Final Report Requirements

- Write a paper with the following sections: 1) introduction, 2) brief description of check station(s) and location(s) where you worked, 3) methods (how you collected and analyzed/summarized data, 4) data summary, and 5) discussion.
- The introduction should include a literature review that allows you to describe the purpose of check stations. What are the plus's and minus's for collecting harvest and biological data via check stations? What other techniques are used to get harvest data? Be sure to incorporate some literature citations from peer-reviewed journals and other sources.
- Methods: describe the methods you used at the check station to collect data and briefly describe methods you used to analyze/summarize the data.
- Data: Analyze check station data from **2021 and 2022** for at least two different check stations. We will provide you access to the check station data by email and/or on the website. You are welcome to include 2023 data in your analysis if you would like to wait until it's available at the end of the season (last day of the season is November 26).
- Data summary/analysis: Summarize harvest and hunter success data covering the entire season <u>for both years</u> and evaluate trends in the data <u>between years</u>. Use tables and figures to summarize each year's data and illustrate trends between years, as much as you can. Interpret your data summary, tables, and figures by discussing populations and sex and age distributions in each year, and how they might have changed between years. A good thing to bear in mind is that raw data on numbers of animals coming through a check station over 2 years can be misleading about trends between the years, unless corrected for hunter effort. One way to handle this is to divide the number of animals for each species brought through a check station by the total number of hunters (both successful and unsuccessful) that came through the check station. This would not be useful for uncommon species (mountain lions, bighorn sheet, wolves, etc.) but could be informative for the more common species (elk, deer).
- Discussion: Building on your data summary, describe the strengths and limitations of the check station data. For example, how will it help managers? What should managers be cautious about when applying the data to make management decisions? Feel free to include thoughts on what you experienced and learned working at check stations, suggestions for improving the student experience, and the overall operation of check stations.
- Paper should be ~6 pages in length (which includes your data summary, tables and figures). Use 1.5 line spacing. It's OK for the report to exceed 6 pages, especially if your tables/figures take up a lot of space. Also include a Literature Cited section for the literature references you cite in the introduction. The Literature Cited section should not count toward the page requirement.
- Report is due no later than Friday, December 8. You are welcome to turn it in earlier though!
- Submit an electronic copy to: Chad Bishop at chad.bishop@umontana.edu

<u>Contact Information and</u> <u>Hours of Operation for Check Stations</u>

Montana Cooperative Wildlife Research Unit	
Wildlife Biology Program Director:	
Chad Bishop: Office: 406.243.4374 or 406.243.4	4388/Cell: 970.273.1769
Email: Chad.bishop@umontana.edu	,
*Contact for information, scheduling problems,	, etc.
MT Fish, Wildlife and Parks Biologists Contact Informa	tion & Hours of Operation:
Regional Wildlife Manager:	
Liz Bradley: Office: 406.542.5515/Cell: 406.210.2	2508
Email: <u>LBradley@mt.gov</u>	
Bonner Check Station:	10:30am – 8:00pm
Mike Ebinger: 406.210.3479	
Email: <u>Michael.Ebinger@mt.gov</u>	
Fish Creek Station:	10:30am – 8:00pm
Ryan Klimstra: 406.431.0362	
Email: <u>Ryan.Klimstra@mt.gov</u>	
Anaconda Check Station:	10:30am – 8:00pm
Kirstie Yeager: Cell: 406.270.6998	
Email: <u>Kirstie.Yeager@mt.gov</u>	
Darby Check Station:	10:30am – 8:00pm
Rebecca Mowry: Office: 406.363.7141/Cell: 406.	.210.7384
Email: <u>RMowry@mt.gov</u>	
Waterfowl Check Stations Contact Information & Hou	rs of Operation:
Arlee Check Station:	8:00am – 3:00pm
September 30 st : Payton Adams: 406.241.5527	
October 7 th : Payton Adams: 406.241.5527	
Ronan Check Station:	8:00am – 3:00pm
Email: <u>kari.eneas@cskt.org</u>	
Contomber 20 st , Kari Kingary 400 201 0774	
September 30°°° Karl Kingery: 406.261.6774	

Contact Debora Simmons, MT Coop Wildlife Research Unit, Natural Science 205. Office: 406.243.4388; Email: <u>Debora.simmons@mso.umt.edu</u>, regarding mileage reimbursement (Darby, Anaconda, and Fish Creek only).

