

2003 Annual Accomplishment Report
Jack H. Berryman Institute
Utah State University
Mississippi State University

Education, Extension, and Research in Wildlife Damage Management

Submitted to
USDA/WS - National Wildlife Research Center
Authorized Departmental Office's Designated Representative

Date: December 10, 2003

Funding Period: October 1, 2002 - September 30, 2003

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Executive Summary
By Drs. Mike Conover and Bruce Leopold

The Jack H. Berryman Institute had a busy and productive year thanks, in large part, to a funding increase from USDA/APHIS/WS. Our eastern branch at Mississippi State University became operational, and we held numerous meetings to begin long-term planning and integration of the institutions. Our first meeting was in September, during which we gathered state directors of USDA/APHIS/WS and faculty to examine research and educational priorities. Our second meeting at MSU involved the Eastern Scientific Advisory Panel to shore up procedural and policy issues for our eastern branch. The third and final meeting was critical, as it was of our Advisory Board, who worked diligently for 2 days to formulate final policy and procedural issues for Berryman (east and west).

The Berryman Institute released its request for research and outreach proposals (RFP), which was open to faculty at other colleges and universities, employees of state and federal wildlife agencies, and individuals with non-governmental agencies. Proposals were accepted in the categories of Research Mini-grants, Student Internships, Graduate Stipends, and Faculty Affiliates. Proposals were evaluated and ranked by the Advisory Panel. This RFP resulted in 39 grant applications and 22 were funded in 13 states, addressing diverse issues such as urban deer, feral swine, beaver impacts, raccoon, and black bear. Funded grants are summarized in more detail later in this document.

During 2003, the Berryman Institute had a membership of 42 undergraduate students, 29 graduate students, and 27 faculty affiliates. Seven former Berryman Institute students began working for the USDA/APHIS/WS during the year.

Background of the Berryman Institute (BI)

The Jack H. Berryman Institute evolved from the Program in Wildlife Damage Management at Utah State University. This program was created in 1990, when it received funding from the USDA/APHIS/WS and became the Jack H. Berryman Institute. During 1993, it was expanded and granted institute status by the university. The Institute began receiving funding from the state of Utah in 1997, and this amount was augmented in 1999.

During 2002, the Berryman Institute shifted from a one-university to a two-university model, when Mississippi State University was invited to become a full partner with Utah State University. This eastern branch became operational in 2003, after receiving funding from the USDA/APHIS/WS.

Clarification of Role of Wildlife Services Research Needs Assessment in Grant Funding

All research and extension projects funded via the eastern branch at MSU are externally reviewed based on criteria which 1) require a linkage with the National Needs Assessment, 2) do not duplicate existing projects within USDA/APHIS/WS, and 3) are relevant to the Berryman Institute mission. A similar procedure was implemented by the western branch for proposals submitted after 2003. Such a process significantly minimizes opportunity for research or outreach which conflicts with goals and activities of USDA/APHIS/WS and the NWRC to be funded.

Explanation of Eastern Branch (MSU) Grant Headings

Faculty Affiliates - Berryman Institute (Eastern Unit) will provide up to \$6,600 of an individual's salary (not to exceed 10% of total salary), including fringe benefits (not to exceed 25% of salary), for faculty conducting a research or education program in wildlife damage management. These individuals will be listed as Berryman Faculty Affiliates. Faculty affiliates may be employees of a university, or a state, federal, or private conservation organization. Faculty affiliate support is for a one year period, but may be renewed. An annual report of significant findings for research or a detailed summary of the education program including products (videotape, CD, etc.) will be the required deliverable. Fringe benefits are in addition to grant amount, i.e., up to stated amount of grant, plus listed percentage available for fringes. Administrative (overhead) costs will not be paid by the Berryman Institute.

Graduate Student Fellowships - Berryman Institute (Eastern Unit) will provide up to \$15,000 towards a graduate stipend for a student who is conducting a research or developing an education program in wildlife damage management. These individuals will be listed as Berryman Graduate Fellows. Graduate Fellow support is awarded for a one year period, but may be renewed. The graduate student must be a currently enrolled student in a wildlife management/wildlife biology/wildlife ecology program and be in good standing with a GPA > 3.00. An annual report of significant findings for research, or a detailed summary of the education program, including products (videotape, CD, etc.), will be the required deliverable. Fringe benefits are in addition to grant amount. Tuition or other fringe benefits exceeding 1% of the stipend may not be requested. Administrative (overhead) costs will not be paid by Berryman Institute.

