Alberta Conservation Association

2020/21 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
Lethbridge College

Key Findings

- The logbook program expanded its focus to include the four quota species (fisher, lynx, otter, and wolverine) in addition to age-specific marten information.
- A total of 206 logbooks were received (down by 3% from the previous year).
- On average, trappers set 46 traps for about 34 days, harvesting an average of 10 marten. The average Catch Per Unit Effort was 0.91 marten per 100 trap nights (*SE* = 0.09), which equates to one marten for every 110 trap nights.
- Lethbridge College produced 3D images of trapper-provided marten heads. The realistic examples will be used in trapper education courses to describe how to identify marten to age class (adult or juvenile).

Abstract

ACA was asked to assist AEP and ATA with the development of logbooks for trappers to record information about their trapping activities and fur harvesting results. After revisions to the initial logbook and a concerted communication effort with trappers, the number of logbooks submitted

increased substantially over a series of years, providing an adequate sample to track trends over time at the province and natural region levels. Since 2017/18, the logbook entries have focused on marten harvest and effort. In 2019/20, despite a decline in the export of marten pelts from the province, marten catch for an equivalent amount of effort was highest of the years monitored at 0.91 marten per 100 trap nights. The 2019/20 season was the first season in which the four quota species (fisher, lynx, otter, and wolverine) were also included in the logbook.

Introduction

In 2014, Alberta Trappers' Association (ATA) developed a detailed logbook for volunteer trappers to record trapping activities and species harvest, which will help to track population trends over time. Starting in 2017, Alberta Conservation Association (ACA) began working alongside ATA to continually improve their data collection and analysis process each year. Beginning with the 2017/18 season, logbook entries have focused on marten given their universality, widespread distribution, and a harvest pattern that is uncomplicated by a set quota. ATA adopted a method for trappers to determine age class of marten based on size of 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. The four quota species (i.e., fisher, lynx, otter, and wolverine) were included in the 2019/20 logbook.

Methods

Data 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). One logbook was submitted per trapline. Trappers were also asked to document their harvested marten by gender (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. Results were summarized at the provincial, natural region, and fur management zone (FMZ) levels. Quota species data collection followed a similar method to marten; however, age-class information was not collected for quota species.

A sample of marten skulls was collected from trappers to use as part of a training initiative focused on using the skull muscle method. The Centre for Teaching, Learning, and Innovation at Lethbridge College kindly offered to create 3D models from these marten heads. The 3D models will ultimately be used in future trapper education courses since age class (adult and juvenile) of marten can be determined by observing the degree of muscle coalescence on top of their heads once they are skinned by the trapper.

Results

A total of 206 logbooks were received by July 31, 2020 from the 2019/20 trapping season (Figure 1). Of those, 66% were submitted via the online logbook option rather than a paper submission.

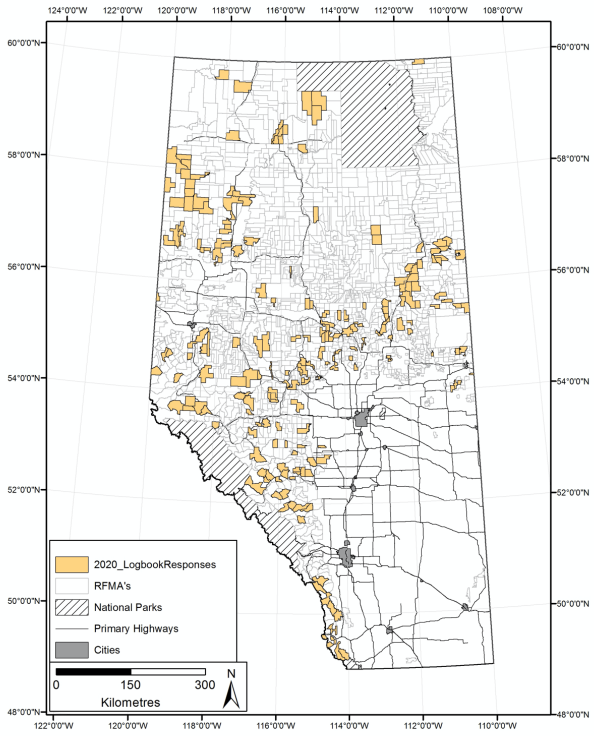


Figure 1. The spatial distribution of logbooks provided robust marten data for the 2019/20 trapping season at the provincial and natural region scales. The greatest number of logbooks came from Fur Management Zone 4.

