MUNICIPAL DISTRICT OF GREENVIEW NO. 16

REGULAR AGRICULTURAL SERVICE BOARD MEETING AGENDA

Wednesday, November 24, 2021 | 9:30 AM | Council Chambers, Administration Building

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#1	CALL TO ORDER		
#2	ADOPTION OF AGENDA		
#3	MINUTES	3.1 Organizational Agricultural Service Board Meeting minutes held Wednesday, October 27, 2021 to be adopted.	3
		3.2 Regular Agricultural Service Board Meeting minutes held Wednesday, October 27, 2021 to be adopted.	7
		3.2 Business Arising from the Minutes	
		3.3 Action Items	11
#4	DELEGATION	4.1 Alberta Agricultural Service Board	12
#5	BUSINESS	5.1 Meeting Date Changes for 2022	92
		5.2 Conference Registration Sponsorships	94
		5.3 Rental Equipment Policy	96
		5.4 Elk Populations	108
		5.5 Grizzly Populations Letter	119
		5.6 Manager's Report	197
#6	MEMBERS REPORTS	• Chair Warren Wohlgemuth • Vice Chair Shelley Morrison	

- Deputy Reeve Bill Smith
- Councillor Dave Berry
- Member Richard Brochu
- Member Larry Smith
- Member Mark Pellerin

#7 CORRESPONDENCE

- Upcoming Events

#8 CLOSED SESSION

8.1 Disclosure Harmful to Business Interests of a Third Party (Section 16, FOIP)

#9 ADJOURNMENT

Minutes of a

ORGANIZATIONAL AGRICULTURAL SERVICE BOARD MEETING
MUNICIPAL DISTRICT OF GREENVIEW NO. 16

Greenview Administration Building,
Valleyview, Alberta, on Wednesday, October 27, 2021

 # 1
CALL TO ORDER

Manager, Agricultural Services, Sheila Kaus called the meeting to order at 9:30 a.m.

PRESENT

A.S.B. Member – Deputy Reeve	Bill Smith
A.S.B. Member – Councillor	Dave Berry
A.S.B. Member	Warren Wohlgemuth
A.S.B. Member	Richard Brochu
A.S.B. Member	Larry Smith
A.S.B. Member	Shelley Morrison

ATTENDING

Manager, Agriculture Services	Sheila Kaus
Agriculture Supervisor Trainee	Kristin King
Beautification Coordinator	Jessica McCormick
Communications Associate	Stacey Sevilla
Recording Secretary	Denise Baranowski

ABSENT

A.S. B. Member	Mark Pellerin

#2
AGENDA

MOTION: 21.10.100. Moved by MEMBER RICHARD BROCHU:
That the Agricultural Service Board adopt the October 27, 2021 Organizational Agricultural Service Board Meeting Agenda as presented.

CARRIED

#3
NOMINATION OF CHAIR

NOMINATION FOR CHAIR

Manager, Agricultural Services, Sheila Kaus, called for nominations for the election of Agricultural Service Board Chair.

Richard Brochu nominated Warren Wohlgemuth.

Manager, Agricultural Services, Sheila Kaus, called for a second time for nominations for the election of Agricultural Service Board Chair.

None were heard.

Manager, Agricultural Services, Sheila Kaus, called for a third time nominations for the election of Agricultural Service Board Chair.

None were heard.

CEASE NOMINATIONS FOR CHAIR

MOTION: 21.10.101. Moved by: MEMBER SHELLEY MORRISON
That the Agricultural Service Board cease nominations for the Agricultural Service Board Chair.

CARRIED

APPOINTMENT OF CHAIR

MOTION: 21.10.102. Moved by: MEMBER RICHARD BROCHU
That the Agricultural Service Board appoint Warren Wohlgemuth as the Chair of the Municipal District of Greenview No. 16 Agricultural Service Board until the next annual Organizational Meeting.

CARRIED

Manager, Agricultural Services, Sheila Kaus declared MEMBER WARREN WOHLGEMUTH as the elected Chair of the Agricultural Service Board until the next Organizational Meeting and Warren Wohlgemuth assumed the Chair. Manager, Agricultural Services, Sheila Kaus passed the meeting to Chair Warren Wohlgemuth.

#4.0 NOMINATION OF VICE-CHAIR

NOMINATION FOR VICE-CHAIR

Chair Warren Wohlgemuth, called for nominations for the election of Agricultural Service Board Vice-Chair.

Shelley Morrison nominated Richard Brochu.
Richard Brochu declined.

Chair Warren Wohlgemuth, called a second time for nominations for the election of Agricultural Service Board Vice-Chair.

Larry Smith nominated Shelley Morrison.

Chair Warren Wohlgemuth, called for a third time nominations for the election of Agricultural Service Board Vice-Chair.

None were heard.

CEASE NOMINATIONS FOR VICE-CHAIR

MOTION: 21.10.103. Moved by: MEMBER WARREN WOHLGEMUTH
That the Agricultural Service Board cease nominations for the Agricultural Service Board Vice-Chair.

CARRIED

APPOINTMENT OF VICE-CHAIR

MOTION: 21.10.104. Moved by: MEMBER RICHARD BROCHU
That the Agricultural Service Board appoint Shelley Morrison as the Vice-Chair of the Agricultural Service Board until the next annual Organizational Meeting.

CARRIED

Chair Warren Wohlgemuth declared Shelley Morrison as the Vice-Chair for the Agricultural Service board until the next Organizational Meeting.

#5 MEETING DATES

2022 MEETING DATES

MOTION: 21.10.105. Moved by: MEMBER LARRY SMITH
That the Agricultural Service Board hold the following Regular Scheduled Meetings for the Agricultural Service Board in Council Chambers at 9:30am.

January 26, 2022
February 23, 2022
March 30, 2022
April 27, 2022
May 25, 2022
June 29, 2022
July 27, 2022
August 31, 2022
September 28, 2022
October 26, 2022
November 30, 2022
December 14, 2022

CARRIED

#6 ADJOURNMENT

6.0 ADJOURNMENT

MOTION: 21.10.106. Moved by: MEMBER RICHARD BROCHU
That this Organizational Agricultural Service Board meeting adjourn at 9:41 a.m.

CARRIED

_____ _____

MANAGER, AGRICULTURE SERVICES ASB CHAIR

Minutes of a
REGULAR AGRICULTURAL SERVICE BOARD
MUNICIPAL DISTRICT OF GREENVIEW NO. 16
Greenview Administration Building,
Valleyview, Alberta, on Wednesday, October 27, 2021

#1 CALL TO ORDER

Chair Warren Wohlgemuth called the meeting to order at 9:42 a.m.

PRESENT

A.S.B. Member - Chair	Warren Wohlgemuth
A.S.B. Member – Vice Chair	Shelley Morrison
A.S.B. Member – Deputy Reeve	Bill Smith
A.S.B. Member – Councillor	Dave Berry
A.S.B. Member	Larry Smith
A.S.B. Member	Richard Brochu

ATTENDING

Manager, Agriculture Services	Sheila Kaus
Agriculture Supervisor Trainee	Kristin King
Beautification Coordinator	Jessica McCormick
Manager, Communications & Marketing	Stacey Sevilla
Recording Secretary	Denise Baranowski

ABSENT

A.S.B. Member	Mark Pellerin

#2 AGENDA

MOTION: 21.10.107. Moved by: VICE CHAIR SHELLEY MORRISON
That the Agricultural Service Board adopt the October 27, 2021, Regular Agricultural Service Board Meeting Agenda as presented.
CARRIED

#3.1 REGULAR AGRICULTURAL SERVICE BOARD MEETING MINUTES

MOTION: 21.10.108. Moved by: MEMBER LARRY SMITH
That the Agricultural Service Board adopt the minutes of the Regular Agricultural Service Board Meeting held on Wednesday, September 29, 2021, as presented.
CARRIED

#3.2 BUSINESS ARISING FROM MINUTES

3.2 BUSINESS ARISING FROM MINUTES

#3.3 ACTION ITEMS

3.3 ACTION ITEMS

MOTION: 21.10.109. Moved by: CHAIR WARREN WOHLGEMUTH
That the Agricultural Service Board accept the Action Items, as presented.
CARRIED

#4.0 DELEGATION

4.0 DELEGATIONS

4.1 PEACE COUNTRY BEEF AND FORAGE ASSOCIATION

Delegation was virtual to discuss the most recent research and activities of PCBFA.

PEACE COUNTRY BEEF AND FORAGE ASSOCIATION DELEGATION PRESENTATION

MOTION: 21.10.110. Moved by: MEMBER RICHARD BROCHU
That the Agricultural Service Board accept the Peace Country Beef and Forage Association presentation for information, as presented.

CARRIED

Vice Chair Shelley Morrison vacated the meeting at 10:33 a.m.

Chair Warren Wohlgemuth recessed the meeting at 10:40 a.m.

Chair Warren Wohlgemuth reconvened the meeting at 10:55 a.m.

#5 BUSINESS

5.0 BUSINESS

5.1 EQUIPMENT SANITATION GUIDELINES

EQUIPMENT SANITATION GUIDELINES

MOTION: 21.10.111. Moved by: MEMBER LARRY SMITH
That the Agricultural Service Board accept the Equipment Sanitation Guidelines report for information, with the following changes;

- Insertion of used wooden rig matting
- Elimination of C(i)

CARRIED

MOTION: 21.10.112. Moved by: COUNCILLOR DAVE BERRY
That the Agricultural Service Board recommend that Administration draft an agreement template that landowners can use to develop their own agreement pertaining to rental or access of their land.

CARRIED

5.2 MANAGERS' REPORT

MANAGERS' REPORT

MOTION: 21.10.113. Moved by: MEMBER RICHARD BROCHU
That the Agricultural Service Board accept the Managers' report, as presented.

CARRIED

#6 MEMBERS' BUSINESS & REPORTS

6.0 MEMBERS' BUSINESS & REPORTS

MANAGER AND ASB MEMBERS REPORTS

CHAIR WARREN WOHLGEMUTH updated the Agriculture Service Board on his recent activities, which include;

- No report

VICE CHAIR SHELLEY MORRISON updated the Agriculture Service Board on his recent activities, which include;

- No report

DEPUTY REEVE BILL SMITH updated the Agriculture Service Board on his recent activities, which include;

- No report

COUNCILLOR DAVE BERRY updated the Agriculture Service Board on his recent activities, which include;

- No report

MEMBER RICHARD BROCHU updated the Agriculture Service Board on his recent activities, which include;

- No report

MEMBER LARRY SMITH updated the Agriculture Service Board on his recent activities, which include;

- No report

MEMBER MARK PELLERIN updated the Agriculture Service Board on his recent activities, which include;

- No report

MEMBERS BUSINESS AND REPORTS

MOTION: 21.10.114. Moved by: DEPUTY REEVE BILL SMITH
That the Agricultural Service Board accept the Members reports as information.
CARRIED

#7 CORRESPONDENCE

7.0 CORRESPONDENCE

ASB CORRESPONDENCE

MOTION: 21.10.115. Moved by: DEPUTY REEVE BILL SMITH
That the Agricultural Service Board accept the correspondence as information.
CARRIED

#8 CLOSED SESSION

8.0 CLOSED SESSION

CLOSED SESSION

MOTION: 21.10.116. Moved by: CHAIR WARREN WOHLGEMUTH
That the meeting go to Closed Session, at 11:55 a.m. pursuant to Section 197 of the Municipal Government Act, 2000, Chapter M-26 and amendments thereto, and Division 2 of Part 1 of the Freedom of Information and Protection Act, Revised Statutes of Alberta 2000, Chapter F-25 and amendments thereto, to discuss Legal Contract information with regards to the Closed Session.

CARRIED

8.1 PRIVILEGED INFORMATION (FOIPP, SECTION 27)

OPEN SESSION

MOTION: 21.10.117. Moved by: DEPUTY REEVE BILL SMITH
That, in compliance with Section 197(2) of the Municipal Government Act, this meeting come into Open Session at 12:33 p.m.

CARRIED

#9 ADJOURNMENT

9.0 ADJOURNMENT

ASB ADJOURNMENT

MOTION: 21.10.118. Moved by: MEMBER RICHARD BROCHU
That this Agricultural Service Board meeting adjourn at 12:35 p.m.

CARRIED

MANAGER, AGRICULTURE SERVICES

ASB CHAIRMAN

Agricultural Service Board Motions – Action Items

Agenda Item # **3.3**

No.	Motion	Assigned to	Status
MOTION: 21.03.20 March 24, 2021	**Moved by: MEMBER RICHARD BROCHU** that the Agricultural Service Board rescind motion 21.01.05 to recommend to Council to direct Administration to take over the Fox Creek Walleye Spawning Enhancement Project for 2021 from the Alberta Conservation Association (ACA).	Ben Brochu, Problem Wildlife Officer	To be reviewed for 2022
MOTION: 21.06.66 June 23, 2021	**Moved by: MEMBER MARK PELLERIN** that the Agricultural Service Board direct administration to produce a document assisting interested producers with having commodity and livestock check off dollars returned to the producer.	Sheila Kaus, Agricultural Services Manager	In Progress
MOTION: 21.08.76 August 25, 2021	**Moved by: MEMBER LARRY SMITH** that the Agricultural Service Board authorize Administration to develop options to publicly highlight the past, present and future Greenview Farm Family Award recipients with the following revision: Change 1995 recipient to Larry & Donna Noullett	Stacey Sevilla, Communications Manager	In Progress
MOTION: 21.09.97 September 29, 2021	**Moved by: REEVE DALE SMITH** that Administration draft a letter regarding elk negative impact concerns. Cc Jason Nixon, Devin Dreeshen, RMA representatives, & Peace Region MLA's for consideration at the Regional ASB meeting**.**	Sheila Kaus, Agricultural Services Manager	In Progress/Completed
MOTION: 21.09.98 September 29, 2021	**Moved by: COUNCILLOR BILL SMITH** that Administration draft a letter regarding grizzly bear impact concerns. Cc Jason Nixon, Devin Dreeshen, RMA representatives, & Peace Region MLA's in districtfor consideration at the Regional ASB meeting.	Sheila Kaus, Agricultural Services Manager	Completed
MOTION: 21.10.111 October 27, 2021	**Moved by: MEMBER LARRY SMITH** that the Agricultural Service Board accept the Equipment Sanitation Guidelines report for information, with the following changes; • Insertion of used wooden rig matting • Elimination of C(i)	Sheila Kaus, Agricultural Services Manager	Completed, Working with Communications for Publication on Website
MOTION: 21.10.112 October 27, 2021	**Moved by: COUNCILLOR DAVE BERRY** that the Agricultural Service Board recommend that Administration draft an agreement template that landowners can use to develop their own agreement pertaining to rental or access of their land.	Kristin King, Agricultural Services Coordinator	In Progress

MD of Greenview
November 24th, 2021

REQUEST FOR DECISION

SUBJECT:	**Alberta Agricultural Service Board**		
SUBMISSION TO:	AGRICULTURAL SERVICES BOARD	REVIEWED AND APPROVED FOR SUBMISSION	
MEETING DATE:	November 24, 2021	CAO:	MANAGER: SK
DEPARTMENT:	AGRICULTURE	GM:	PRESENTER: SK
STRATEGIC PLAN:	Level of Service	LEG:	

RELEVANT LEGISLATION:
Provincial (cite) – N/A

Council Bylaw/Policy (cite) – N/A

RECOMMENDED ACTION:
MOTION: That the Agricultural Service Board accept the Alberta Agriculture Service Board orientation for information, as presented.

BACKGROUND/PROPOSAL:
Alberta Agriculture and Forestry along with the Agriculture Service Manager will provide an Alberta Agriculture Service Board orientation.

Agricultural Service Boards (ASBs) are unique to North America as they are special committees appointed by the local municipal Council to address agricultural concerns in their communities and to review policies that pertain to the local agricultural sector. Alberta Agriculture and Forestry (AF), the provincial government partners with these boards, in many ways ensure collectively that agricultural production is maintained and improved.

Administration anticipates the benefit of the orientation will be to provide members with a greater understanding of the role and responsibility.

BENEFITS OF THE RECOMMENDED ACTION:
1. The benefit of the Agricultural Service Board accepting the recommended motion is that the Board will have the opportunity to learn about the role and responsibility of the Agricultural Service Board.

DISADVANTAGES OF THE RECOMMENDED ACTION:
1. There are no perceived disadvantages to the recommended motion.

ALTERNATIVES CONSIDERED:
Alternative #1: N/A

FINANCIAL IMPLICATION:

There are no financial implications to the recommended motion.

STAFFING IMPLICATION:

There are no staffing implications to the recommended motion.

PUBLIC ENGAGEMENT LEVEL:

Greenview has adopted the IAP2 Framework for public consultation.

INCREASING LEVEL OF PUBLIC IMPACT

Inform

PUBLIC PARTICIPATION GOAL

Inform - To provide the public with balanced and objective information to assist them in understanding the problem, alternatives, opportunities and/or solutions.