HUNTER CHECK STATION INFORMATION AND SIGN-UP SHEET

WILD 374, Sect. 01

- This is a one-credit class and you are required to volunteer 4 days
- Big Game Check Stations are located in Anaconda, Bonner, Darby, and Fish Creek.
- Migratory Waterfowl and Pheasant Openers are located in the Mission Valley (Arlee/Ronan).
- Please provide current contact information and keep our office updated.
- STAY IN TOUCH IF YOU DON'T HEAR FROM US!!
- If you have questions contact MTCWRU at 243-4388

CONTACT INFORMATION - VERY IMPORTANT, PLEASE PRINT CAREFULLY

NAME	PHONE
University Email Address (please use and check):	
DO YOU HAVE A VEHICLE AVAILABLE TO DRIVE TO THE CHE	ECK STATION?
HOW MANY PEOPLE CAN YOU TAKE? (In addition to yourself)	

Turn in to Debora before the end of meeting.







Other Roads

Other Roads

Take I-90 West 45 miles to Exit 66 - Fish Creek Road Allow a minimum of 45 minutes driving time

10:30am - 8:00pm



This map was generated from the Montana Fish, Wildlife & Parks (FWP) internal FWP Mapper online mapping system. Data layers on this map may depict sensitive species level information. This map is not intended for distribution or use beyond work associated with FWP.

Directions to Anaconda Check Station:

- Drive east on Interstate 90 to Drummond approximately 47 miles
- Take exit 153 at Drummond
- Drive Hwy 1 for approximately 35 miles toward Anaconda
- Check station will be a few miles before Anaconda on the right side of the road, across from a large rock quarry

HARVEST SUMMARY FORM

STATION:	
Names of Students:	

TOTAL NUMBER OF HUNTERS:

	W	hite-T	ailed	Deer		
	Fawn	1-1/2	2-1/2	(Prime) Adult	(Old) Adult	Fa
Male						
Female						

	ſ	Mule I	Deer	
Fawn	1-1/2	2-1/2	(Prime) Adult	(Old) Adult

Elk							
	Calf	1-1/2	2-1/2	(Prime) Adult	(Old) Adult		
Male			-				
Female							

Other	

COMMENTS:

Turn in this form to MTCWRU, Natural Science Building, Room 205 by Tuesday following your volunteer day.

Hunter Check Station Materials:

- Name Tags please wear them when you are working.
- Supplies to take to Game Check Stations
- Contact Information Sheet
- Final Report Requirements
- Aging Forms
- Harvest Forms One person from your group is responsible for turning these completed forms in at the MTWCRU office by Tuesday of the week following your volunteer day. Only one sheet per day will need to be completed at each Check Station. It is mandatory that every volunteer who shows up MUST sign this sheet. It is very important to turn this sheet in as soon as possible. It will contain the data you will need to complete your final report.
- Maps

Supplies for Game Check Stations

- Warm clothing, gloves, boots, rain gear (expect the worst!)
- Lunch, dinner, snacks
- Name Tag in training packet please wear them!
- Pencils #2 (soft lead)
- Map to your station (in packet)
- Harvest Forms supplied by Coop Unit in your packet.
- Aging Sheets in packet
- Game Check Schedule Will be emailed to you and periodically updated on the Coop Unit website under the "Mitchell Lab tab"
- Drivers should have winter tires or chains in their vehicles especially for the late and distant stations.





Fawns-A fawn usually has four cheek teeth, but can have only three if less than four months and five if it is over seven months. The 3rd tooth will always have three cusps or peaks. Notice the second molar is just beginning to erupt.



Yearling

1.5-A yearling still has the first three baby teeth along with the 4^{th} , 5^{th} , and 6^{th} teeth that are permanent. The first three teeth, or milk teeth, will be heavily worn & replaced within a year.



2.5-At this age the three milk teeth are replaced with permanent teeth; therefore, sharp peaks are present on all teeth. The 3^{rd} tooth now has only two cusps. Enamel is wider than the dentine on teeth 4, 5, & 6.



41/2 Year Old

3.5-When a deer is three, the 4th tooth begins to show wear and the dentine is as wide or wider than the enamel.

4.5-At four the dentine of the 4^{th} and 5^{th} teeth is as wide or wider than the enamel.