Undergraduate or Post-Graduate Internships - Berryman Institute (Eastern Unit) will provide up to \$10,000 (plus up to 1% fringe benefits) towards the salary of an undergraduate or graduate student to work with an university, or a state, federal, or private conservation agency. The work experience must deal with an approved research or educational program concerning wildlife damage management. These individuals will be listed as a Berryman Institute Undergraduate/Graduate Intern. Internship support is limited to a one-year period. Each intern will be required to submit a report of his/her activities and their relation to achieving Berryman Institute goals as the required deliverable. Fringe benefits are in addition to grant amount. Administrative (overhead) costs will not be paid by Berryman Institute.

Research Mini-grant - Berryman Institute (Eastern Unit) will provide up to \$5,500 in support of research or educational activities being conducted by an university, or a state, federal, or private conservation agency concerning approved educational or research programs regarding wildlife damage management. These projects will be listed as Berryman Institute Research Grants - Level I. The principal investigator(s) will be required to submit a report of his/her activities and their relation to achieving Berryman Institute goals as the required deliverable. Administrative (overhead) costs will not be paid by Berryman Institute, but up to 1% fringe benefits will be allowed for salaries of workers. For these grants, principal investigator salaries and equipment costs will not be funded.

* The headings above reflect minor revisions (e.g., grant amounts) made for 2004, but are applicable to the 2003 funding year. Two additional categories (Research Maxi-grants and Educational Enhancement Grants) were added for the 2004 funding year (available on our website <https://hdclel.cfr.msstate.edu/berryman/grants.html>). The requirements of Faculty Affiliate, Graduate Research Fellow, and Undergraduate Student are being fully defined and will be stated in the Berryman Institute Bylaws once they are approved by the Advisory Board.

Education, Extension, and Research in Wildlife Damage Management (October 1, 2002 - September 30, 2003)

USU (\$229,794) and MSU (\$38,415) Faculty funded by WS (amount and % of time)

Total Faculty = \$268,209

USU	MSU
Karen Beard (USU) \$5,000, 11%	Lora R. Ballweber (MSU, <i>Zoonotic Diseases of Feral Hogs</i>), \$6,160, 8%
Mary Conner (USU) \$29,947, ?	L. Wes Burger (MSU, <i>Nonlethal Predator Management Strategies</i>), \$7,997, 9%
Michael Conover (USU) \$71,406, 75%	Kevin M. Hunt (MSU, <i>Berryman Strategic Planning and Needs Assessment</i>), \$5,065, 8%
Jennifer Gervais (USU) \$19,591, 42%	Bruce Leopold (MSU, Associate Director of BI) \$15,202, 13.6%
Nicole McCoy (USU) \$5,521, 8%	Richard B. Minnis (MSU, <i>Seroprevalence of Selected Pathogens in Feral Swine</i>), \$3,991, 9%
Frederick Provenza (USU) \$26,617, 33%	*Richard H. Bailey (MSU), \$6,500, minigrant
Robert Schmidt (USU) \$71,712, 98%	*Lora R. Ballweber (MSU), \$6,500, minigrant
	*L. Wes Burger (MSU), \$6,450, minigrant
	*Richard B. Minnis (MSU), \$6,500, minigrant

***Minigrants are not faculty salaries and are not included in salary or fringe totals**

USU (\$0) and MSU (\$40,000) Staff funded by WS (amount and % of time)

Total Staff = \$40,000

Laura Andrews (MSU, Assistant to Director of BI), \$26,000, 80%
Robert Griffin (MSU, Outreach Associate), \$3,000, 100% (intermittent appointment)
Benjamin West (MSU, Outreach Coordinator), \$11,000, 20%