PROMISE TO THE PUBLIC

Inform - We will keep you informed.

FOLLOW UP ACTIONS:

There are no follow up actions to the recommended motion.

ATTACHMENT(S):

- Policy 6308 – Clubroot of Canola
- ASB Member Orientation PowerPoint

POLICY

Title: CLUBROOT OF CANOLA

Policy No: 6308

Effective Date: July 27, 2021

Motion Number: 21.07.398

Supersedes Policy No: None

Review Date: July 27, 2024

Purpose: The purpose of this policy is to establish a management plan to prevent and/or minimize the spread and impact of Clubroot in Greenview. Greenview Council recognizes that Clubroot of Canola is declared a pest under the *Agricultural Pests Act* of Alberta and is a concern to agricultural producers within Greenview. Council further recognizes that it is beneficial to the agricultural industry to 'take active measures to prevent the establishment of, control or destroy pests in Greenview (Sec. 6, *Agricultural Pests Act,* R.S.A 2000, Chapter A-8*).*

1. DEFINITIONS

1.1. **Manager of Agricultural Services** means the individual appointed as the Agricultural Fieldman through motion by Greenview Council and by virtue of position (*Agricultural Service Board Act*) who acts as a Pest Inspector.

1.2. **Agricultural Pests Act** means the Alberta *Agricultural Pests Act* (R.S.A. 200, Chapter A-8) and the *Pest and Nuisance Control Regulation* (184/2001) including any amendments or successor legislation thereto.

1.3. **Agricultural Service Board** means the Board appointed by Greenview Council to address agricultural concerns.

1.4. **Alberta Clubroot Management Plan** means the plan to manage clubroot of canola as set forth by Alberta Agriculture and Forestry.

1.5. **Clubroot of Canola ("Clubroot")** means the serious soil-borne disease caused by *Plasmodiophora brassicae*.

1.6. **Control** means to destroy or manage the disease through measures deemed acceptable by the Pest Inspector and this Policy.

1.7. **Crop Residue** means the material left in an agricultural field after the crop has been harvested.

1.8. **Cruciferous Plants** means a plant family which includes; canola/rapeseed and mustard, as well as the cabbage family (broccoli, brussel sprouts, cabbage, cauliflower, kale, kohlrabi, radish, rutabaga and turnip).

1.9. **ID %** means a value derived from application of the accepted algorithm to determine clubroot disease severity: (#1 total*1)+(#2 total*3))/100)*100.

1.10. **Destroy** means to kill all growing parts or to render reproductive mechanisms non-viable.

1.11. **Geographic Area** means an area of land under the jurisdiction of Greenview.

1.12. **Greenview** means the Municipal District of Greenview No. 16.

1.13. **Infested** means a property containing Clubroot of Canola.

1.14. **Notice** means a notice in writing issued by a Pest Inspector under section 12 of the *Agricultural Pests Act*.

1.15. **Period of Restriction** means a period of time which a cruciferous crop may not be planted or grown.

1.16. **Pest** means an animal, bird, insect, plant or disease declared a pest under section two of the *Agricultural Pests Act*.

1.17. **Pest Inspector** means an inspector appointed by Greenview Council or by the Minister to carry out the *Agricultural Pests Act*.

1.18. **Producer** means a farm operator.

1.19. **Soil Disturbance** means anything that can or may move soil.

2. POLICY STATEMENT

2.1. Clubroot of Canola poses a serious threat to the Canola industry by reducing yields, it reduces the quantity and quality of the oil produced from the seeds and the spores can remain viable for twenty (20) years or more according to current research.

A. Clubroot was declared a pest to Alberta under the *Agricultural Pests Act* (APA) in 2007. Section 6 of the APA states that: a local authority shall take active measures to prevent the establishment of, or to control or destroy pests in Greenview.

3. PROCEDURE

3.1. In the event that a symptomatic sample sent to an accredited lab for analysis returns a DNA positive for Clubroot Greenview shall:

A. Ensure the landowner(s) and/or producer(s) receive a written Pest Notice as per the *Agricultural Pests Act* and associated Regulations following these parameters, as set by Council:

i. 1-3 rotation or a two-year break when ID% is less than 2%;
ii. 1-4 rotation or a three-year break when ID% is greater than 2%;
iii. Should pathotype testing reveal the field is infested with a resistance breaking pathotype the pest notice shall be until there is a canola cultivar

with resistance to that specific pathotype. All other brassica crops shall be prohibited.

B. All landowner(s) and/or producer(s) within a one (1) mile or 1.6 kilometer radius of the field where Clubroot was confirmed, will be sent written confirmation that Clubroot was confirmed within a one (1) mile or 1.6 kilometer radius of their property with an information package.

3.2. The landowner(s) and/or producer(s) of lands confirmed with Clubroot shall be required to adopt the following immediate control measures;

A. The crop shall be harvested, and the canola seed shall be sold for crushing, but **not** sold for feed or seed, and shall **not** be retained for reseeding.
B. Crop residue shall be chopped and evenly spread back onto the infected land, not baled or removed.
C. Any seed load transported from the infested land shall be securely covered (tarped).
D. Soil disturbance on infected land should be minimized to prevent movement to uninfected land.
E. Any crop residue and soil should be cleaned from all equipment and implements and left on the land before taking equipment off the infected land.
F. Implements, or parts thereof, which come directly into contact with the soil should be sterilized, as per the Alberta Clubroot Management Plant (Appendix 1 and 2).
G. Should the landowner(s) and/or producer(s) of infected land plant canola fail to abide by the notice the Manager of Agricultural Services shall:

i. If the landowner(s) and/or producer(s) fails to abide by the Notice, the Manager of Agricultural Services shall.
ii. Take appropriate measures to destroy the planted crop.
iii. Should Greenview destroy the crop, an invoice shall be issued to the landowner(s) and/or producer(s) for the labour, chemical and equipment costs of the crops destruction as per Provincial Legislation, including the ability of Greenview to add the arrears amount to the property taxes.
iv. Should enforcement be required, where the landowner(s) or producer(s) does not elect to perform the control themselves additional administrative fees will be charged at 15% of the cost of enforcement.

H. After the period of restriction listed in the Notice has expired, canola may be seeded.
I. Inform any contractors or custom operators who may enter onto the land that Clubroot has been found on the property, and advise them to properly clean and disinfect any equipment which comes into contact with the soil.

4. COUNCIL RESPONSIBILITIES

4.1. Council shall appoint Pest Inspectors (as per section 10 of the *Agricultural Pests Act*).

4.2. Council shall review the Clubroot of Canola policy annually, to ensure the policy is informed by the most recent advancements in knowledge of the clubroot pathogen.

POLICY

5. ADMINISTRATION RESPONSIBILITIES

5.1. The Manager of Agricultural Services shall establish protocols and an inspection schedule to be followed outlining the following:

A. Ensure fields to be inspected are distributed across the geographic area of Greenview.
B. Sampling techniques, recordkeeping and protocols for entering land.
C. Mitigation and control of clubroot spore transferral between fields by Pest Inspectors and;
D. Timed to ensure impacted producers are informed of positive clubroot DNA results prior to harvest.

5.2. For Research purposes, canola and other cruciferous crops may be permitted to be grown on lands where a Notice has been issued with respect to Clubroot of Canola on the lands provided that pre-approval has been granted by the Manager of Agricultural Services at their sole discretion.

5.3. Administration shall develop a geographical heat map based on Townships of infestations for use in mitigation plan development by industry and construction companies.

5.4. In order to better understand how the disease was introduced and spread, administration shall gather as much information about the Clubroot infected field as possible, including type and variety of the crop, seed retailer, equipment movement, custom operators used, soil type, pH and drainage patterns.

5.5. Greenview Agricultural Services will provide information and education to landowner(s) and/or producer(s) regarding the spread of Clubroot of Canola.

5.6. Greenview will advocate that all seed (of a host crop) should be a Clubroot resistant variety.

ASB Member Orientation

Today's Goals

Why do we have Agricultural Service Boards?

What are they?

What are they supposed to do?

What is my role as an ASB member?

What is the role of an agricultural fieldman?

Why do we have Agricultural Service Boards?

Soil Erosion

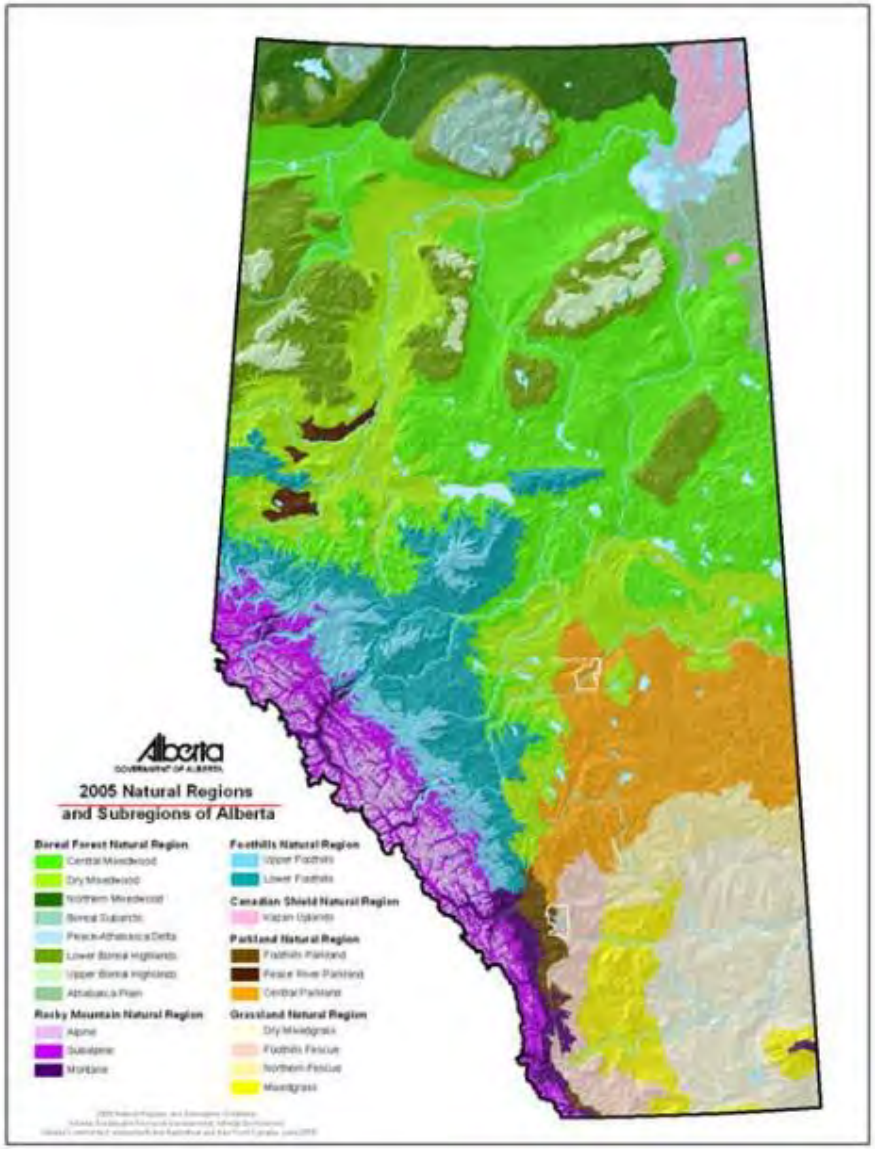
http://www.mccord-museum.qc.ca/en/collection/artifacts/19770260001

Dust Storm, Pearce, Alberta
November 1942

Weed Infestations

http://www.phoenixant.com/Prints/60-68.htm

Natural Regions & Subregions of Alberta



Alberta Land Area 157,710,720 acres

33% of land mass is farmed

1943: Agricultural Committee Pilot Project

Photograph by] THE SELECTING COMMITTEE OF THE PHOTOGRAPHIC SALON. *Hana Studios, Limited.*

Reading from left to right the names are as follows: Walter Benington, Frederick H. Evans, George Davison, Malcolm Arbuthnot, Reginald Craigie (seated), J. Dudley Johnstone, F. J. Mortimer, J. Craig Annan.

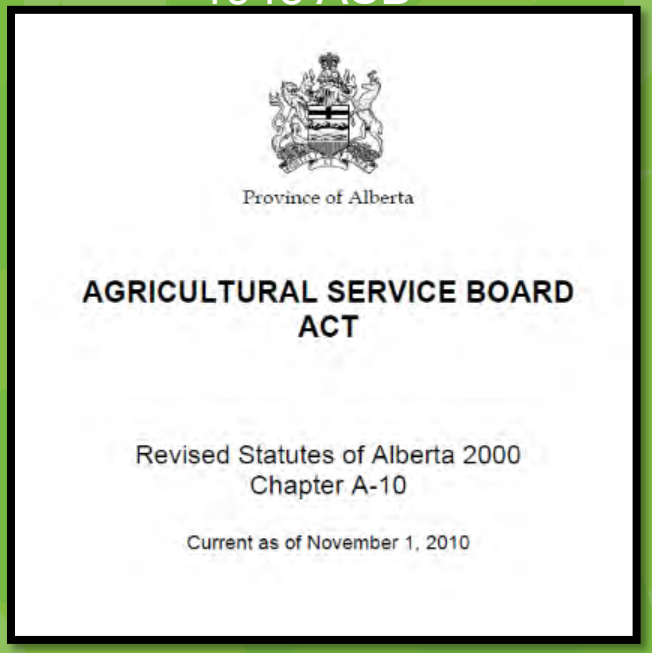
http://mbtitruths.blogspot.ca/2013/07/how-to-be-successful-as-each-type.html#!/2013/07/how-to-be-successful-as-each-type.html

Formation of ASBs

Be it resolved that this conference endorse and recommend the establishment of ASBs in all municipal districts, such boards to be similar to personnel and objectives as the one established in the M.D. of Conrich No. 220 and now in operation and that legislation as may be considered necessary be enacted by the Legislature to authorize the formation of such boards and to designate their powers

Municipal Districts Convention
November 1944

1945 ASB



Province of Alberta

AGRICULTURAL SERVICE BOARD ACT

Revised Statutes of Alberta 2000
Chapter A-10

Current as of November 1, 2010

“Father” of the ASB Program

William (Bill) Lobay

- Provincial Supervisor
- Helped to enact the ASB Act
- Organized and developed the program
- Established the Norway Rat program

What is an Agricultural Service Board?

MD of Willow Creek
Agricultural Service Board Members (2018)

Brazeau County
Agricultural Service Board Members (2019)

What are the roles and responsibilities of ASBs?

