curation of freshwater mussels of the genus *Anodonta* for T.L. Myers, Ph. D. an independent Arizona researcher investigating the taxonomic relationships of this species in central and western Mexico. Donated jars, lids and gaskets to Weber State University, Provo UT for the teaching/reference collections used for their ichthyology classes.

T.F. Turner

Museum of Southwestern Biology Executive Committee and ad-hoc member of the Museum of Southwestern Biology Space Committee; University of New Mexico Faculty Senate Arts and Sciences Representative

ADVANCED STUDY, HONORS, AWARDS, FELLOWSHIPS, ETC.

None.

DONATIONS AND GIFTS RECEIVED

None

CURRENT STAFF

A. Faculty/Staff

Ayesha S. Burdett, Postdoctoral Research Associate

Megan J. Osborne, Research Assistant Professor

Steven P. Platania, Associate Curator of Fishes

Stephen T. Ross, Curator Emeritus and UNM Adjunct Professor of Biology

Alexandra M. Snyder, Collections Manager

Thomas F. Turner, Curator of Fishes and MSB Director

B. Graduate students

Thomas L. Kennedy, Ph.D. candidate

Trevor J. Krabbenhoft, Ph.D. candidate

Wade D. Wilson, Ph.D. candidate

C. Undergraduate Students

Adam L. Barkalow, NMGF Intern Invertebrates

Nathan Daves-Brody, NSF-REU Research Assistant

Tracy Diver, Research Assistant Turner Lab

Alicia M. Hodson, MSB Curatorial Assistant

Nedra Iwerks, Research Assistant MSB Special Projects

Monica Tellez, NSF-REU Research Assistant

Cynthia Rivera, MSB Curatorial Assistant

Alana Sharp, Turner Lab Research Assistant

John Skillman, MSB Curatorial Assistant

MUSEUM ASSOCIATES

A. Curatorial Associates

David L. Propst, Ph. D. New Mexico Dept. of Game and Fish, Santa Fe

B. Research Associates

W. Howard Brandenburg, American Southwest Ichthyological Researchers, Albuquerque

James E. Brooks, U.S. Fish and Wildlife Service, Albuquerque

Brooks M. Burr, Ph.D. Southern Illinois University, Carbondale

Robert K. Dudley, Ph. D. American Southwest Ichthyological Researchers, Albuquerque

Michael A. Farrington, American Southwest Ichthyological Researchers, Albuquerque

Astrid Kodric-Brown, Ph.D. University of New Mexico, Albuquerque

DIVISION OF GENOMIC RESOURCES

DIVISION HIGHLIGHTS

The Division of Genomic Resources (DGR) of the Museum of Southwestern Biology (MSB) is a centralized repository for cryogenic material from all MSB divisions at the University of New Mexico and other individuals and institutions worldwide for which archival agreements are extant. The DGR frozen tissue collection is taxonomically broad and contains multiple tissue samples from approximately 120,000 specimens. The collection is ranked as one of the largest tissue collections in the Western Hemisphere.

Division highlights this year include, an archival agreement completed with Dr. James Derr of Texas A&M University, College of Veterinary Medicine & Biomedical Sciences to serve as a repository for their collection of North American bison DNA samples. DGR will acquire 3,500 DNA samples from multiple bison populations. A joint press release detailing this collaboration between Universities to preserve these genomic samples from this iconic North American species is forthcoming.

Special activities this year included DGR staff participation as local committee members for the 87th annual meeting of the American Society of Mammalogists held in Albuquerque the 6-10th of June 2007. Collection manager Cheryl Parmenter served as committee co-chairman for the registration/help desk, and served on the social events, and field trips committees as well as helping with transportation and parking, signs, the fun run, breakfasts with a scientist, and the auction. Cheryl also had the honor of presenting Dr. Richard Yanagihara's poster entitled *Newfound Soricid-Borne Hantaviruses in the United States* at the meeting. Graduate Assistant Andrew Hope served as chairman of the oversight of signage committee and on the media tech committee. Work-study Kendra Anderson served on the help desk committee. Curator Terry Yates had many functions at the meeting.

In 2007, Curator Terry Yates contributed to the scientific community through his attendance at many meetings and by presentations to scientific societies. He maintained 24 board appointments representing the University of New Mexico (see details below).

TABLE OF COLLECTION USE

Collection Growth (Specimens catalogued)	Loans (outgoing)	Loans (incoming)	Visitors	Information Requests Personally Responded to	Publications Citing MSB Specimens
10659/42606	45/2392	1/5	44	>50	25

The collection growth of 10,659 NK numbers (individual specimens) would equal approximately 42,606 tissue tubes added to the DGR collection this year. Collection growth can be further broken down by divisions: 9,493 were mammal specimens, 569 were DGR specimens (no

vouchers-mammals) and 597 were Bird specimens. Loans consisted of 45 individual loans comprised of 2392 samples.

COURSES USING THE COLLECTIONS.

BIOL 402/502 Advanced Field Mammalogy. 2 Students

BIOL 489 Mammalogy 15 Students

BIOL 599 Thesis. 1 Student

BIOL 699 Dissertation. 2 Students

ART HI 407 Museum Studies

COURSES TAUGHT BY MSB PERSONNEL

A. Faculty/Collection Managers

Yates, T.

BIOL 699, Dissertation, 2 students

B. Graduate Students

Weise, Christa. Ph. D. Candidate. Community Structure, Vertical Stratification and Seasonal Patterns of Neotropical Bats.

Harding, Larisa. Ph. D. Candidate. Speciation and Biodiversity: Phylogeography and historical biogeography of *Mustela frenata*; Phylogeny of the American Mustelidae, with emphasis on two South American endemics.

COLLECTION MANAGEMENT

This year, DGR personnel focused on loan processing, specimen archiving and data verification. We archived over 10,659 new specimens, including tissues of mammals from Alaska, California, Colorado, Montana, New Mexico, Wyoming, Idaho, Utah, Nevada, Oregon, Canada, Estonia, and Chile and bird tissue from Arizona, Alaska, California, Colorado, Florida, New Mexico, Oregon, Columbia and Belize. In total, 6,500 new NK numbers were issued to researchers for the year. We processed 45 outgoing loans containing 2,392 individual specimens to 14 states and 3 foreign countries. Of these, 45 loans, 11 were for our own UNM undergraduate and graduate students. Three of the loans were for the Bird Division and 42 loans were for the Mammal Division.

AWARDS, GRANTS, AND CONTRACTS.

NSF REU to EID: *Ecological Drivers of Rodent-borne Disease Outbreaks: Trophic Cascades and Dispersal Waves*. 14 April 04- 31 August 2007. This grant was transferred to a Co-PI. All other grants spanning 2007 are in the VP for Research and Economic Development Office.

PUBLICATIONS.

A. Books, Chapters, Edited Volumes

None

B. Journal Articles

Yates, T. L.

Arai, S., J.-W. Song, L. Sumibcay, S. N. Bennett, V. R. Nerurkar, C. Parmenter, J. A. Cook, T. L. Yates, and R. Yanagihara. 2007. Hantavirus in Northern Short-tailed Shrew, United States. *Emerging Infectious Diseases* 13(9):1420-1423.

[Calisher, C.H.](#), K. D. [Wagoner](#), B. R. [Amman](#), J. J. [Root](#), R. J. [Douglass](#), A. J. [Kuenzi](#), K. D. Abbott, C. Parmenter, T. L. Yates, T. G. Ksiazek, B. J. [Beaty](#), J. N. [Mills](#). 2007. Demographic factors associated with prevalence of antibody to Sin Nombre virus in deer mice in the western United States. [Journal of Wildlife Diseases](#) 43(1):1-11.

Frey, J. K., M. A. Bogan and T. L. Yates. 2007. Mountaintop island age determines species richness of boreal mammals in the American Southwest. *Ecography* 30:231-240.

Salazar-Bravo, J., and T. L. Yates. 2007. A New Species of *Thomasomys* (Cricetidae: Sigmodontinae) from Central Bolivia. Pp. 747-774 in Kelt, D. A., E. P. Lessa, J. Salazar-Bravo, and J. L. Patton (eds.). 2007. *The Quintessential Naturalist: Honoring the Life and Legacy of Oliver P. Pearson*. University of California Publications in Zoology 134:1-981.

Sitdikov, R. A., E. S. Wilkins, T. Yates, and B. Hjelle. Detection of Hantavirus using a new miniaturized biosensor device. 2007. *Journal of Applied Research* 7(1):86-107.

C. Parmenter

Arai, S., Jin-Won Song Laarni Dumibcay, Vivek R. Nerurkar, Shannon N. Bennett, Cheryl Parmenter, Joseph A. Cook, Terry L. Yates, Richard Yanagihara. 2007. *Hantavirus in the short-tailed shrew, North America*. *Emerging Infectious Diseases* 13:1420-1423.

Calisher, C., K. Wagoner, B. Amman, J. Root, R. Douglass, A. Kuenze, K. Abbott, C. Parmenter, T. Yates, T. Ksiazek, B. Beaty, J. Mills. 2007 *Demographic Factors Associated With Prevalence Of Sin Nombre Virus in Deer Mice in the Western United States*. *Journal of Wildlife Diseases*, 43(1)pp. 1-11.

C. Web-Based

None

D. Technical Reports

University of New Mexico, Museum of Southwestern Biology, Division of Genomic Resources: 2007 Annual Report. **Joseph A. Cook, Jon L. Dunnum and Cheryl A. Parmenter.**

E. Theses/Dissertations Completed

Christa Weise.

Community Structure, Vertical Stratification and Seasonal Patterns of Neotropical Bats, July 2007.

F. Work In Progress

G. Publications and reports based on museum specimens by researchers excluding Museum staff, students and Associates.

- Alvarez-Castaneda, S. T. 2007. Systematics of the antelope ground squirrel (*Ammospermophilus*) from islands adjacent to the Baja California peninsula. *Journal of Mammalogy*, 88(5):1160–1169.
- Banbury, J. L., and G. S. Spicer. 2007. Molecular systematics of chipmunks (*Neotamias*) inferred by mitochondrial control region sequences. *Journal of Mammal Evolution* 14:149–162.
- Bradley, R. D., N. D. Durish, D. S. Rogers, J. R. Miller, M. D. Engstrom, and C. W. Kilpatrick. 2007. Toward a molecular phylogeny for *Peromyscus*: evidence from mitochondrial Cytochrome-b sequences. *Journal of Mammalogy* 88(5):1146–1159.
- Campbell, P., A. S. Putnam, C. Bonney, R. Bilgin, J. C. Morales, T. H. Kunz, L. A. Ruedas. 2007. Contrasting patterns of genetic differentiation between endemic and widespread species of fruit bats (Chiroptera: Pteropodidae) in Sulawesi, Indonesia. *Molecular Phylogenetics and Evolution* 44:474–482.
- Cutrera, A. P., and E. A. Lacey. 2007. Trans-species polymorphism and evidence of selection on class II MHC loci in tuco-tucos (Rodentia: Ctenomyidae). *Immunogenetics* 59:937–948.
- Dick, C. W., D. Gettinger, and S. L. Gardner. 2007. Bolivian Ectoparasites: A Survey of Bats (Mammalia Chiroptera). *Comparative Parasitology* 74(2):372–377.
- Ditto, A. M., and J. K. Frey. 2007. Effects of ecogeographic variables on genetic variation in montane mammals: implications for conservation in a global warming scenario. *Journal of Biogeography* 34(7):1136–1149.
- Foot, N. J., S. Orgeig, S. Donnellan, T. Bertozzi, C. B. Daniels. 2007. Positive selection in the N-Terminal extramembrane domain of lung surfactant protein C (SP-C) in marine mammals. *Journal of Molecular Evolution* 65:12–22.
- Frey, J. K. 2007. There is no valid record of cliff chipmunk (*Tamias dorsalis*) in the Sandia mountains, New Mexico. *Western North American Naturalist* 67(4):611–612.
- Geluso, K. 2007. Winter activity of bats over water and along flyways in New Mexico. *The Southwestern Naturalist* 52(4):482–492.
- Glass, G. G., T. Shields, B. Cai, T. L. Yates, and R. Parmenter. 2007. Persistently highest risk areas for hantavirus pulmonary syndrome: potential sites for refugia. *Ecological Applications*, 17(1):129–139.
- Haukisalmi, V., L. M. Hardman, J. Niemimaa and H. Henttonen. 2007. Taxonomy and genetic divergence of *Paranoplocephala kalelai* (Tenora, Haukisalmi et Henttonen, 1985) (Cestoda, Anoplocephalidae) in the grey-sided vole *Myodes rufocanus* in northern Fennoscandia. *Acta Parasitologica* 52(4), 335–341.

Koepfli, K-P., M. E. Gompper, E. Eizirik, C.-C. Ho, L. Linden, J. E. Maldonado, R. K. Wayne. 2007. Phylogeny of the Procyonidae (Mammalia: Carnivora): Molecules, morphology and the Great American Interchange. *Molecular Phylogenetics and Evolution* 43:1076–1095.

Matocq, M. D., Q. R. Shurtli V, C. R. Feldman. 2007. Phylogenetics of the woodrat genus *Neotoma* (Rodentia: Muridae): Implications for the evolution of phenotypic variation in male external Genitalia. *Molecular Phylogenetics and Evolution* 42: 637–652.

Notarnicola, J., F. A. Jimenez, and S. L. Gardner. 2007. A new species of *Dipetalonema* (Filarioidea: Onchocercidae) from *Ateles chamek* from the Beni of Bolivia. *Journal of Parasitology* 93(3):661–667.

Porter, C. A., S. R. Hofer, C. A. Cline, F. G. Hoffmann, and R. J. Baker. 2007. Molecular phylogenetics of the Phyllostomid bat genus *Micronycteris* with descriptions of two new subgenera. *Journal of Mammalogy* 88(5):1205–1215.

Potter, S., S. Orgeig, S. Donnellan, and C. B. Daniels. 2007. Purifying selection drives the evolution of surfactant protein C (SP-C) independently of body temperature regulation in mammals. [*Comparative Biochemistry and Physiology Part D: Genomics and Proteomics* 2\(2\):165-176.](#)

Quintana N, H., and V. Pacheco T. 2007. Identificación y distribución de los murciélagos vampiros del Perú. *Revista Peruana Med Exp Salud Publica* 24(1):81-88.

Ruedas, L. A., and J. Salazar-Bravo. 2007. [*Morphological and chromosomal taxonomic assessment of *Sylvilagus brasiliensis gabbi* \(Leporidae\).*](#) *Mammalia* 71(1/2):63–69.

Schutz, H., and R. P. Guralnick. 2007. Postcranial element shape and function: assessing locomotor mode in extant and extinct mustelid. *Zoological Journal of the Linnean Society* 150:895-914.

Solari, S. 2007. New species of *Monodelphis* (Didelphimorphia: Didelphidae) from Peru, with notes on *M. adusta* (Thomas, 1897). *Journal of Mammalogy* 88(2):319–329.

Storz, J. F., Sabatino S. J., F. G. Hoffmann, E. J. Gering, H. Moriyama, et al. (2007). The molecular basis of high-altitude adaptation in deer mice. *PLoS Genet* 3(3): 0448-0459.

Weyandt, S. E., and R. A. Van Den Bussche. 2007. Phylogeographic structuring and volant mammals: the case of the pallid bat (*Antrozous pallidus*). *Journal of Biogeography* 34(7):1233-1245.

Woodman, N. 2007. A new species of nectar-feeding bat, genus *Lonchophylla*, from western Colombia and western Ecuador (Mammalia: Chiroptera: Phyllostomidae). *Proceedings of the Biological Society of Washington* 120(3):340–358.

Young, R. L., T. S. Haselkorn, and A.V. Badyaev. 2007. Functional equivalence of morphologies enables morphological and ecological diversity. *Evolution* 61-11: 2480–2492.

ACTIVITIES IN LEARNED SOCIETIES.

A. Invited or plenary talks

Many

B. Contributed talks or posters.

T.L. Yates

Many

C. Parmenter:

Newfound Soricid-Borne Hantaviruses in the United States. The 87th Annual Meeting of the American Society of Mammalogists, Albuquerque NM. 6-10th of June 2007.

C. Attendance at professional meetings.

T.L. Yates

National Academies of Sciences Annual Mtg Washington, DC January 2007

American Society of Mammalogist Annual Mtg Albuquerque, NM. June 2007

Natural Science Collections Alliance Board of Directors Mtg Washington, DC 2007

NSCA Annual Meeting, Washington DC 2007.

RAMBO Annual Meeting 2007 Sevilleta National Wildlife Refuge, NM.

C. Parmenter

The 87th Annual Meeting of the American Society of Mammalogists, Albuquerque NM. 6-10th of June 2007. Local Committee and presenter.

RAMBO Annual Meeting 2007 Sevilleta National Wildlife Refuge, NM.