USU (\$58,778) and MSU (\$45,501) Students funded by WS

Total Students = \$104,279

USU	MSU
Rebecca Bartel (MS, USU) - \$2,200	Maria R. Camille Harris, <i>Diseases of Feral Hogs in Mississippi</i> (MS, MSU) - \$10,500
Are Berentsen (MS, USU) - \$7,404	Edith Parks, <i>National and State Survey of Feral Hog Issues</i> (MS, MSU) - \$10,500
Jennifer Borgo (MS, USU) - \$12,032	Student appointment pending, <i>Beaver Population Assessment/Monitoring</i> (BS, MSU) - \$8,167
Jeremy Bruskotter (MS, USU) - \$2,917	Student appointment pending, <i>Reforestation</i> (BS, MSU) - \$8,167
Trevor Fox (BS, USU) - \$124	Student appointment pending, <i>Wildlife Damage Management Technical Assistance in MS</i> (BS, MSU) - \$8,167
Nicki Frey (PhD, USU) - \$13,104	
Justin Harrington (MS, USU) - \$2,960	
Echo Rexroad (MS, USU) - \$14,952	
Jessica Tegt (MS, USU) - \$3,085	
Fringe: USU = \$89,620	MSU = \$18,019 (Faculty and Staff = 23.25%, Students and Intermittent = 1%)
Intermittent = 1%)	Total Fringe = \$107,639

WS personnel functioning as [official] cooperating faculty (e.g., on advisory committees, faculty status, student degree committee)

USU

Dr. Mike Jaeger, NWRC
Dr. Fred Knowlton, NWRC
Dr. John Shivik, NWRC

MSU

Dr. Scott Barras, NWRC
Ms. Kris Godwin, WS
Dr. Jimmy Taylor, NWRC

Grants awarded to other universities or agencies (including funding)

USU - none

MSU:

Faculty Affiliate Grants:

James B. Armstrong, School of Forestry and Wildlife, Auburn University, Alabama, \$8,151, *Food Habits, Habitat and Reproduction in Feral Swine*

Jacob Bowman, Department of Entomology and Wildlife Ecology, University of Delaware, Delaware, \$7,875, *Deer Movements and Controlled Hunts*

Lora Smith, Jones Ecological Research Center, Georgia, \$7,650, *Predator Impacts on Gopher Tortoise*

Graduate Fellowships: (Fellowship refers to term used for 2003 graduate awards and does not designate student appointed as Berryman Institute Fellow)

James B. Armstrong - PI, graduate student appointment pending, School of Forestry and Wildlife, Auburn University, Alabama, \$10,605, *Feral Hogs/Damage Control*

Scott Hygnstrom - PI, graduate student appointment pending, University of Nebraska-Lincoln, Nebraska, \$10,605, *Influence of White-tailed Deer Movements in Disease Transmission*

David Ehrenfeld - Faculty Advisor, Joseph Paulin - graduate student, Cooperative Extension Service, Rutgers University, New Jersey, \$10,605, *Black Bear Issues Survey*

Undergraduate/Post-graduate Internships:

Jacob Bowman - PI, intern appointment pending, Department of Entomology and Wildlife Ecology, University of Delaware, Delaware, \$7,128, *Deer Movements in an Urban Environment*

Mike Mengak - PI, intern appointment pending, Warnell School of Forest Resources, University of Georgia, Georgia, \$8,250, *Communication Skills Development*

Mini-Grants:

Stephen A. DeStefano, MA Coop Fish and Wildlife Research Unit, University of Massachusetts, Massachusetts, \$6,444, *Demographics and Management of Beavers in an Urban-Rural Gradient*

Robert J. Gates, School of Natural Resources, Ohio State University, Ohio, \$6,461, *Raccoon Movements Relative to Distribution*

Education

Undergraduate and graduate courses taught related to WS needs

USU

Michael Conover: FW 3300 Wildlife Behavior
FW 4250 Advanced Internships with USDA/WS
FW 5300/7400 Principles of Wildlife Damage Management

MSU

Kris Godwin:
WF 4213, Wildlife Damage Management

Michael Conover and Michael Bodenchuk:
FW 4810 Readings: Wildlife Damage Management

Robert Schmidt:
ENVS 3600, Living with Wildlife
ENVS 6300, Wildlife Damage Management Policy

