Alberta Conservation Association

2018/19 Project Summary Report

Project Name: Working with Alberta's Trappers to Monitor Furbearer Population Trends

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Project Lead: Robert Anderson

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Partnerships

Alberta Environment and Parks
Alberta Trappers' Association

Key Findings

- The revised logbook focused on marten so that species-specific information collection could involve a wide range of trappers. A total of 126 logbooks from 2017/18 were received and analyzed, up from only ten in 2016/17.
- On average, trappers set 34 marten traps for about 53 days, harvesting an average of ten marten. The average Catch Per Unit Effort was 0.70 marten per 100 trap nights (range 0–5.64, S.E. = 0.08).
- A total of 986 marten were classified to age class by trappers following skull musculature diagrams developed in Alaska, then processed by a lab to get true age. We found no difference in the overall classification when we compared trapper estimates to lab results;

however, trappers were more accurate with males than females. Further training may improve this.

- A digital version of the logbook was developed, allowing trappers to submit their 2018/19 data via computer or smart phone.

Introduction

In 2014, Alberta Trappers' Association (ATA) developed a detailed logbook for volunteer trappers to record trapping activities and species harvest. We have been helping them with revisions to the original format that will assist with measuring population trends. For the 2017/18 season logbook entries focused on marten specifically, given their popularity and widespread distribution, and lack of a prescribed harvest quota. ATA adopted a method for trappers to determine age class of marten from an approach first developed by Alaska biologists that uses the temporal muscles of the skull (Magoun et al. 1988; Flynn and Schumacher 2016). We are assisting trappers with testing the accuracy of this method as applied by a diverse citizen science group.

Methods

Information collected with the logbook included location (Registered Fur Management Area number), contact information, and an estimate of the number of hours spent in various trapline-related activities each month (e.g., preparation, setting and checking traps, etc.). One logbook was submitted per trapline. Trappers were asked to document their harvested marten by sex (male/female) and age (juvenile/adult) using the skull muscle method (Magoun et al. 1988, Flynn and Schumacher 2016), as well as their trapping effort by providing an estimate of the average number of traps set at any given time and the average length of time (days) that those traps would remain set. Harvest information was used to calculate ratios of males to females and juveniles to adult females in the harvest. From the estimate of trap nights (number of traps set multiplied by number of days set), we calculated a catch per unit effort (CPUE; number of marten caught per 100 trap nights) for each trapper. A report was prepared for internal ATA use,

with results summarized at the provincial, Natural Region, and Fur Management Zone (FMZ) levels.

Those trappers who were interested in participating were asked to submit up to ten skinned marten skulls to assist with an assessment of the accuracy of the muscle-based aging method. Prior to submission, trappers noted gender from the carcass and identified each skull to age class using the Alaska guidelines (Magoun et al. 1988; Flynn and Schumacher 2016). To account for individual and method-specific variation, ACA staff worked in teams of two when processing trapper-submitted skulls. One staff quickly identified each marten skull to age class similarly to how trappers might do it in an actual skinning situation (a short glance at the skull prior to moving on to the next one), while the other staff member took detailed measurements of skull length and temporal muscle coalescence. A tooth was extracted for laboratory aging to compare actual age to the class as determined by trappers and again by biologists.

Results

During fall of 2017, ACA staff visited 20 of 23 trapping locals province-wide, presenting on both the wolverine project results and the new logbook/marten aging trial initiative. A total of 126 logbooks were received by July 20, 2018 (Figure 1).

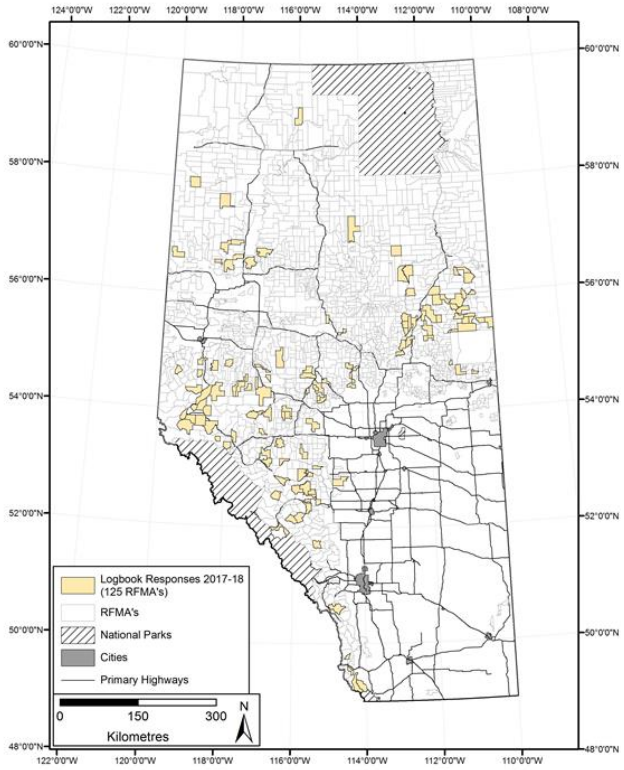


Figure 1. Alberta Trappers' Association logbook responses received from trappers for the 2017/18 trapping season, by July 20, 2018.