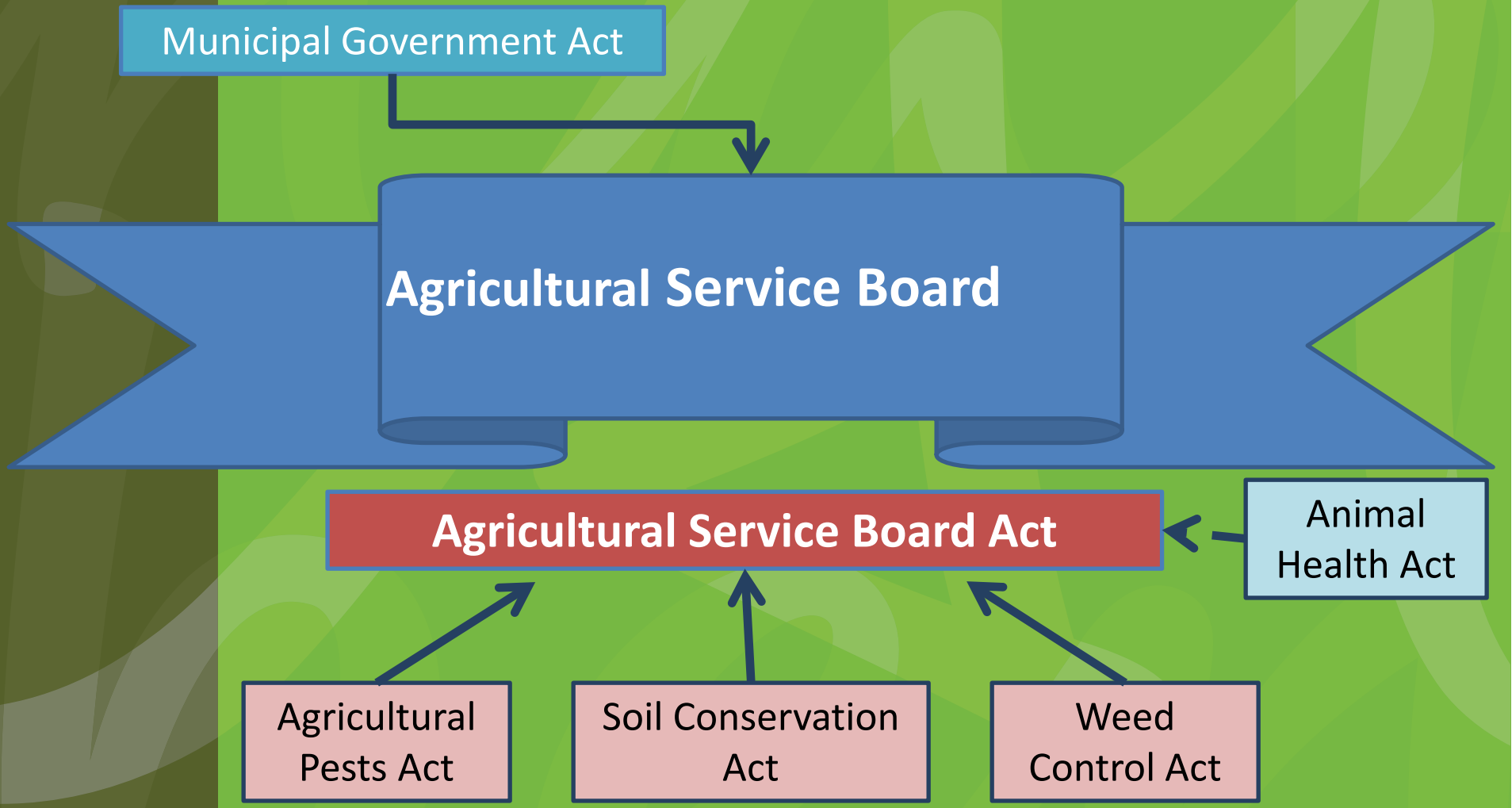
Legislated Duties under the ASB Act

Roles and Responsibilities

ASB Members

Agricultural Fieldman

Legislation Affecting ASBs



Legislated Duties of ASBs

Advisory to Council & Minister (Sec 2a)

Advise on weed and pest control & soil and water conservation programs (Sec 2b)

Legislated Duties of ASBs

Assist in control of animal diseases (Sec 2c)

Promote sustainable agriculture to improve the economic viability of producers (Sec 2d)

Policy Development (Sec 2e)

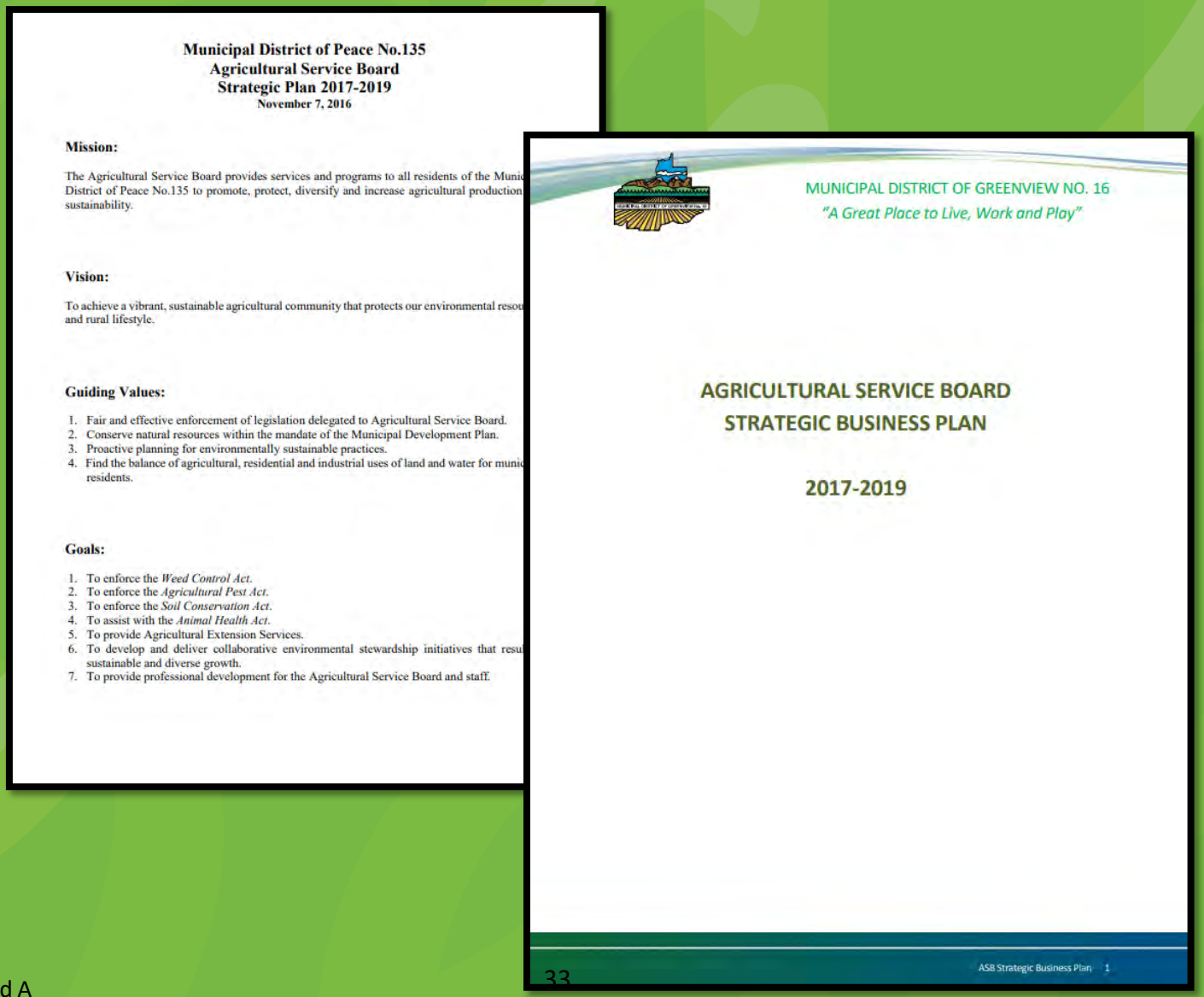
Other Roles of ASB include…

Policy Administration

Agricultural Programming

Role of ASB Member

Strategic Planning



Municipal District of Peace No.135
Agricultural Service Board
Strategic Plan 2017-2019
November 7, 2016

Mission:

The Agricultural Service Board provides services and programs to all residents of the Muni
District of Peace No.135 to promote, protect, diversify and increase agricultural production
sustainability.

Vision:

To achieve a vibrant, sustainable agricultural community that protects our environmental resou
and rural lifestyle.

Guiding Values:

1. Fair and effective enforcement of legislation delegated to Agricultural Service Board.
2. Conserve natural resources within the mandate of the Municipal Development Plan.
3. Proactive planning for environmentally sustainable practices.
4. Find the balance of agricultural, residential and industrial uses of land and water for munic
residents.

Goals:

1. To enforce the *Weed Control Act*.
2. To enforce the *Agricultural Pest Act*.
3. To enforce the *Soil Conservation Act*.
4. To assist with the *Animal Health Act*.
5. To provide Agricultural Extension Services.
6. To develop and deliver collaborative environmental stewardship initiatives that resu
sustainable and diverse growth.
7. To provide professional development for the Agricultural Service Board and staff.

MUNICIPAL DISTRICT OF GREENVIEW NO. 16

"A Great Place to Live, Work and Play"

AGRICULTURAL SERVICE BOARD
STRATEGIC BUSINESS PLAN

2017-2019

ASB Strategic Business Plan 1

Other Legislated Duties

Report on Activities Annually to Council (sec 4)

Ensure an Agricultural Fieldman is Appointed (sec 8)

What is an Agricultural Fieldman?

Full time employee

Qualified person

Legislated duties:

- Implement agricultural policies & programs
- Manage agricultural resources of the municipality

Designated officer

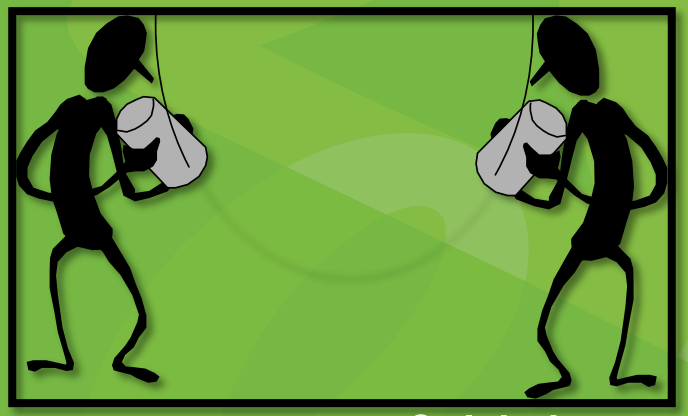
Inspector

What Does an Ag Fieldman Do?

Administration

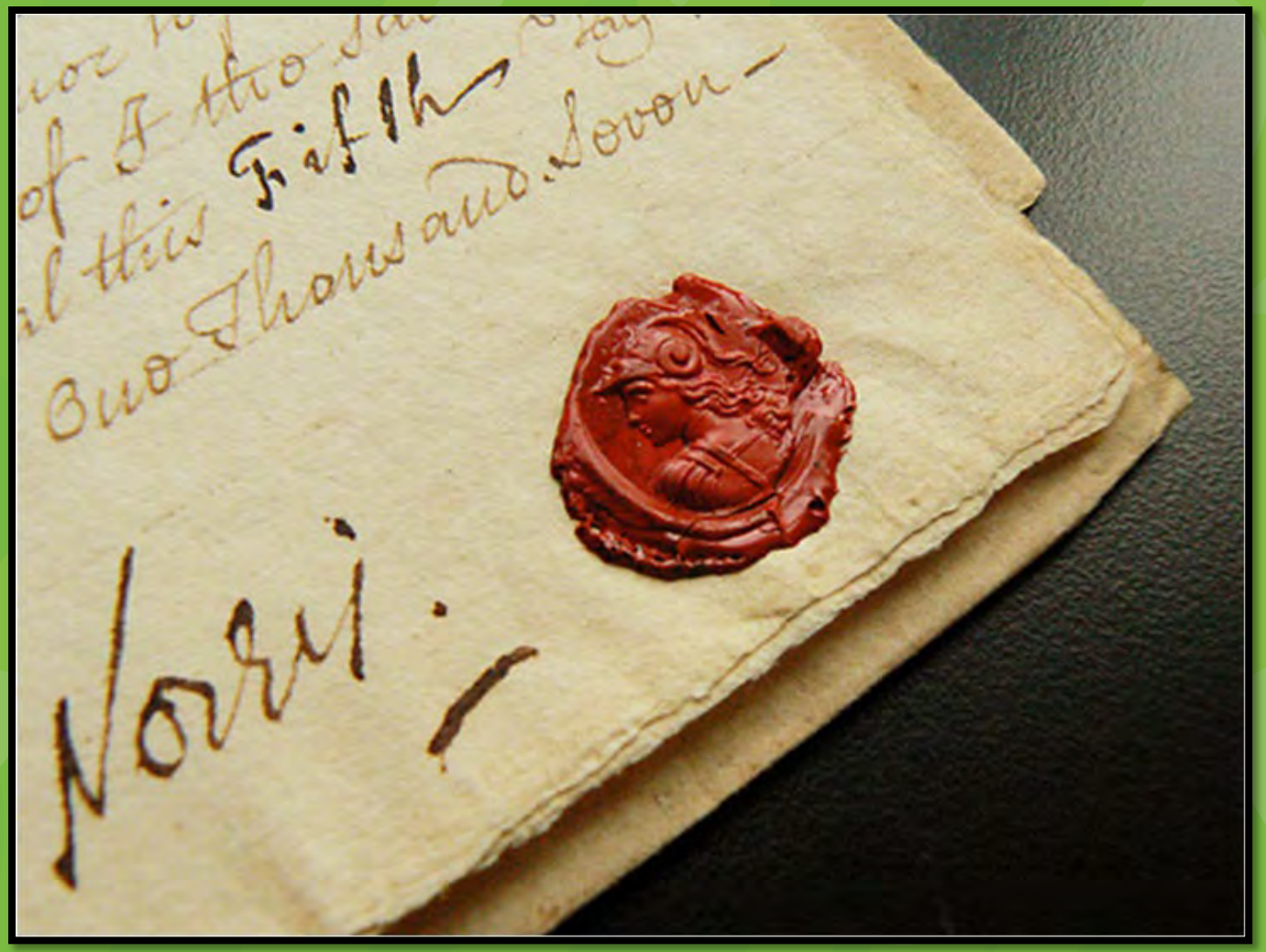
Implement Policy & Programs

Regulatory

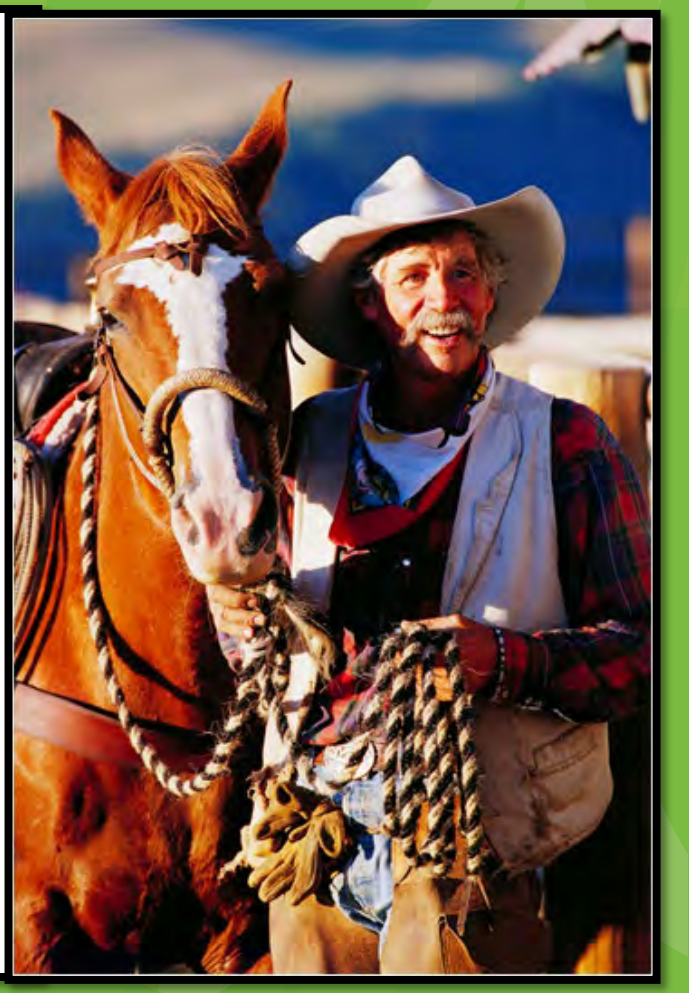


Communication & Liaison

Agricultural Service Board Act



ASB Membership



Advisory Committees

Advisory to ASB & to council

May be established permanently or on an “as needed” basis

May have more than one advisory committee

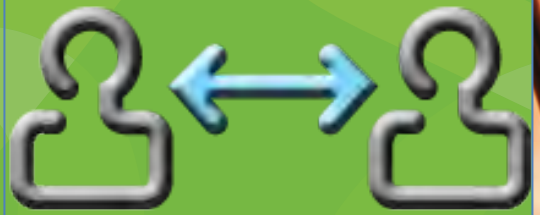
Minister's Representative

Agreement

Agricultural Service Board Program

Grant Administration

Legislation



Liaison

Education & Extension

The Agricultural Service Board Unit

Doug Macaulay
Manager, Agriculture Service Board Unit

Alan Efetha
Provincial ASB Specialist

Agriculture and Forestry ASB Contacts

David Feindel
Director Plant and Bee Health Surveillance Section/ Chief Provincial Plant Health Officer