On-line and independent study courses

USU

FRWS 2200, Ecology of Our Changing World
FRWS 4810, Directed Readings in Wildlife Damage Management
FRWS 4950, Special Topics: Wildlife Biology
FRWS 4950, Special Topics: Vegetation and Landscapes in Relation to Wildlife

MSU

None

BI students who completed degrees at USU and MSU and their current employers

USU

Rebecca Bartel (MS, USU) - Ph.D. student at NCSU
Mike Burrell (BS, USU) - USDA/WS
Eric Covington (BS, USU) - USDA/WS
Justin Harrington (BS, USU) - Graduate student at USU
Luke Smith (BS, USU) - Studying on a Kibbutz in Israel
Todd Sullivan (MS, USU) - USDA/WS
Dalin Tidwell (BS, USU) - USDA/WS

MSU

None

BI graduates hired by USDA/APHIS/Wildlife Services during 2003:

USU

Olin Albertson - Washington
Valerie Burton - Utah
Mike Burrell - Arizona
Eric Covington - California
Dalin Tidwell - California

Daren Williams - Colorado
Jared Zierenber - Arizona

MSU
none

Student Travel grants (\$10,539)

The BI encourages its students to attend professional meetings by providing travel grants to them.

MSU - none

USU:

BI students attending the IAFWA meeting in Big Sky, MT:

Nicki Frey, Heather Keough

BI Students Attending WCC-95 Meeting in Reno, NV:

Are Berentsen, Nicki Frey, Renee Chi, Trevor Fox, Luke Smith, Jake Bonham,
Lee Rindlisbacher

BI Students Attending EWCC in Hot Springs, AK:

Are Berentsen, Trevor Fox, Luke Smith, Jake Bonham, Lee Rindlisbacher,
Wesley Jolley, Justin Harrington, Dalin Tidwell, Jeff Peterson, Garrett Savory

BI students attending The Wildlife Society Meeting in Burlington, VT:

Are Berentsen, Renee Chi, Heather Keough, Sarah Lupis, Jennifer Lynch,
William Bower, Nicki Frey, Ron Greer, Lee Rindlisbacher, Mike Smith

Educational grants awarded to universities or agencies (including funding)

USU - none

MSU:

Graduate Fellowships: (Fellowship refers to term used for 2003 graduate awards and does not designate student appointed as Berryman Institute Fellow)

James B. Armstrong - PI, graduate student appointment pending, School of Forestry and Wildlife, Auburn University, Alabama, \$10,605, *Feral Hogs/Damage Control*

Lora Ballweber - Faculty Advisor, M. R. Camille Harris - graduate student, College of Veterinary Medicine, Mississippi State University, Mississippi, \$10,605, *Diseases of Feral Hogs in Mississippi*

Scott Hygnstrom - PI, graduate student appointment pending, University of Nebraska-Lincoln, Nebraska, \$10,605, *Influence of White-tailed Deer Movements in Disease Transmission*

Richard Minnis - Faculty Advisor, Edith Parks - graduate student, Department of Wildlife and Fisheries, Mississippi State University, Mississippi, \$10,605, *National and State Survey of Feral Hog Issues*

David Ehrenfeld - Faculty Advisor, Joseph Paulin - graduate student, Cooperative Extension Service, Rutgers University, New Jersey, \$10,605, *Black Bear Issues Survey*

Undergraduate/Post-graduate Internships:

Jacob Bowman - Faculty Advisor, undergraduate student intern appointment pending, Department of Entomology and Wildlife Ecology, University of Delaware, Delaware, \$7,128, *Deer Movements in an Urban Environment*

Jeanne C. Jones - Faculty Advisor, undergraduate student intern appointment pending, Department of Wildlife and Fisheries, Mississippi State University, Mississippi, \$8,250, *Beaver Population Assessment/Monitoring*

Jeanne C. Jones - Faculty Advisor, undergraduate student intern appointment pending, Department of Wildlife and Fisheries, Mississippi State University, Mississippi, \$8,250, *Reforestation*