Hope, A. G:

The 87th Annual Meeting of the American Society of Mammalogists, Albuquerque NM. 6-10th of June 2007. Local Committee and presenter.

D. Service as editor or on editorial board of a journal

None

E. Service as officer of professional society or organization

Terry Yates:

Board of Directors, The National Assoc. of State Universities & Land-Grant Colleges, Nov. 2006 - 2007

Board Member, Board of Life Sciences, The National Academies of Sciences, October 2006 – June 2007

Board of Directors, New Mexico LambdaRail Inc., (NMLR), September 2006-2007

Board of Directors, New Mexico Consortium Inc., (NMC), August 2006 - 2007

Board of Directors, Ibero American Science & Tech. Education Consortium (ISTEC), 2005-2007

Board of Directors, National Center for Genome Resources (NCGR), Nov. 2005 - 2007

Chair-elect, Council on Research Policy & Graduate Education (CRPGE), June 2006-2007

President, Natural Science Collections Alliance, 2005- 2007

Board of Directors, National LambdaRail Incorporated, 2004 - 2007
Executive Board, Council on Research Policy & Graduate Education (CRPGE), 2004 -2007
Chairman, New Mexico Research Council, 2003 - 2007
President, Monzano Conservation Foundation, 2003 - 2007
Board of Directors, NM Technology Research Collaborative, 2003 - 2007
Executive Board of Directors, Science & Technology Corporation @ UNM, 2001 - 2007
Board of Directors, La Semilla Institute, 2001 - 2007
Trustee, Southwestern Association of Naturalists
Board of Directors, Peromyscus Stock Center
Commission Member, Albuquerque-Chihuahua City Bilateral Commission, January 2005 - 2007
Board Member, All Species Foundation,
Chairman, Board of Trustees, Society of Systematic Biology, 1999-2007
Professor of Pathology, University of New Mexico, 1999-2007
Chairman, Board of Trustees Reserve Fund and Pooled Income Fund, American Society of Mammalogists, 1998-2007
Professor of Biology, University of New Mexico, 1993-2007

OTHER PROFESSIONAL ACTIVITIES

A. Colloquium Presentations

Terry Yates
Many

B. Presentation to General Audience in a Scholarly Capacity

Terry Yates
NSF

C. Presentations in a Scholarly Capacity at Hearings, Workshops, Legislative Committees, etc.

Terry Yates
Many, including local rotary and other business groups.

D. Service in a Scholarly as a Member of a Local, State, Regional or National Committee, Panel etc.

Terry Yates
Program Committee, American Society of Mammalogists
Systematic Collections Committee, American Society of Mammalogists
Development Committee, Southwestern Association of Naturalists
International Commission on Systematic Collections, IUBS, Section of Thereology
Species Survival Commission (IUCN)-Insectivora, Tree Shrew, and Elephant Shrew Specialist Group
Species Survival Commission-Rodent Specialist Group
Small Mammal Recovery Team-USFW
NSF/USAID Interagency Steering Committee
Search Committee-Molecular Analyst, Smithsonian Institution
Global Environmental Facility-World Bank-Biodiversity Subcommittee
Latin American Biodiversity Committee-Smithsonian Institution

Bio Task Force on Environmental Biology, NSF
Research Needs Committee-Ecological Society of America
International Relations Committee, Chair, ASM.
OSTP Subcommittee on weapons of mass destruction
NEON Design Team, National Science Foundation
Albuquerque-Chihuahua City Bilateral Commission
CRPGE Executive Committee (Council on Research Policy & Graduation Education of the
National Assoc. of State University and Land-Grant Colleges)
Latin American Institute Liaison Committee, Dept. of Biology, 1985-2007
Coordinating Committee for Latin American Exchanges Land Use Committee
International Policy Committee
Grants Committee Latin American Institute
Academic Freedom and Tenure Committee
Council on the Americas
Integrative Cancer Biology Program Advisory Board, UNM Health Sciences Center
IACUC Committee
Annual Research Lecture Committee
Institutional Bio-Safety Committee
UNM Strategic Planning Committee
NM Research Council
UNM Research Cabinet
UNM Economic Development Council
UNM Business & Industry Advisory Cabinet
UNM Emergency Operations Center, 2006

E. Journal Referee.

Terry Yates
Journal of Mammalogy
Bioscience

SERVICE

A. Symposia, Workshops, Conferences, etc. Sponsored, Organized, Held etc.

Terry Yates
Many

B. Public Service

Terry Yates
President of Placitas Homeowners Association

Cheryl Parmenter
Division tours – provided educational tours and assistance for visitors.

Visitors

Johns Hopkins University-Infectious Disease Class-Greg Glass-14 Students
Dr. Gary Simpson
Biology New Graduate Students

LTER
USGS
EID Crew
MSB Bird Division
Dr. Michael Mares
Dr. Robert Baker and student.

ADVANCED STUDY, HONORS, AWARDS, FELLOWSHIPS, ETC.

Terry Yates
Research Associate -The Museum, Texas Tech University.
Elected Board of Governors, Southwestern Association of Naturalists
Appointed as one of two American representatives International Commission on Systematic Collections, IUBS
Appointed Research Associate, American Museum of Natural History, 1985-2007
Elected Trustee, Southwestern Association of Naturalists
Elected President, Natural Science Collections Alliance (NSCA), 2005 – 2007
President-elect, Council on Research Policy & Graduate Education (CRPRGE), National Society of State Universities and Land Grant Colleges

Hope, A. G.
Sigma Xi Grants in Aid of Research - \$400 awarded Fall 2007: Molecular vs. morphological vicariant evolution of rapidly evolving mammals: *Sorex minutissimus*, the tiny shrew.

DONATIONS AND GIFTS RECEIVED.

No donations or gifts.
Archival agreement-Bison FTA Card Collection 3,500 DNA specimens.

CURRENT STAFF

Faculty

Terry Yates: Curator of Genomic Resources, Museum of Southwestern Biology. Vice President for Research & Economic Development. Professor, Department of Biology, Professor and Department of Pathology.

Staff

Cheryl Parmenter: Collection manager

Students

Andrew Hope **Graduate Assistant.**
Comparative Phylogeography of the Sorex cinereus Complex: PhD in progress.

Kendra Anderson **Undergraduate workstudy**
Graduating UNM Spring 2007.

MUSEUM ASSOCIATES.

A. Curatorial Associates

None

B. Research Associates

J. Scott Altenbach	UNM Department of Biology
Sydney Anderson	American Museum of Natural History, New York
Robert J. Baker	The Museum, Texas Tech University, Lubbock, TX
Troy L. Best	Department of Biology, Auburn University
Jerry Dragoo	UNM Department of Biology
Jennifer Frey	Eastern New Mexico University, Portales, NM
Scott L. Gardner	Dept. Nematology, Curator, University Nebraska.
Sarah B. George	Director, Utah State Museum.
Gary L. Graham	Bat Conservation International
David J. Hafner	New Mexico Museum Nat. History
Edward J. Heske	Illinois Biological Survey
R. Dewitt Ivey	Retired. Active in Botany, mammals
Clyde Jones	The Museum Texas Tech University
Dwight W. Moore	Emporia State University
Robert Parmenter	Valles Caldera Preserve- Chief Scientist
James L. Patton	Museum of Vertebrate Zoology, University of California
Luis Ruedas	Portland State University, Portland, Oregon
Jorge-Salazar Bravo	Texas Tech University, Lubbock, TX
Richard A. Smartt	New Mexico Museum of Natural History.

HERBARIUM

DIVISION HIGHLIGHTS

In 2007 the UNM herbarium contained more than 112,687 accessioned specimens of vascular and non-vascular plants

Development and maintenance of digital relational databases

The New Mexico Biodiversity Consortium Database contains 350,000 specimens from 4 university collections in NM: <http://nmbiodiversity.org>

Interpretive activities or Collections-related Outreach including tours for UNM students and the Native Plant Society of New Mexico and maintaining the Herbarium webpage

Collections Improvement Funding, Grant Applications/Awards: \$6000 for Database improvement-UNM and \$1000 from New Mexico Native Plant Society

Tim Lowrey and Jane Mygatt continue to collaborate on A Field Guide to the Plants and Animals of the Middle Rio Grande.

TABLE OF COLLECTION USE

Collection Growth (specimens catalogued & entered in collection)	Loans/# specimens (outgoing)	Loans (incoming)	Visitors (not including tour groups)	Information Requests Personally Responded to	Publications Citing MSB Specimens
1158	21/1124	9/129	246	69	7

COURSES USING THE COLLECTIONS

Biol 402, Plants and People, Spring 2007- 21 students

NSC 400- Geobotany, Summer 2007- 15 students

COURSES TAUGHT BY MSB PERSONNEL

A. Faculty/Collection Manager

Hanson, D.

Bio 360, Botany- 15 students

Biol 478, Plant Physiology with lab- 9 students

Biol 546, Lab Methods in Molecular Biology- 13 students

Biol 402/502, Lab Methods in Gas Exchange- 5 students

Lowrey, T.K.

Biol 402, Plants and People, Spring 2007- 21 students

NSC 400- Geobotany, Summer 2007- 15 K-12 Teachers

B. Graduate Students

None

COLLECTION MANAGEMENT

Herbarium staff processed and added 1158 new acquisitions to the collection. The UNM Herbarium received 33 gifts and 1 exchange of specimens, totaling 1829 specimens. The majority of specimens were collected from New Mexico. The herbarium logged more than 246 visits from the botanical community. We average 1 information request per week by e-mail and/or phone, and the Biodiversity website receives many hits per month for herbaria in the state. We continue georeferencing the collections using part time graduate student assistance. In addition, we continue to image specimens in the collection, and to-date have imaged our Type specimens, the state's threatened and endangered taxa, New Mexico collections in the Cactaceae (2676 specimens), and work continued imaging the Asteraceae.

Accessions for 2007:

2007.01	Bob Sivinski, NM State botanist, 37 specimens
2007.02	Jim McGrath, 13 specimens
2007.03	NHNM, 322 Middle Rio Grande Bosque plants
2007.04	NHNM, 29 Carlsbad National Monument plants
2007.05	NHNM, 107 Lower Santa Fe River specimens
2007.06	NHNM, 97 Middle Rio Grande Overbank project specimens
2007.07	NMSU, 8 various
2007.08	NHNM, 23 Carlsbad playas plants.
2007.09	NHNM, 71 Capulin Volcano National Monument plants
2007.10	Mygatt, 133 Bosque plants
2007.11	Bob Sivinski, NM State botanist, 43 various specimens
2007.12	BRY gift, 116 Utah specimens
2007.13	Chick Keller, 1 specimen
2007.14	Gene Jercinovic, 4 specimens
2007.15	Bob Sivinski, NM State botanist, 157 specimens
2007.16	NHNM, 36 Salinas Pueblo Missions National Monument
2007.17	Gene Jercinovic, 11 specimens
2007.18	Paula Rebert, 55 Santa Rosa Lake State Park
2007.19	Bob Sivinski, NM State botanist, 57 specimens
2007.20	Joanna Redfern, grad student 17 Fouquiera
2007.21	Joanne Schlegel, 1 Eupatorium
2007.22	KANU gift, 2 Stenotus
2007.23	GREE gift, 26 various
2007.24	David Conklin, 2 specimens
2007.25	Bob Sivinski, NM State botanist, 47 specimens
2007.26	Gene Jercinovic, 4 Euphorbia

2007.27 Arnold Clifford, 59 Navajo Indian Reservation
 2007.28 Jim McGrath, 27 specimens
 2007.29 Bob Sivinski, NM State botanist, 83 specimens
 2007.30 NHHM, 60 Salinas Pueblo Missions National Monument
 2007.31 J. Melaragno, 22 specimens
 2007.32 Vitality Works, 1 Goldenseal root
 2007.33 Lolly Jones, 1 Asteraceae
 2007.34 Don Heinze gift, 106 specimens

AWARDS, GRANTS, AND CONTRACTS

\$160,000. Institute of Geophysics and Planetary Physics at LANL. #09566-001-05. Biosphere-atmosphere CO₂ exchange of terrestrial ecosystems: combining high resolution measurements and models to understand the global atmospheric carbon budget. D.T. Hanson, PI. 10/04-09/07.

\$4,000. UNM Research Allocation Committee. PEPC activity in C₃ plants. D.T. Hanson, PI. 09/06-09/07.

\$480,000. Collaborative Research: Light enhanced ¹³C enrichment of dark respired CO₂: Implications for leaf internal CO₂ conductance and respiration in the light. National Science Foundation Integrative Organismal Biology Environmental and Structural Systems Cluster. D.T. Hanson, N. McDowell, and T. Rosenstiel. 08/15/2007- 06/30/2010

\$350,000. Integrated Bioenergy Processing System for Productive Use of NM Dairy Industry Waste Streams. New Mexico Technology Research Collaborative. R. Pate, P. Pohl, K. Hoodenpyle, D.T. Hanson, V. Cabrera, S. Deng. 02/15/2007 - 6/31/2008

\$40,000. U.S. Fish And Wildlife Service. A Field Guide to the Flora and Fauna of the Middle Rio Grande Bosque. PI: Jean-Luc Cartron. Co-PIs: D. Lightfoot, J. Mygatt, S. Brantley, and T.K. Lowrey. 09/06-09/07.

\$41, 892. Development of a Wildlife Conservation Plan for the City of Albuquerque. Co-PIs: Howard Snell and T.K. Lowrey. City of Albuquerque 10/01/2007-06/30/2008

\$250,000. Renovations to increase residence capacity at the UNM Sevilleta Field Station. PI: S. Collins. Co-PIs: T.K. Lowrey, M. Friggens, and D. Natvig. National Science Foundation. 08/01/2007-07/31/2010

\$1000. J. Redfern (Ph.D. advisee) Research grant from New Mexico Native Plant Society.

\$6000. T.K. Lowrey. Database improvement-UNM.

\$1000. T.K. Lowrey. Native Plant Society of New Mexico. Grant for database mapping.

Submitted:

Towards an isotopic early warning system of climate change impacts. Institute of Geophysics and Planetary Physics at LANL - Complex Dynamical Climate and Environmental Systems. N.

McDowell, D.T. Hanson, M. Barbour, W. Pockman, J. Randerson, B. Riley, T. Ringler, C. Still. \$100,000 per year (\$30,000 for UNM per year + student support)

Biochemical Characterization of Poplar Phosphoenol-Pyruvate Carboxylase (PEPc): exploring an enzymatic bridge between primary and secondary metabolism. Todd Rosenstiel (Portland State University) and D.T. Hanson. U.S. Department of Agriculture 10/01/2007 - 9/30/2010. \$390,000 (\$50,000 to UNM)

Pre-proposal: Production of Energy, Microbial-Feedstock-Based Biodiesel Fuel, and Co-products from Dairy Wastes. Joint USDA-DOE Biomass R&D Initiative Solicitation RD-RBP-Biomass-2007 R. Pate, K. Hoodenpyle, D.T. Hanson, S. Lombardi, V. Cabrera, S. Deng, Q. Hu, T. French. \$1 million

Testing oxygen isotope models of carbon and water cycles. Los Alamos National Laboratory-Exploratory Research. N. McDowell, M. Barbour, D.T. Hanson, B. Riley 1/1/2008 - 12/31/2010. \$290,000 per year

RESUBMISSION How do land plants manage water over physiological, ecological and phylogenetic time scales? National Science Foundation – Frontiers in Integrative Biological Research program. B. Mishler, UC Berkeley (D.T. Hanson – lead on physiology section, 7 other institutions involved). 07/01/2007 - 06/30/2012. \$4 million (\$475,500 to UNM)

RESUBMISSION Collaborative Research: Interaction of photosynthetic and hydraulic responses to freezing and drought stress of *Larrea* spp. from north and south America. National Science Foundation Integrative Organismal Biology Environmental and Structural Systems Cluster. W.T. Pockman, D.T. Hanson, and B. Logan 07/01/2007 - 06/30/2010. \$341,812 to UNM

RESUBMISSION Collaborative Research: Ecophysiological traits and carbon cycle impacts of earliest land plants. National Science Foundation Integrative Organismal Biology Environmental and Structural Systems Cluster. D.T. Hanson (Collaborating PI's L. Graham, E. Waters, and M. Cook). 07/01/2007-06/30/2010. \$169,494 to UNM

RESUBMISSION Fungal loop model for the N cycle of semiarid grasslands. Ecosystem Science, National Science Foundation. R. Sinsabaugh (co-PI's S. Collins, D.T. Hanson, M. Allen). 07/01/2007-06/30/2010. \$666,723

PUBLICATIONS

A. Books, Book Chapters, Edited Volumes

B. Journal Articles

McDowell, N., D. Baldocchi, M. Barbour, C. Bickford, M. Cuntz, D.T. Hanson, A. Knohl, H. Powers, T. Rahn, J. Randerson, B. Riley, C. Still, K. Tu, A. Walcroft. Measuring and modeling the stable isotope composition of biosphere-atmosphere CO₂ exchange: where are we and where are we going? Accepted in Fall 2007 EOS, 89(10):94-95; 2008

Barbour, M.M., G.D. Farquhar, D.T. Hanson, C.P. Bickford, H. Powers, and N.G. McDowell. A new measurement technique reveals temporal variation in $\delta^{18}\text{O}$ of leaf-respired CO_2 . Plant, Cell and Environment; 30: 456-468; 2007a.