Dale Chrapko
Manager
Environmental Programs

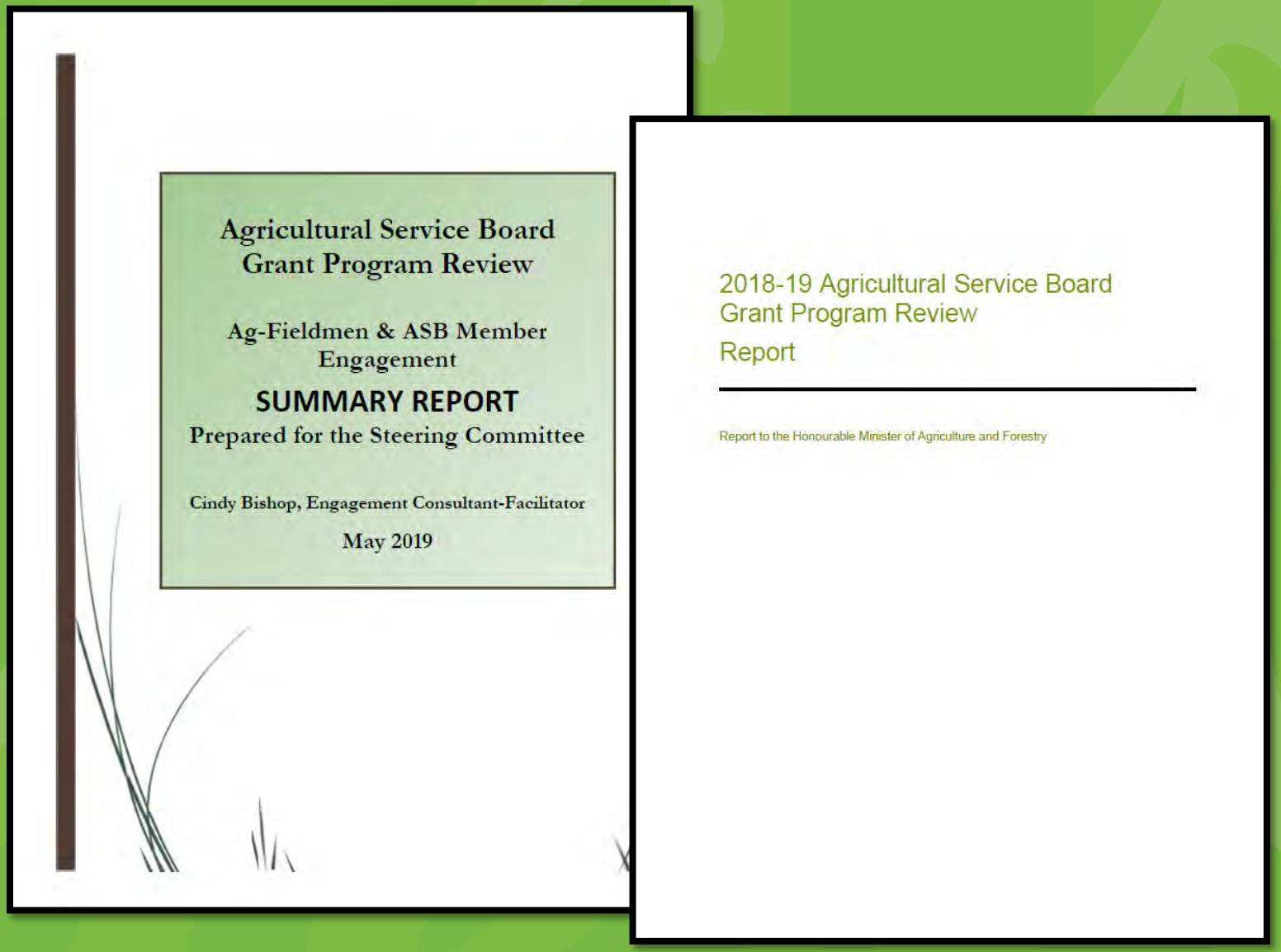
Shelley Barkley
Entomology Programs

Mike Harding
Plant Pathologist

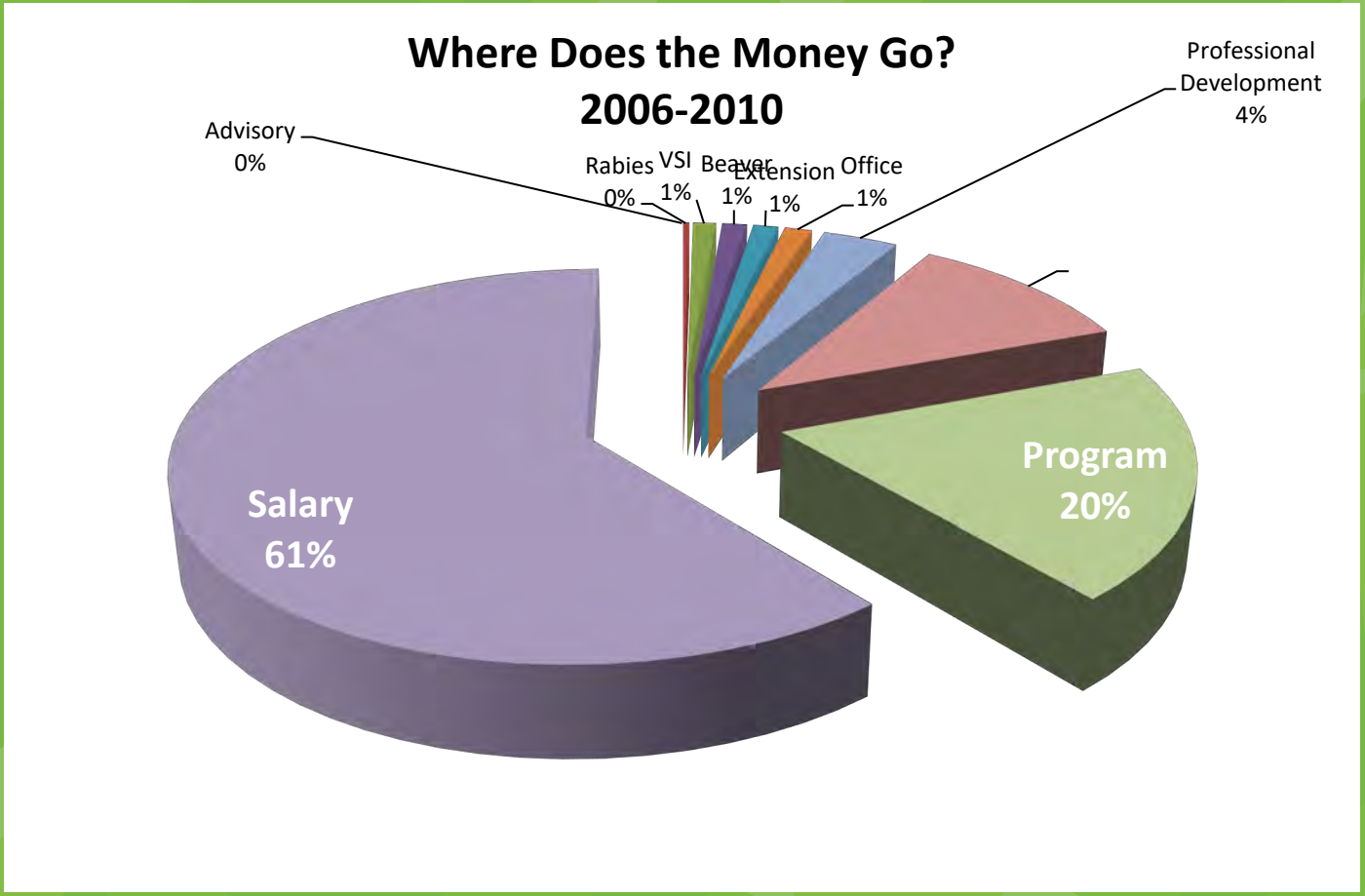
Gayah Sieusahai
Pest Regulatory Officer

Chris Neeser
Weed Scientist

Program Reviews



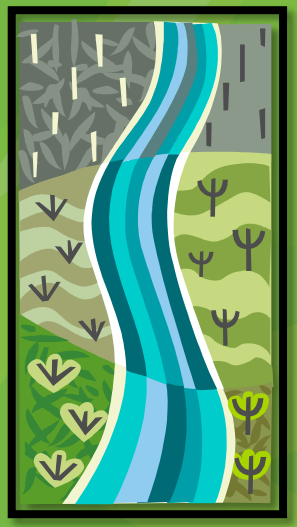
Grant Administration



ASB Program Grants

ASB Grant

Legislative Funding Stream



Resource Management Funding Stream

Wild Boar at Large Ear Bounty Grant

ASB Grant Program Outcomes

Weed, Pest & Soil Programs

Agricultural Policy Development

Protect Watershed Health

Collaboration

ASB Grant Eligibility & Application

1. Must be a municipality with an established ASB

2. Must have an agricultural fieldman appointed

3. Application postmarked before due date

What should we use ASB Grant Money for?

Labour

- Salary, wages, benefits, professional development

Operating Expenses

- Vehicles, equipment

Materials & Supplies

Office Operations

Contracted Services

Weed Control Act

Agricultural Pests Act

Soil Conservation Act

Animal Health Act

Education & Extension

Eligible Activities

Rabies Vector Control Program

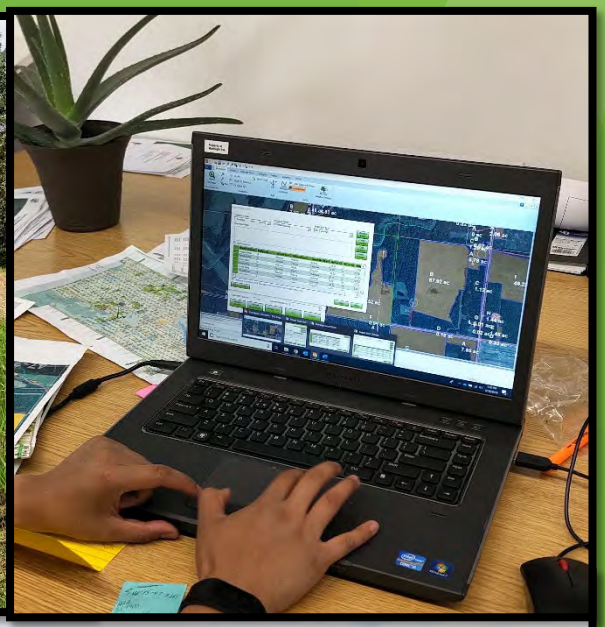
Pest Surveying

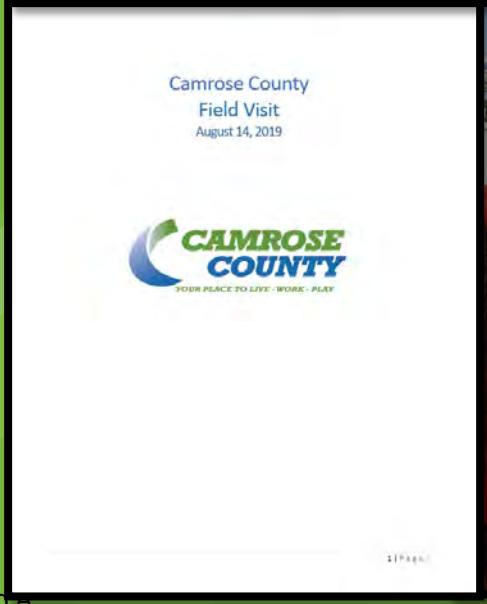
Other Activities as Requested by the Minister

Alberta Government

ASB Program

Field Visits





ASB Regional Liaison Program

- Replaces former Key Contact Program
- Goal is to provide updates to Agricultural Fieldmen to share with ASBs and their colleagues on AF programming & initiatives
- To address regional issues and concerns brought forward
- To attend Region's Regional Conference and the ASB Provincial Conference when possible
- Spring and Fall ADM Town Halls hosted by the ASB Provincial Committee

REGION	LIAISON	ALTERNATE
PEACE	Gayah Sieusahai	Dan Benson
NORTHWEST	Tanya Warren	Shawn Elgert
NORTHEAST	Cassandra Docherty	
CENTRAL	Kellie Jackson	
SOUTH	Alan Efetha	Joe Harrington

ASB Connector

ASB Town Hall with ADM

- ASB Town halls with ADM Primary Agriculture John Conrad scheduled Spring & Fall
- Focused on engaging ASBs / Chairs
- Updates on recent Ministry Initiatives
- Question / Discussion Focused

Agricultural Service Boards Program – Overview

Local boards work in their communities to help control weeds and pests, conserve soil and water and encourage sustainable agriculture.

On this page:

Overview
Agricultural service board grant
Functions
Unique partnership
Advisory committees
Weed and pest control
Municipal bylaws
Contact

Wild Boar at Large in Alberta

- Wild Boar Eradication Project
- Partnership with Alberta Pork who have contracted a wild boar specialist
- Alberta Invasive Species Council – Squeal on Pigs
- Alberta Environment & Parks, K9 trained dogs for detection
- New Website: https://www.alberta.ca/wild-boar.aspx
- Report wild boar at af.wildboar@gov.ab.ca

Liaison Role

ASBPC Committee members

Position	Members	Alternates	Representation
Region Rep.	Vacant	Vacant	Peace Region
Region Rep.	Sebastien Dutrisac	Cliff Wowdzia	Northeast Region
Region Rep.	Morgan Rockenbach	John Van Driesten	South Region
Region Rep.	Brenda Knight	Kathy Rooyakkers	Central Region
Region Rep.	Walter Preugschas	Ross Bohnet	Northwest Region
Secretary	Jane Fulton		AAAF
Executive Assistant	Linda Hunt		ASBPC
RMA Rep.	Jason Schneider		RMA
AAAF President	Sebastien Dutrisac		AAAF
ASB Program Manager	Doug Macaulay		Agriculture and Forestry
Recording Secretary	Arlene Stephens		Agriculture and Forestry

Role of Provincial Committee

Provide advice and recommendations to ASBs and AF	Increase communication between ASBs and AF (ASB Program Manager)	Represent views of all ASBs at ministerial and	Department Meetings
Elevate the significance of ASBs	Work cooperatively with AF, RMA, AAAF and other organizations on agricultural issues	Increase the policy development capacity of ASBs.	Review and approve resolutions passed at Regional ASB Meetings

PC Engagement (2021)

- ✓ 9 regular meetings, 7 with delegations
- ✓ 10 extra engagements which included :
- ✓ Minister Dreeshen and Minister Nixon Meetings
- ✓ DM and ADM of Transportation
- ✓ South Rural Caucus presentation
- ✓ Minister Dreeshen budget 2021 stakeholder Conference call
- ✓ Minister Dreeshen reception at the Stampede
- ✓ ADM ASB Chair town hall in the spring
- ✓ Regional Liaison Program Development with ADM
- ✓ Working group for Weeds on Wellsites
- ✓ Alberta Climate Engagement – Tech and bio based solutions
- ✓ CFIA online engagement seed regulatory modernization

AGRICULTURAL SERVICE BOARDS

75 years of promoting sustainable agriculture in Alberta

POSTS

SEPTEMBER 23, 2021

Weeds on Abandoned Well Sites Working Group

Resolution 1-21 In May 2021 the ASBPC met with a delegation from the Primary Agriculture Division that included ADM John Conrad. The Committee discussed as many of the resolutions that they could in the time that was allotted, giving priority attention to those where there was some activity. From that discussion ADM learned the extent ...

Continue reading

AUGUST 17, 2021

Agriculture Disasters Declared Due to Dry Conditions

There are now 32 of the 69 municipalities declaring Agriculture

Regional Liaison Program

Other Committees

- *Fusarium graminareum* Action Committee
- Clubroot Action Committee

Education & Extension

Legislation

Municipal Responsibilities

- Appoint inspectors
- Make bylaws
- Control pests/weeds on municipal lands
- Extension

Fieldman Responsibilities

Designated Officer
- Agricultural Pest Act
- Soil Conservation Act
- Weed Control Act

Authorized Person
- Animal Health Act

Manage agricultural resources

Implement policy

Agricultural Service Board Act
(Land Under Supervision/Order of Reclamation)

Greenview Policies

Agricultural Service Board Act

Greenview has staggered the appointments of the Agricultural Service Boards to ensure continuity to the board. The Board consists of 5 members at large and 2 councillors. Councillors are appointed for annually at Councils Organizational Meeting and the Chair and Vice Chair are decided annually at the ASB Organizational meeting. Members at large are appointed in the following terms:

- **3 members for two-year terms**
- **2 members for three-year terms**

Greenview Policies

Agricultural Service Board Act

ASB Member Name	Postion on Board	Term
Warren Wohlgemuth	Chair	2 year term Ending 2022
Shelley Morrison	Vice Chair	2 year term Ending 2023
Bill Smith	Deputy Reeve	1 year term 2022
Dave Berry	Councillor	1 year term 2022
Richard Brochu	Member at Large	2 year term Ending 2023
Larry Smith	Member at Large	3 year term Ending 2022
Mark Pellerin	Member at Large	3 year term Ending 2022

Greenview Policies

Agricultural Service Board Act

Policy 6304: Agricultural Research and Demonstration*; not provided*
Policy 6322: Rental Equipment*; review pending*
Policy 6309: Agricultural Improvement; *April 2022*
Policy 6310: Agricultural Service Board; *April 2022*
Policy 6315: Farm Family Award; *June 2022*

These policies set out Greenviews commitment to fulfilling the responsibilities of the ASB laid out in the ASB Act.

Agricultural Pests Act

Greenview Policies

Agricultural Pest Act

The Agricultural Pests Act requires municipalities to take active measures to prevent the establishment, control or destroy legislated agricultural pests.

AG 17: Equipment Sanitation; ***February 2022***
Policy 6316: Pest Control; ***June 2022***
Policy 6308: Clubroot of Canola; ***July 2022***
Policy 6319: Pest Surveillance and Control; ***June 2022***

These policies set out Greenview's active measures under the Agricultural Pests Act

Weed Control Act

Greenview Policies

Weed Control Act

The Weed Control Act states that municipalities shall inspect all private and public land for legislated weeds. Noxious Weeds require control, Prohibited Noxious Weeds require destruction.