Across the province, the mean monthly time spent on trapping activities ranged from 4 hours in June to 79 hours in December (Figure 2), with an overall average of 186 hours spent per trapline on all trapping-related activities. Nearly half of all time spent was used on setting or checking traps (42%), followed by preparation (17%), cabin maintenance (18%), scouting (12%), and handling fur (11%).

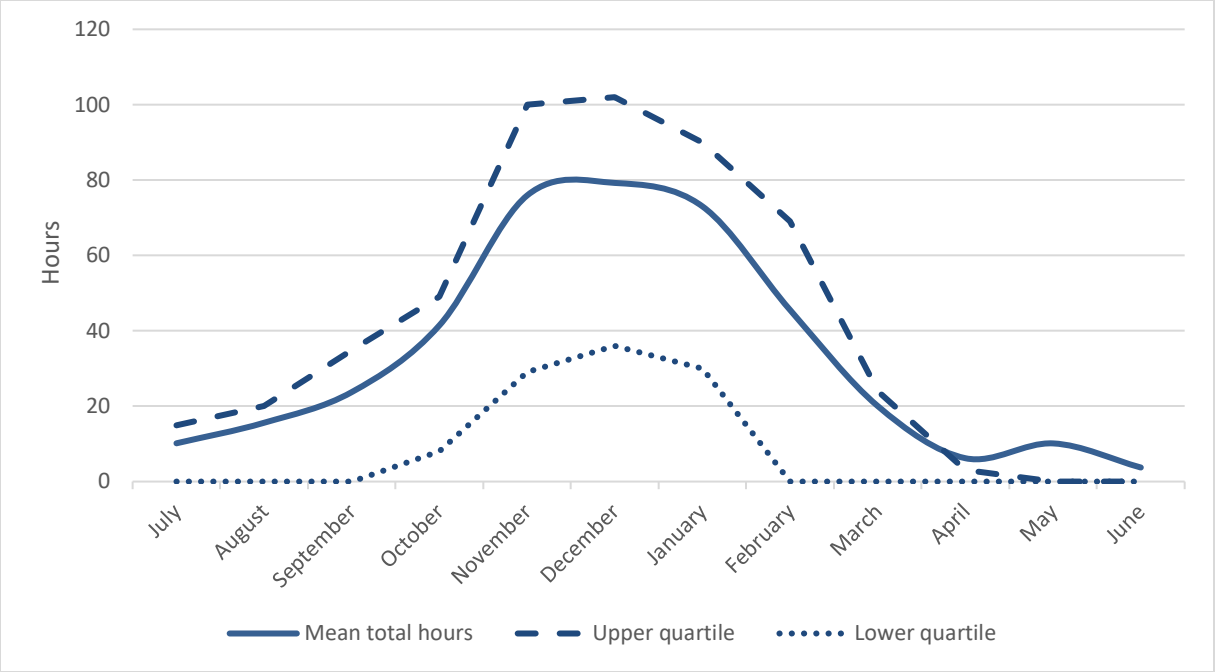


Figure 2. Average and upper and lower typical number of hours spent on trapping activities (prep, scout, set/check, fur, and cabin) during the 2017/18 trapping season.