Mike Mengak - Faculty Advisor, undergraduate student intern appointment pending, Warnell School of Forest Resources, University of Georgia, Georgia, \$8,250, *Communication Skills Development*

Ben West - Faculty Advisor, undergraduate student intern appointment pending, Department of Wildlife and Fisheries, Mississippi State University, Mississippi, \$8,250, *Wildlife Damage Management Technical Assistance in MS*

Outreach Efforts

USU:

Beard, Karen

Karen gave seminars on the ecology and management of coqui frogs to the Coqui Working Work at the University of Hawaii, Hawaii Nurserymen's Association (Hilo, Hawaii), and the USFWS in Honolulu. She also visited the USDA/WS/NWRC/Hawaii Field Station and discussed with its faculty the management of this exotic frog.

Bissonette, John.

John provided technical assistance related to reducing wildlife-vehicle collisions to the following agencies and organizations:

Utah:	UDOT, Salt Lake City URS Corporation, Devils Canyon UDWR, Southwestern UT SWCA, Inc. Environmental Consultants, Salt Lake City
Colorado:	Science Applications International Corporation, Littleton, CO
Montana:	Western Transportation Institute, Bozeman, MT Montana Department of Transportation, Helena, MT
New Jersey:	N.J. Department of Transportation, Basking Ridge, NJ
Idaho:	Idaho Transportation Department, Boise, ID
Canada:	Tecsult Environment Inc., Quebec B.C. Ministry of Transportation and Highways, Victoria, B.C. Newfoundland Transportation Department, Terra Nova, N. P.
Germany:	Institute of Wildlife Research, Hanover, Germany
Spain:	C.L. Garcia, Madrid, Spain
Great Britain:	Chapel Cleve, Minehead, UK

Conover, Michael

News media contacts: *Newsday* (NY), *Water Gardening Magazine*, *PBS Nature Show*, *Wall Street Journal*, *Horticulture Magazine*, *Readers Digest* and *Arkansas Democrat Gazette*.

Mike served as President of the National Animal Damage Control Association

Schmidt, Robert

News media contacts: Logan Herald Journal, Salt Lake City Tribune, Deseret News, Vernal Express (UT), KUSU (UT radio), KUER (UT radio), KCPW (UT radio), KUTV (UT TV), NationalGeographic.com

Robert was a columnist for *Wildlife Control Technology* on issues of professionalism:

"The turtle and the hare. " WCT 9(5):6-7.

"Welcome of our world. " WCT 9(6):6-7.

"Expand your horizons. " WCT 10(2):6-7.

"Responding to customer complaints: develop your own program. " WCT 10(2):6-7.

"Recognize the damage or damage potential. " WCT 10(5):6-7.

Robert also wrote an article entitled "Forget catching ghost cat" for the Honolulu Advertiser.

Robert served as Coordinator of WDAMAGE listserv.

Robert reviewed the section of euthanasia for the USDA/WS Field Operations Training Manual

MSU:

Griffin, Bob

Bob is Outreach Associate for the Berryman Institute and is developing, with Ben West, a course entitled *Administration, Leadership, and Communication for Wildlife Damage Professionals* for curriculum of Mississippi State University.

West, Ben

Ben is Outreach Coordinator for the Berryman Institute and taught the Wildlife Damage Management Section of a short course presented to employees of the U.S. Army Corps of Engineers. Ben is also developing, with Bob Griffin, a course entitled *Administration, Leadership, and Communication for Wildlife Damage Professionals* for curriculum of Mississippi State University.

Presentations at WS State/Regional Meetings

USU:

Conover, Mike

Mike Conover attended USDA/WS state meeting in Port Townsend, Washington.

MSU:

Leopold, Bruce

Bruce attended the Mid-Atlantic States Meeting in Crossnore, SC, and presented *Predator Control: Here We Go Again?*

Bruce also conducted, with Kevin Sullivan, an informal session of professional development and interviewing strategies at Mid-Atlantic.

Personnel who took BI courses and their courses or became 486-qualified

USU:

WS employees who take USU courses are not required to identify themselves as such. Robert Schmidt estimates that 38 WS employees took USU courses this year. Thirteen WS employees asked Robert

Schmidt to review their academic portfolios.