Policy 6302: Roadside Vegetation Management
Policy 6302-1: Roadside Vegetation Management - Procedure
Policy 6303: Weed Control
Policy 6303-01: Weed Control – Procedure
Policy 6317- Spray Exemptions*; June 2022*
Policy 6318: Private Land Herbicide Application; *June 2022*

These policies set out Greenviews commitment to fulfilling these responsibilities.

Soil Conservation Act

Greenview Policies

Soil Conservation Act

The Soil Conservation Act directs the responsibility to inspect all public and private lands for incidents of soil erosion. Should an inspection identify Soil Erosion or degradation, the Act empowers the local authority to serve notice, if required.

Policy 6314: Soil Conservation; ***April 2022***

This policy set out Greenviews commitment to fulfilling these responsibilities.

Alberta Government

Appeal Committees

	Weed Control Act	Agricultural Pest Act	Soil Conservation Act
Requirements	Independent Appeal Committee Members	Members appointed at Start of Year	See SCA (sec 14 a, c & d)

Greenview

Intermunicipal Appeal Committee

To help ensure impartial application of the appeal process, Greenview has partnered with Northern Sunrise County, Big Lakes County and the County of Northern Lights to form the Intermunicipal Appeal Committee.

- **Covers appeals under the *Agricultural Pests Act and Weed Control Act***
- **Appointed in January**
- **Members at Large preferred**

A joint orientation of the Intermunicipal Appeal Committee is being coordinated, to be held in April 2022

Greenview

Soil Conservation Act Appeal Committee

- **The Agricultural Service Board acts as the Appeal Committee for any Notices given under the Soil Conservation Act.**
- **Appointed in January, annually.**

Animal Health Act

Greenview

Animal Health Act

Greenview Agricultural Services plays a supportive role in regards to the Animal Health Act, maintaining relationships with veterinarians and working to ensure veterinary services within Greenview.

- **Policy 6307: Veterinary Service Incorporated;** ***June 2024***
- **Policy 6311: Animal Health;** ***April 2022***

Other Legislation

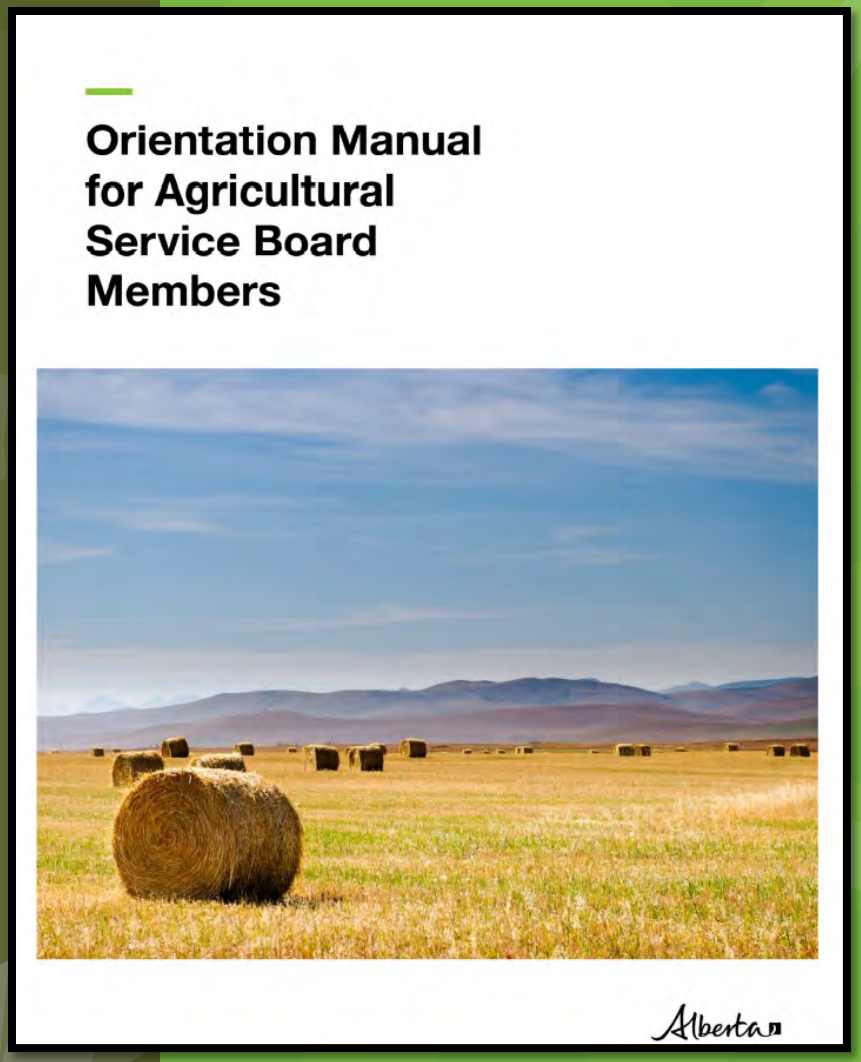
Agricultural Operation Practices Act (AOPA)

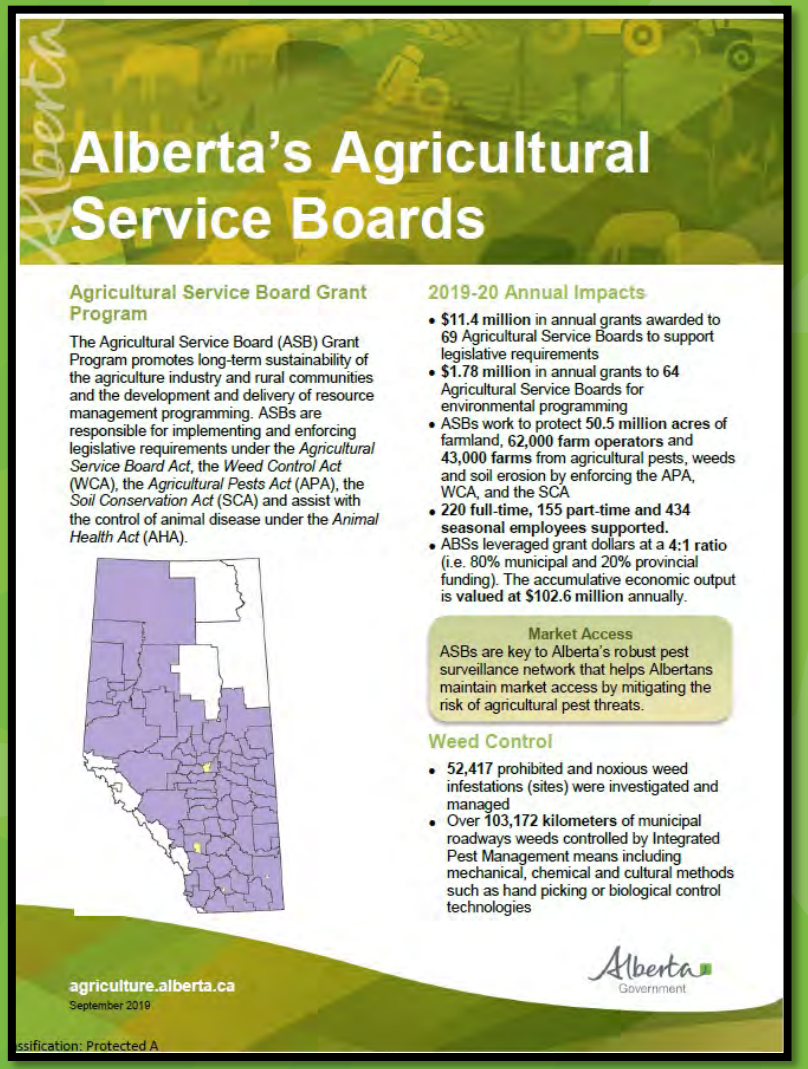
Environmental Protection and Enhancement Act (EPEA)

Stray Animals Act

Animal Protection Act

Helpful Material





Recap

Why do we have Agricultural Service Boards?

What are they?

What are they supposed to do?

What is my role as an ASB member?

What is the role of an agricultural fieldman?

Questions?

Doug Macaulay
780-980-4878
doug.macaulay@gov.ab.ca
Leduc, AB

Alan Efetha
403-381-5852
alan.efetha@gov.ab.ca

REQUEST FOR DECISION

SUBJECT:	**Meeting Date Changes for 2022**		
SUBMISSION TO:	AGRICULTURAL SERVICES BOARD	REVIEWED AND APPROVED FOR SUBMISSION	
MEETING DATE:	November 24, 2021	CAO:	MANAGER: SK
DEPARTMENT:	AGRICULTURE	GM:	PRESENTER: KK
STRATEGIC PLAN:	Level of Service	LEG:	

RELEVANT LEGISLATION:
Provincial (cite) – N/A

Council Bylaw/Policy (cite) – N/A

RECOMMENDED ACTION:
MOTION: That the Agricultural Service Board rescind motion 21.10.105 regarding the regular scheduled meetings for the Agriculture Service Board.

MOTION: That the Agriculture Service Board approve Regular Scheduled Agriculture Service Board Meetings to occur in Council Chambers at 9:30 a.m. on the following dates:
January 26, 2022
February 23, 2022
March 23, 2022
April 27, 2022
May 25, 2022
June 29, 2022
July 27, 2022
August 24, 2022
September 28, 2022
October 26, 2022
November 23, 2022
December 12, 2022

BACKGROUND/PROPOSAL:
In reviewing the Agricultural Service Board meeting dates scheduled for the 2022 calendar year, Administration determined three of the dates outlined in Motion 21.10.105 adopted at the October 27, 2021 Organizational Meeting would not follow the second Council meeting of the month, and one date conflicted with other committee meeting. Administration recommends rescinding Motion 21.10.105 and adopting the date schedule which includes the following revisions:

- March 30, 2022, revised to March 23, 2022; to follow the second Council meeting of the month
- August 31, 2022, revised to August 24, 2022; to follow the second Council meeting of the month

- November 30, 2022, revised to November 23, 2022; to follow the second Council meeting of the month
- December 14, 2022, revised to December 12, 2022; to mitigate a conflict with the Municipal Planning Commission and the Policy Review Committee

BENEFITS OF THE RECOMMENDED ACTION:

1. The benefit of the Agricultural Service Board accepting the recommended motion is that the meeting dates will be revised to occur after the second Council meeting of the month and proactively mitigate a meeting conflict.

DISADVANTAGES OF THE RECOMMENDED ACTION:

1. There are no perceived disadvantages to the recommended motion.

ALTERNATIVES CONSIDERED:

Alternative #1: The Agricultural Service Board has the alternative to alter or deny the recommended motion.

FINANCIAL IMPLICATION:

There are no financial implications to the recommended motion.

STAFFING IMPLICATION:

There are no staffing implications to the recommended motion.

PUBLIC ENGAGEMENT LEVEL:

Greenview has adopted the IAP2 Framework for public consultation.

INCREASING LEVEL OF PUBLIC IMPACT

Inform

PUBLIC PARTICIPATION GOAL

Inform - To provide the public with balanced and objective information to assist them in understanding the problem, alternatives, opportunities and/or solutions.

PROMISE TO THE PUBLIC

Inform - We will keep you informed.

FOLLOW UP ACTIONS:

Administration will schedule the meetings accordingly with the decision made by the Board.

ATTACHMENT(S): N/A

REQUEST FOR DECISION

SUBJECT:	**Conference Registration Sponsorships**		
SUBMISSION TO:	AGRICULTURAL SERVICES BOARD	REVIEWED AND APPROVED FOR SUBMISSION	
MEETING DATE:	November 24, 2021	CAO:	MANAGER: SK
DEPARTMENT:	AGRICULTURE	GM:	PRESENTER: KK
STRATEGIC PLAN:	Level of Service	LEG:	

RELEVANT LEGISLATION:
Provincial (cite) – N/A

Council Bylaw/Policy (cite) – N/A

RECOMMENDED ACTION:
MOTION: That the Agricultural Service Board accept the Conference Sponsorship report for information, as presented.

BACKGROUND/PROPOSAL:
Administration is requesting to facilitate attendance of Greenview producers at industry-driven conferences and seminars through entry fee and accommodation sponsorship. This may provide producers with access to important industry research and information that may not be readily available within the Peace Region. Sponsorship for recipients may support and encourgage the forward momentum and economic diversification of the local agricultural industry.

Administration is recommending Greenview provide sponsorship limited to the cost of the ticket to attend and $150.00 per night of accommodation, with an annual budget of $3,500.00. Sponsorship shall be limited to the following conferences and seminars:

- FarmTech
- Alberta Beef Industry Conference
- Agronomy Update
- Canolapalooza
- AgSmart
- Western Canada Grazing Conference
- AgEx
- Farm Forum Event

A line item within the Agriculture Service budget (Grants to Organizations) includes $3,500.00 for sponsorship that may be utilized for this intended purpose. If the Board approves of the sponsorship initiative, Administration will draft a corresponding policy to provide guidelines.

BENEFITS OF THE RECOMMENDED ACTION:

1. The benefit of the recommended motion is that the Board will be informed of an initiative to encourage agricultural residents to attend conferences and seminars that may provide current information and research that will benefit the agricultural community.

DISADVANTAGES OF THE RECOMMENDED ACTION:

1. There are no perceived disadvantages to the recommended motion.

ALTERNATIVES CONSIDERED:

Alternative #1: Council has the alternative to alter or deny the recommended motion.

FINANCIAL IMPLICATION:

Direct Costs:

Ongoing / Future Costs:

STAFFING IMPLICATION:

There are no staffing implications to the recommended motion.

PUBLIC ENGAGEMENT LEVEL:

Greenview has adopted the IAP2 Framework for public consultation.

INCREASING LEVEL OF PUBLIC IMPACT

Inform

PUBLIC PARTICIPATION GOAL

Inform - To provide the public with balanced and objective information to assist them in understanding the problem, alternatives, opportunities and/or solutions.

PROMISE TO THE PUBLIC

Inform - We will keep you informed.

FOLLOW UP ACTIONS:

Should Council approve the initiative, Administration will bring forward additional information with regard to recipient selection guidelines and a proposed application.

ATTACHMENT(S): N/A

REQUEST FOR DECISION

SUBJECT:	**Rental Equipment Policy**		
SUBMISSION TO:	AGRICULTURAL SERVICES BOARD	REVIEWED AND APPROVED FOR SUBMISSION	
MEETING DATE:	November 24, 2021	CAO:	MANAGER: SK
DEPARTMENT:	AGRICULTURE	GM:	PRESENTER: SK
STRATEGIC PLAN:	Level of Service		

RELEVANT LEGISLATION:

Provincial (cite) – N/A

Council Bylaw/Policy (cite) – N/A

RECOMMENDED ACTION:

MOTION: That the Agricultural Service Board recommend the Rental Equipment Policy be presented to the Policy Review Committee as presented.

BACKGROUND/PROPOSAL:

In January 2021, the Agricultural Service Board requested a review of Policy AG-09: Rental Equipment. Administration required time to assess the program as it was administered to inform policy drafting for the Board's approval.

The drafted policy includes check-in and out procedures to better delineate damages, equipment-specific hazard assessments to mitigate liability, a damage deposit, and administrative fees for no-show bookings. The damage deposit system may encourage renters of the equipment to take more care in handling the equipment, therefore lessening maintenance and repairs costs.

All fees will be outlined in the upcoming 2022 Schedule of Fees, to be approved in the new year.

BENEFITS OF THE RECOMMENDED ACTION:

1. The benefit of the Agricultural Service Board accepting the recommended motion is that the Board will recommend a revised policy that provides better risk management concerning the Agricultural Rental Equipment Program.

DISADVANTAGES OF THE RECOMMENDED ACTION:

1. The initiation of a damage deposit, no-show and other administrative fees may not be popular with ratepayers.

ALTERNATIVES CONSIDERED:

Alternative #1: The Agricultural Service Board has the alternative to alter, or deny the recommended motion.

FINANCIAL IMPLICATION:

There are no financial implications to the recommended motion.

STAFFING IMPLICATION:

There are no staffing implications to the recommended motion.

PUBLIC ENGAGEMENT LEVEL:

Greenview has adopted the IAP2 Framework for public consultation.

INCREASING LEVEL OF PUBLIC IMPACT

Inform

PUBLIC PARTICIPATION GOAL

Inform - To provide the public with balanced and objective information to assist them in understanding the problem, alternatives, opportunities and/or solutions.

PROMISE TO THE PUBLIC

Inform - We will keep you informed.