The mean monthly time spent on trapping activities by logbook participants ranged from eight hours in June to 79 hours in December, with a combined annual average of 406 hours spent per trapline on all trapping-related activities. For the trappers participating in the logbook initiative, the total hours spent trapping has remained relatively consistent among years (Figure 2). The voluntary logbook program captures data from a dedicated group of active ATA members. As such, this sample may not accurately reflect trapping effort across all registered traplines. Activity peaked each year during December when trapline access is good and most pelts reach prime condition.

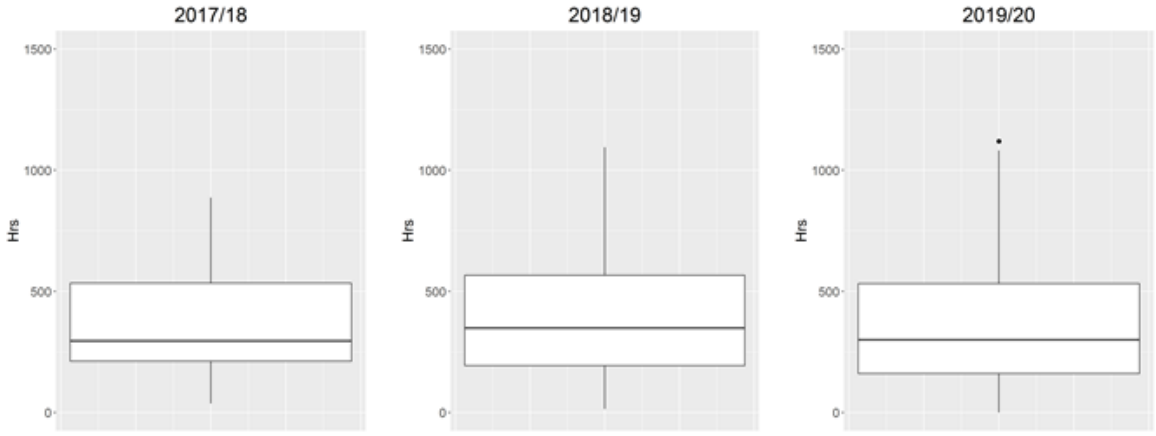


Figure 2. Total hours spent on trapping activities by those who submitted logbooks over the past three years. Boxes represent the typical range. Overlapping boxes indicate little change among years. Data are from active ATA members and may not accurately represent activity on all RFMAs across the province.

