

**FEDERAL AID ANNUAL  
RESEARCH PERFORMANCE REPORT**

ALASKA DEPARTMENT OF FISH AND GAME  
DIVISION OF WILDLIFE CONSERVATION  
PO Box 115526  
Juneau, AK 99811-5526

**Alaska Department of Fish and Game  
Wildlife Restoration Grant**

**GRANT NUMBER:** W-33

**SEGMENT NUMBER:** 10

**PROJECT NUMBER:** 7.01

**PROJECT TITLE:** Develop and evaluate indices for assessing marten population status and trend in Interior Alaska

**PROJECT DURATION:** 1 July 2010–30 June 2013

**REPORTING PERIOD:** 1 July 2011 – 30 June 2012

**REPORT DUE DATE:** 1 September 2012

**PRINCIPAL INVESTIGATOR:** Craig L. Gardner, ADF&G; coauthor: Nathan J. Pamperin, ADF&G

**COOPERATORS:** Knut Keilland, University of Alaska Fairbanks

**WORK LOCATION:** Game Management Units 12, 19D, 20A, 20B, 20C, 20D, 20E, 20F, 25B, and 25C

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**I. PROGRESS ON PROJECT OBJECTIVES DURING LAST SEGMENT**

**OBJECTIVE 1:** Determine the value of monitoring gender, young of year:adult female (YOY:AdF) ratios, diet and fecundity (pregnancy rate and blastocysts counts) of harvested marten to predict marten population status and composition for use by trappers to manage their traplines.

During FY11 and FY12, we necropsied 308 and 1,183 marten carcasses, respectively. Five trappers from 4 areas (Units 19D, 20A, 20B, and 12) contributed the FY11 sample and 17 trappers from 9 areas, the FY12 sample. For each carcass, we determined gender; aged as an adult or young of years (YOY) based on skull characteristics; determined pregnancy by the presence of blastocysts in the uterine horns; and collected muscle, hair and claw samples to determine seasonal diets using stable isotope analyses. We also pulled the lower fourth premolar and sent it to an independent laboratory to further age females. The stable isotope analyses were conducted by specialists at the University of Alaska Fairbanks. Results are pending for age data collected during FY12 and the stable isotope analyses for FY11 and FY12. Additional data are necessary to evaluate if any of these variables are useful indicators of marten population trend. Preliminary findings indicate that throughout most of western and central Interior Alaska a reproductive failure occurred during May–September 2011 affecting harvest composition during November 2011–February 2012 trapping season; very few YOYs were caught. During most years, this age class comprises most of the harvest (Flynn and Schumacher 2009).

### Literature Cited

FLYNN, R. W., AND T. V. SCHUMACHER. 2009. Temporal changes in population dynamics of American martens. *Journal of Wildlife Management* 73(8):1269–1281.

## **II. SUMMARY OF WORK COMPLETED ON JOBS IDENTIFIED IN ANNUAL PLAN THIS PERIOD**

### JOB/ACTIVITY 1A: Literature review.

I conducted monthly literature reviews.

Federal funds were used to pay my salary while conducting this task. On a monthly basis, I conducted a literature search for information on marten population dynamics, productivity, and food habits and on stable isotope analyses for mammals. I have acquired numerous publications that will help interpret our results.

### JOB/ACTIVITY 2: Necropsy marten carcasses.

We collected and necropsied marten carcasses.

Federal funds were used to pay for my salary while working on this task. During FY12, we necropsied 1,183 marten carcasses collected from 17 trappers in 9 areas in Interior Alaska. Overall, percent male was 59.8, the YOY/AdF ratio was 1.1, percent pregnancy rate for marten  $\geq 1$ -year-old was 71, average number of blastocysts/pregnant female was 2.7. The YOY/AdF ratios were well below the recommended minimum of 3.0 YOY/Ad (Strickland and Douglas 1987) throughout the Interior except for isolated areas in Units 20E and 20F.

### Literature Cited

STRICKLAND, M. A., AND C. W. DOUGLAS. 1987. Marten. Pages 530–546 *in* M. Novak, J. A. Baker, M. E. Obard, and B. Malloch, editors. *Wild furbearer management and conservation in North America* North Bay, Ontario, Canada, Ontario Trappers Association.

### JOB/ACTIVITY 3: Age structure of harvest.

I collected a premolar from each harvested female  $\geq 1$ -year-old to determine age structure of the harvest.

Federal funds were used to pay for my salary to extract and prepare teeth for aging and for laboratory processing and cementum aging by Matson's Laboratory, LLC (Milltown, MT). I sent a tooth from 362 adult female marten to Matson's Laboratory for aging. Results are pending.

### JOB/ACTIVITY 4: Stable isotope analyses.

I collected a muscle, claw, and hair sample from each of the harvested females  $\geq 1$ -year-old for stable isotope analyses to determine seasonal diets.

Federal funds were used to pay for my salary while working on this task and for processing and conducting stable isotope analyses by the University of Alaska laboratory. I sent muscle, claw, and hair samples from 362 adult female marten to a laboratory at the University of Alaska

Fairbanks specializing in stable isotope analyses to evaluate diet in the different sampling areas relative to productivity. Results are pending.

JOB/ACTIVITY 5E: Data analysis and reporting.

I began data analysis and reporting.

Federal funds were used to pay my salary while working on this task. We summarized our FY12 necropsy results in a report distributed to Interior area biologists and to the individual trappers involved in the study.

#### **IV. PUBLICATIONS**

None.

**PREPARED BY:** Craig L. Gardner

**DATE:** 6 August 2012