5.5-The dentine of the 4^{th} , 5^{th} , and 6^{th} teeth is as wide or wider than the enamel.



61/2 Year Old

6.5-In a six year old, the 4^{th} tooth is begins to look polished & the dentine in the 4^{th} , 5^{th} , and 6^{th} teeth continues to become even wider than the enamel.

7.5-This age class has so much wear on the premolars they may appear flat & the dentine of the forth tooth is about 70% of the chewing surface.

8.5-The wear is slightly greater than a 7.5 and the dentine of the 3rd premolar is beginning to blend into the dentine of the 1st molar.



91/2 Year Old

9.5 and Older-Around 9.5 years old and older the 3^{rd} , 4^{th} , or 5^{th} tooth may begin to show signs of cupping and appear polished.

How to Age An Elk

Elk in North Dakota are primarily born in late May and early June. Therefore, when most animals are harvested in October and November they are considered either six months, 1 1/2years, 2 1/2years, 3 1/2years, etc., in age. This guide is designed to block elk into these age categories.

Although elk may live to 16 years in the wild, the overall age structure of a hunted elk population is younger than most people think. Of elk harvested in the badlands that biologists have examined, more than 70 percent of cows and 90 percent of bulls were 4 1/2 years old or younger.

Antler and body size can indicate an elk's age, but physical characteristics are often misleading. The number of antler points do not correspond to age. Even if it did, it wouldn't help in aging cows, which make up a considerable proportion of the harvest each year.

Antler size in bulls and physical development in both genders is greatly affected by diet, which may account for differences between animals of the same age taken from different locations.

It's All in the Teeth

The science of aging elk is based on tooth development and wear. Like humans, elk replace their "baby teeth" with permanent teeth at a relatively set rate. As surely as a 6-year-old child will soon get her two front teeth, and 18-month-old elk will have its central two permanent incisors. By the time an elk is 3 1/2 years old, all permanent teeth are in. At this stage, estimating age is based largely on the rate of tooth wear. Diet and soil types may accelerate tooth wear, but generally, estimating the age of adult elk is straight-forward through age 3 1/2. In animals 4 1/2 years and older, estimating age by tooth wear is less reliable.



Central front teeth all permanently in place. This elk is at least $3^{1}/_{2}$ years old.

Cheek Teeth

Premolars: The first three teeth on each side of the jaw are called premolars. Elk grow two sets of premolars. The first set appear in calves and last until the animal is about 2 1/2years old, when permanent adult premolars push out the baby premolar teeth. An important characteristic of the first set of premolars is that the third premolar has three crowns or cusps. When permanent teeth come, all premolars have just two cusps.



Cheek teeth of a $3^{1/2}$ year-old elk. Premolars and molars are indicated. Each permanent premolar and molar has two cusps or crowns, except the third molar, which has three cusps. The cusps on the lower jaw form a ridge of sharp points on the side nearest the tongue, called lingual crests.



Tooth Identification Basics Elk basically have two groups of teeth. The front teeth, or incisors, are used for collecting food. The back teeth or cheek teeth - molars and premolars are used to chew and grind food. Between the incisors and molars is an open space along the jaw that has no teeth. (Note: In all photos, black line indicates the gum line.)

Your basic elk jaw. Incisors in the front, premolars and molars in the back, and a big space between.

Front Teeth (Incisors): These are the front teeth of an elk jaw. When an elk is 15-18 months old, the central two incisors are replaced. The rest of the front teeth - lateral incisors and canine teeth are replaced during the second and third year of life. Unlike horses, elk do not have upper incisors.



Front teeth of a six-month old elk (calf). Width of incisors less than $1^{3}/4$ inches.



Yearling jaw with permanant central two front teeth fully emerged.



 $21/_2$ year-old elk have central six permant front teeth fully emerged. Temporary canine teeth may still be small, or permanent canines are emerging.



3 1/2 Years: All permanent front teeth and cheek teeth are fully erupted and in place (see incisor photos). Last cusp of sixth cheek tooth shows little or no wear.

4 1/2 to 8 1/2 Years: Aging elk 4 1/2 to 8 1/2 years is difficult. Wear on the lingual crest and cupping of molars becomes more pronounced. By 8 1/2 years the dark portion (dentine) of the first molar (four cheek tooth) nearly surrounds the pit, or infundibula, of the tooth. In older animals the infundibula of the first molar will be completely worn away.