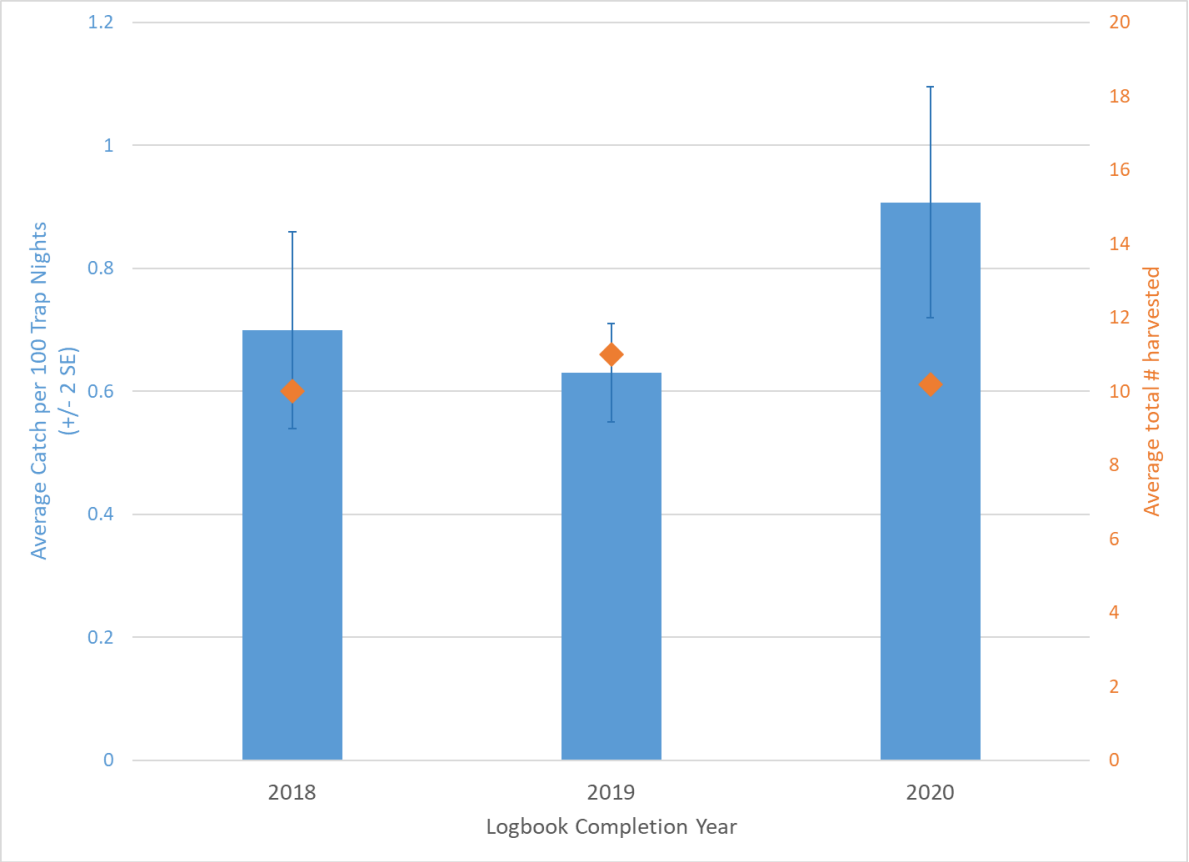


Figure 3. Average number of marten caught per 100 trap nights (bars; mean ± 2 *SE*) and average total marten harvested (diamonds) by trappers who submitted logbooks in 2018, 2019, and 2020.

The number of logbooks submitted generally produced good data at the provincial (Figure 3) and natural region levels, but was often less precise than we would like to see for breaking the numbers down by FMZ. The average (mean) CPUE across the province was 0.91 marten per 100 trap nights (S.E. = 0.09). Despite a 49% decline in the number of marten pelts exported from the province between 2017/18 and 2019/20 (AEP 2020), trappers who participated in the logbook initiative reported no decrease in the catch for an equivalent amount of effort. In 2019/20, the ratio of male to female harvest across the province was 2.8 males for each female.

During the 2019/20 season, trappers began reporting similar data for species with a quota on harvest (i.e., lynx, fisher, otter, wolverine). Of the 206 logbooks submitted, 141 included lynx

information (this included traplines with and without lynx harvest). An average of five lynx were harvested per trapline and 56% of those harvests were male. Ninety-four logbooks included fisher information and an average of two fisher were harvested per trapline with 54% being male. A total of 46 and 45 logbooks included otter and wolverine information respectively with an average harvest of one harvest per trapline (60% and 68% male harvest respectively).

To acquire suitable images for 3D processing (images without shadows), we used a photo light box and captured 50 – 60 images of each marten head, taking images at all angles and turning the head slightly each time. All 60 images were processed using Agisoft Metashape photogrammetry software resulting in a single 3D image. We will have twenty 3D images in total, 10 of each gender with varied examples of muscle coalescence.