*journal co-cover article (with following article)

Barbour M.M., G. Tcherkez, C.P. Bickford, N.G. McDowell, D.T. Hanson. A new measurement technique reveals rapid post-illumination changes in the carbon isotope composition of leaf-respired CO_2 . Plant, Cell, and Environment; 30: 469-482; 2007b.

*journal co-cover article (with preceding article)

Mygatt, J.E. 2007. Plant Distribution Reports. *Iris pseudacorus*. The New Mexico Botanist. No. 39. pp.7.

C. Web-Based

None.

D. Technical Reports

None.

E. Theses/Dissertations Completed

None.

F. Work In Progress

None.

G. Publications/Reports Based on MSB Specimens/Data by Outside Researchers

Wilder, B.T., R.S. Felger, H. Romero-Morales, A. Quijada-Mascareñas. 2007. New Plant Discoveries for Sonoran Islands, Gulf of California, Mexico. J. Bot. Res. Inst. Texas 1(2):1203-1227.

Allred, K. 2007. *Ranunculus acris* not known from New Mexico. The New Mexico Botanist. No. 41, pp. 8.

Spellenberg, R. 2007. *Astragalus missouriensis* var. *mimetus*. Taxon report on the New Mexico Rare Plants website. <http://nmrareplants.unm.edu/droplist/astmim.htm>

Spellenberg, R. 2007. *Astragalus humistratus* var. *crispulus*. Taxon report in the New Mexico Rare Plants website. http://nmrareplants.unm.edu/rarelist_single.php?SpeciesID=221

Jercinovic, E. 2007. Josephine Skehan and the Mountains Near Gray. The New Mexico Botanist. No. 39. pp.1-6.

Stefanovic, S., M. Kuzmina and M. Costea. 2007. Delimitation of major lineages within *Cuscuta* subgenus *Grammica* (Convolvulaceae) using plastid and nuclear DNA sequences. American Journal of Botany. 94:568-589.

ACTIVITIES IN LEARNED SOCIETIES

A. Invited/Plenary Talks and/or Seminars

Hanson, D.T.

The evolution of resistance to photosynthetic CO₂ exchange. D.T. Hanson. Invited seminar speaker for the Interdisciplinary Plant Group, San Diego State University. October 2007

Early land plant adaptations to limitation of photosynthesis by CO₂ diffusion. Symposium co-chair (with Liz Waters, SDSU – there was a competitive process for selection of our symposium) and speaker at joint meeting of the American Society of Plant Biologists and the Botanical Society of America. Chicago, July 2007.

New discoveries after two centuries of debate in plant biology on how gasses move through leaves. Invited seminar speaker for the Interdisciplinary Plant Group, University of Missouri-Columbia. April 2007

Leaf level control of water use efficiency: New insights using high frequency isotopic analyses. Invited seminar speaker United States Department of Agriculture Western Cotton Research Station, Maricopa, AZ. February 2007.

Lowrey, T.K.

Herbarium Networking: United We Stand. Keynote Address, Texas-Oklahoma Regional Consortium of Herbaria Annual meeting with Southwest Association of Naturalists Annual Meeting, Tarleton State University, Stephenville, TX April 2007.

B. Contributed Talks/Posters

From Plastid to Planet: How leaf-level diffusion impacts global productivity. D.T. Hanson; Seminar at UNM Biology Department; Albuquerque, NM; November 1, 2007

On-line stable carbon isotope analysis of leaf-respired CO₂. M. Barbour, G. Tcherkez, N. McDowell and D.T. Hanson. EcoFizz – 2007 (Ecological Physiology) meeting, Sydney, Australia

Using tunable diode laser spectroscopy to determine carbon isotope discrimination and internal transfer conductance in field-grown juniper. Bickford, C.P., N.G. McDowell, H.H. Powers, K.M. Brown, D.T. Hanson. Joint meeting of the American Society of Plant Biologists and the Botanical Society of America, Chicago, July 2007.

Measurement of stable CO₂ isotopes with a laser: Tunable diode laser spectroscopy applications for ecosystem measurements. H.H. Powers, J. Hunt, D.T. Hanson, and N.G. McDowell. Research Day, UNM Biology Department; Albuquerque, NM; April 2007

Using tunable diode laser spectroscopy to determine carbon isotope discrimination and internal leaf conductance in field-grown juniper. Bickford, C.P., N.G. McDowell, H.H. Powers, K.M. Brown, D.T. Hanson. Research Day, UNM Biology Department; Albuquerque, NM; April 2007

Redfern, J. (Ph.D. student) Seminar presentation at Universidad Autonoma Nacional Mexico, July 2007.

Redfern, J., D. Hafner, and T.K. Lowrey. Phylogeography of *Fouquieria splendens* and related *Fouquieria* species: evolutionary history of North American warm deserts from a botanical perspective. Ecological Society of America. July 2007. San Jose, CA.

C. Attendance at Professional Meetings

Hanson, D.T. Joint meeting of the American Society of Plant Biologists and the Botanical Society of America, Chicago, July 2007

Brouillet, L., T.K. Lowrey, L. Urbatsch, V. Karaman, and G. Sancho. Phylogeny and Evolution of the Tribe Astereae. Botany 2007 National Meetings. July, 2007. Chicago, IL.

Lowrey, T.K. Texas-Oklahoma Regional Consortium of Herbaria Annual meeting with Southwest Association of Naturalists Annual Meeting, Tarleton State University, Stephenville, TX April 2007.

Redfern, J. Ecological Society of America. July 2007. San Jose, CA.

Redfern, J. Seminar presentation at Universidad Autonoma Nacional Mexico, July 2007.

D. Service as Editor or on Editorial Board of a Journal

None.

E. Service as Officer of Professional Society/Organization

Hanson, D.T. Symposium Co-chair (and co-creator) for joint meeting of the American Society of Plant Biologists and the Botanical Society of America, Chicago, IL, July 2007. Symposium title: "Comparative algal and bryophyte physiology"

Hanson, D.T. Co-head of the Western Sectional Society of the American Society of Plant Biologists, Southwestern sub-sectional region; September 2002-present.

Lowrey, T.K. Chair, Collections Committee, American Society of Plant Taxonomists (appointed).

Lowrey, T.K. Secretary, Sigma Xi Chapter, University of New Mexico (elected).

OTHER PROFESSIONAL ACTIVITIES

A. Presentation to General Audience in a Scholarly Capacity (*presenter)

Lowrey, T.K. Ice Plants in South Africa. Albuquerque Cactus and Succulent Society. August 2007.

B. Presentations in a Scholarly Capacity at Hearings, Workshops, Legislative Committees, etc.

Hanson, D.T. Symposium Co-chair (and co-creator) for joint meeting of the American Society of Plant Biologists and the Botanical Society of America, Chicago, IL, July 2007. Symposium title: “Comparative algal and bryophyte physiology”

C. Scholarly Service as a Member of a Local/State/Regional/National Committee, Panel, etc.

Hanson, D.T.

Proposal Review Panel member for the National Science Foundation

Lowrey, T.K.

Member, New Mexico Rare Plant Technical Council

Mygatt, J.

Member, New Mexico Rare Plant Technical Council

D. Journal Referee

Hanson, D.T. American Journal of Botany (1), New Phytologist (1)

Lowrey, T.K. Sida (2), International Journal of Plant Science (1), Annals of Botany (1), Madrono (1), Systematic Botany (2), Canadian Journal of Botany (3), Lundelliana (1), Journal of Biogeography (1), Taxon (1)

E. Hosting Professional Colloquia and Groups

SERVICE

A. Symposia, Workshops, Conferences etc. Sponsored, Organized, Held, etc.

B. Public Service

Mygatt, J. Science Fair Judge. NWNM Regional Science & Engineering Fair. Special Botany Award category for the New Mexico Native Plant Society. March 2007.

UNM Student Health Center’s ‘Health Fair’. Supplied plants used for section on plant allergies. September 2007.

C. University and Departmental Committees:

Hanson, D. T.

Biology Department Seminars

Greenhouses

Graduate Admissions Committee

External Advisory Board, UNM Mass Spectrometry Facility

Lowrey, T.K.

Chair, Academic Freedom and Tenure Committee

Faculty Senate Library Committee

Director of Maxwell Museum of Anthropology Faculty Search Committee, 2007
Member, Lecturer Search Committee, Earth and Planetary Sciences

ADVANCED STUDY, HONORS, AWARDS, FELLOWSHIPS, ETC.

None.

DONATIONS AND GIFTS RECEIVED

\$500. Native Plant Society donation for New Mexico Herbaria.

\$500. Native Plant Society (Albuquerque Chapter) donation for Field Guide to the Plants and Animals of the Middle Rio Grande Bosque.

CURRENT STAFF

A. Faculty/Staff

Lowrey, T.K., Curator

Mygatt, J., Collection Manager

B. Graduate students

C. Undergraduate Student Workers and Volunteers

Zickefoose, K. Undergraduate work-study student

MUSEUM ASSOCIATES

A. Curatorial Associates

Hanson, D.T., UNM Faculty (Curator of Bryophytes)

Sivinski, R., New Mexico State Botanist

B. Research Associates

Bleakly, D., Botanical Consultant

Carter, J., Emeritus Professor, Colorado College and Botanist

Dunmire, W., Retired U.S. National Park Service and Author

Keller, C., Retired, Los Alamos National Laboratory

Knight, P., Botanical Consultant

Tonne, P., Natural Heritage New Mexico, Rare Plant Botanist

DIVISION OF MAMMALS

DIVISION HIGHLIGHTS.

NSF collections improvement grant funded. A \$ 259,285 grant (Curation, Databasing, and Integration of the Orphaned Illinois Mammal Collection) was funded. This will provide funding for new cases, drawers, trays and two years of student employment support to integrate the recently acquired University of Illinois Museum of Natural History (UIMNH) mammal collection (ca. 33,000 specimens). Curation, database development, and integration are now underway on this important new collection of primarily southwestern mammals collected from the 1940's through 1980's.

American Society of Mammalogists (ASM) Annual Meeting. The Division of Mammals (DOM) organized and successfully hosted the 87th meeting from 6-10 June. 580 participants attended. This was one of the largest meetings held recently. UNM has a long history of leadership in this professional society. A number of ASM Past-Presidents (e.g., Drs. Findley, Wilson, Brown), Honorary members (4) and current members of the Board of Directors (5) and Editorial Board (3) are populated by UNM faculty and alumni.

Reaccreditation of the DOM collection. The Division underwent a formal reaccreditation review by the Systematic Collections Committee during the ASM meeting. While we are still awaiting the official documentation, we have been informed that collection was successfully reaccredited.

Creation of Division of Parasitology at MSB. DOM led efforts to establish this new Division at MSB. DOM was awarded a NSF supplemental grant (NSF0726625) to transfer the helminth collections of Robert Rausch and the Beringian Coevolution Project from the USDA National Parasite Collection. These specimens were moved from Beltsville, Maryland and accessioned into DOM space in the wet collections. They form the nucleus of the newly created Division of Parasitology, now the third largest helminth collection in North America.

DOM collection reorganization. The entire wet and dry collections were reorganized, shifted and relabeled to follow the taxonomic arrangement of Wilson and Reeder 2005. Previously the collection had followed a mixture of Simpson, 1945 and Wilson and Reeder, 1993.

Successful fieldwork and collaborations with state and federal resource agencies lead to large number of newly accessioned specimens. Extensive fieldwork by faculty, staff, graduate students and undergraduate students through the western US (NM, CO, UT, NV, OR, WA, AK), western Canada (YT, BC, AB), Panama, and Chile produced significant new collections of integrated specimens (skins, skeletons, tissues, parasites). Nearly 10,000 new specimens were cataloged in 2007 (7% increase in size). Work was primarily sponsored by the National Science Foundation, National Institutes of Health, USDA Forest Service and US Fish and Wildlife Service. We are also part of a new project to survey vertebrates and parasites in Mongolia (2007-2011) with the University of Nebraska and University of Kansas.

Planning Underway for New Dermestarium. The UNM owned Elk's Club building located north of the University was condemned due to unsafe conditions during 2007. This building housed the DOM dermestarium. Loss of our skeletal processing facility has created a huge backlog in material to be processed. Efforts are underway to finalize funding and plans to build a new facility.

Transcription of DOM accession data. During 2007, all accession data back through 1987 was transferred into our electronic database system (ARCTOS), thus allowing linkage of individual specimen to accession numbers and data.

UNO-Undergraduate Opportunities training grant awarded (\$1,015,000). The DOM had a leadership role (PI's Cook and Gannon) in securing funding for undergraduate training in science at UNM. The National Science Foundation awarded a 5 year undergraduate training grant that will host 12 undergraduate students from underrepresented groups per year in various research projects in the Biological Sciences at UNM.

COLLECTION USE

Collection Growth (specimens catalogued)	Loans (outgoing)	Loans (incoming)	Visitors	Information Requests Personally Responded to	Publications Citing MSB DOM Specimens
9611*	30(3824) / 42(2392)**	3	168***	>100****	37

* Currently the fastest growing collection in the western hemisphere.

** Loans originating in DOM / loans of mammal tissue originating in DGR Combined total of 72 loans of 6216 specimens of traditional voucher specimens and tissue samples.

*** 46 visiting researchers (55 research days), 14 educational tours (122 people).

**** Estimate of email or phone requests. Web visits to the DOM searchable database (ARCTOS) tracked via Google analytics = 24,758 visits (345,453 individual page views) from 125 countries (4,277 visitors referred to our site from GenBank).

COURSES USING THE COLLECTIONS

Non-UNM Courses Johns Hopkins – Emerging infectious Diseases Field Studies (Greg Glass, professor) (6 students)

Bosque School - Wildlife Biology Class (13 students)

Laguna Middle School - Science class

Polk Middle School – Wild Friends program (9 students)

Educational tours

Southwestern Polytechnic Institute (8 students)

Family School (3 students)

Aurora Academy (2 students)

A.P. Conference (10 students)
Mesalands College
Highland High
Tucumcari High
Manzano High
West Las Vegas High
Laguna High
Valencia High
Capital High
Truman Middle School

UNM Courses
ANTH 373/573 Zooarchaeology (Fall)
BIOL 112L Biology for Non Majors
BIOL 203L Ecology and Evolution
BIOL 204L Plant and Animal Form and Function
BIOL 324L – Natural History of the SW
BIOL 402/502 Advanced Field Mammalogy
BIOL 386 General Vertebrate Zoology
ART/ART HIST Museum Studies
ART 207- Painting
BIOL 489 (Fall)-Mammalogy (15 students)
BIOL 400 (Fall) Senior Honors Thesis- (1 student)
BIOL 599 Masters Thesis—(1 student)
BIOL 699 Dissertation—(2 students)

COURSES TAUGHT BY MSB PERSONNEL

A. Faculty/Collection Managers

Cook, J. A.
BIOL 489 – Mammalogy, (15 students)
BIOL 402/502 - Advanced Field Methods in Tropical Mammalogy (2 students)
BIOL. 461L, Tropical Biology, Spring, 15 students + 5 faculty

Gannon, W. L.
BioMed 555 - Research BioEthics, Fall 2007, 14 students

Student Mentoring
Vani Aran-- BIOL 400 (Fall) Senior Honors Thesis
Krista Ortega REU/UMEB
Ben Edinger—Regents Scholar
Kelly Speer---Regents' Scholar
Ben Schaff—USDA support
Scarlett Swanson---NSF (REU)
Ashley Montoya –NSF-UNO
Elisha Song---NSF-UNO
Randle McCain---NSF-UNO

B. Graduate Students (labs, etc.)

BIOL 489L – Mammalogy Lab

BIOL 386L - General Vertebrate Zoology Lab

COLLECTION MANAGEMENT

The DOM received 96 accessions (approximately 37,000 specimens, including the 33,000 UIMNH specimens which were not officially accessioned in 2006) in 2007. The majority of specimens (those not from the UIMNH collection) were generated by the Beringian Coevolution Project (consisting mainly of carnivore, soricomorph, lagomorph, and rodent material from Alaska, Canada and Siberia) and the ICIDR project (rodent material from Chile, Panama). The DOM continues its collaboration with state and federal agencies (e.g., serving as repository for both mountain lion taken by the NMGF, and Mexican wolves from the federal reintroduction program).

The majority of staff time was spent:

Reorganizing and relabeling of the wet and dry collections to follow the taxonomic arrangement of Wilson and Reeder 2005.