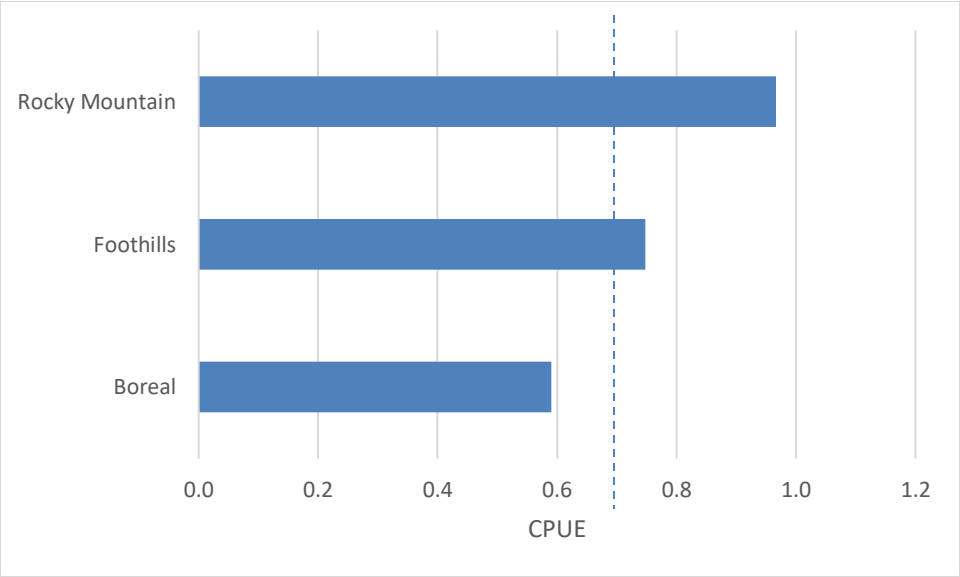


Figure 3. Average marten catch per unit effort (CPUE) for 2017/18 in each Natural Region. Dashed line represents the mean for trappers across the province.

The number of logbooks submitted produced good data at the provincial level but were often less than we'd like to see for breaking the numbers down further. The average (mean) CPUE across

the province was 0.70 marten per 100 trap nights (range 0–5.64, S.E. = 0.08). RFMAs within the Rocky Mountain Natural Region had the highest CPUE (Figure 3) but were also the most variable due to low sample size. Catch within FMZs varied from less than 0.4 to greater than 1.4, but insufficient sample sizes created a great deal of uncertainty. The ratio of male to female harvest across the province was 1.74 males for each female.

A total of 986 marten skulls were collected from 110 trappers. We found that overall (males and females combined), trappers had correctly classified the marten skull ages 73% of the time. Our staff repeated this method with an overall accuracy of 82%. We speculate that the difference between trapper and biologist accuracy can largely be attributed to the training that occurred prior to skull processing and the number of skulls handled per individual. The biologists handled many more skulls than individual trappers. We found that both trappers and biologists were better at correctly identifying age class for males than females (approximately 20% difference). When looking at the pooled data, a Chi-Square Goodness of Fit test identified no significant differences between the overall trapper and lab age class distribution, but there were differences when viewed by sex. No differences were found at any level when we compared the visual assessment results from ACA staff with those from the lab analysis.

Conclusions

There has been a sizeable increase in logbook participation; however, we still need a larger sample size before we will be confident in breaking out results by smaller geographic areas such as Fur Management Zone. The overall aging results showed that trappers can produce reliable age class data; however, female results should be used cautiously. Our results lead us to speculate that after exposure to a range of skulls, through trapline experience and/or training workshops, trappers will be able to produce reliable age class data for all categories. Combining demographic information of harvested marten along with trapping effort will allow managers to make inferences about the marten population at a provincial level and, once a series of years has been collected, ultimately lead to population modelling and trend monitoring.

Communications

Presentations

- A series of presentations were given to ATA members, updating them on the revised logbook results. Locations included: West Central, Edson, Hinton, Rocky Mountain House, Sundre, Grande Prairie, Athabasca, Slave Lake, South Country Trappers (Pincher Creek), Lac la Biche, Bonnyville, Wabash, Edmonton, Fort McMurray/Anzac, Grande Cache, High Level, Fort Assiniboine, Manning, and Eureka local trapping meetings during fall 2018 and early 2019.
- ATA Rendezvous, logbook and aging trial presentations, Westlock 2018.
- ATA AGM, logbook highlights from 2018.

Other

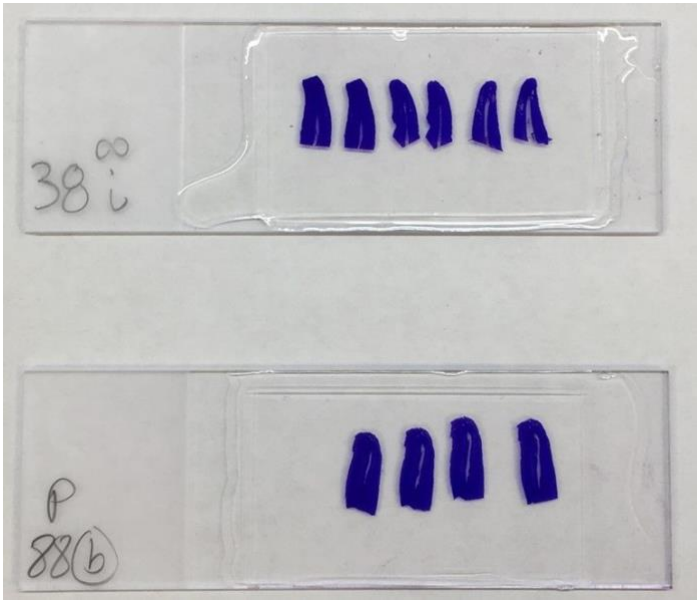
- Newsletter highlighting project progress, May 2018, December 2018, March 2019