Conclusions

There has been a sizeable increase in logbook participation over the years and this has allowed us to dig deeper into the marten data; however, we still need a larger sample size before we will be confident in reporting results by FMZ. The total number of logbook submissions and online submissions appears to remain stable. Given our results from the trapper-based marten aging trial, and recent published literature that brings into question the value of using a harvest ratio of juveniles per adult female, we have limited confidence in that ratio as an indicator of harvest sustainability. We have far more confidence in using the ratio of males to females in the harvest. To this point, we have not seen anything in the data at the provincial or natural region level that causes us concern in terms of harvest sustainability for marten. In the absence of any other data, a decline of 49% in marten fur exports from 2017/18 to 2019/20 (AEP 2020) could have been cause for concern. However, our estimate of catch per one hundred trap nights has not declined over that same period, suggesting that factors beyond population size may have resulted in the declining number of exported pelts. This demonstrates the value of collecting logbook data over the long term. In the future, combining demographic information of harvested marten with trapping effort should allow us to conduct population and trend monitoring. We may never reach a large enough sample size for the quota species to analyze data beyond the provincial level, but having an estimate of effort for each species is key to begin interpreting species-specific fluctuation over time.

Communications

Presentations

- ATA AGM, logbook highlights from 2020.

Other

- Newsletter highlighting project progress in November 2020.
- Individual trapper summaries were sent to all those who submitted a logbook by the deadline.

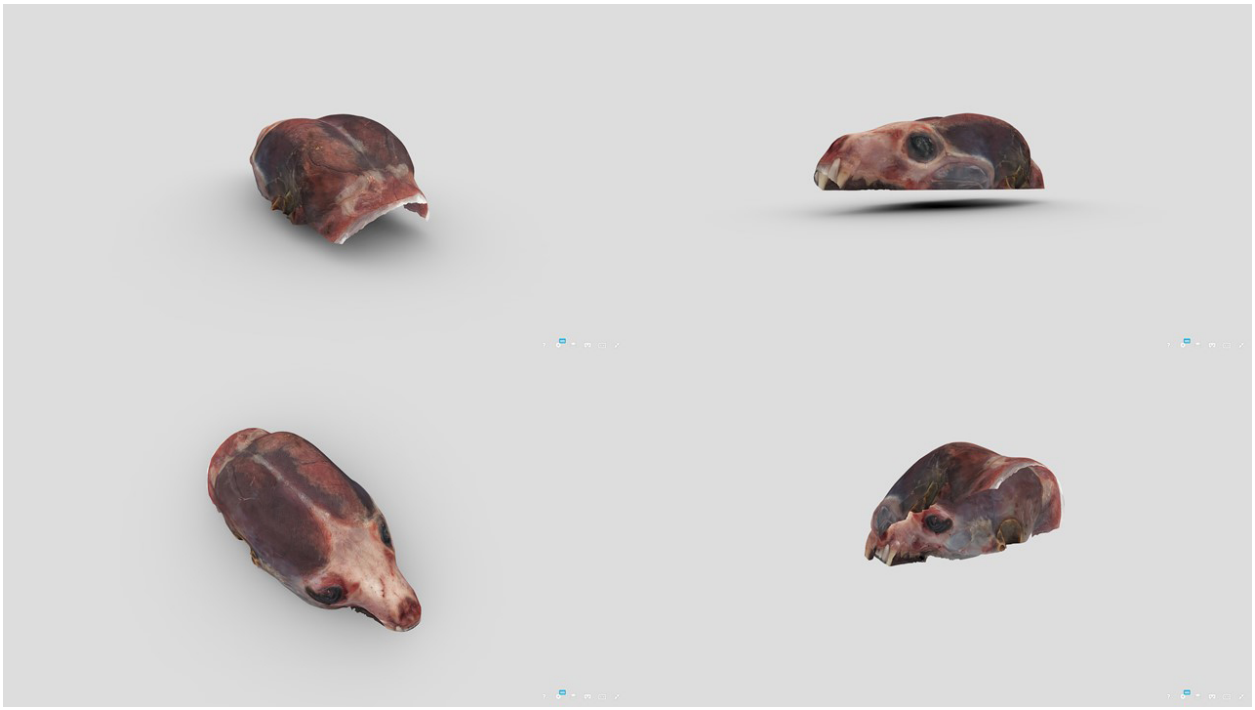
Literature Cited

Alberta Environment and Parks (AEP). 2020. *Alberta Guide to Trapping Regulations 2020-2021*. Government of Alberta. Edmonton, AB. https://albertaregulations.ca/trappingregs-pdfs-2020.html. ISBN 978-1-4601-4844-0