Preparation for the ASM meeting.

Assisting with BIOL 489 - Mammalogy.

Preparation, cataloging and installation of museum specimens.

Data entry for the incoming accessions.

Filling information requests.

Processing the large volume of material that was loaned to other investigators in 2007.

AWARDS, GRANTS, AND CONTRACTS

Cook, J.A.

A Test of Landscape Connectivity across the Sky Islands Region using Large Carnivores as Model Organisms (JA Cook, co-PI; PI is Gary Roemer, NMSU).

Wilburforce Foundation.

Total \$25,000 (F&A to NMSU)

Curation, Databasing, and Integration of the Orphaned Illinois Mammal Collection.

NSF-DEB 0744025 2/01/2008-2/01/2010

Total \$ 259,285 Yearly \$130,000 (F&A \$50,052)

URM: Undergraduate Nurturing Opportunities (UNO); (JA Cook, PI)

NSF-DEB 0731350 08/01/07 - 08/01/12

Total \$1,010,000, yearly \$116,155 (F&A \$15,000)

Mongolia Vertebrate Parasite Project (S. Gardner, PI; JA Cook, Co-PI)
NSF-DEB0717214 09/11/07 -9/01/09
Total \$466,000, yearly \$210,000 (Grant and F&A to University of Nebraska)

Fogarty International Training Grant
Project Title: Training in Hantavirus Ecology, Virology & Clinical Investigation in the Americas. NIH- 2 D43 TW001133-06A1 (G Mertz, PI-Medical School; JA Cook, Co-PI)
07/01/1999 - 03/31/2011
Total \$510,000, yearly \$132,133 (F&A to Med School)

Transfer of BCP & Rausch Helminth Collections to MSB (JA Cook, PI)
NSF-DEB 0726625 Amendment No. 6 to DEB-0415668
Total \$9,997 (F&A 3,000)

Molecular Genetics of Endemics; (JA Cook, PI)
US Fish and Wildlife Service, Juneau (Supplement ongoing to 12/08)
One year \$75,000 (F&A \$25,000)

Mammals of Alaska, (JA Cook, PI)
US National Park Service (DOI) 9/1/07-9/1/08
Total one year \$14,100 (F&A \$2,100)

Mammals of Conservation Concern (JA Cook, PI)
US Fish Wildlife Service 9/2007 - 11/2008
Total one year \$25,000 (F&A \$5,150)

National Science Foundation, Beringia Coevolution Project II (JA Cook, PI)
NSF0415668Funded 2004-2008
Total \$610,000, yearly \$165,000 (F&A \$55,000)

NFIM Mammal Monitoring and Inventorying of the Tongass National Forest
USDA Forest Service 6/2007-7/2008
Total \$40,000 (2 awards) (F&A imputed)

Dunnum, J. L.
Curation, Databasing, and Integration of the Orphaned Illinois Mammal Collection.
NSF-DEB 0744025 (Dunnum, Co-PI, Cook, PI,) 2/01/2008-2/01/2010
Total \$ 259,285, yearly \$130,000 (F&A \$50,052)

Gannon, W.L.
Curation, Databasing, and Integration of the Orphaned Illinois Mammal Collection.
NSF-DEB 0744025 (Gannon, Co-PI, Cook, PI) 2/01/2008-2/01/2010
Total \$ 259,285, yearly \$130,000 (F&A \$50,052)

URM: Undergraduate Nurturing Opportunities (UNO); (Gannon, Co-PI, Cook, PI)
NSF-DEB 0731350 08/01/07 - 08/01/12
Total \$1,010,000, yearly \$116,155 (F&A \$15,000)

National Fish and Wildlife Foundation. Impacts of abandoned mine reclamation on population dynamics and the molecular landscape of Townsend's big-eared bat (*Corynorhinus townsendii*). Year III. (Gannon, PI, R. E. Sherwin Co-PI) Dec 2006 through Dec 2007.
Total \$215,000 (No F&A).

Improved housing of wolf (*Canis lupus baileyi*) specimens and its conservation in New Mexico. U. S. Fish and Wildlife Service.
Total \$3,000 (No F&A)

PUBLICATIONS

A. Books, Book Chapters, Edited Volumes

MacDonald, S. O. and J. A. Cook. 2007. The Mammals and Amphibians of Southeast Alaska. Museum of Southwestern Biology, Special Publication 191 pages.

B. Journal Articles

Cook, J. A.

Arai, S., Jin-Won Song, Laarni Sumibcay, Vivek R. Nerurkar, Shannon N. Bennett, Cheryl Parmenter, Joseph A. Cook, Terry L. Yates, Richard Yanagihara. 2007. Hantavirus in the short-tailed shrew, North America. *Emerging Infectious Diseases* 13:1420-1423.

Lucid, M. K. and J. A. Cook. 2007. Cytochrome b haplotypes suggest an undescribed *Peromyscus* species from the Yukon. *Canadian Journal of Zoology*, 85:916-919.

Koehler, A. V. A., E. P. Hoberg, N. E. Dokuchaev and J. A. Cook. 2007. Geographic and host range of the nematode *Soboliphyme baturini* across Beringia. *Journal of Parasitology*. 93:1070-1083.

Duszynski, D.W., A.J. Lynch, J.A. Cook, 2007. *Coccidia* (Apicomplexa: Eimeriidae) infecting cricetid rodents from Alaska, U.S.A., and Northeastern Siberia, Russia, and description of a new *Eimeria* species from *Myodes rutilus*, the northern red-backed vole. *Comparative Parasitology*, 74:294-311.

MacDonald, S. O. and J. A. Cook. 2007. The Mammals and Amphibians of Southeast Alaska. Museum of Southwestern Biology, Special Publication 8:1-191.

Lynch, A.J., D.W. Duszynski, and J.A. Cook. 2007. Species of *Coccidia* (Apicomplexa: Eimeriidae) Infecting Pikas from Alaska, U.S.A. and Northeastern Siberia, Russia. *Journal of Parasitology* 93(5):1230-1234.

Dalerum, F., J. Loxterman, B. Shults, K. Kunkel, J. A. Cook. 2007. Microsatellite markers suggest delayed female dispersal in a solitary carnivore, the wolverine. *Journal of Mammalogy* 88:793-800.

Waltari, E., E. P. Hoberg, E. P. Lessa, and J. A. Cook. 2007. Eastward Ho: phylogeographic perspectives on colonization across the Beringian nexus. *Journal of Biogeography* 34:561-574.

Dawson, Natalie

Dawson, N. G. 2007. Post Post-Doc: Are new scientists prepared for the real world? *BioScience* 57:16.

Gannon, W. L.

Gannon, W. L., R. S. Sikes, and the Animal Care and Use Committee of the American Society of Mammalogists. 2007. Guidelines for the Use of Wild Mammals in Research by the American Society of Mammalogists. *Journal of Mammalogy* 88:809-823.

Gannon, W. L. 2007. Squirrel Answer guide review. *Journal of Mammalogy*, 88:846.

Torrez-Perez, Fernando

Palma R.E., Torres-Pérez F. & Boric-Bargetto D. 2007. The ecology and evolutionary history of *Oligoryzomys longicaudatus* in southern South America. p. 671-693. In: Kelt D., Lessa E.P., Salazar-Bravo, J. & Patton, J.L. (Eds.) *The Quintessential Naturalist: Honoring the Life and Legacy of Oliver P. Pearson*. University of California Publications in Zoology, V. 134.

Vásquez, M., Torres-Pérez F. & Lamborot M. 2007. Genetic variation within and between four chromosomal races of *Liolaemus monticola* (Tropiduridae) in Chile. *Herpetological Journal* 17:149-160.

Torres-Pérez F., Lamborot M., Boric-Bargetto D., Hernández C.E. , Ortiz J.C. & Palma R.E. 2007. Phylogeography of a mountain lizard species: a deep evolutionary divergence into the *Liolaemus monticola* complex (Sauria: Liolaemidae). *Journal of Zoological Systematics and Evolutionary Research* 45(1):72-81.

Hope, A. G.

Hope, A. G. and R. R. Parmenter, (2007). Food habits of rodents inhabiting arid and semi-arid ecosystems of central New Mexico. *Museum of Southwestern Biology Special Publication*, No. 9, pp1-75.

Duszynski, D.

Duszynski, D. W., A. J. Lynch, and J. A. Cook. 2007. *Coccidia* (Apicomplexa: Eimeriidae) infecting Cricetid Rodents from Alaska, U.S.A., and Northeastern Siberia, Russia, and description of a new *Eimeria* species from *Myodes rutilus*, the northern red-backed vole. *Comparative Parasitology* 74(2):294–311.

Lynch, A.J., D.W. Duszynski, and J.A. Cook. 2007. Species of *Coccidia* (Apicomplexa: Eimeriidae) Infecting Pikas from Alaska, U.S.A. and Northeastern Siberia, Russia. *Parasitology*. 93:1230-1234.

Ubelaker, J. E., R. Easter-Taylor, A. Marshall, and D. W. Duszynski. 2007. A new species of *Subulura* (Nematoda: Subuluroidea) from ground squirrels, *Spermophilus spilosoma* Bennett, 1833, in New Mexico. *Journal of Parasitology* 93(5):1199–1201.

Yates, T. L.

Arai, S., J.-W. Song, L. Sumibcay, S. N. Bennett, V. R. Nerurkar, C. Parmenter, J. A. Cook, T. L. Yates, and R. Yanagihara. 2007. Hantavirus in Northern Short-tailed Shrew, United States. *Emerging Infectious Diseases* 13(9):1420-1423.

[Calisher, C.H.](#), K. D. [Wagoner](#), B. R. [Amman](#), J. J. [Root](#), R. J. [Douglass](#), A. J. [Kuenzi](#), K. D. Abbott, C. Parmenter, T. L. Yates, T. G. Ksiazek, B. J. [Beaty](#), J. N. [Mills](#). 2007. Demographic factors associated with prevalence of antibody to Sin Nombre virus in deer mice in the western United States. [Journal of Wildlife Diseases](#) 43(1):1-11.

Frey, J. K., M. A. Bogan and T. L. Yates. 2007. Mountaintop island age determines species richness of boreal mammals in the American Southwest. *Ecography* 30:231-240.

Salazar-Bravo, J., and T. L. Yates. 2007. A New Species of *Thomasomys* (Cricetidae: Sigmodontinae) from Central Bolivia. Pp. 747-774 in Kelt, D. A., E. P. Lessa, J. Salazar-Bravo, and J. L. Patton (eds.). 2007. *The Quintessential Naturalist: Honoring the Life and Legacy of Oliver P. Pearson*. University of California Publications in Zoology 134:1-981.

C. Web-Based

All publications in the MSB series are available via free-download from our website.

D. Technical Reports

Dawson, N. G., S. O. MacDonald and J. A. Cook. 2007. Endemic Mammals of the Alexander Archipelago. In J. Schoen (ed). *Wildlife Management on the Tongass National Forest*. Audubon Special Publication

E. Theses/Dissertations Completed

Holliday, J. A. 2007. Phylogeny and character change in the feloid Carnivora. Doctoral Dissertation. Department in Biological Science, Florida State University. Fall 2007.

Koehler, A. 2007. Systematics, phylogeography, distribution, and lifecycle of *Soboliphyma baturini*. Master's Thesis, University of New Mexico, Albuquerque, New Mexico. 90 p. Graduated in May 2007.

Carrera Estupiñan, J. P. 2007. Relational database for Ecuadorian mammals deposited in museums around the world. Master's Thesis. Museum Sciences, Texas Tech University.

Weise, C.D., 2007. Community structure, vertical stratification and seasonal patterns of neotropical bats. Doctoral Dissertation, University of New Mexico, Albuquerque, NM, May 2007.

F. Work In Progress

J. A. Cook

Arai, S., S. Bennett, L. Sumibacay, J. A. Cook, J. Song, A. Hope, C. Parmenter, V. R. Nerurkar, T.L. Yates, and R. Yanagihara. 2008. Phylogenetically distinct hantaviruses in the masked shrew

(*Sorex cinereus*) and montane shrew (*Sorex monticolus*) in the United States. In Press. American Journal of Tropical Medicine and Hygiene.

Fedorov, V. B., A. V. Goropashnaya, G. G. Boeskorov and J. A. Cook. 2008. Comparative phylogeography and demographic history of the wood lemming (*Myopus schisticolor*): implications for late Quaternary history of the taiga species in Eurasia.

Runck, A., M. Matocq, and J. A. Cook. Submitted. Historic hybridization and persistence of a novel mito-nuclear combination in red-backed voles (genus *Myodes*).

Torrez-Perez, F.

Hjelle B. & Torres-Pérez F. Rodent Borne-Viruses. In: Clinical Virology Manual. Specter S., Hodinka R., Wiedbrauk D., & Young S (Eds). American Society for Microbiology. (Book Chapter).

G. Publications/Reports Based on MSB Specimens/Data by Outside Researchers

Alvarez-Castaneda, S. T. 2007. Systematics of the antelope ground squirrel (*Ammospermophilus*) from islands adjacent to the Baja California peninsula. *Journal of Mammalogy*, 88(5):1160–1169.

Banbury, J. L., and G. S. Spicer. 2007. Molecular systematics of chipmunks (*Neotamias*) inferred by mitochondrial control region sequences. *Journal of Mammal Evolution* 14:149–162.

Bradley, R. D., N. D. Durish, D. S. Rogers, J. R. Miller, M. D. Engstrom, and C. W. Kilpatrick. 2007. Toward a molecular phylogeny for *Peromyscus*: evidence from mitochondrial Cytochrome-b sequences. *Journal of Mammalogy* 88(5):1146–1159.

Campbell, P., A. S. Putnam, C. Bonney, R. Bilgin, J. C. Morales, T. H. Kunz, L. A. Ruedas. 2007. Contrasting patterns of genetic differentiation between endemic and widespread species of fruit bats (Chiroptera: Pteropodidae) in Sulawesi, Indonesia. *Molecular Phylogenetics and Evolution* 44:474–482.

Cutrera, A. P., and E. A. Lacey. 2007. Trans-species polymorphism and evidence of selection on class II MHC loci in tuco-tucos (Rodentia: Ctenomyidae). *Immunogenetics* 59:937–948.

Dick, C. W., D. Gettinger, and S. L. Gardner. 2007. Bolivian Ectoparasites: A Survey of Bats (Mammalia Chiroptera). *Comparative Parasitology* 74(2):372–377.

Ditto, A. M., and J. K. Frey. 2007. Effects of ecogeographic variables on genetic variation in montane mammals: implications for conservation in a global warming scenario. *Journal of Biogeography* 34(7):1136–1149.

Foot, N. J., S. Orgeig, S. Donnellan, T. Bertozzi, C. B. Daniels. 2007. Positive selection in the N-Terminal extramembrane domain of lung surfactant protein C (SP-C) in marine mammals. *Journal of Molecular Evolution* 65:12–22.

- Frey, J. K. 2007. There is no valid record of cliff chipmunk ([Tamias dorsalis](#)) in the Sandia mountains, New Mexico. *Western North American Naturalist* 67(4):611–612.
- Geluso, K. 2007. Winter activity of bats over water and along flyways in New Mexico. *The Southwestern Naturalist* 52(4):482–492.
- Glass, G. G., T. Shields, B. Cai, T. L. Yates, and R. Parmenter. 2007. Persistently highest risk areas for hantavirus pulmonary syndrome: potential sites for refugia. *Ecological Applications*, 17(1):129–139.
- Haukisalmi, V., L. M. Hardman, J. Niemimaa and H. Henttonen. 2007. Taxonomy and genetic divergence of *Paranoplocephala kalelai* (Tenora, Haukisalmi et Henttonen, 1985) (Cestoda, Anoplocephalidae) in the grey-sided vole *Myodes rufocanus* in northern Fennoscandia. *Acta Parasitologica* 52(4), 335–341.
- Koepfli, K-P., M. E. Gompper, E. Eizirik, C.-C. Ho, L. Linden, J. E. Maldonado, R. K. Wayne. 2007. Phylogeny of the Procyonidae (Mammalia: Carnivora): Molecules, morphology and the Great American Interchange. *Molecular Phylogenetics and Evolution* 43:1076–1095.
- Matocq, M. D., Q. R. Shurtli V, C. R. Feldman. 2007. Phylogenetics of the woodrat genus *Neotoma* (Rodentia: Muridae): Implications for the evolution of phenotypic variation in male external Genitalia. *Molecular Phylogenetics and Evolution* 42: 637–652.
- Notarnicola, J., F. A. Jimenez, and S. L. Gardner. 2007. A new species of *Dipetalonema* (Filarioidea: Onchocercidae) from *Ateles chamek* from the Beni of Bolivia. *Journal of Parasitology* 93(3):661–667.
- Porter, C. A., S. R. Hoofer, C. A. Cline, F. G. Hoffmann, and R. J. Baker. 2007. Molecular phylogenetics of the Phyllostomid bat genus *Micronycteris* with descriptions of two new subgenera. *Journal of Mammalogy* 88(5):1205–1215.
- Potter, S., S. Orgeig, S. Donnellan, and C. B. Daniels. 2007. Purifying selection drives the evolution of surfactant protein C (SP-C) independently of body temperature regulation in mammals. [Comparative Biochemistry and Physiology Part D: Genomics and Proteomics](#) 2(2):165-176.
- Quintana N, H., and V. Pacheco T. 2007. Identificación y distribución de los murciélagos vampiros del Perú. *Revista Peruana Med Exp Salud Publica* 24(1):81-88.
- Ruedas, L. A., and J. Salazar-Bravo. 2007. [Morphological and chromosomal taxonomic assessment of *Sylvilagus brasiliensis gabbi* \(Leporidae\)](#). *Mammalia* 71(1/2):63–69.
- Schutz, H., and R. P. Guralnick. 2007. Postcranial element shape and function: assessing locomotor mode in extant and extinct mustelid. *Zoological Journal of the Linnean Society* 150:895-914.