FOLLOW UP ACTIONS: N/A

ATTACHMENT(S):

- Draft Policy 6322: Rental Equipment
- Strike-Out AG-09: Rental Equipment
- Rental Agreement with Hazard Assessment
- Schedule of Fee Update

POLICY

Title: Rental of Agricultural Equipment

Policy No:

Effective Date: Date passed in Council

Motion Number:

Supersedes Policy No: AG 09

Review Date: (3 Years from date approved by Council)

Purpose: To give non-profit organizations and ratepayers access to ~~specialized~~ agricultural equipment being made available for rent by ~~the~~ ~~M.D. Municipal District of~~ Greenview.

1. DEFINITIONS

1.1. **Boundary** means the municipal boundaries as recognized by the Province of Alberta.
1.2. **Good Standing** means a non-profit organization and/or ratepayer with no outstanding tax overburden, nor in the process of litigating against Greenview, nor having litigated in the past five years.

2. POLICY STATEMENT

2.1. ~~The M.D. of~~ Greenview will rent ~~agricultural~~ equipment to non-profit organizations and ratepayers that are in good standing ~~with the M.D., as per established guidelines.~~

3. PROCEDURE

Rental equipment will be utilized only ~~in the M.D. of Greenview No. 16.~~ within Greenview boundaries.

3.1.

3.2. Rental equipment will be released to a renter following the completion of the following forms:

A) ~~a~~ Rental Agreement form~~, which is attached hereto as part of this policy~~ (appendix 1)
B) Equipment specific check-out list (~~example~~ appendix 2)~~.~~
~~3.1.~~C) Equipment Specific Hazard Assessment (example appendix 3)

~~3.3.~~ Rental fees plus applicable Goods and Service Tax will be collected for the number of days rented, upon the equipment's return. ~~A minimum one days~~day ~~rent will be collected, whether the equipment was used or not.~~

3.4. If the equipment has been booked and the renter does not show and does not call, an administrative cancellation fee will be charged.

~~3.5.~~

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3.6. The renter is responsible to ensure the equipment is transported safely and ~~M.D.~~Greenview Staff has the right to refuse the release of any piece of equipment, if in their opinion it cannot be transported in a safe manner.

~~3.2.~~

~~3.3.~~ Damage charges ~~may~~ where applicable, will be assessed ~~after the equipment passes~~ should the equipment fail to pass inspection upon return or in the case of ~~an inspection of working order and~~ uncleanliness. ~~Damage obviously caused by the renter will be charged back to the renter.~~Damages and cleanliness will be assessed by the Manager of Agricultural Services or ~~designate~~designate, and the renter will be invoiced for resulting expenditures.

3.7.

~~3.4.~~3.8. Equipment returned unclean will have ~~be cleaned and~~ a cleaning fee ~~will be~~ charged on a per hour basis.~~.~~

3.9. If the equipment is not returned on the day specified by the rental agreement, ~~and other persons are waiting for the equipment~~, the renter will be contacted.

~~3.5.~~ If the ~~lessee~~ renter fails to return the equipment, the

~~3.6.~~ C.A.O. or designate will retrieve the equipment. This will result in the renter forfeiting rental privileges until such time as full recovery of costs, plus rental charges for the total number days that the equipment was held, are recovered.

3.10.

~~3.7.~~

3.11. Rental fees are to be established by Council by resolution ~~from time to time,~~ and set forth in the Schedule of Fees for the Municipality.

~~3.8.The renter is responsible to ensure the equipment is transported safely and M.D. Staff has the right to refuse the release of any piece of equipment, if in their opinion it cannot be transported in a safe manner.~~

~~3.9.~~

~~3.10. Rental fees are to be established by Council by resolution from time to time, and set forth in the Schedule of Fees for the Municipality.~~

~~3.11.~~3.12. (Actionable items by Council, Administration or the Public)

~~3.12.~~3.13. *Note: Processes specific to administration that do not involve Council or the Public will be outlined in Internal Directives as opposed to Council Approved Policies

~~3.13.~~3.14. Outline the PROCESS of implementation of the policy

~~3.14.~~3.15. Numbering level 2

A) Includes pertinent information for Council and/or ratepayers about the Administrative process.

B) Numbering Level 3

i. i.e. Application process

ii. i.e. Applicable Fees

iii. Numbering Level 4

4. APPLICATION

4.1. Process of application goes here if applicable

5. COUNCIL RESPONSIBILITIES

5.1. Council responsibilities go here

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6. ADMINISTRATION RESPONSIBILITIES

6.1. Administration responsibilities go here

POLICY

POLICY

Title: Rental of Agricultural Equipment

Policy No:

Effective Date: Date passed in Council

Motion Number:

Supersedes Policy No: AG 09

Review Date: (3 Years from date approved by Council)

Purpose: To give non-profit organizations and ratepayers access to agricultural equipment available for rent by Greenview.

1. DEFINITIONS

1.1. **Boundary** means the municipal boundaries as recognized by the Province of Alberta.
1.2. **Good Standing** means a non-profit organization and/or ratepayer with no outstanding tax overburden, nor in the process of litigating against Greenview, nor having litigated in the past five years.

2. POLICY STATEMENT

2.1. Greenview will rent equipment to non-profit organizations and ratepayers that are in good standing with the municipality.

3. PROCEDURE

3.1. Rental equipment will be utilized only within Greenview boundaries.

3.2. Rental equipment will be released to a renter following the completion of the following forms:

A) Rental Agreement (appendix 1)
B) Equipment Specific Hazard Assessment
C) Damage Deposit has been paid.

3.3. Rental fees plus applicable Goods and Service Tax will be collected for the number of days rented, upon the equipment's return.

3.4. If the equipment has been booked and the renter does not show and does not call, an administrative cancellation fee will be charged.

3.5. The renter is responsible to ensure the equipment is transported safely and Greenview Staff has the right to refuse the release of any piece of equipment, if in their opinion it cannot be transported in a safe manner.

3.6. Damage charges will be assessed should the equipment fail to pass check-in inspection upon return or in the case of uncleanliness. Damages and cleanliness will be assessed by the Manager of Agricultural Services or designate, and the renter will be invoiced for resulting expenditures, including parts and labour.

3.7. Equipment returned unclean will have a cleaning fee charged on a per hour basis.

3.8. If the renter fails to return the equipment, the Manager of Agricultural Services or designate will retrieve the equipment. This will result in the renter forfeiting rental privileges until such time as full recovery of costs, including rental charges for the total number days that the equipment was held, transportation, equipment, parts and labour cost, are recovered.

4. COUNCIL RESPONSIBILITIES

4.1. Rental fees, labour fees, administrative fees, damage deposit rates are to be established by Council by resolution and set forth in the Schedule of Fees for the Municipality.

4.2. Purchase of replacement or additional rental equipment shall be decided by motion of Council.

5. ADMINISTRATION RESPONSIBILITIES

5.1. Administration shall ensure that equipment leaves the yard in good, working order. This shall be documented with a check-out form completed with each rental. Should the equipment not be in good, working order, Administration must cancel the rental.

5.2. Administration shall ensure renters understand the hazards of the piece of equipment and sign equipment specific hazard assessment and rental forms.

5.3. Administration shall complete check-in forms after each rental to ensure maintenance is completed promptly and potential damages are attributed to the correct rental.

5.4. Administration shall ensure renters are in good standing with Greenview prior to equipment leaving the premises.

MUNICIPAL DISTRICT OF GREENVIEW

RENTAL EQUIPMENT AGREEMEMT, signed at Valleyview, Alberta

You, (the Renter) agree to rent equipment from the Municipal District of Greenview No. 16 (the Owner) on the following terms and conditions. The Owner reserves the right to refuse rental privileges to anyone.

1. Rental equipment is for use by Municipal residents and non-commercial organizations. It is not to be used to fulfill a contract or for commercial use.
2. Rental equipment shall be utilized only within the boundaries of the Municipal District of Greenview No. 16.
3. The Renter will receive the equipment and return it to the Owner in the same condition as obtained. Typical effects of use are exempt.
4. The Renter recognizes and accepts the risks and responsibilities that may result from crop diseases being transmitted by use of this equipment, and agrees to sanitize equipment before use (if necessary), and return equipment after it has been thoroughly cleaned. As per Greenview Policy AG 17.

   _____ INITIAL
5. The Renter will be charged and agree to pay the Owner:
   - Minimum one (1) day's rent, whether the equipment is used to not.
   - For service calls, cleaning and/or repairs required which are above normal wear and tear, as per Managers discretion.
   - The cost of retrieving the equipment if it is not returned on the agreed upon date.
6. The Renter is responsible for any loss or damage to the equipment caused by their negligence.
7. The Renter uses the equipment at their own risk. The Owner is not responsible for any injury, loss or damages sustained or caused by the Renter, their employees or agents as a result of the use of the equipment. This assumes the Owner has not been negligent.
8. The Renter indemnifies the Municipal District of Greenview with regard to any claims, damages, and causes of action or fines which may be made against the M.D. by reason of use of the equipment by the Renter, save the except where the fine, claim, damages or cause of action arises by reason of the negligence of the M.D.
9. The Renter must maintain:

   _____ INITIAL
   - A $1,000,000 inclusive per occurrence Comprehensive General Liability insurance policy against bodily injury, personal injury and property damage including loss of use of the property.
   - A $1,000,000 inclusive Automobile Liability insurance policy on all vehicles owned, operated or licensed in The Renters name if they are used to tow or haul rental equipment.
10. The Renter is responsible to ensure the equipment can be transported safely. The Owner has the right to refuse to release any piece of equipment if in their opinion it cannot be transported in a safe manner.
11. The Renters rental privileges may be terminated if they do not pay rental, cleaning, retrieval, or repair fees.
12. Rental Equipment Rates and delivery charges are as set by Council in the M.D. of Greenview Schedule of Fees annually.

_____ *Print Name*	**UNIT #:** _____ *Rental Equipment*
_____ *Mailing Address*	_____ *Number of Days Rented*
_____ *Telephone Number*	_____ *Date & Time Signed*
_____ *Signature*	_____ *M.D. Representative*

12’ Pull Type Blade

General Operation

Please read and follow all instructions before and while using unit:

- Ensure equipment is cleaned before returning to the M.D.
- Hitch is single clevis draw pin, **a double clevis is required for transport**
- Maximum speed of 40km/h during transportation
- Maximum 6km/h operating speed
- Maximum 150 HP while operating, 100 HP minimum
- 3 pairs of Pioneer hydraulics
- Study your operator’s manual and know your equipment, if you have any questions contact an Ag. Representative

Hazard Assessment

Hazards	Controls	Initial of Renter
Pinching fingers or hands	Keep hands and fingers away from pinch areas, wear gloves if possible	
Fatigue	Take breaks when required. Stretch and drink plenty of water	
Back strain	Use proper lifting techniques when lifting units, ask for help when possible	
Driving through rough terrain	Use caution to prevent rollover. Go slow and watch for hazards. Avoid steep slopes and embankments	
Runover	Make sure to set park break before dismounting from tractor/truck. Do not stand between unit and tractor/truck when the vehicle is running.	
Hooking and unhooking trailer	Ensure hitch is pinned and chained properly and the truck/tractor is heavy enough to haul the unit	
Underground utilities	Have underground utilities located before using the pull blade. Alberta One Call: 1-800-242-3447	
Hydraulic system safety	Always place all hydraulic controls in neutral and relieve system pressure before disconnection or working on hydraulic system	
Hydraulic system repairs	**Do not attempt any makeshift repairs** to the hydraulic fittings or hoses by using tape, clamps, or cements. The hydraulic system operates under extremely high pressure. Such repairs can/will fail suddenly and create a hazardous and unsafe conditions	
Hydraulic system leaks	Escaping fluid under pressure can be nearly invisible and have enough force to penetrate skin causing serious injury. Use a piece of cardboard to search for leaks.	

	During times of heavy use, rental periods are limited to a 3 day maximum			
	Description	2022 Rates		
		Per Day	Weekend Rate	Deposit
1	**Picnic Tables (per table, per day)**			
i	Non-Profit Organizations; Community Event	**NO CHARGE**		$5.00
ii	Private Affair, Non-Public Event - *10 day max.*	$10.00	$15.00	$5.00
2	**Barbeque**			
i	Non-Profit Organizations; Community Event	**NO CHARGE**		$200.00
ii	Private Affair, Non-Public Event - *10 day max.*	$100.00	$150.00	$200.00
3	**Weed and Insect Control Equipment**			
i	Field Sprayer c/w GPS	$50.00	$75.00	$25.00
ii	Boomless Sprayer *VV, GD*	$20.00	$30.00	$10.00
iii	Water Tank on Trailer (For Spraying) *VV, GD*	$25.00	$37.50	$10.00
iv	Estate Sprayer (Pull Type)	$20.00	$30.00	$10.00
v	Estate Sprayer (3 pt hitch) *VV*	$20.00	$30.00	$10.00
vi	Handheld Sprayer	$5.00	$7.50	$5.00
vii	Quad Mounted Sprayers	$10.00	$15.00	$5.00
viii	Backpack Sprayers	$5.00	$7.50	$5.00
viiii	Granular Pesticide Bait Applicator *(Holds 135 lbs Bran)*	$30.00	$45.00	$15.00
4	**Spreaders**			
i	Manure Spreader *VV, GD*	$300.00	$450.00	$150.00
ii	Fertilizer Spreader *VV, GD*	$100.00	$150.00	$50.00
5	**Earth Moving and Post Pounding Equipment**			
i	1000 Earth Mover	$200.00	$300.00	$100.00
ii	12' Pull-Type Blade, *VV*	$50.00	$75.00	$25.00
iii	Vee Ditcher, *GD*	$50.00	$75.00	$25.00
iv	Post Pounder *(1/2 day rate* ***$65.00*** *)*	$125.00	$187.50	$62.50
v	Bin Crane *VV, GD*	$100.00	$150.00	$50.00
6	**Cattle Equipment**			
i	Cattle Squeeze	$25.00	$37.50	$12.50
ii	Loading Chute	$50.00	$75.00	$25.00
iii	Panel Trailer *VV, GD*	$50.00	$75.00	$25.00
iv	Spare Panels *(free 3 days, $5 each for additional days)*	$5.00	$5.00	$5.00
v	Tag Reader, *VV, GD*	**free**	**free**	$100.00
7	**Conservation Equipment**			
i	50' Heavy Harrow with Granual Applicator, *VV*	$250.00	$375.00	$125.00
ii	33' Heavy Harrow with Granular Applicator, *GD*	$250.00	$375.00	$125.00
iii	30' Land Roller, *VV, GD*	$200.00	$300.00	$100.00
iv	14' Heavy Disc, *VV, GD*	$300.00	$450.00	$150.00

7	Conservation Equipment	Per Day	Weekend Rate	Deposit
v	No-Till Drill, *VV*	$300.00	$450.00	$150.00
vi	Conservation Seeder- 3 pt hitch, *VV*	$100.00	$150.00	$50.00
vii	3 pt hitch 8' Rotary Tiller, *VV*	$150.00	$225.00	$75.00
viii	3 pt hitch 8' Deep Tillage Cultivator, *VV*	$100.00	$150.00	$50.00
viiii	3 pt hitch 8' Disk, *VV*	$100.00	$150.00	$50.00
x	3 pt hitch 8' Diamond Harrow, *VV*	$50.00	$75.00	$25.00
xi	3 pt hitch 8' Pull Blade, *VV*	$25.00	$37.50	$12.50
xii	Grain Bag Roller, *VV*	$50.00	$75.00	$25.00
xii	Plastic Mulch Applicator, *VV*	$50.00	$75.00	$25.00
xiiii	Tree Planter, *VV*	$50.00	$75.00	$25.00

8	Broadcast Seeding Equipment			
i	Truck Mount Seeder, *VV*	$10.00	$15.00	$5.00
ii	Quad Mount Seeder, *VV*	$10.00	$15.00	$5.00
iii	Hand Seeder, *(free 3 days, $5 per day after)*	$5.00	$7.50	$5.00
iv	Broadcast Seeder, 3 pt hitch, *VV*	$15.00	$22.50	$7.50

9	Miscellaneous Equipment			
i	Survey Equipment*, VV*	$10.00	$15.00	$5.00
ii	Metal Detector, *VV*	$10.00	$15.00	$5.00
iii	Hay Sampler, Soil Sampler (*Free first 3 days)*	$5.00	$7.50	$5.00
iiii	Bin Probe, Measuring Wheel *(Free first 3 days)*	$5.00	$7.50	$5.00
iv	Scare Cannons *(Free first 3 days)*	$5.00	$7.50	$5.00
v	Small Animal Traps	$2.00	$3.00	$100.00
vi	Purchase Magpie Traps (*inculdes GST)*	$150.00	N/A	N/A
vii	Grain Vacuum, *VV* , GD (1/2 day rate **$75)**	$150.00	$225.00	$75.00
viii	Bale Wagon, *VV, GD*	$250.00	$375.00	$125.00
viiii	Pressure Washer on Trailer, *VV*	$50.00	$75.00	$25.00

10	Water Pumping Equipment	48 hrs	+ 24 hrs	Deposit
i	Water Pump & Trailer, *VV, GD (Apr 2-Oct 31)*	$250.00	$250.00	$250.00

11	Recovery & Repairs; Rental Equipment Program	Per hr
i	Recovery requiring 1 ton minimum for transpoort	$100.00
ii	Recovery requiring under 1 ton to transport	$75.00
iii	Cleaning of Equipment *(plus $75 disposal fee)*	$60.00
iiii	Repair due to Negligent Use, labour	$60.00
v	Repair due to Negligent Use, parts	**FULL COST**

12	Notice Enforcement & Chemcial	Per hr	Admin Fee
i	Notice Enforcement, Internal Labour	$200.00	$125.00
ii	Notice Enforcement, External Labour	**FULL COST**	+ 15%
iii	Notice Enforcement, Chemical *(by volume)*	**FULL COST**	
iiii	Range and Pasture Product *(by box purchased)*	**FULL COST**	
v	Rural Acreage Owner Chemical *(by volume)*	**FULL COST**	

13	**Haying and Pasture Permits**	
i	Application fee ***No GST**	$100.00
ii	Plus Annual per Acre Charge ***No GST**	$15.00

12	**Spray Exemption Signs**	
i	Spray Exemption Signs - Initial Purchase	**Free**
ii	Lost or Replacement Signs (each)	$30.00

13	**Guides**	
i	Guide to Crop Protection	$15.00
ii	Weed Seedling Guide	$10.00

14	**Shelterbelt Program Rates, 2022**	
	Seedling Bundle *(10 seedlings)*	$12.50
	Seedling Bundle *(15 seedlings)*	$18.75
	Landscape Seedlings *(single seedling)*	$5.00
	Plastic Mulch, 1 Roll *(1,500 ft per roll)*	$225.00

REQUEST FOR DECISION

SUBJECT:	**Elk Populations**		
SUBMISSION TO:	AGRICULTURAL SERVICES BOARD	REVIEWED AND APPROVED FOR SUBMISSION	
MEETING DATE:	November 24, 2021	CAO:	MANAGER: SK
DEPARTMENT:	AGRICULTURE	GM:	PRESENTER: SK
STRATEGIC PLAN:	Level of Service		

RELEVANT LEGISLATION:
Provincial (cite) – N/A

Council Bylaw/Policy (cite) – N/A

RECOMMENDED ACTION:
MOTION: That the Agricultural Service Board accept the Elk Population Report for information, as presented.