We are unaware of any WS employees who became 486-qualified this year that we can claim to have helped.

MSU - none

BI outreach grants awarded to universities or agencies (including funding)

USU - none

MSU:

Ben West - Faculty Advisor, undergraduate student intern appointment pending, Department of Wildlife and Fisheries, Mississippi State University, Mississippi, \$8,250, *Wildlife Damage Management Technical Assistance in MS*

Diversity efforts within WS

USU: Four of our 5 PhD students are female, as are 7 of 14 M.S. students, and 4 of 34 B.S. students. One student is African-American.

MSU: At least 2 African-American female, complete breakdown not yet available as some appointments are pending.

Research

Undergraduate and graduate research supported at USU (\$178,423) and MSU (\$45,960), with brief summaries (Note some of these funds have been reported earlier under faculty and student support)

USU:

Beard, Karen. Exploratory research on the environmental impact of exotic coqui frogs in Hawaii. (\$3,000, USU)

Beard, Karen. Quantifying deer grazing effects on plant community structure and function in eastern Washington, Berryman Institute Grant, Utah State University (\$38,000, USU).

We are resurveying State of Washington Wildlife Areas that contain pairs of ungulate exclosures to observe the effects of 50 years of deer grazing in eastern WA. Using the original data taken from these sites in 1952 and 1965, we are addressing several hypotheses about changing in community and ecosystem structure and function with deer exclusion.

Conner, Mary. Development of a spatially explicit component for the coyote population model. (\$30,000, USU)

Darrow, Patrick. Habituation of coyotes to motion-activated. (\$10,750, USU)

Gervais, Jennifer. Modeling the relative effectiveness of fertility control and lethal control for vertebrate pest of agricultural crops. (\$21,223, USU)

Provenza, Fred. Understanding robin depredation on grapes. (\$25,000, USU)

Schmidt, Robert, and Are Berentsen. Latency to Activation and Behavioral Responses of Coyote to the Coyote-Lure Operative Device (CLOD). (\$7,000 which is budgeted separately, USU)

The CLOD is a bait delivery device designed in the 1980s for coyotes. It has the potential advantage of serving as a repeated “reward” stimulus to coyote ingesting its non-toxic contents on a regular basis. When the appropriate level of conditioning is achieved, the contents can be modified to include an active ingredient, such as a biological marker or a contraceptive agent. This study investigated the response of coyotes to CLODs with a single exposure in both familiar and unfamiliar environments, the response times of coyotes to repeated exposures to the CLOD, and the behavior of paired coyotes to multiple exposures to the CLOD, all in captive settings.

Schmidt, Robert . Extension, Outreach, and Continuing Education in Wildlife Damage Management (\$10,000 plus the BI pays Dr. Schmidt’s salary which is budgeted separately, USU).

Schmidt, Robert. The Utah Wolf Project. (BI pays Dr. Schmidt’s salary which is budgeted separately, USU).

We continue to investigate future scenarios that put gray wolves into the pool of other large predators (black bears, coyotes, and mountain lions) in the state. In particular, the project focuses on the human dimensions of gray wolf management. Since October, the primary issue has been the development of a survey instrument that obtains information about the acceptability of various management scenarios to gain a greater understanding of general public, hunter, and urban and rural responses to predator management areas. Robert Schmidt reports that “gray wolves are dispersing through natural processes into Utah. As wolves arrive, they will join black bears, cougars, and coyotes as large predators in the state. I am analyzing the impacts of this addition, and getting out information to stakeholders about these impacts. In addition, I am surveying Utah residents regarding their attitudes toward wolf management scenarios.”

Schmidt, Robert. Developing Training Opportunities for Wildlife Damage management Students and Professionals: A Short Course in Wildlife Capture, Handling, Immobilization and Euthanasia. (\$6,000 plus the BI pays Dr. Schmidt’s salary which is budgeted separately, USU).

Tegt, Jessica. Creation of Public Service Announcements for television on wildlife damage. (\$27,450, USU)

MSU:

Ballweber, Lora and Camille Harris. Diseases of feral hogs in Mississippi. (\$10,605, MSU)

Summary is not presently available, as work was not funded until Sept. 2003.