Sitdikov, R. A., E. S. Wilkins, T. Yates, and B. Hjelle. Detection of Hantavirus using a new miniaturized biosensor device. 2007. *Journal of Applied Research* 7(1):86-107.

Solari, S. 2007. New species of *Monodelphis* (Didelphimorphia: Didelphidae) from Peru, with notes on *M. adusta* (Thomas, 1897). *Journal of Mammalogy* 88(2):319–329.

Storz, J. F., Sabatino S. J., F. G. Hoffmann, E. J. Gering, H. Moriyama, et al. (2007). The molecular basis of high-altitude adaptation in deer mice. *PLoS Genet* 3(3): 0448-0459.

Weyandt, S. E., and R. A. Van Den Bussche. 2007. Phylogeographic structuring and volant mammals: the case of the pallid bat (*Antrozous pallidus*). *Journal of Biogeography* 34(7):1233-1245.

Woodman, N. 2007. A new species of nectar-feeding bat, genus *Lonchophylla*, from western Colombia and western Ecuador (Mammalia: Chiroptera: Phyllostomidae). *Proceedings of the Biological Society of Washington* 120(3):340–358.

Young, R. L., T. S. Haselkorn, and A.V. Badyaev. 2007. Functional equivalence of morphologies enables morphological and ecological diversity. *Evolution* 61-11: 2480–2492.

G. Dissertations and Theses completed utilizing MSB DOM specimens

Holliday, J. A. 2007. Phylogeny and character change in the feloid Carnivora. Doctoral Dissertation. Department in Biological Science, Florida State University.

Carrera Estupiñan, J. P. 2007. Relational database for Ecuadorian mammals deposited in museums around the world. Master's Thesis. Museum Sciences, Texas Tech University.

8. ACTIVITIES IN LEARNED SOCIETIES

A. Invited/Plenary Talks and/or Seminars

J.A. Cook

Cook, JA. And N. Dawson. 2007. Natural History Collections: Critical Research Infrastructure in the United States. Congressional National Science Foundation Exhibit. Longworth Building Washington, DC June.

Cook, JA and N. Dawson. 2007. High Latitude Science: The Beringian Coevolution Project. Congressional National Science Foundation Exhibit—Longworth Building. Washington, DC June

B. Contributed Talks/Posters

Joe Cook

Arai, S., Sumibcay, L., Yates, T., Ohdachi, S., Truong, N.U., Parmenter, C., Cook, J.A., Nerurkar, V.R., Song, J.-W., and Yanagihara, R. 2007. Search for novel insectivore-borne hantaviruses. VII International HFRS Meeting, Buenos Aires, Argentina. June.

Arai, S., L. Sumibcay, Jin-Won Song, Terry L. Yates, Vivek R. Nerurkar, Shannon N. Bennett, Cheryl Parmenter, Joseph A. Cook, and Richard Yanagihara. A Phylogenetically Distinct

Hantavirus in the Short-Tailed Shrew (*Blarina brevicauda*) in the United States. VII International HFRS Meeting, Buenos Aires, Argentina. June.

Arai, S., L. Sumibcay, Jin-Won Song, Terry L. Yates, Vivek R. Nerurkar, Shannon N. Bennett, Cheryl Parmenter, Joseph A. Cook, and Richard Yanagihara. 2007. A Phylogenetically Distinct Hantavirus in the Short-Tailed Shrew (*Blarina brevicauda*) in the United States. American Society of Mammalogists 87th Annual Meeting, June. Albuquerque.
Beringian Coevolution Project. PolarPalooza, New Mexico Museum of Natural History, October-Dec 2007.

Cook, JA. 2007. Beringian Coevolution Project. INTEL International Science Fair, Departmental Display. Albuquerque. May.

Torres-Perez, F., R. A. Medina, R. Eduardo Palma, Brian Hjelle, Joseph A. Cook. 2007. Population and ecogeographic genetic structure of *O. longicaudatus* and Andes virus in three major Chilean ecoregions. American Society of Mammalogists 87th Annual Meeting, June. Albuquerque.

Torres-Perez, F., B. S. Barker, R. E. Palma & J. A. Cook. 2007. Population structure of a rodent reservoir for Hantavirus, *O. longicaudatus*, in Chile and its human implications. Evolutionary Change in Human-altered Environments: An International Summit. Institute of the Environment University of California, Los Angeles. February.

Dawson, N., M. Small. K. Stone, J. A. Cook. 2007. Islands, introductions, and endemism, Martes in the Alexander Archipelago. American Society of Mammalogists Annual Meeting, Albuquerque June.

Dawson, N., A. Hope, S. MacDonald, J. A. Cook. 2007. Endemic mammals highlight conservation hotspots in the Alexander Archipelago. Poster presentation at the International Summit on Evolutionary Change in Human-Altered Environments. Center for the Environment, University of California Los Angeles.

Koehler, A. V. A., E. P. Hoberg, N. E. Dokuchaev, N. A. Tranbenkova, J. S. Whitman, D. W. Nagorsen and J. A. Cook. 2007. Phylogeography of *Soboliphyme baturini*, a transBeringian nematode of mustelids. American Society of Mammalogists Annual Meeting, Albuquerque June.

Esteva, M., F. Cervantes, S. Brant, J. A. Cook. 2007. Phylogenetic relationships of Saussure's shrew from Mexico. American Society of Mammalogists Annual Meeting, Albuquerque June.

Tsvetkova A., J. Cook, E. Hoberg, H. Henttonen, S. MacDonald, J. Laakkonen, D. Goade. 2007. The Beringian Coevolution Project: Model Archives provide Baselines for Research and Management. American Society of Mammalogists Annual Meeting, Albuquerque June.

MacDonald, S. O. and J. A. Cook. 2007. Alaska Land Mammals of Conservation Concern. American Society of Mammalogists Annual Meeting, Albuquerque June.

Matsumoto, K, Cook, JA, Goethert, HK, Telford, SR. 2007. Bartonella sp. infection of red-backed voles trapped from an interior Alaskan site where ticks are absent. American Society of Tropical Medicine and Hygiene, Philadelphia, November.

Nofchissey, RA, J. Cook, D. Goade, A. Tsvetkova, and G. Ebel. 2007. Serological evidence of Powassan virus transmission in small mammals collected in Russia, Alaska and the Southwest US. American Society of Tropical Medicine and Hygiene, Philadelphia, November.

Yanagihara, R., JW Song, S. Arai, S. N. Bennett, J. A. Cook. 2007. Evolutionary insights from newly identified soricid-borne hantaviruses. 5th International Conference on Emerging Zoonoses. Limassol, Cyprus, November.

Thomas, J. A.

Comparative Phylogeography of the Sin Nombre Virus, /Peromyscus maniculatus/ (deer mice) and the emergence of virulent strains of Hantavirus. Guild of Rocky Mountain Ecologists and Evolutionary Biologists.

Torrez-Perez, F.

Torres-Pérez F., Medina R.A, Palma R.E., Hjelle B. & Cook J.A. 2007. Population and ecogeographic genetic structure of O. longicaudatus and Andes virus in three major Chilean ecoregions. American Society of Mammalogists, University of New Mexico, USA, June 10-14.

Barker B.S., Torres-Pérez F., Palma R.E & Cook J.A. 2007. Population genetic structure of a rodent reservoir for Hantavirus, O. longicaudatus, in Chile and its human implications. Evolutionary Change in Human-altered environments. Institute of the Environment, University of California, USA, February 8-10.

Francis, J.

Phylogeography of the wolverine (Gulo gulo) with an emphasis on Southeast Alaska. American Society of Mammalogy. Albuquerque, NM, June 2007.

Phylogeography of the wolverine (gulo gulo) with an emphasis on SE AK and the kenai peninsula: preliminary results. GREEB meeting. Abiqui, NM, Sept 2007.

Hope, A. G.

Hope, A.G. and J. A. Cook (2007) Molecular and morphological evolution of Sorex minutissimus, the tiny shrew. American Society of Mammalogists Meeting, Albuquerque, NM, Jun 2007.

Arai, S., L. Sumibcay, S. N. Bennett, J-W. Song, Z. R. Nerurkar, C. Parmenter, A. Hope, S. Brant, J. A. Cook, T. L. Yates, R. Yanagihara (2007) Newfound Soricid-Borne Hantaviruses in the United States. American Society of Mammalogists Meeting, Albuquerque, NM, Jun 2007.

Hope, A. G. and R. R. Parmenter, (2007). Food habits of rodents inhabiting arid and semi-arid ecosystems of central New Mexico. American Society of Mammalogists Meeting, Albuquerque, NM, Jun 2007.

Nofchissey, R.A., J. A. Cook, A. G. Hope, A. Tsvetkova, C. Ralph, S. Arguello, and D. Goade. Antibody Prevalence to Hantaviruses in Rodents from Alaska, British Columbia, Southwest United States and Russia. American Society of Mammalogists Meeting, Albuquerque, NM, Jun 2007.

Nofchissey, R.A., J. A. Cook, A. G. Hope, A. Tsvetkova and G. D. Ebel. Serological Evidence of Powassan Virus Transmission in Mammals Collected in Russia, Alaska and the Southwest United States. American Society of Mammalogists Meeting, Albuquerque, NM, Jun 2007.

C. Attendance at Professional Meetings

Barker, B.

American Society of Mammalogists, Albuquerque, NM, June 2007.

Evolutionary Change in Human-altered environments. Institute of the Environment, University of California, USA, February 8-10.

Cook, J. A.

American Society of Mammalogists, Albuquerque, NM, June 2007.

Dunnum, J.

American Society of Mammalogists, Albuquerque, NM, June 2007.

Gannon, W. L.

American Society of Mammalogists, Albuquerque, NM, June 2007.

Harding, L. E.

American Society of Mammalogists, Albuquerque, NM, June 2007.

Hope, A. G.

American Society of Mammalogists, Albuquerque, NM, June 2007.

Evolutionary Change in Human-altered environments. Institute of the Environment, University of California, USA, February 8-10.

Koehler, A. V.

American Society of Mammalogists, Albuquerque, NM, June 2007.

Malaney, J.

American Society of Mammalogists, Albuquerque, NM, June 2007.

Evolutionary Change in Human-altered environments. Institute of the Environment, University of California, USA, February 8-10.

Thomas, J. A.

American Society of Mammalogists, Albuquerque, NM, June 2007.

Guild of Rocky Mountain Ecologists and Evolutionary Biologists.

Torrez-Perez, F.

American Society of Mammalogists, Albuquerque, NM, June 2007.

Evolutionary Change in Human-altered environments. Institute of the Environment, University of California, USA, February 8-10.

Dawson, Natalie

Evolutionary Change in Human-altered environments. Institute of the Environment, University of California, USA, February 8-10.

D. Service as Editor or on Editorial Board of a Journal

Gannon, W.L.

Associate Editor, Book Reviews, Journal of Mammalogy (2005-present)

E. Service as Officer or Professional Society/Organization

Cook, J.A.

Board Member, American Society of Mammalogists (elected) 2007-2010.

OTHER PROFESSIONAL ACTIVITIES

A. Presentations to General Audience in a Scholarly Capacity

Cook, J.A.

Beringian Coevolution Project, PolarPalooza exhibit, New Mexico Museum of Natural History, October-Dec 2007

Gannon, W. L.

Bats! The Nature Center, Albuquerque Bosque, 200 people, 18 December 2007.

B. Presentations in a Scholarly Capacity at Hearings, Workshops, Legislative Committees, etc.

Cook, J. A.

On behalf of American Institute of Biological Sciences (AIBS), I met with Senator Bingaman's staff and then Rep. Tom Udall's staff regarding amendment (expansion) of Bingaman's Competitive Science Initiative (Senate Bill that was passed and signed into law) to include biological sciences. Washington, DC June 2007

C. Scholarly Service as a Member of a Local/State/Regional/National Committee, Panel, etc.

Cook, J. A.

1 hour presentation on Wildlife Management Issues to Interagency Working Group in Juneau, AK July 2007 (Alaska Department of Fish and Game, USDA Forest Service, US Fish and Wildlife Service, National Park Service).

Cook, J.A.

Chair, Biology Tenure and Promotion Committee

Member, MSB Executive Committee

Editorial Board, MSB Publications Series, (1 manuscript managed/edited)

Chair, UNM Graduate Student Selection Committee, 2006-2007

Co-Chair, UNM Ad hoc Vehicle Policy Committee, 2006-2007

Co-Chair, Local Organizing Committee, American Society of Mammalogists 87th Meeting. Albuquerque, NM, 6-10 June 2007 (580 attendees).

Member, Resolutions Committee, American Society of Mammalogists

Member, Latin American Scholarship Committee, American Society of Mammalogists

Dunnum, J.L.

Co-Chair, Local Organizing Committee, American Society of Mammalogists 87th Meeting. Albuquerque, NM, 6-10 June 2007 (580 attendees).

Gannon, W.L.

Co-Chair, Local Organizing Committee, American Society of Mammalogists 87th Meeting. Albuquerque, NM, 6-10 June 2007 (580 attendees).

D. Journal Referee

Cook, J.A.

Molecular Ecology (2 papers), Interciencia (1 paper), Journal of Zoology (1 paper).

National Science Foundation, ad hoc reviewer (2 proposals)

National Science Foundation, Panel Member, November (12 proposals)

Gannon, W.L.

Journal of Mammalogy

Acta Chiropterologica

Torrez-Perez, F.

Revista de Biología Tropical

E. Hosting Professional Colleagues and Groups

46 visiting academics and professionals from 22 outside institutions (see following list) visited the collections for research purposes. Additionally the MSB DOM hosted the American Society of Mammalogists meeting in June. During this meeting the collection was visited by the Systematics Collections Committee for a reaccreditation review (22 committee members toured).

Cook personally hosted the following individuals:

Dr. Sylvia Brunner, Dr. Gordon Jarrell, Dusty McDonald; University of Alaska Museum.

Dr. Eric Hoberg, Curator, US National Parasite Lab.

Dr. Enrique Lessa, Professor of Evolution, Universidad de la Republica.

Dr. Marjorie Matocq, Idaho State University.

Dr. Albina Tsvetkova, Russian Academy of Sciences

SERVICE

A. Symposia, Workshops, Conferences, etc. Sponsored, Organized, Held, etc.

American Society of Mammalogists 87th Meeting. Albuquerque, NM, 6-10 June 2007 (580 attendees).

B. Public Service

General

A significant portion of DOM staff time is spent providing information or assistance to the public either during visits to the collection, through phone calls, emails or through outreach endeavors. This is an important and ongoing activity of all DOM personnel.

Cook, J. A.

Visited Diné Tribal College in Tsalie AZ and Shiprock NM to recruit Navajo students to UNM Biology Program and establish collaborative ties.

National American Indian Science and Engineering Fair, Judge, May.

INTEL International Science Fair, Departmental Display. Albuquerque. Special Awards Judge & Grand Awards Judge. May.

Peer Evaluation of Promotion File for Dr. Jesus Maldonado, Curator, Smithsonian Institution. March.

Peer Evaluation of Distinguished Researcher File for Dr. Marjorie Matocq, Idaho State University. January.

Faculty Sponsor, UNM Wild Student Organization

Dawson, N.

Grand Awards science fair judge for local, regional, and international science fairs including the INTEL International Science and Engineering Fair and the Native American Indian Science and Engineering Fair.

Wildfriends (a program working with underprivileged youth in New Mexico in the sciences and public policy) volunteer science advisor and co-developer of “Wild Side of Ecology” curriculum for 5th-12th grade students.

Dunnum, J. L.

Mentor – Cameron Robles, Truman Middle School gifted seminar class (Peggy Lynch Hill, advisor).

INTEL International Science Fair, MSB DOM display. Albuquerque, NM.