WILLIAM JENSEN is a big game biologist in the Game and Fish Department Bismarck office.

This project was conducted with the cooperation of the Sybille Wildlife Conservation and Research Unit, (Wyoming Game and Fish Dept). Support was provided by the Rocky Mountain Elk Foundation.



Incisors of elk 8 $\frac{1}{2}$ years and older show a great deal Central two-front teeth are worn to within $\frac{1}{2}$ inch of



Six Months: The nose or muzzle of the elk appears short or stubby, when compared to older elk. All the immature incisors are still present. Generally, only four cheek teeth are showing. The third premolar has three cusps.

1 1/2 Years: Central two permanent front teeth are in place (see incisor inset photos). Five cheek teeth have errupted in the lower jaw. The third premolar still has three cusps and is well worn. Elk harvested later in the season may be in the process of losing this threecusped molar. Third molar may just be starting to erupt through the gum. Lingual crest of molars have sharp points.

2 1/2 Years: Central six permanent front teeth are in place (see incisor photos). Look closely at the third cheek tooth (third premolar). The permanent tooth is two cusps, unstained, sharp, and shows little or no wear; enamel (white portion) of the lingual crest shows well above the dentine (brown portion). Third molar (sixth cheek tooth) may still be erupting.



Each premolar and molar shows white and dark portions. The white portion is the enamel. The dark portion is dentine. The pits in the tooth are called infundibula.

Molars: The fourth, fifth, and sixth cheek teeth are the molars. Elk grow one set of molars. Generally, six-month-old elk have only one molar when they enter the fall hunting season. Therefore, sixmonth-old animals usually have only four cheek teeth. By 1 1/2years of age - the second fall - the second and third molar have erupted through the gum, though the last cusp of the third molar may still be below the gum line, All six molars and premolars are fully erupted by 3 1/2 years. To determine the age of animals in older age classes we need to look more closely at tooth wear.

Through the Ages

While it is possible to determine whether an elk is six months, 1 1/2 or 2 1/2 years old by looking at its incisors or front teeth, it is the cheek teeth of the lower jaw, that harbor the most reliable clues for older animals.

To get a good look at the cheek teeth (premolars and molars), you need to cut back the lip and cheek skin. If you plan to have the elk head mounted, let your taxidermist skin out the head and remove the jaw for you.

Welcome to the Confederated Salish and Kootenai Tribe's Hunter Check stations for Waterfowl and Upland Game Bird Hunting

Thank you for your interest in volunteering with our hunter check station this year. Our Tribal Wildlife Program has been carefully counseled by the Salish, Pend O'Reille and Kootenai Elders in order to think holistically about native and cultural wildlife species important to our people and ancestors. As a result, we take careful consideration to the actions and impacts of wildlife within the Flathead Reservation, and are happy to partner with you in making this year's opening weekend check stations a success.

This year we will be hosting four check stations total. Two during migratory waterfowl opener weekend on September October 1 (Arlee and Ronan), and two check stations during pheasant opening weekend on Saturday September 8 (Arlee and Ronan). Please see the attached maps for check station locations for Arlee and Ronan. We open the stations at 8am and will typically close them down between 2-3pm, weather can change quickly during the day so please bring a lunch, water, and dress for Montana fall weather.

Attached you will also find some example materials that we will be using during the stations to identify species, sex and age for waterfowl. You do not need to be proficient in bird identification, as the materials will help positively identify birds if you are unfamiliar. We will also teach you some neat tricks to determining age classes of Canada Goose, pheasants, and ducks!

We look forward to seeing you at the check stations!















OTHER SIMILAR SPECIES — NO RESTRICTIONS



Gadwalls are most numerous in the Central Flyway, but not too common anywhere. They are often called "gray mallards" or "gray ducks." They are one of the earliest migrants, seldom facing cold weather.

They are the only puddle ducks with a white speculum.





Shovelers, "spoonbills" to many, are early migrants, moving out at the first frost. The largest numbers are in the Central and Pacific flyways.

The usual flight is steady and direct. When startled, the small flocks twist and turn in the air like teal.