BACKGROUND/PROPOSAL:
During the September 29, 2021 meeting, the Agricultural Service Board made the following motion:

MOTION: 21.09.97 Moved by: REEVE DALE SMITH that Administration draft a letter regarding elk negative impact concerns. Cc Jason Nixon, Devin Dreeshen, RMA representatives, & Peace Region MLA's for consideration at the Regional ASB meeting.

Since this time, Administration has reached out to regional municipalities and learned of a late Alberta Agricultural Service Board resolution submitted by Saddle Hills County regarding elk populations. The resolution reviews the past 20 years of ASB resolutions regarding growing elk populations and the detrimental impact their numbers have on agricultural production. Greenview was asked to review and second the resolution. Administration recommends the Agricultural Service Board support this resolution instead of writing a letter.

BENEFITS OF THE RECOMMENDED ACTION:
1. The benefit of the Agricultural Service Board accepting the recommended motion is that the Board will be informed as to the upcoming resolution regarding elk populations and the comprehensive nature of the approach.

DISADVANTAGES OF THE RECOMMENDED ACTION:
1. There are no disadvantage to the recommended motion.

ALTERNATIVES CONSIDERED:
Alternative #1: The Agricultural Service Board has the alternative to alter, or deny the recommended motion.

FINANCIAL IMPLICATION:

There are no financial implications to the recommended motion.

STAFFING IMPLICATION:

There are no staffing implications to the recommended motion.

PUBLIC ENGAGEMENT LEVEL:

Greenview has adopted the IAP2 Framework for public consultation.

INCREASING LEVEL OF PUBLIC IMPACT

Inform

PUBLIC PARTICIPATION GOAL

Inform - To provide the public with balanced and objective information to assist them in understanding the problem, alternatives, opportunities and/or solutions.

PROMISE TO THE PUBLIC

Inform - We will keep you informed.

FOLLOW UP ACTIONS: N/A

ATTACHMENT(S):

- SHC Ungulate Management Resolution

LATE RESOLUTION
PROPERLY MANAGING UNGULATE POPULATIONS

WHEREAS wildlife ungulate populations, specifically elk, are extremely high in many areas in Northern Alberta, particularly on lands used for agricultural production;

WHEREAS increased ungulate populations result in significant damage to agricultural commodities;

WHEREAS accurate ungulate population surveys are not conducted regularly;

WHEREAS the ungulate issue has been an agricultural problem for many years as can be seen from the past resolutions which were carried at the ASB Provincial Conference as well as at RMA (formerly AAMD&C),

THEREFORE BE IT RESOLVED
THAT ALBERTA'S AGRICULTURAL SERVICE BOARDS REQUEST

That Alberta Environment and Parks address the issue of outdated population data in areas which have high rates of wildlife damage insurance claims and restructure ungulate population survey frequency to accurately understand population densities in relevant Wildlife Management Units (WMUs).

FURTHER THEREFORE BE IT RESOLVED
THAT ALBERTA'S AGRICULTURAL SERVICE BOARDS REQUEST

That Alberta Environment and Parks use the precise population data to manage ungulate populations through increased numbers of hunting tags.

SPONSORED BY: Saddle Hills County
MOVED BY: _____
SECONDED BY: _____
CARRIED: _____
DEFEATED: _____
STATUS: Provincial
DEPARTMENT: Alberta Environment and Parks

BACKGROUND INFORMATION

Rising ungulate populations have had an increasingly negative impact on producers of agricultural commodities. In 2010, wildlife damage insurance claims were approximately eight hundred and twenty-nine thousand dollars. In 2020, claims were in excess of two million dollars. According to the wildlife biologist employed by the Government of Alberta who is responsible for managing Peace Region wildlife management units, some areas have not been surveyed since 2014. Management decisions are made based on the most recent population data available.

Past resolutions on this issue date back to 1999, from both the Provincial ASB Conference and RMA (AAMD&C) and include:

Resolution 9-15: Elk Quota Hunt

WHEREAS: Many Eastern Slopes and Peace Region Municipalities are having difficulties with problem elk populations;

WHEREAS: Many Peace Region Municipalities have submitted many resolutions in this regard for these same problems;

WHEREAS: Minimal and modest increases have been made to Eastern Slopes and Peace Region Wild Life Management Units (WMU's) harvest limits;

WHEREAS: These increases in tag allocations have not resulted in alleviating or mitigating economic losses sustained by producers;

THEREFORE BE IT RESOLVED THAT ALBERTA'S AGRICULTURAL SERVICE BOARDS REQUEST that the Minister of Environment and Sustainable Resources implement an Elk Quota Hunt, based upon the principles of the former Chronic Wasting Disease Quota Hunt and/or other ways the ministry can develop to alleviate this problem.

Status: Provincial

Response

Alberta Environment and Sustainable Resource Development

Environment and Sustainable Resource Development is implementing new elk hunting seasons in wildlife management units 162 and 163 in southeastern Alberta. These additional seasons will occur in areas where there are currently low elk numbers in order to maintain low populations and reduce range expansion.

Our department is increasing the number of antlerless elk hunting seasons for Canadian Forces Base Suffield and creating new hunting seasons for antlered elk. These seasons are in support of lowering elk populations in and around the base in response to landowner concerns. We are also implementing late-season antlerless elk hunting seasons in wildlife management units 302, 303, 304, 305, 306, 308 and 310 in southwestern Alberta. These seasons will extend into January and are being implemented in response to landowner concerns over agricultural depredation.

Department staff conducted elk population surveys in many wildlife management units throughout the province, including the Peace River area. Updated population estimates will be used to make changes to the number of issued hunting permits for the upcoming 2015 hunting season.

In addition, Environment and Sustainable Resource Development is amending the procedure for landowners to provide greater flexibility in obtaining antlerless elk landowner licences. Landowners who are unsuccessful in either the antlerless or antlered elk special licence draws will be allowed to apply for an antlerless elk landowner licence.

Resolution 12-20F

Expansion of Elk Hunting for Management in Agriculture Production Areas

Date:

November 1, 2020
Expiry Date:

December 1, 2023
Active Status:

Active
Sponsors:

Leduc County
District:

3 - Pembina River
Year:

2020
Convention:

Fall
Category:

Environment
Status:

Intent Not Met
Vote Results:

Carried
Preamble:

WHEREAS Alberta's elk populations are increasing rapidly due to current wildlife management policies; and

WHEREAS increased elk populations within primarily agricultural areas has impacted agricultural producers through damage to hay land, pasture, silage crops and other crops; and

WHEREAS the introduction of an antlerless elk season in many of Alberta's wildlife management units was intended to assist in elk population control;
Operative Clause:

THEREFORE, BE IT RESOLVED that the Rural Municipalities of Alberta (RMA) request that the Government of Alberta increase the number of antlerless elk draw seasons to a minimum of two per wildlife management unit (WMU) located within agricultural areas; and
FURTHER BE IT RESOLVED that RMA request that the Government of Alberta increase the number of antlerless elk tags allocated within WMUs that are located within agricultural areas to compensate for poor hunter harvest success.
Member Background:

Wildlife Management Unit (WMU) 334 is comprised of portions of Leduc County, Brazeau County, and Yellowhead County. The eastern portion of this WMU is primarily agricultural land with a high proportion of livestock operations, who rely on hay land and silage crops (such as corn) to provide winter feed for their cattle herds. Over the past three years, several herds of non-migrating elk have become established within WMU 334. Sightings of at least two separate herds of eighty elk and two herds of forty are common within the area. These elk have been damaging both standing and stockpiled forages that are intended for cattle feed.

Elk in the area have become especially damaging to corn crops that are intended as winter grazing for the cattle. While there are techniques for preventing and mitigating ungulate damage, such as deterrent, intercept feed and permanent fencing, these techniques are typically not effective/economical when dealing with large areas, such as entire fields.

The introduction of an antlerless elk season is believed to assist in the control of elk populations by removing female elk from the population. Tags are allocated within each WMU based on population numbers. This allocation assumes that with a 100% success rate of harvest, population numbers will be manageable. However, based on Alberta Environment and Parks' (AEP) Hunter Harvest Report, hunter success rates for elk only exceeded 50% in one WMU, and was only 11% in specifically for WMU 334.

AEP has confirmed that there has not been a specific survey for elk conducted within WMU 334, and the last aerial survey that was flown for other ungulate species was in January 2016. However, AEP had allocated 20 antlerless tags for WMU 334 in 2019 and 20 in 2020. According to the 2019 Hunter Harvest Report in 2019, five female elk and two young elk were harvested within the WMU, a success rate of 35%. Although this is a higher success rate than is recorded on the estimated resident harvest for elk, it is not a high enough success rate to ensure populations are managed.

By increasing the number of antlerless hunting seasons within WMUs where agriculture is a significant operation, the season in which elk can be hunted within these WMU's can be extended, and it is believed that the hunter harvest success rate can be increased. By increasing the number of antlerless tags available in these unit areas, elk populations will be more accurately managed even with a less than ideal hunter harvest rate.

Past resolutions have been endorsed by members of the Rural Municipalities of Alberta specifically related to elk population control, although there are no active resolutions currently.

References:

https://open.alberta.ca/publications/hunter-harvest-report-elk-estimated-resident-harvest-for-elk
https://rmalberta.com/resolutions/2-15s-elk-quota-hunt/
https://rmalberta.com/resolutions/4-15s-landowner-special-licence-for-elk/

RMA Background:

RMA has no active resolutions directly related to this issue.

Government Response:

Alberta Environment and Parks

I appreciated hearing from RMA members regarding elk depredation specific to Wildlife Management Unit 334. To mitigate elk depredation in Alberta's agricultural areas, Environment and Parks employs several management strategies, including adding extra seasons, extending antlerless seasons and changing landowner licence eligibility. While these strategies reduce depredation, they can also contribute to concerns related to hunter density, which can impact hunting access and limit harvest success.

I encourage the RMA to have concerned members track depredation events and provide details to their local fish and wildlife office (contact information is available at

www.alberta.ca by searching for “fish and wildlife contacts”), as this information can be used to assist the department in managing elk.

I have asked Environment and Parks staff to review the current landowner special licence process to ensure it is efficient and relevant to minimizing depredation issues. The department will also be evaluating the antlerless elk special licence as part of its annual process for recommending changes to hunting rules, and will adjust the number to better address concerns over agricultural conflict. Department staff indicate that an increase in antlerless elk tags and split seasons will not necessarily account for limited hunter success. Hunters’ ability to access lands containing the elk herds remains a key factor in determining the effectiveness of hunting as an elk-management tool. To assist on this front, I encourage RMA’s members to facilitate elk hunter access to private and leased public lands. This would have a substantial impact on harvest success.

Alberta Municipal Affairs

Alberta’s disaster recovery programs (DRPs) are intended to be financial assistance programs of last resort in response to widespread disasters or emergencies. The intent is that applicants first use insurance and other sources of assistance prior to accessing DRP assistance. Documentation is required from applicants to ensure that assistance is paid only for eligible uninsurable costs.

To enable DRP applicants to recover more quickly, the 2020 Disaster Assistance Guidelines (DAGs) include shortened program timelines to expedite the closure of DRPs, from five years in previous guidelines to three years. Applicants may request an extension if they experience project delays or are unable to submit the required documentation within the three-year timeline.

The Alberta Emergency Management Agency (AEMA) may provide a local authority applicant with an advance payment of up to 50 per cent of the eligible amount of requested assistance, if requested in writing by the community upon establishment of a DRP. Any subsequent requests for rolling advances must be supported by paid invoices from the applicant. For communities to receive an expedited final DRP payment, it is essential that they have completed their recovery projects and submitted all required records as indicated in the DAGs. Delays or discrepancies in project completion or the submission of requested documents result in final payment delays to the applicant.

The Disaster Assistance Guidelines ensure fair and transparent administration of DRPs and outline documentation requirements for applicants. The guidelines closely align with the federal Disaster Financial Assistance Arrangements (DFAAs) to maximize federal reimbursement and minimize the financial burden on Alberta taxpayers. Public Safety and Emergency Preparedness Canada may provide cost-recovery funding for DRPs based on a progressive formula under the DFAAs.

In order to receive federal reimbursement, the province must pass a strict federal audit for each program and meet all documentation requirements. AEMA is looking for opportunities to reduce red tape for individuals and communities under the DRP. As part

of these efforts, AEMA is advocating for changes to the DFAA guidelines that would reduce administrative burdens under the program.
Development:

RMA appreciates the Alberta Environment and Parks (AEP) response outlining the several management strategies currently employed to mitigate elk depredation in agricultural areas. AEP's response has indicated that the department will be evaluating the antlerless elk special licence as part of its annual process for recommending changes to hunting rules and will adjust the number to better address concerns over agricultural conflict.

