



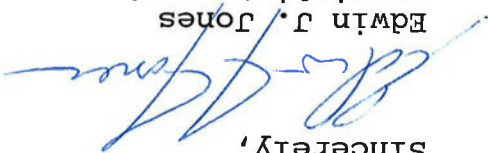
February 10, 1993

Nancy Ohlsen
Blue Ridge Parkway
200 BB&T Building
One Pack Square
Asheville, NC 28801
Dear Ms. Ohlsen:

Please find enclosed the final report for the project conducted by John Parsons. I believe it is complete, but if there are any questions, please feel free to contact me or John. I apologize for the delay in getting this to you.

Thank you for your cooperation in this study. I hope that the Blue Ridge Parkway can benefit in some way with the information gathered.

Sincerely,


Edwin J. Jones
Specialist In-Charge
Associate Professor

Encl.

A FINAL REPORT

to the
United States Department of the Interior
National Park Service
Blue Ridge Parkway

Diversity of Mammals Found in Declining Spruce-Fir Forests
of the Balsam, Black and Roan Mountains
in North Carolina

John Parsons
Master Candidate
and
Dr. Edwin J. Jones
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This Project was Partially Funded by
THE NATURE CONSERVANCY

BLR N 006

Region

Blue Ridge Parkway Nature Trail (BRP) in the
Balsam Mountains (see appendix)

NRSP # or RMP Project #
N2219 or NCWRC # 92 ES 53

Year

July 22, 1992 to November 31, 1992

Project Title

Diversity of Mammals Found in Declining Spruce-Fir
Forests of the Balsam, Black and Roan Mountains in
North Carolina.

Field of Study

Zoology and Forestry

Principal Investigator

Dr. Edwin J. Jones
Associate Professor and Specialist in Charge

Department of Forestry

North Carolina State University

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Co-investigators (None)

John L. Parsons, a Master Candidate, did the field
work.

Estimated Funding

\$	National Park Service
\$	Park Base
\$	Region Base
\$	Fire Pro
\$	Service - NRP
\$	Service - Air
\$	Service - Water
\$	Service - Acid Rain
\$	Other Federal Agency
\$	State/Local Agency
\$	Academic Institution
\$ 850.00	Non-profit institution
\$ 4,600.00	Personal/Volunteer
\$	Total

Date Started	July 22, 1992
Anticipated End	May 15, 1993
Percent Done	75 %

Project Objectives

Determine the following in spruce-fir forests of the Balsam, Black and Roan Mountains with light and severe mortality rates.

- 1) Population estimates of small mammals.
- 2) The relationship of mammal diversity and vegetation at different elevations.
- 3) Mammal diversity estimates.

Progress to Date

A total of 12 small mammal trapping grids (four each in the Balsam, Black and Roan Mountains of North Carolina) have been completed at this time. The vegetation analysis has been finished on seven of the twelve trapping grids. The mammal and vegetation data is currently being analyzed. This project will be completed by May of 1993.

Significant Findings

Small mammals of five species were captured from the spruce-fir habitats with severe mortality rates (more than 70% of the dominant and codominant trees are dead) in the BRP Nature Trail located in the Balsam Mountains. The southern red-backed vole (*Clethrionomys rapperti*) and deer mice (*Peromyscus maniculatus*) were the species captured most. The short-tail shrew (*Blarina brevicauda*), masked shrew (*Sorex cinereus*) and red squirrel (*Tamiasciurus hudsonicus*) were captured least.

When the small mammal trapping grids were placed in the severe spruce-fir habitats instead of the light spruce-fir habitats (less than 30% of the dominant and codominant standing trees are dead) the southern red-backed vole and deer mice populations increased slightly. The short-tailed shrews, masked shrews and red squirrels were captured a few times in both types of habitats.

Specimen Status

Listed below are the results of the small mammals captured in the BRP Nature trail on the Balsam Mountains (please refer to the appendix). Grids three and four had a total of 27 large and small Sherman live traps placed every 10 meters in a trapping grid measuring 20 by 80 meters, for a total of 54 live traps per grid area. The traps were baited with peanut butter and rolled oats. The traps were set for five

Specimen Status (continued)
 days for a total of 270 trap nights per trapping period. Listed below are the small mammal results from the two trapping grids located in the BRP Nature Trail;

Location		Cg	Pm	Bb	Sc	Th
Grid 3: Balsam Mountains (severe habitat)						
Unmarked	10	6	2	0	0	0
Marked	2	7	0	0	0	0
Total	12	13	2	0	0	0
Grid 4: Balsam Mountains (severe habitat)						
Unmarked	7	11	1	1	1	1
Marked	13	7	0	0	0	0
Total	20	18	1	1	1	1

Abbreviations are as follows: Bb: Blarina brevicauda, Cg: Clethrionomys raptori, Pm: Peromyscus maniculatus, Sc: Sorex cinereus and Th: Tamiasciurus hudsonicus.

Bibliography

Adams, D. A. and J. S. Hammond. 1991. Changes in forest vegetation, bird, and small mammal populations at Mount Mitchell, North Carolina-1959/62 and 1985. Journal of the Elisha Mitchell Scientific Society. 107(1):3-12.
 Dull, C. W., J. D. Ward, H. D. Brown, G. W. Ryan, W. H. Clerke and R. J. Uhler. 1988. Evaluation of spruce and fir mortality in the southern Appalachian Mountains. Protection Report R8-Pr 13. 1-95 p.
 Powell, R. A. 1990. Small mammal occurrence in high elevation habitats of Great Smokey Mountain National Park. Final Report, Part A. Cooperative agreement CA-5000-3-8025 between USDI National Park Service and North Carolina State University. Raleigh, North Carolina State University. 14 p.
 Smith, T. R. and J. M. Mouzon. 1985. Small mammal survey in the spruce-fir area of Great Smokey Mountains National Park. Final Research Report, unpublished. Great Smokey Mountains National Park, Gatlinburg, Tn.

Plans for Next Year
 We do not have any research plans at this time for the following year.

Keywords (up to four)
Small mammals; spruce-fir forests; forest decline; mammal diversity.

Species Studied
Short-tailed shrews *Blarina brevicauda*, red-backed voles *Clethrionomys rapperti*, deer mice *Peromyscus maniculatus*, masked shrew *Sorex cinereus* and red squirrel *Tamiasciurus hudsonicus*.

Family/Order Studied			Species	
			Family	Order
Deermice	Cricetidae	Rodentia		
Masked shrew	Soricidae	Insectivora		
Red-backed voles	Cricetidae	Rodentia		
Red squirrel	Sciuridae	Rodentia		
Short-tailed shrew	Soricidae	Insectivora		

APPENDIX 2

BALSAM MOUNTAINS
 RICHLAND BALSAM
 SEVERE STUDY AREAS 3 & 4