Division tours – provide educational tours and information for visitors and school groups.

Thomas, J. A.

Laguna Middle School Science Fair Judge, EMERG GK12 Summer camp for middle school students held at the Seviella National Wildlife Reserve.

Gannon, G.L.

Judge for 3 science fairs in fall 2007

Regional Science Fair, March 2007

ADVANCED STUDY, HONORS, AWARDS, FELLOWSHIPS, ETC.

Francis, J.

Student Research Allocation Committee Grant through UNM. Project Title: Landscape Connectivity and Conservation Genetics of Wolverine (*Gulo gulo*) of Southeast Alaska and the Kenai Peninsula.

Graduate Research Allocation Committee through UNM. Project Title: Population Connectivity and Conservation Genetics of the Wolverine (*Gulo gulo*) in North America.

Hope, A. G.

Sigma Xi Grants in Aid of Research - \$400 awarded Fall 2007: Molecular vs. morphological vicariant evolution of rapidly evolving mammals: *Sorex minutissimus*, the tiny shrew.

Ediger, B.

Barry M. Goldwater Undergraduate Fellowship

DONATIONS AND GIFTS RECEIVED

None

CURRENT STAFF

A. Faculty/Staff

J.A. Cook, Curator

J.L. Dunnum, Collection Manager

C.A. Ramotnik, USGS Collection Manager

M.A. Bogan, Emeritus Curator

J.S. Findley, Emeritus Curator

Fernando Torres, Post-Doctoral Associate

B. Graduate students

Barker, Brittany. Ph.D. student. Landscape genetics of two frogs from Puerto Rico: *Eleutherodactylus antillensis* and *E. portoricensis*.

Crawford, Dolly. Ph.D. student. Dolly investigated molecular analysis of *Microtus mexicanus*: a test of the genetic distinctiveness of *M. mogollonensis*.

Dawson, Natalie. Ph.D. Candidate. Endemism, conservation genetics, and insular biogeography of 3 carnivores of the Tongass National Forest.

Escobedo, Yadeh. 1 st year Ph.D. Linkage corridors along the North Pacific Coast.

Francis, Jose. Master's student. Phylogeography of the wolverine (*Gulo gulo*) with an emphasis on Southeast Alaska.

Harding, Larisa. Ph. D. Candidate. Speciation and Biodiversity: Phylogeography and historical biogeography of *Mustela frenata*; Phylogeny of the American Mustelidae, with emphasis on two South American endemics.

Hope, Andrew. Ph.D. student. Comparative phylogeography of trans-Beringian *Sorex*: a tool for investigating geographic and genetic responses to climate change.

Malaney, Jason. Ph.D. student. Snowshoe hare historical biogeography and plant herbivore coevolution.

Rearick, Jolene. 1st year Ph.D. Phylogeography and molecular evolution of freeze tolerance in *Lithobates sylvaticus*.

Thomas, Jason Andrew. 3rd year Ph.D. student. Phylogeography of the Sin Nombre virus, *Peromyscus maniculatus*/ a coevolutionary relationship.

C. Undergraduate Student Workers and Volunteers

Seven undergraduates worked in the collections.

Tierney Adamson

Ben Ediger

Melvin Foster

Randle McCain

Benjamin Schaff

Elisha Song

Scarlett Swanson

Jamie Raines

High School Students/Volunteers

Max Maguire, Sandia Prep HS

MUSEUM ASSOCIATES

A. Curatorial Associates

James H. Brown, UNM Department of Biology

Jerry W. Dragoo, UNM Department of Biology

Donald W. Duszynski, UNM Department of Biology

William Gannon, UNM Research Ethics

Gabor R. Racz, UNM Department of Biology

B. Research Associates

J. Scott Altenbach, UNM Department of Biology

Sydney Anderson, American Museum of Natural History, New York

Robert J. Baker, The Museum, Texas Tech University, Lubbock, TX

Troy L. Best, Department of Biology, Auburn University

M. Scott Burt, Kirksville, Missouri

Fernando Cervantes, UNAM, Mexico City, Mexico

Paul J. Cryan, Ft. Collins, Colorado

John Demboski, Denver Museum of Science and Nature, Denver, Colorado

Eugene Fleharty, Oklahoma

Melissa Fleming, Poulsbo, Washington

Jennifer K. Frey, Las Curces, New Mexico
 Scott L. Gardner, Dept. Nematology, Curator, University Nebraska
 Keith Geluso, Albuquerque, New Mexico
 Ken Geluso, Lincoln, Nebraska
 Sarah B. George, Director, Utah State Museum
 Gary L. Graham, Texas Parks and Recreation Division
 David J. Hafner, New Mexico Museum Nat. History
 Art Harris, University of Texas, El Paso, Texas
 Bruce Hayward, Silver City, New Mexico
 Heikki Henttonen, Finland
 Edward J. Heske, Illinois Biological Survey
 Erik Hoberg, Beltsville, Maryland
 R. Dewitt Ivey, Retired. Active in Botany, mammals
 Clyde Jones, The Museum Texas Tech University
 Sue Kutz, Saskatoon, Saskatchewan
 Enrique Lessa, Montevideo, Uruguay
 Stephen MacDonald, Silver City, New Mexico
 Michael Mares, Norman, Oklahoma
 Pablo Marquet, Valdivia, Chile
 Rodrigo Medillín, UNAM, Mexico City, Mexico
 Tony R. Mollhagen, Lubbock, Texas
 Gary Morgan, New Mexico Museum Natural History, New Mexico
 Dwight W. Moore, Emporia State University
 Michael J. O'Farrell, Jr., Las Vegas, Nevada
 Thomas J. O'Shea, Ft. Collins, Colorado
 Eduardo Palma, Valdivia, Chile
 Robert Parmenter, Valles Caldera, Jemez, New Mexico
 James L. Patton, Museum of Vertebrate Zoology, Berkeley, California
 Paul J. Polechla, Albuquerque, New Mexico
 Robert Rausch, University of Washington, Seattle
 Brett R. Riddle, University of Nevada, Las Vegas, NV
 Jorge Salazar Bravo, Texas Tech University, Texas
 C. Greg Schmitt, Farmington, New Mexico
 Richard E. Sherwin, Christopher Newport University, Virginia
 Fred Szalay, Los Ranchos de la Rio Grande, New Mexico
 Sandy Talbot, Molecular Ecology Lab- USGS Anchorage, Alaska
 Ernie Valdez, Tijeras, New Mexico
 Alasdair Veitch, Department of Renewable Resources, Norman Wells, NWT, Canada
 Jack Whitman, Alaska Department of Fish and Game – Fairbanks, Alaska
 Don E. Wilson, Smithsonian, Washington, DC

NATURAL HERITAGE NEW MEXICO

DIVISION HIGHLIGHTS

In 2007, Natural Heritage New Mexico conducted a wide variety of projects on conservation of plants, animals, and ecosystems. With respect to rare plants, our focus was on the Sacramento Prickly Poppy, *Argemone pleiacantha* ssp. *pinnatisecta*. We conducted a range-wide survey of this species and documented declines throughout the area. We met with city, state, and federal agencies to discuss potential changes in land management to better provide for this endangered plant.

We continued our work on issues of biodiversity and Rio Grande restoration with a project on Southwestern willow flycatcher habitat and nesting with the Pueblo of Isleta; an analysis of vegetation and insects in native versus exotic vegetation, and the mapping of river bar vegetation in the Albuquerque reach as part of the Bosque Initiative sponsored by the U.S. Fish and Wildlife Service.

Using remote-sensing methods we developed for black-tailed prairie dogs, we conducted a survey of Gunnison's prairie dog disturbance on the Navajo Nation and Reservation of the Hopi Tribe. We are currently developing models to estimate current acreage of prairie dogs over the two-reservation area in Arizona, Utah, and New Mexico. Collaborating with the Institute for Culture and Ecology and the Forest Guild to develop a project on the effects of woody biomass removals on wildlife of conservation concern in pinyon-juniper.

We upgraded our GIS Enterprise geodatabase in support of our research, survey and assessment activities by switching our suite of GIS coverages to the NAD83 Datum and by bringing in-house 2005 digital, color aerial photography for the entire state plus Navajo and Hopi lands (with portions in infra-red). We also upgraded our capacity to deliver spatial conservation data to agencies via the Web along with developing and delivering map products directly for them (NPS, BLM, ACOE, FWS, DOD, NMED, NMGFD, NMARNG, and various NGOs).

Other new projects include: a joint-venture research project on prairie chickens, habitat, and livestock grazing with a Milnesand, NM ranch through the NMDGF Land Owner Incentive Program; a vegetation map for White Sands National Monument; a project site database and Web page upgrade for the Middle Rio Grande Initiative (FWS), a plant and animal inventory project at Pecos National Historic Park, an aquatic insect survey to complement our on-going monitoring and assessment of the Santa Fe River ACEC (BLM), and hosting the New Mexico Biological Collections Consortium website.

TABLE OF COLLECTION USE

Collection Growth (specimens catalogued)	Loans (outgoing)	Loans (incoming)	Visitors	Information Requests Personally Responded to	Publications Citing MSB Specimens
5,368 new records, 3,012 updated records	NA	NA	9,855 visitors to web site	105 personally, 28,043 publications downloaded	Unknown

COURSES USING THE COLLECTIONS

COURSES TAUGHT BY MSB PERSONNEL

A. Faculty/Collection Managers

Johnson, K. ARSC 198, Experience the Natural World, Fall, 18 students

B. Staff

COLLECTION MANAGEMENT

In 2007, Natural Heritage New Mexico began hosting the New Mexico Biological Collections Consortium website. We updated the data and the functionality so researchers and the public can search biological museum data from across New Mexico. There are currently 323,544 searchable specimen records in the NMBCC database representing data from four museums (MSB, ENMU, WNMU, and NMSU) and 22 divisions within those museums. New functionality includes the ability of collection managers/curators to upload new data, set security options on their data, and approve/reject users requesting secured data. We continue to host, maintain, and update other biological resource databases such as the New Mexico Ornithological Society web site/database and the Rare Plant Technical Council web site/database. We made selected biodiversity data available via the EPA data exchange network and researched web mapping software options to upgrade our web mapping sites.

AWARDS, GRANTS, AND CONTRACTS

\$36,591. NM Military Affairs Dept. Banner #048763. Biological resource support NMARNG – Invasive species 2006. Paul Arbetan, PI. 09/06-06/08. \$28,558 (F&A \$4,760).

\$73,409. NM Military Affairs Dept. Banner #048770. Biological resource support NMARNG – Protected, threatened, endangered species 2006. Paul Arbetan, PI. 09/06-06/08. \$40,824 (F&A \$6,804).

\$36,591. NM Military Affairs Dept. Banner #048762. Biological resource support NMARNG – Invasive species 2007. Paul Arbetan, PI. 09/06-06/08. \$0 (F&A \$0).

\$64,234. NM Military Affairs Dept. Banner #048765. Biological resource support NMARNG – Protected, threatened, endangered species 2007. Paul Arbetan, PI. 09/06-06/09. \$0 (F&A \$0).

\$60,000. NM Military Affairs Dept. Banner #048772. Biological resource support NMARNG – Protected, threatened, endangered species. Paul Arbetan, PI. 09/06-06/09. \$0 (F&A \$0).

\$25,000. NM Military Affairs Dept. Banner #048896. Rare, protected, and endangered and threatened species survey for Camel Tracks Training Site; Species monitoring for Grey Vireo. Paul Arbetan, PI. 10/07-06/09. \$0 (F&A \$0).

\$66,150. NM Military Affairs Dept. Banner #048897. Rare, protected, and endangered and threatened species survey for Roswell WETS. Paul Arbetan, PI. 10/07-06/09. \$0 (F&A \$0).

\$50,000. NM Military Affairs Dept. Banner #048898. Rare, protected, and endangered and threatened species survey for Black Mtn. Training Site; Night-blooming Cereus monitoring & surveys. Paul Arbetan, PI. 10/07-06/09. \$0 (F&A \$0).

\$143,915. Navajo Nation. Banner #048821. DOQ survey of Gunnison's prairie dog towns on the Navajo Nation & Reservation of the Hopi Tribe. Kristine Johnson, PI. 07/07-03/09. \$58,928 (F&A \$12,160).

\$68,564. DOD. Banner #048696. Chihuahuan Desert monitoring plan phase II. Kristine Johnson, PI. 04/06-03/07. \$6,922 (F&A \$903).

\$50,000. DOD. Banner #048558. Interdependence of pinyon pines and pinyon jays. Kristine Johnson, PI. 01/05-05/07. \$2,766 (F&A \$571).

\$50,000. DOD. Banner #048793. Pinyon jays and pinyon pines at White Sands Missile Range. Kristine Johnson, PI. 02/07-12/08. \$42,386 (F&A \$8,746).

\$55,000. US FWS. Banner #048786. Habitat analysis for NM DoD species at risk. Kristine Johnson, PI. 11/06-12/07. \$55,000 (F&A \$11,349).

\$120,436. Bureau of Reclamation. Banner #048710. Water requirements for SW willow flycatcher habitat and nesting at the Pueblo of Isleta. Kristine Johnson, PI. 05/06-04/09. \$36,853 (F&A \$7,605).

\$85,639. NMGF. Banner #048622. Database and GIS habitat analysis: lesser prairie chicken and sand dune lizard. Kristine Johnson, PI. 05/05-06/07. \$16,819 (F&A \$2,803).

\$54,452. T.E. Parkinson Ranch. Banner #048840. Wildlife Habitat Improvement of the Parkinson Ranch. Kristine Johnson, PI. 07/07-12/09. \$7,226 (F&A \$0).

\$17,235. NM Game & Fish Dept. Banner #048810. Gunnison's Prairie Dog Habitat Model and Survey. Kristine Johnson, PI. 05/07-08/07. \$17,235 (F&A \$2,873).

\$10,000. BLM. Banner #048894. Biological Resource Data Collection and Storage. Rayo McCollough, PI. 09/07-09/08. \$0 (F&A \$0).

\$238,477. NPS. Banner #048459. Bandelier National Monument vegetation mapping project. Esteban Muldavin, PI. 09/02-09/07. \$29,469 (F&A \$3,844).

\$224,097. NPS. Banner #048546. Vegetation map for El Malpais National Monument. Esteban Muldavin, PI. 08/04-09/08. \$61,534 (F&A \$8,026).

\$323,547. NPS. Banner #048637. Guadalupe Mtns. National Park vegetation map and classification. Esteban Muldavin, PI. 07/05-06/10. \$82,810 (F&A \$10,801).

\$152,363. NPS. Banner #048721. Vegetation map for Petroglyphs Nat'l Monument. Esteban Muldavin, PI. 06/06-03/10. \$24,601 (F&A \$3,209).

\$40,400. NPS. Banner #048628. Carlsbad Caverns National Park vegetation map accuracy assessment. Esteban Muldavin, PI. 07/05-12/08. \$7,966 (F&A \$1,041).

\$8,008. NPS. Banner #048646. Photo map and initiation of a vegetation map for Ft. Davis National Historic Site. Esteban Muldavin, PI. 09/05-12/07. \$5,537 (F&A \$722).

\$20,000. NPS. Banner #048831. Vegetation mapping accuracy assessment – Bandelier and Salinas Mission. Esteban Muldavin, PI. 07/07-12/08. \$17,591 (F&A \$2,620).

\$16,000. NPS. Banner #048842. Map tamarisk park-wide – White Sands Nat'l. Monument. Esteban Muldavin, PI. 09/07-01/10. \$0 (F&A \$0).

\$69,928. NPS. Banner #048847. Monitoring long-term vegetation dynamics in Big Bend NP. Esteban Muldavin, PI. 09/07-12/09. \$13,929 F&A \$2,074).

\$65,472. NPS. Banner #048819. Vegetation mapping at Capulin Volcano NM & Pecos NHP. Esteban Muldavin, PI. 05/07-04/09. \$0 (F&A \$0).

\$94,674. NPS. Banner #048697. Capulin Volcano NM & Pecos NHP vegetation mapping. Esteban Muldavin, PI. 04/06-12/08. \$37,769 (F&A \$4,926).

\$58,016. NPS. Banner #048598. Vegetation classification Pecos National Historic Park, Capulin Volcano Nat'l. Monument, NM & Ft. Union Nat'l. Monument. Esteban Muldavin, PI. 06/05-12/06. \$195 (F&A \$25).

\$10,000. NPS. Banner #048771. Vegetation map for the Southern Colorado Plateau Network: Salinas Pueblo Missions. Esteban Muldavin, PI. 08/03-12/07. \$484 (F&A \$63).

\$31,500. NPS. Banner #048623. White Sands Nat'l. Monument vegetation map accuracy assessment. Esteban Muldavin, PI. 08/05-3/09. \$14,988 (F&A \$1,955).