ADULT

IMMATURE

Fig. 20.8. The two outer primaries in immature gallinaceous birds (except the ring-necked pheasant) are retained through the first winter. The immature No. 9 and No. 10 primaries are pointed (*Right*) as compared to the rounded tips of these feathers in adults (*Left*), as shown in the wings of the ruffed grouse (from Godin 1960). See Fig. 20.13 for illustration of the No. 10 primaries from immature and adult eastern wild turkeys.





FEMALE

MALE

Fig. 20.18. Scapular feathers from Hungarian partridge. Note center stripe infeather from male and barring on feather from female (sketch by Jens von Sivers *in* Thompson 1958, after McCabe and Hawkins 1946).

HUNGARIAN PARTRIDGE

The sex of an adult partridge can be determined by the scapular and median wing coverts (Fig. 20.18). The male has dark "shoulder" feathers, each with a single median buff stripe; in the female these feathers are lighter and each has a wide median buff stripe and two to four buff crossbars (McCabe and Hawkins 1946).

The immature birds in fall look like adults and may be distinguished from them by the pointedness of the two outer primaries (McCabe and Hawkins 1946), and by their yellow feet. Adults are blue-gray (Edminster 1954).



ADULT

JUVENILE

Fig. 20.12. Size of spur as an age criterion of fall-shot cock ring-necked pheasant. Left: Adult (over 1 year old). Right: Juvenile (from Godin 1960).

Hunter Game Check Schedule – Fall 2023 – Updated 8/16/2023

Locations	Saturday/Sunday October 21 & 22 Big Game Opener	Saturday/Sunday October 28 & 29	Saturday/Sunday November 4 & 5	Saturday/Sunday November 11 & 12	Saturday/Sunday November 18 & 19	Saturday/Sunday November 25 & 26
Anaconda	2 volunteers per day	2 volunteer per day	2 volunteer per day	2 volunteer per day	2 volunteer per day	2 volunteers per day
	SATURDAY – Oct. 21	SATURDAY – Oct. 28	SATURDAY – Nov. 4	SATURDAY – Nov. 11	SATURDAY - Nov. 18	SATURDAY – Nov. 25
	SUNDAY – Oct. 22	SUNDAY – Oct.290	SUNDAY – Nov. 5	SUNDAY – Nov. 12	SUNDAY - Nov. 19	SUNDAY – Nov. 26
Bonner	4 volunteers per day	3 volunteers per day	<u>3 volunteers per day</u>	<u>3 volunteers per day</u>	<u>3 volunteers per day</u>	<u>4 volunteers per day</u>
	SATURDAY – Oct. 21	SATURDAY – Oct. 28	SATURDAY – Nov. 4	SATURDAY – Nov. 11	SATURDAY - Nov. 18	SATURDAY – Nov. 25
	SUNDAY – Oct. 22	SUNDAY – Oct. 29	SUNDAY – Nov. 5	SUNDAY – Nov. 12	SUNDAY – Nov. 19	SUNDAY – Nov. 26
Fish Creek	<u>1 volunteers per day</u>	<u>1 volunteers per day</u>	<u>1 volunteers per day</u>	<u>1 volunteers per day</u>	<u>1 volunteers per day</u>	<u>1 volunteers per day</u>
	SATURDAY – Oct. 21	SATURDAY – Oct. 28	SATURDAY – Nov. 4	SATURDAY – Nov. 11	SATURDAY - Nov. 18	SATURDAY – Nov. 25
	SUNDAY – Oct. 22	SUNDAY – Oct. 29	SUNDAY – Nov. 5	SUNDAY – Nov. 12	SUNDAY - Nov. 19	SUNDAY – Nov. 26
Darby	<u>4 volunteers per day</u>	2 volunteers per day	2-3 volunteers per day	2-3 volunteers per day	2-3 volunteers per day	<u>3 volunteers per day</u>
	SATURDAY – Oct. 21	SATURDAY – Oct. 28	SATURDAY – Nov. 4	SATURDAY – Nov. 11	SATURDAY - Nov. 18	SATURDAY – Nov. 25
	SUNDAY – Oct. 22	SUNDAY – Oct. 29	SUNDAY – Nov. 5	SUNDAY – Nov. 12	SUNDAY – Nov. 19	SUNDAY – Nov. 26
Waterfowl- Arlee and Ronan	2-3 volunteers for each SATURDAY – Sept. 30 Arlee Ronan	2-3 volunteers for each SATURDAY – Oct. 7 Arlee Ronan				