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



Examples of marten 3D imaging that allow a user to view the object in realistic form. The amount of muscle coalescence on top of the marten head can be used to determine the age class of an individual. Photo: Screenshot Mike Jokinen

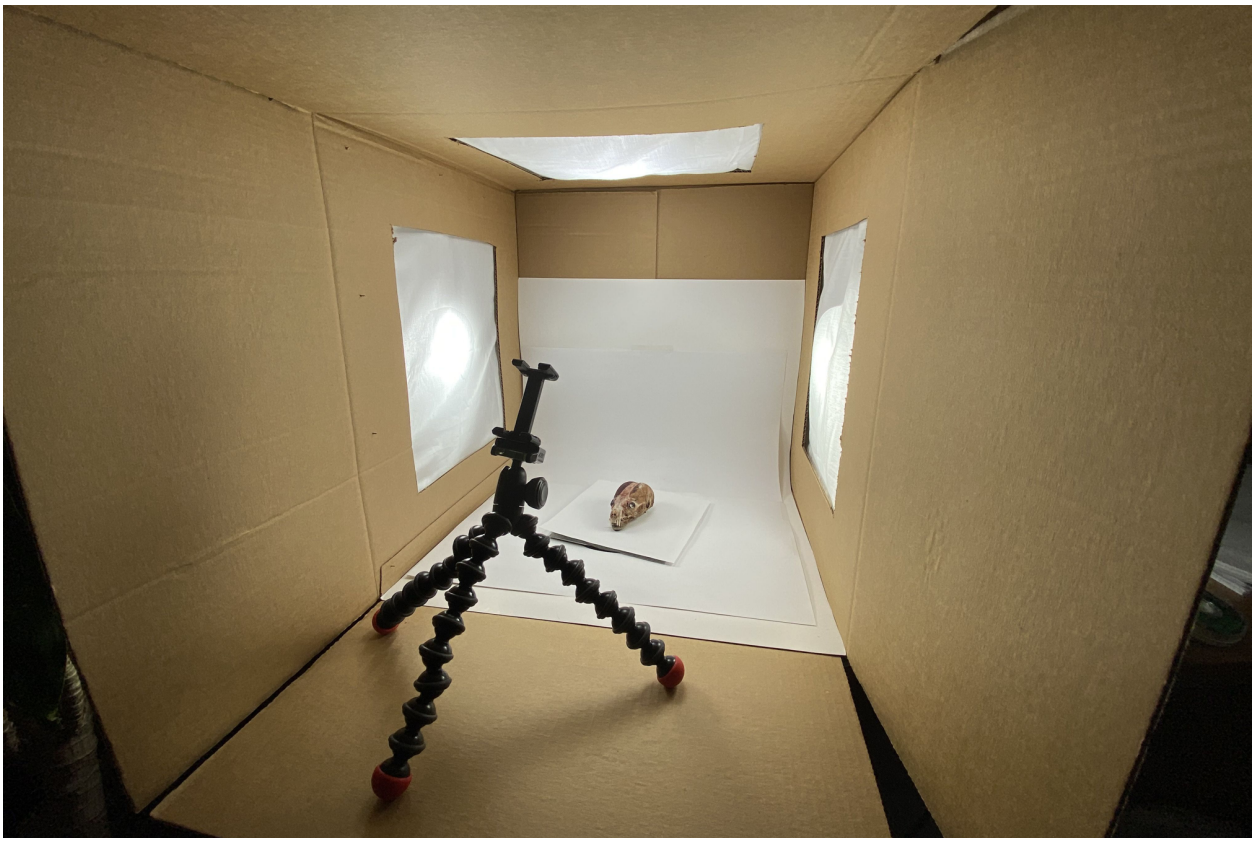


Photo light box used in capturing suitable photos for 3D image processing. Photo: Mike Jokinen