\$95,000. Army Corps of Engrs. Banner #048613. Vegetation sampling middle Rio Grande flood control project. Esteban Muldavin, PI. 07/05-09/07. \$25,492 (F&A \$5,111).

\$280,000. NM Army National Guard. Banner #048624. Biological resources management program. Esteban Muldavin, PI. 08/05-06/07. \$110,397 (F&A \$22,780).

\$131,547. US Fish & Wildlife Service. Banner #048660. River bar biodiversity studies, 08-08. Esteban Muldavin, PI. 08/03-08/08. \$20,323 (F&A \$4,168).

\$116,700. US Fish & Wildlife Service. Banner #048783. River bar vegetation mapping, 03-04. Esteban Muldavin, PI. 09/03-08/08. \$10,779 (F&A \$2,224).

\$13,250. US Fish & Wildlife Service. Banner #048893. Middle Rio Grande bosque initiative web page database and GIS. Esteban Muldavin, PI. 09/07-09/10. \$0 (F&A \$0).

\$60,000. BLM. Banner #048735. Santa Fe River vegetation analysis. Esteban Muldavin, PI. 08/03-12/06. \$1,596 (F&A \$329).

\$15,000. BLM. Banner #048895. Santa Fe River aquatic macroinvertebrate sampling. Esteban Muldavin, PI. 09/07-12/08. \$0 (F&A \$0).

\$10,000. BLM. Banner #048711. Rio Grande vegetation monitoring program. Esteban Muldavin, PI. 05/06-12/06. \$4,968 (F&A \$1,025).

\$10,000. BOR. Banner #048855. Albuquerque overbank project monitoring. Esteban Muldavin, PI. 09/07-09/11. \$8,391 (F&A \$1,250).

\$19,358. NM Energy, Minerals & Natural Resources Dept.. Banner #048776. Sacramento prickly poppy research. Phil Tonne, PI. 09/06-06/07. \$19,209 (F&A \$3,202).

\$5336. NM Energy, Minerals & Natural Resources Dept.. Banner #048899. Pedimelum, Ipomopsis, and Argemone Research. Phil Tonne, PI. 08/07-06/08. \$0 (F&A \$0).

\$5336. NM Energy, Minerals & Natural Resources Dept.. Banner #048900. Pedimelum, Ipomopsis, and Argemone Research. Phil Tonne, PI. 08/07-06/08. \$0 (F&A \$0).

\$9328. NM Energy, Minerals & Natural Resources Dept.. Banner #048901. Pedimelum, Ipomopsis, and Argemone Research. Phil Tonne, PI. 08/07-06/08. \$0 (F&A \$0).

PUBLICATIONS

A. Books, Book Chapters, Edited Volumes

None

B. Journal Articles

Muldavin, E.H., D.I. Moore, S.L. Collins, K.R. Wetherill, and D.C. Lightfoot. (2007). Aboveground net primary production dynamics in a northern Chihuahuan Desert ecosystem. *Oecologia* Published online: 30 October 2007 04/01/2007.

Muldavin, E. H., G.Harper, P. Neville, and S. Wood (In press). A Vegetation classification of the Sierra del Carmen, U.S.A. and Mexico. Proceeding of the Fifth Annual Chihuahuan Desert Symposium. Chihuahuan Desert Research Institute, Alpine TX.

C. Web-Based

D. Technical Reports

Faber-Langendoen, D, Greg Kudray, Carl Nordman, Lesley Sneddon, Linda Vance, Sue Gawler, Carmen Josse, Gwen Kittel, Shannon Menard, Elizabeth Byers, Pat Comer, **Esteban Muldavin**, Joe Rocchio, Mike Schafale. 2007. A rapid assessment method for assessing the ecological integrity of wetlands. Final Report to U.S. Environmental Protection Agency. NatureServe, Arlington, VA.

Johnson, K. and J. Smith. 2007. Relationship of Pinyon Jays and pinyon pines at North Oscura Peak, White Sands Missile Range, 2006 draft report. NHNM Publication No. 07-GTR-311. Natural Heritage New Mexico, Museum of Southwestern Biology, University of New Mexico. 14p.

Johnson, K., P. Tonne, J. Smith, T. Neville. 2007. DoD Legacy Species at Risk (SAR) New Mexico GIS and species accounts project. Natural Heritage New Mexico Publ. No. 07-GTRcd-321. Natural Heritage New Mexico, University of New Mexico, Albuquerque, NM.

Milford, E., E. Muldavin, and A. Browder. 2007. Vegetation sampling for the Middle Rio Grande: Resampling the 1984 Hink and Ohmart transects, Year II. Natural Heritage New Mexico Publ. No. 07-GTR-312. Natural Heritage New Mexico, University of New Mexico, Albuquerque, NM. 19 p. + CD.

Milford, E., E. Muldavin, Y. Chauvin, and A. Browder. 2007. Santa Fe River Riparian Vegetation Monitoring. Report 2006. Natural Heritage New Mexico Publ. No. 07-GTR-317. Natural Heritage New Mexico, University of New Mexico, Albuquerque, NM. 19 p.

Milford, E., E. Muldavin, and A. Browder. 2007. Vegetation Sampling of USACE Forest Restoration Sites in Corrales, Year I. Natural Heritage New Mexico Publ. No. 07-GTR-319. Natural Heritage New Mexico, University of New Mexico, Albuquerque, NM. 13 p. + CD.

Milford, E., K. Mann, and E. Muldavin. 2007. River bar biodiversity studies: Aerial insects, vegetation structure, and bird habitat. Natural Heritage New Mexico Publ. No. 07-GTR-323. Natural Heritage New Mexico, University of New Mexico, Albuquerque, NM. 24 p. + appendices.

Milford, E., T. Neville, and E. Muldavin. 2007. Integrated management tools for monitoring invasive species removal, Orilla Verde Recreation Area. Natural Heritage New Mexico Publ.

No.07-GTR-314. Natural Heritage New Mexico, University of New Mexico, Albuquerque, NM. 19 p. + GIS.

Neville, T. and K. Johnson. 2007. Gunnison's prairie dog predictive range model and survey site selection for New Mexico. Natural Heritage New Mexico Publ. No. 07-GTR-320. Natural Heritage New Mexico, University of New Mexico, Albuquerque, NM. 13 p.

Neville, P., T. Neville, and K. Johnson. 2007. Potential sand dune lizard map of a portion of habitat in Southeastern New Mexico. Natural Heritage New Mexico Publ. No. 07-GTR-318. Natural Heritage New Mexico, University of New Mexico, Albuquerque, NM. 71 p.

Romme, W., C. Allen, J. Bailey, W. Baker, B. Bestelmeyer, P. Brown, K. Eisenhart, L. Floyd Hanna, D. Huffman, B. Jacobs, R. Miller, E. Muldavin, T. Swetnam, R. Tausch, and P. Weisberg. 2007. Historical and modern disturbance regimes of piñon juniper vegetation in the western U.S. Report by the Nature Conservancy, Fire Learning Network. 13 p.

Smith, J. and K. Johnson. 2007. Water requirements for Southwestern Willow Flycatcher habitat and nesting at the Pueblo of Isleta. Natural Heritage New Mexico Publ. No. 07-GTR-315. Natural Heritage New Mexico, University of New Mexico, Albuquerque, NM. 30 p.

Tonne, P. 2007 Results of Sacramento prickly poppy surveys and monitoring: Alamo, Caballero, Dog, and Dry Canyons. Natural Heritage New Mexico Publ. No. 07-GTR-316. Natural Heritage New Mexico, University of New Mexico, Albuquerque, NM. 21 p.

Tonne, P. and J. McIntyre. 2007. Habitat surveys of Elk Springs Estates for Sacramento Mountains Checkerspot Butterfly (*Euphydryas anicia cloudcroftii*). Natural Heritage New Mexico Publ. No. 07-GTR-324. 17 p.

E. Theses/Dissertations Completed

F. Work In Progress

William H. Romme, Craig D. Allen, John D. Bailey, William L. Baker, Brandon T. Bestelmeyer, Peter M. Brown, Karen S. Eisenhart, Lisa Floyd Hanna, David W. Huffman, Brian F. Jacobs, Richard F. Miller, **Esteban H. Muldavin**, Thomas W. Swetnam, Robin J. Tausch, Peter J. Weisberg. Historical and Modern Disturbance Regimes, Stand Structures, and Landscape Dynamics in Piñon--Juniper Vegetation of the Western U.S. Submitted Ecological Applications 9/11/2007.

Yanoff, S. and **E. Muldavin**. (submitted). Grassland-shrubland transformation and grazing: a century-scale view of a northern Chihuahuan Desert grassland. J. of Arid Environments 11/29/2007.

G. Publications/Reports Based on MSB Specimens/Data by Outside Researchers

ACTIVITIES IN LEARNED SOCIETIES

A. Invited/Plenary Talks and/or Seminars

B. Contributed Talks/Posters

C. Attendance at Professional Meetings (List division personnel alphabetically then list meetings attended under each)

R. McCollough: NatureServe Conservation Conference 2007

E. Muldavin: Ecological Society of America- National Vegetation Classification Panel;
New Mexico Forest Restoration Principles Subcommittee on pinyon-juniper woodland
restoration; National NatureServe Team for Ecological Integrity Assessment;
Teri Neville: NatureServe Conservation Conference 2007

D. Service as Editor or on Editorial Board of a Journal

None

E. Service as Officer of Professional Society/Organization

None

OTHER PROFESSIONAL ACTIVITIES

A. Presentation to General Audience in a Scholarly Capacity

P. Tonne: Poster presentation at the Rio Grande Botanic Garden for Earth Day

B. Presentations in a Scholarly Capacity at Hearings, Workshops, Legislative Committees, etc.

C. Scholarly Service as a Member of a Local/State/Regional/National Committee, Panel, etc.

K. Johnson: Gray Vireo State Working Group

E. Muldavin: Collaborative Forest Restoration Institute Federal Advisory Panel;

P. Tonne: Rare Plant Technical Council

E. Milford: New Mexico Wetlands Roundtable

D. Journal Referee

K. Johnson: Ethology; Journal of Field Ornithology

E. Muldavin: J. of Arid Environments; Rangeland Ecology & Management

E. Hosting Professional Colloquia and Groups

SERVICE

A. Symposia, Workshops, Conferences etc. Sponsored, Organized, Held, etc.

B. Public Service

K. Johnson: Intel International Science Fair Judge 2007 -

P. Tonne: Docent training in rare plant conservation, Rio Grande Botanic Garden, Albuquerque, NM.

ADVANCED STUDY, HONORS, AWARDS, FELLOWSHIPS, ETC.

DONATIONS AND GIFTS RECEIVED

CURRENT STAFF

A. Faculty/Staff

Paul Arbetan, Research Assistant Professor
Yvonne Chauvin, Sr. Research Tech/Life Sciences
Charles Jackson, Research Tech/Life Sciences
Kristine Johnson, Research Associate Professor
Rebecca Keeshen, Office Administrator
Amanda Kennedy, Sr. Research Tech/Life Sciences
Rayo McCollough, Database Administrator
Elizabeth Milford, Research Scientist II
Esteban Muldavin, Research Associate Professor
Teri Neville, GIS Analyst
Sandy Sacher, Research Tech/Life Sciences
Jacqueline Smith, Sr. Research Tech/Life Sciences
Phil Tonne, Sr. Research Scientist I

B. Graduate students

Brandon Lee Drake, M.S.
William Dunn, Ph.D.
Kevin Wesley, M.F.A.

C. Undergraduate Student Workers and Volunteers

Nicholas Baker
Chelsie Claus
Mitchell Dunaway
Eric Lindahl
Vy Nguyen
Kari Paustian
Jamie Ruiz
Sandy Sacher
Keith Woodell
Mary Alice Root, Volunteer

MUSEUM ASSOCIATES

None

U.S. GEOLOGICAL SURVEY

DIVISION HIGHLIGHTS

Several noteworthy actions occurred in 2007 relating to collections of the USGS. The Memorandum of Understanding (MOU) between USGS and UNM was renewed and signed in July; this agreement continues our long-standing cooperation on museum matters with the University of New Mexico. Additionally, plans for integration of specimens in three divisions, amphibians and reptiles, fishes, and mammals, were discussed with the respective divisions. Plans were revised as needed and approved by the end of the year. The plans included an estimated budget for supplies and labor and a list of tasks and a timeline to accomplish integration of the USGS and MSB specimens and data for each division. The development and approval of these plans is a truly significant accomplishment for both parties. In order to prepare for integration of the USGS and MSB amphibian and reptile collections, which began in earnest in November, the USGS and MSB collection managers met a minimum of 8 times beginning in October. USGS also catalogued 2,906 reptiles that were part of a large significant collection of reptiles from the Nevada Test Site dating from the 1960s.

Within the Division of Mammals, new tags bearing the MSB acronym and number were attached to several thousand USGS mammal specimens, as part of integration and recataloguing efforts. The mammal collection was reaccredited by the American Society of Mammalogists during the annual meeting in Albuquerque in June, thanks to efforts spearheaded by USGS and MSB curators and collection managers.

During 2007 USGS was successful in acquiring funds to hire two full-time museum technicians to help with integration efforts and general museum activities. The USGS Fort Collins Science Center provided funds to hire a museum technician beginning in July 2007, and in November, a Department of Interior internship allowed us to hire a full-time museum intern. Funding for museum supplies came from USGS and DOI.

Ernie Valdez, a USGS wildlife biologist, continued field work on bats at Mesa Verde National Park, together with biologists from the USGS Fort Collins Science Center (FORT), and Colorado State University. The emphasis of this study was to increase information on bat species occurrence and provide better understanding of the bat community utilizing the old-growth piñon-juniper woodlands, other coniferous stands, and rocks and crevices in cliffs as roosting habitat, by using radio-tracking techniques. Ernie also continued his studies on ectoparasites, food habits, and morphology of bats of the region and submitted several chapters from his Dissertation for publication. Ernie is co-chair of the New Mexico Bat Working Group and wrote multiple species accounts for the group's Bat Conservation Plan.

Janet Ruth, a USGS Research Ecologist/Ornithologist, edited the proceedings from a USGS-USFWS interagency workshop on applying radar technology to natural resources issues, which was published as a USGS Open-File Report. The third year of a three-year project using NEXRAD radar data to document bird migration patterns and stopover habitat in the Southwest was initiated in collaboration with a colleague at the University of Southern Mississippi. Ruth co-authored a manuscript for a volume of "Studies in Avian Biology" on US-Mexico

borderlands issues based on data from this project. She also authored a second manuscript for the same volume from her project surveying the breeding distribution and abundance of Arizona Grasshopper Sparrow (*Ammodramus savannarum ammodramus*). She worked with two colleagues from USFWS and University of Texas Pan American as the Associate Editors for this volume. As the official USGS Coordinator for Partners in Flight (PIF), Ruth attended national meetings of PIF's Implementation and Science committees, and received a national PIF Leadership Award.

TABLE OF COLLECTION USE

Specimens catalogued	Loans (outgoing)	Loans (incoming)	Visitors	Information Requests	Publications Citing MSB Specimens
3,056	6	1	See MSB	35	See MSB

COURSES USING THE COLLECTIONS

See MSB Divisions.

COURSES TAUGHT BY MSB/USGS PERSONNEL

A. Faculty/Collection Managers

None.

B. Graduate Students

A. England

BIOL 202 – Genetics Lab, Spring, 50 students

BIOL 324 – Natural History of the Southwest Lab, Fall, 14 students

BIOL 112L – Biology for Non-majors Lab, Fall, 20 students.

COLLECTION MANAGEMENT

In 2007 USGS accessioned 3 collections including 12 amphibians and reptiles and 23 mammals from the southwestern U.S. Museum staff catalogued 3,056 specimens, most of which were reptiles that were collected from the Nevada Test Site in the 1960s. USGS evaluated approximately 12 loan requests for mammal vouchers and 7 for mammal tissues; processed 6 loans (1 herp, 2 fish, and 3 mammal) and 1 loan return (mammal). Ramotnik responded to 35 information requests: 13 were specimen-related and 22 were technical. Requests ranged from providing sources for museum supplies such as specimen boxes, skin tags, tape, and archival paper; to providing technical assistance in dealing with the storage of polar bear pelts, properly handling greasy swan skins, and dealing with recrystallizing naphthalene on mammal skins. Online requests for bird and mammal specimen data are reported separately in those divisions' reports. Ramotnik assisted 12 visitors with use of the collection, and conducted 4 collection tours (UNM graduate student orientation; Southwestern Indian Polytechnic Institute class; DOI

museum staff; and NPS regional curators). Visitor use is also tracked by the Divisions of Birds and Mammals and each division reports this information in their respective divisional report.