Literature Cited

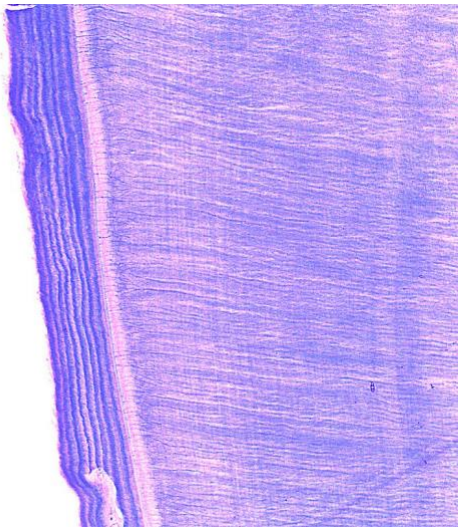
Flynn, R. W. and T. V. Schumacher. 2016. Using sex and age of martens in the North Pacific Coast: using skull length and temporal muscle coalescence. Alaska Department of Fish and Game, Wildlife Research Report ADF&G/DWC/WRR-2016-5, Juneau. 20 pp.

Magoun, A.J., R.M. Gronquist, and D.J. Reed. 1988. Development of a field technique for sexing and aging marten. Alaska Department of Fish and Game, Final Report.

Photos

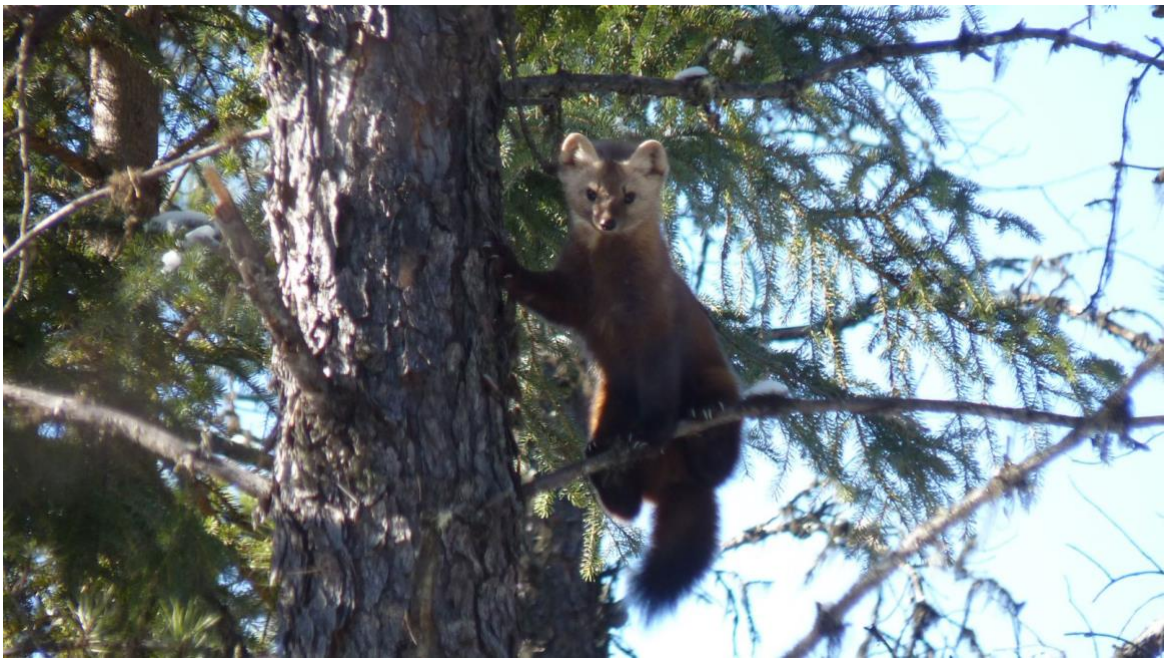


Completed slides of stained, thinly sliced tooth sections which the lab view under a microscope to count the number of rings (annuli). Photo: Matson's Laboratory



A marten tooth section under the microscope. The outer left portion is the cementum, the portion of the tooth that grows and contains annuli. Annuli are the lines within the cementum, each representing a year of growth. Photo: Matson's Laboratory

Premolar and incisor teeth extracted from a marten in preparation for aging analysis. Photo: C. Rasmussen



Marten are a beautiful and much-desired furbearer in Alberta. Photo: M. Jokinen

A gap the thickness of a dime at the rear of a marten skull, illustrating how to identify a juvenile female marten. Photo: M. Ranger