Jones, Jeanne C., and student intern (TBA). Beaver population assessment/monitoring. (\$8,250, MSU)

Summary is not presently available, as work was not funded until Sept. 2003.

Jones, Jeanne C., and student intern (TBA). Reforestation (\$8,250, MSU)

Summary is not presently available, as work was not funded until Sept. 2003.

Minnis, Richard, and Edith Parks. National and state survey of feral hog issues. (\$10,605, MSU)

Summary is not presently available, as work was not funded until Sept. 2003.

West, Ben, and student intern (TBA). Wildlife damage management technical assistance in Mississippi. (\$8,250, MSU)

Summary is not presently available, as work was not funded until Sept. 2003.

BI research grants awarded to universities or agencies, including funding (Note these funds have been reported earlier)

USU - none

MSU:

Faculty Affiliate Grants:

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Mini-Grants:

Stephen A. DeStefano, MA Coop Fish and Wildlife Research Unit, University of Massachusetts, Massachusetts, \$6,444, *Demographics and Management of Beavers in an Urban-Rural Gradient*

Robert J. Gates, School of Natural Resources, Ohio State University, Ohio, \$6,461, *Raccoon Movements Relative to Distribution*

Cooperative research with WS employees (with brief summaries)

MSU - none

USU:

Karen Beard is looking forward to working with USDA/WS employees in Hawaii on the coqui invasion.

Mike Conover is working with Mike Bodenchuk on two studies. One examines the impact of predation on recruitment of waterfowl at the Bear River National Wildlife Refuge. The other examines whether the control of coyotes for livestock protection also increases the survival of mule deer fawns in the local area.

Publications

Books

MSU - none

USU:

Forman, R. T., T., D. Sperling, J. A. Bissonette, A. P. Clevenger, C. D. Cutshall, V. H. Dale, L. Fahrig, R. France, C.R. Goldman, K. Heanue, J.A. Jones, F.J. Swanson, T. Turrentine, and T.C. Winter. 2003. *Road Ecology; Science and Solutions*. Island Press, Covelo, CA.

deVos, J.C., Jr. , M. R. Conover, and N. E. Headrick (editors). 2003. *Mule Deer Conservation: Issues and Management Strategies*. Berryman Institute Press, Utah State University, Logan, UT. 240 pp.

Theses and Dissertations

MSU - none

USU:

Bartel, R. 2003. Factors influencing the foraging behavior of coyotes in the Curlew Valley of Utah. Thesis. Utah State University.

Bibliographies

MSU - none

USU:

Wolf, T. L., and M. R. Conover. 2003. Feral pigs and the environment: an annotated bibliography. Jack Berryman Institute, Publication 21, Utah State University, Logan; Mississippi State University, Starkville, 55 pp.

Sullivan, T. 2003. Deer vehicle collisions: an analysis of the nation-wide status and a new mitigation technique. Thesis. Utah State University.

Book Chapters

MSU - none

USU:

Conover, M. R., and N. H. McCoy. 2003. Positive and negative values of blackbirds. Pages 17-20. In: *Management of North-American Blackbirds*. G.M. Linz, editor. USDA-APHIS National Wildlife Research Center., Fort Collins, CO. 118 pp.

McCoy, N.L. 2002. Economic Tools for Managing Impacts of Urban Canada Geese. Pages 117-122 In: *Human Conflicts with Wildlife: Economic Considerations*. USDA-APHIS National Wildlife Research Center, Fort Collins, CO. 180 pp.

Publications in Conference Proceedings

MSU - none

USU:

Schmidt, R. H. 2002. Playing with fire: trust and the credibility of the profession. Proceedings of the Vertebrate Pest Conference. 20:3-6

Publications in Peer-reviewed Journals

MSU - none

USU:

Barlet, R. A., and M. W. Brunson. 2003. Effects of Utah's coyote bounty program on harvester behavior. *Wildlife Society Bulletin*. 31:736-743.

Bissonette, J.A. 2002. Scaling roads and wildlife: the Cinderella Principle. *Zeitschrift für Jagdwissenschaft Supplement* 48: 208-214.

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