During the second half of the year, efforts to ramp up integration activities were greatly enhanced by the addition of two full-time museum technicians, Adrienne Raniszewski and Sarah Manor. Under the supervision of Ramotnik, they spent considerable time in the Division of Amphibians and Reptiles working on a variety of integration activities of UNM and USGS amphibian and reptile specimens that included reviewing the draft integration plan, conducting jar inventories, designing specimen labels and jar labels, and learning the intricacies of the thermal printer. Initial costs of integration (museum supplies and labor) came from Patty Stevens, Trust Species and Habitats Program in USGS-FORT in Ft. Collins, CO; and through requests by Ramotnik to the USGS Museum Property Program in Reston, VA and the DOI Museum Property Program, Washington, DC.

Ramotnik completed draft integration plans for amphibians and reptiles, fishes, and mammals, and attended subsequent meetings with all three divisions that resulted in finalizing and approving the plans. She also met at least eight times with the collection manager for the Division of Amphibians and Reptiles between October and the end of December to discuss protocol and procedure. In addition she attended numerous other museum meetings (including the MSB retreat) throughout the year that covered various topics such as fish integration, wet collection space, mammal collection arrangement and integration, mammal vial labels and online database procedures, bugroom design, and ASM accreditation. Ramotnik reviewed the Divisions of Birds and Mammals Biosafety SOP and a wet collection expansion plan; responded to NPS on annual museum property inventories (~15); provided updated museum records to USGS Museum Property Program; and updated the USGS page on the MSB website.

Curator Emeritus Bogan participated in meetings of the MSB Executive Committee, reviewed numerous drafts of integration plans and the MOU, attended meetings to assist in getting the plans and MOU approved, and completed curation of specimens of *Myotis*, in particular, and vespertilionid bats, in general, in the main mammal collection.

AWARDS, GRANTS, AND CONTRACTS

\$1,000. Native Plant Society of New Mexico, 2007 Grants. A.E. England. P.I.

\$3,000. UNM, Department of Biology, Grove Summer Scholarship, Summer 2007. A.E. England. P.I.

\$2,500. Bat Conservation International, Student Research Scholarship, May 2007. A.E. England. P.I.

\$1,500. UNM, Department of Biology and Museum of Southwestern Biology, Joseph A. Gaudin Scholarship, Spring 2007. A.E. England. P.I.

\$25,500. USGS, Fort Collins Science Center. Integration of USGS vertebrate collections. C.A. Ramotnik, PI. 7/07-4/08 (\$12,500).

\$3,000. USGS Museum Property Program, Reston, VA. FY08 funds for museum supplies. C.A. Ramotnik, P.I. (\$3,000).

\$2,534. Department of Interior Museum Property Program, Washington, DC. FY08 funds for museum supplies. C.A. Ramotnik, P.I. (\$2,534).

\$10,000. Department of Interior Museum Property Program, Washington, DC. Funds for museum internship. C.A. Ramotnik, P.I. 11/07-6/08 (\$1,440).

\$20,000. USGS Headquarters, Reston, VA. Funds for radar workshop and subsequent publications and activities of the collaborative. J.M. Ruth, P.I. 02/06-09/09 (\$10,000)

\$12,000. Sonoran Joint Venture. # 201814N766. Bird migration patterns in the arid Southwest, J.M. Ruth, PI [R. Diehl (USM) Co-P.I.]. 03/05-02/08 (\$12,000).

\$10,000. Lannan Foundation. Bird migration patterns in the arid Southwest, J.M. Ruth, PI (R. Diehl (USM) Co-P.I.). 03/05-02/08 (\$3,000).

\$15,000. U.S. Fish and Wildlife Service, Region 2, Migratory Bird Office. #201814N766. Bird migration patterns in the arid Southwest, J.M. Ruth, PI (R. Diehl (USM) Co-P.I.). 03/05-02/08 (\$9,100).

\$89,000. USGS Science Support Program. Bird migration patterns in the arid Southwest, J.M. Ruth, PI (R. Diehl (USM) Co-P.I.). 03/05-02/08 (\$15,200).

PUBLICATIONS

A. Books, Book Chapters, Edited Volumes

None.

B. Journal Articles

Frey, J.K., M.A. Bogan, and T.L. Yates. 2007. Mountaintop island age determines species richness of boreal mammals in the American Southwest. *Ecography* 30:241-240.

C. Web-Based

Blancher, P.J., K.V. Rosenberg, A.O. Panjabi, B. Altman, J. Bart, C.J. Beardmore, G.S. Butcher, D. Demarest, R. Dettmers, E.H. Dunn, W. Easton, W.C. Hunter, E.E. Iñigo-Elias, D.N. Pashley, C.J. Ralph, T.D. Rich, C.M. Rustay, J.M. Ruth, and T.C. Will. 2007. Guide to the Partners in Flight Population Estimates Database. Version: North American Landbird Conservation Plan 2004. Partners in Flight Technical Series No. 5. <http://www.partnersinflight.org/pubs/ts/>

Bogan, M. A., K. Geluso, S. Haymond, and E. W. Valdez. 2007. Mammal inventories for eight National Parks in the Southern Colorado Plateau Network. Natural Resource Technical Report NPS/SCPN/NRTR-2007/054. National Park Service, Ft. Collins, CO. http://science.nature.nps.gov/im/units/scpn/Documents/8Park_Mammal_Final_2007.pdf

D. Technical Reports

Bogan, M.A., T.R. Mollhagen, and K. Geluso. 2007 [2006]. Inventory for bats (Chiroptera) of Canyonlands National Park. Final Report submitted to National Park Service, Moab, UT. 35 pp.

Cryan, P.M., C. Ramotnik, and M. Bogan. 2007 [2006]. Natural history collections: a scientific treasure trove. Fact Sheet 2006-3079. Fort Collins, CO: U.S. Geological Survey, Fort Collins Science Center. 2 pp.

Felix, R., R. Diehl, and J. M. Ruth. 2007. Bird migration patterns in the arid Southwest: Year II. Administrative report. USGS FORT, Arid Lands Field Station, Albuquerque, NM. 17 pp.

Mollhagen, T. R., and M. A. Bogan. 2007. Inventory for Certain Small Mammals (Bats and Rodents) in San Juan County, Utah. Unpublished final report to Bureau of Land Management, Monticello, Utah. 26 pp.

O'Shea, T. J., P.M. Cryan, L.E. Ellison, and E.W. Valdez. 2007. Bat use of coniferous forests at Mesa Verde National Park: Year 1 Progress Report. Administrative Report submitted to USGS Natural Resources Preservation Program and National Park Service. 168 pp.

Ruth, J.M. 2007. Applying radar technology to migratory bird conservation and management: strengthening and expanding a collaborative. Open-File Report 2007-1361. U.S. Geological Survey. 175 pp.

E. Theses/Dissertations Completed

Weise, C.D. 2007. Community structure, vertical stratification and seasonal patterns of neotropical bats. (Bogan, co-advisor)

F. Work In Progress

Benson, L.V., H.E. Taylor, K.A. Peterson, B.D. Shattuck, C.A. Ramotnik, and J.R. Stein. Development and evaluation of geochemical methods for the sourcing of archaeological maize. *Journal of Archaeological Science*.

Felix Jr., R. K. R. H. Diehl, and J. M. Ruth. Seasonal passerine migratory movements over the arid Southwest. *In* J. M. Ruth, T. Brush, and D.J. Krueper (editors). *Birds of the US-Mexico Borderlands: distribution, ecology, and conservation*. *Studies in Avian Biology* Volume No. 37.

Fitzgerald, J. A., W. E. Thogmartin, R. Dettmers, T. Jones, C. Rustay, J. M. Ruth, F. R. Thompson III, and T. C. Will. Application of models to conservation planning for terrestrial birds in North America, Chapter 22 *In* J. J. Millspaugh and F. R. Thompson III (editors) *Models for planning wildlife conservation in large landscapes*. Elsevier Press.

Pyle, P., S.L. Jones, and J.M. Ruth. Molt and aging criteria for four North American grassland passerines. U.S. Department of Interior, Fish and Wildlife Service, Biological Technical Publication. Washington, D.C.

Ruth, J.M. Radar technology--a tool for understanding migratory "aerofauna". USGS website.

Ruth, J.M., T. Brush, and D.J. Krueper (editors). Birds of the US-Mexico Borderlands: distribution, ecology, and conservation. Studies in Avian Biology Volume No. 37.

Ruth, J.M. Distribution and abundance of breeding Arizona Grasshopper Sparrow (*Ammodramus savannarum ammodramus*) in the Southwestern United States: Past, Present, and Future. In J. M. Ruth, T. Brush, and D.J. Krueper (editors) Birds of the US-Mexico Borderlands: distribution, ecology, and conservation. Studies in Avian Biology Volume No. 37.

Ruth, J.M., T. Brush, and D.J. Krueper. Preface. In J.M. Ruth, T. Brush, and D.J. Krueper (editors) Birds of the US-Mexico Borderlands: distribution, ecology, and conservation. Studies in Avian Biology Volume No. 37.

Smith, F.A., D. Crawford, L. Harding, H.M. Lease, I.W. Murray, A. Raniszewski, and K.M. Youberg. In press. A tale of two species: evolution, extirpation and range expansion during the late Quaternary in an extreme environment. Global Ecology and Biogeography.

Valdez, E.W. and P.M. Cryan. In review. Food habits of the hoary bat (*Lasiurus cinereus*) in New Mexico during spring migration. The Southwestern Naturalist.

Valdez, E.V. and K. Geluso. In review. Late seasonal activity and diet of the evening bat (*Nycticeius humeralis*) in Nebraska. Western North American Naturalist.

Valdez, E.W. Species account: *Myotis evotis*. New Mexico Bat Conservation Plan. New Mexico Bat Working Group Website.

Valdez, E.W. Species account: *Myotis volans*. New Mexico Bat Conservation Plan. New Mexico Bat Working Group Website.

Valdez, E.W. Species account: *Myotis occultus*. New Mexico Bat Conservation Plan. New Mexico Bat Working Group Website.

G. Publications/Reports Based on MSB Specimens/Data by Outside Researchers

See MSB results.

ACTIVITIES IN LEARNED SOCIETIES

A. Invited/Plenary Talks and/or Seminars

None.

B. Contributed Talks/Posters

England, A.E. Nectar-feeding bat visitation to blooming *Agave palmeri* in New Mexico. Poster presented at 37th Meeting of the American Society of Mammalogists, Albuquerque, NM, June.

England, A.E. 2007. Pollination Ecology of *Agave palmeri* in New Mexico. Oral presentation, Guild of Rocky Mountain Evolutionary and Ecological Biologists, Abiquiu, NM.

Ramotnik, C.A. Effect of wildfire on abundance, detection probability, and arthropod prey base of Sacramento Mountain salamanders (*Aneides hardii*). SW Partners in Amphibians and Reptile Conservation, First Annual Meeting, Albuquerque, NM, May-June 2007.

Ruth, J. M. Abundance and distribution of Arizona Grasshopper Sparrow (*Ammodramus savannarum ammodramus*): current and historical surveys. New Mexico Ornithological Society Annual Meeting, Carlsbad, NM, May 2007.

Ruth, J. M., C. E. Gordon, and T. R. Stanley. Wintering bird-habitat associations and responses to grazing in Arizona semidesert grasslands. American Ornithologists' Union Annual Meeting, Laramie, WY, August 2007 (presented by J.M. Ruth).

Smith, F.A., L. Harding, H.M. Lease, I.W. Murray, A. Raniszewski, and K.M. Youberg. A tale of two species: extirpation, range expansion and evolution in an extreme environment during the late Quaternary. 37th Meeting of the American Society of Mammalogists, Albuquerque, NM, June 2007 (Presented by F.A. Smith).

Smith, F.A., L. Harding, H.M. Lease, I.W. Murray, A. Raniszewski, and K.M. Youberg. A tale of two species: extirpation, range expansion and evolution in an extreme environment during the late Quaternary. Ecological Society of America, San Jose, CA, August 2007 (Presented by F.A. Smith).

Smith, F.A., L. Harding, H.M. Lease, I.W. Murray, A. Raniszewski, and K.M. Youberg. A tale of two species: extirpation, range expansion and evolution in an extreme environment during the late Quaternary. Museum of Vertebrate Zoology Colloquium in Evolutionary Biology, University of California Berkeley, Berkeley, CA, November 2007 (Presented by F.A. Smith).

C. Attendance at Professional Meeting

Bogan, M.A. Annual meeting of the American Society of Mammalogists, Albuquerque, NM, June.

Ramotnik, C.A. Annual meeting of the American Society of Mammalogists, Albuquerque, NM, June.

Ruth, J.M. Annual meetings of the New Mexico Ornithological Society and the American Ornithologists' Union.

Valdez, E.W. Annual meeting of the American Society of Mammalogists, Albuquerque, NM, June.

D. Service as Editor or on Editorial Board of a Journal

Ramotnik, C.A. Associate Editor, Collection Forum (Society for the Preservation of Natural History Collections).

Ruth, J.M., T. Brush, and D.J. Krueper. Associate Editors. Birds of the US-Mexico Borderlands: distribution, ecology, and conservation. Studies in Avian Biology, Volume No. 37.

E. Service as Officer of Professional Society/Organization

Ramotnik, C.A. Society for the Preservation of Natural History Collections (SPNHC): Conservation Committee (Chair, Resources Subcommittee); member of Membership and Publication committees.

Ruth, J.M. New Mexico Ornithological Society, Board Member.

Valdez, E.W. Co-Chair of New Mexico Bat working Group.

OTHER PROFESSIONAL ACTIVITIES**A. Colloquium Presentations**

None.

B. Presentation to General Audience in a Scholarly Capacity**C. Presentations in a Scholarly Capacity at Hearings, Workshops, Legislative Committees, etc.**

None.

D. Scholarly Service as a Member of a Local/State/Regional/National Committee, Panel, etc.

Ramotnik, C.A. Member, New Mexico Endemic Salamander Team.

Ruth, J.M. USGS Partners in Flight (PIF) Co-Coordinator; Chair of PIF National Research Working Group; Member of PIF Science Committee. Steering Committee Member, New Mexico Avian Conservation Partners.

E. Journal Referee

Bogan, M.A. Journal of Mammalogy (5), Western North American Naturalist (3), Southwestern Naturalist (6).

Ruth, J.M. Journal of Arid Environments (1), Arizona Field Ornithologists' web journal (1), Restoration Ecology (1).

Valdez, E.W. Western North American Naturalist (2), Northwestern Naturalist (1).

SERVICE**A. Symposia, Workshops, Conferences etc. Sponsored, Organized, Held, etc.**

Bogan, M.A. Member of local committee for American Society of Mammalogists, Albuquerque, NM, June.

Ramotnik, C.A. Member of local committee for American Society of Mammalogists, Albuquerque, NM, June.

Ruth, J.M. Participated on the Planning Team for the 4th PIF International Conference to be held in McAllen, TX in February 2008.

Valdez, E.W. Chaired session at annual meeting of the American Society of Mammalogists, Albuquerque, NM, June.

Valdez, E.W. Member of local committee for American Society of Mammalogists, Albuquerque, NM, June.

B. Public Service

Ramotnik, C.A. Participated in the Albuquerque Christmas Bird Count.

Ruth, J.M. Participated in the Albuquerque Christmas Bird Count, Four Points Christmas Bird Count (Sevilleta NWR), Peloncillos Christmas Bird Count, and the Portal (AZ) Christmas Bird Count. Annually conducts/participates in two Breeding Bird Survey routes – Counselors, NM and Fence Lake, NM.

ADVANCED STUDY, HONORS, AWARDS, FELLOWSHIPS, ETC.

Bogan, M.A. Served on committee as Faculty Co-Advisor for two doctoral candidates in the Department of Biology, UNM.

Ruth, J.M. Received a National Partners in Flight Leadership Award.

DONATIONS AND GIFTS RECEIVED

None.

CURRENT STAFF

A. Faculty/Staff

Michael A. Bogan—Curator Emeritus

Cindy A. Ramotnik—Museum Specialist (Zoology)

Adrienne Raniszewski, contractor with Arctic Slope Research Corp., Ft. Collins, CO

Janet M. Ruth—Research Ecologist (Ornithology)

Ernest W. Valdez—Wildlife Biologist

B. Graduate students

Angela England—Wildlife Biologist, Ph.D. candidate

Christa D. Weise—Wildlife Biologist, Ph.D. candidate

C. Student Workers and Volunteers

Sarah Manor, intern with DOI National Conservation Education Program

MUSEUM ASSOCIATES

A. Curatorial Associates

B. Research Associates

Paul Cryan, Ph.D., USGS research biologist, Ft. Collins, CO.

Robert B. Finley, Ph.D., emeritus curator, Boulder, CO.

Tony R. Mollhagen, Ph.D., emeritus professor, Texas Tech Univ., Lubbock, TX.
Tom O'Shea, Ph.D., USGS research wildlife biologist, Ft. Collins, CO.
Ernest Valdez, Ph.D., USGS wildlife biologist, Albuquerque, NM.