RMA assigns this resolution a status of Intent Not Met and will update the status of the resolution if there are any changes to elk hunting management from the annual evaluation.
Provincial Ministries:

Environment and Parks

Resolution 4-99F

Ungulate Damage to Stored Grain and Feed

Date:

January 1, 1999
Expiry Date:

December 1, 2002
Active Status:

Expired
Year:

1999
Convention:

Fall
Status:

Archived
Vote Results:

Carried
Preamble:

WHEREAS agricultural producers in Alberta continue to suffer considerable financial losses, due to ungulate damages; AND WHEREAS even when producers exercise due

diligence in the storage of grains and feeds, herds growing in size and aggressiveness consistently cause loss of product and damage to storage facilities;AND WHEREAS while the Department of Environment and the Department of Agriculture, Food and Rural Development acknowledge there is a problem, neither of these departments, nor the Agricultural Financial Services Corporation, offer programs to compensate producers for these types of losses;

Operative Clause:

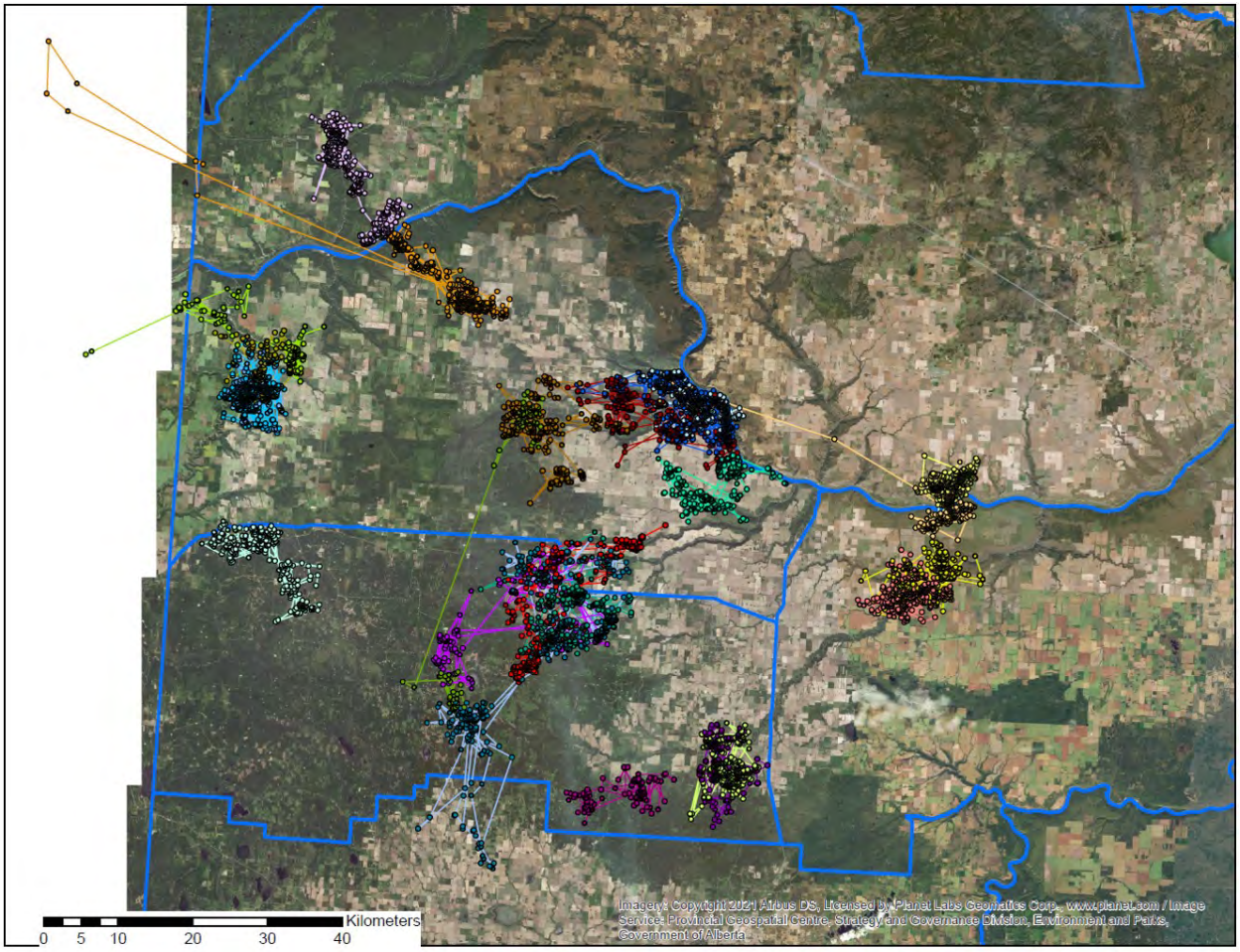
THEREFORE BE IT RESOLVED that the Alberta Association of Municipal Districts and Counties urge the Government of Alberta that in addition to proactive herd management practices, programs be established with adequate funding to compensate agricultural producers in Alberta for their loss of stored product and damage to storage facilities related to ungulate activity when the producer has exercised due diligence.

Member Background:

In recent years, agricultural producers in Alberta have been suffering increasing losses due to ungulate damage. The Agricultural Financial Services Corporation (AFSC) administers the Waterfowl and Wildlife Compensation Program, which provides compensation for crops damaged by ungulates or waterfowl. However, this program does not extend to stacked or stored feed or bales left in the field. Both Alberta Environment and Agriculture Food and Rural Development have acknowledged this issue and have provided some funding for fencing, stack wrap and intercept sites but when these efforts prove ineffective and a farmer suffers losses, no funding is available.For example, in the Central Peace Region, 60 elk were introduced in the early 1960s. While the local committee, in conjunction with Fish and Wildlife staff, has estimated the area can support approximately 600 animals, the herd size has grown to over 1,600. Elk move throughout the region, knocking down protective fencing and damaging bins to access feeds and grains. Department staff are strapped for financial resources and the manpower to address this issue and while the Province has advised tag numbers for antlerless elk and mule deer will be adjusted to increase the numbers taken, frustration among producers remains high. This is particularly true for producers who have taken the extra measures to secure a site only to find the animals have prevailed.This is the crux of the issue: if a producer takes the necessary steps to protect grains and feed, then there should be funding available to compensate for damage. It is rather ironic when consideration is given to the extra time, effort and expense incurred by the farmer for storing materials that AFSC should provide funds for damaged crops still in the field but not for stored product.

Provincial Ministries:

Agriculture and Rural Development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REQUEST FOR DECISION

SUBJECT:	**Grizzly Populations Letter**		
SUBMISSION TO:	AGRICULTURAL SERVICES BOARD	REVIEWED AND APPROVED FOR SUBMISSION	
MEETING DATE:	November 24, 2021	CAO:	MANAGER: SK
DEPARTMENT:	AGRICULTURE	GM:	PRESENTER: SK
STRATEGIC PLAN:	Level of Service		

RELEVANT LEGISLATION:
Provincial (cite) – N/A

Council Bylaw/Policy (cite) – N/A

RECOMMENDED ACTION:
MOTION: That the Agricultural Service Board recommend Council authorize Administration to send a Peace Region Wildlife Populations and Conflict with Agricultural Productivity letter to the Honourable Nate Horner, Minister of Agriculture and Forestry and the Honourable Jason Nixon, Minister of Environment and Parks.

BACKGROUND/PROPOSAL:
During the September 29th meeting, the Agricultural Service Board made the following motion:

MOTION: 21.09.98 Moved by: COUNCILLOR BILL SMITH that Administration draft a letter regarding grizzly bear impact concerns. Cc Jason Nixon, Devin Dreeshen, RMA representatives, & Peace Region MLA's in district for consideration at the Regional ASB meeting.

Since this time, Administration has researched data on grizzly populations within Alberta. Areas of the province are separated into Bear Management Areas (BMA). Greenview is part of BMA 2 (Grande Cache) and BMA 7 (Swan Hills). Estimates of the Grizzly population in these BMAs were done in 2008 and 2018, respectively. Grande Cache BMA had a higher concentration of Grizzly in the Wilmore/Kakwa areas. The Swan Hills estimates were cited as imprecise, and the researchers recommended a more thorough gathering of data for better assessment. Recent assessments have indicated that Grizzly populations are increasing across the province.

Greenview has more concern for Grizzly populations and their impact on producers than other municipalities within the Peace Region, lessening the likelihood of support for a regional ASB letter. Administration recommends recommending Council to approve submitting letters to Minister Nate Horner and Minister Jason Nixon with regard to Peace Region Wildlife Populations and Conflict with Agricultural Productivity. Administration will investigate the feasibility of a 2022 Regional resolution regarding Grizzly bear populations' impact on agricultural production.

BENEFITS OF THE RECOMMENDED ACTION:

1. The benefit of the Agricultural Service Board accepting the recommended motion is that the Peace region increase of wildlife population and the resulting conflict with agricultural productivity will be conveyed to the Province.

DISADVANTAGES OF THE RECOMMENDED ACTION:

1. There are no disadvantages to the recommended action.

ALTERNATIVES CONSIDERED:

Alternative #1: The Agricultural Service Board can alter or deny the recommended motion.

FINANCIAL IMPLICATION:

There are no financial implications.

STAFFING IMPLICATION:

There are no staffing implications to the recommended motion.

PUBLIC ENGAGEMENT LEVEL:

Greenview has adopted the IAP2 Framework for public consultation.

INCREASING LEVEL OF PUBLIC IMPACT

Inform

PUBLIC PARTICIPATION GOAL

Inform - To provide the public with balanced and objective information to assist them in understanding the problem, alternatives, opportunities and/or solutions.

PROMISE TO THE PUBLIC

Inform - We will keep you informed.

FOLLOW UP ACTIONS:

Administration will submit the letters to Council for their approval if the Board recommends proceeding with this correspondence initiative.

ATTACHMENT(S):

- Draft Letters to Minister Horner
- Daft Letter to Minister Nixon
- 2018 Grizzly Bear Population Inventory – Bear Management Area 7

- CTV News Article "Provincial Data says Alberta grizzly bear populations thriving, raising questions of future management."

MUNICIPAL DISTRICT OF GREENVIEW

November 12, 2021

Honourable Nate Horner
Minister of Agriculture and Forestry
229 Legislature Building
10800-97 Ave
Edmonton AB, T5K 2B6

Dear Hon. Minister Nate Horner,

RE: PEACE REGION WILDLIFE POPULATIONS CONFLICT WITH AGRICULTURAL PRODUCTIVITY

On November 10th, Saddle Hills County shared the proposed ASB Resolution "PROPERLY MANAGING UNGULATE POPULATIONS" with the Greenview Agricultural Service Board. The Greenview ASB had been in discussions previous to learning of Saddle Hills County's resolution related to increased impacts from ungulates on Greenview crop producers coupled with the 20% reduction to the AFSC top-up for damages and increased pressures on our livestock producers from Grizzly populations. Management of wildlife populations within Alberta appears to have taken a back seat to other concerns

Greenview is part of Bear Management Areas (BMA) 2 and 7. BMA 7, Swan Hills, population survey conducted by Foothills Research Institute in 2018 suggested an estimate of 62 grizzly bears in BMA 7 be used for management purposes until a study with higher precision could be performed. The grizzly population density in BMA 7 is estimated at 12.6 bears per 1,000 km2.

BMA 2, Grande Cache, was last surveyed in 2008, with no further surveys announced. The 2008 survey revealed an estimated population of 271 grizzly bears. The density of grizzlies stood at 18.11 bears per 1,000 km^2. This density was most concentrated in the Wilmore/Kakwa areas.

With the range of an adult male grizzly bear being 1800 km^2, the proximity of ranches in the Grovedale and Grande Cache areas increases the potential for conflicts. As populations appear to have rebounded in other BMAs, Greenview requests grizzly population estimates be updated

for BMA 2 and completed with increased precision in BMA 7 to inform our residents and agricultural producers, potentially reducing wildlife conflicts.

Respectfully,

Warren Wohlgemuth, ASB Chair
Municipal District of Greenview

Figure ES. 1 Grizzly Bear Management Areas (BMAs) and management zones.

MUNICIPAL DISTRICT OF GREENVIEW

November 12, 2021

Honourable Jason Nixon
Minister of Environment and Parks
323 Legislature Building
10800-97 Ave
Edmonton AB, T5K 2B6

Dear Hon. Minister Jason Nixon,

RE: PEACE REGION WILDLIFE POPULATIONS CONFLICT WITH AGRICULTURAL PRODUCTIVITY

On November 10th, Saddle Hills County shared the proposed ASB Resolution "PROPERLY MANAGING UNGULATE POPULATIONS" with the Greenview Agricultural Service Board. The Greenview ASB had been in discussions previous to learning of Saddle Hills County's resolution related to increased impacts from ungulates on Greenview crop producers coupled with the 20% reduction to the AFSC top-up for damages and increased pressures on our livestock producers from Grizzly populations. Management of wildlife populations within Alberta appears to have taken a back seat to other concerns

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for BMA 2 and completed with increased precision in BMA 7 to inform our residents and agricultural producers, potentially reducing wildlife conflicts.

Respectfully,

Warren Wohlgemuth, ASB Chair
Municipal District of Greenview

Figure ES. 1 Grizzly Bear Management Areas (BMAs) and management zones.

FINAL REPORT

2018 Grizzly Bear Population Inventory – Bear Management Area 7

Prepared for

West Fraser, Millar Western Forest Products, Vanderwell Contractors, FRIAA and Alberta Environment and parks

January 2021
Final Report

Gordon Stenhouse, John Boulanger, Karen Graham, Isobel Phoebus, Cameron McClelland and Karine Pigeon

Citation: Stenhouse, G.B.[1], Boulanger, J.[2], Graham, K.[1], Phoebus, I.[1], McClelland, C.[1] and Pigeon K.[1]. 2021. Estimates of Grizzly Bear population size, density and distribution for the Alberta Swan Hills Population Unit (BMA 7). 65 pages

[1.] fRI Research Grizzly Bear Program, 1176 Switzer Drive, Hinton, Alberta

[2.] Integrated Ecological Research, Nelson, B.C.

fRI Research
Informing Land & Resource Management

Acknowledgements

This project would not have been possible without funding provided by West Fraser Timber, Millar Western Forest Products, Vanderwell Contractors, the Forest Resource Improvement Association of Alberta (FRIAA) and the Government of Alberta (Alberta Environment and Parks). We want to thank all our partners for seeing this project through to completion.

Thank you to all who helped with this project; it could not have been completed without the dedication of so many. Karine Pigeon provided strong leadership in overseeing all elements of the fieldwork for this project and her dedication and participation was instrumental to the gathering of genetic samples. We primarily would like to thank our field crews who drove, hiked and flew in all weather conditions including: Sean Murray, Erika Croken, Mercede Schindler, Lyndsey Stewart, Christine Kuntzemann, Damon Waselenchuk, Brianna Brandon, Lauren Skinner, Brian Smith, Ryan Ponich, Denyse Dawe, and Franco Alo. We would also like to thank Karen Graham for her considerable support in data management throughout the course of this project. Thank you to both Dan Wismer and Julie Duval for GIS support and to Cemil Gamas and Risa Croken for administration support. We would like to acknowledge Wildlife Genetics International in Nelson, B.C, and NIBIO lab in Svanhovd Norway for the laboratory DNA analysis portion of this study. We would like to thank our helicopter pilots Hans Nogel and Ian Tower for getting us to sites safely. We would further like to thank the volunteer efforts of Cala Jorgensen, Kevin Downing, Jim Castle, Curtis Stambaugh, Fauve Blanchard, and Callen Warren. Cam McClelland and Isobel Phoebus assisted with the preparation and assembly of this final report.

Foreword

This document represents the achievements and results from the 2018 grizzly bear population inventory project conducted in the Swan Hills Bear Management Area (BMA 7). The focus of this project was to complete a DNA inventory to provide the first population estimate for this BMA. These analyses required DNA laboratory results from genetic samples collected in 2018, however, project funding was on hold for over a year and a half. With funding provided in 2020, we were able to complete the genetic laboratory work, statistical analysis, and prepare this final report.

Executive Summary

In 2018, a collaborative project was undertaken between regional forest tenure holders and the Alberta Government (Alberta Environment and Parks) to provide the first assessment of the grizzly bear population in the Swan Hills Bear Management Area (BMA 7). Since the Swan Hills area has never had a DNA based population estimate, this project was intended to provide a base level for future comparisons to monitor population trends.

Using genetic samples gathered through non-invasive barbwire hair snagging, we sampled 9,800 km^2 of grizzly bear habitat with a grid sampling design over a 6-week period from May to July 2018. The study design used was based on previous knowledge of grizzly bears and habitats within BMA 7, combined with past experience and data from other spatially explicit capture-recapture grizzly bear population inventory work that our research team has undertaken in other provincial BMAs since 2004. This project provides the first estimates of grizzly bear abundance and density for the Swan Hills area.

During this inventory, we submitted 750 hair samples for DNA analysis. 507 of these were genetically determined to be black bears, 100 were from grizzly bears. From these grizzly bear samples, 93 grizzly bears were identified to the individual, with 39 unique bears identified (21 females and 18 males). The Swan Hills project had lower sampling efficiency compared to other projects conducted in Alberta. This was a result of the low proportion of grizzly bears detected in more than one sampling session, and a high proportion of new grizzly bears detected in the final sampling session. This low redetection frequency was anomalous when compared to other grizzly bear DNA mark-recapture projects performed in the province.

To confront sparse data from the BMA 7 project we used a meta-analysis approach to estimate density that used data from the adjacent BMA 2 survey that was conducted in 2008. This analysis suggested the density of grizzly bears to be 12.6 bears per 1,000 km^2 which resulted in an average estimated number of bears between 150 and 152 (CI=69–330) in core and secondary areas. However, the precision of estimates was low (CVs of 35–41%) and the low numbers of redetections was the primary factor for the poor precision of these estimates. Although we cannot fully explain the low redetection rates of bears in this study, it is likely that a high-density black bear population in this BMA could have influenced grizzly bear responses (i.e. attraction) to the sampling sites. Based on the large amount of black bear

hair identified, the presence of black bear hair at most sampling sites in all sessions, and supported by the identification of a large number of black bear scats, we feel such an effect is possible, although not fully understood.

We did see that the detection of family groups (4 cubs - in two family groups) in the last sampling period had an effect on population estimates by creating potential demographic closure within the analysis framework. When these four bears that were sampled together at one site, and identified as cubs through genetic analysis, were excluded from the analysis (mothers were retained), the population estimate decreased by 30 bears. This demonstrates the effect of potential demographic closure and the sparse nature of the data set on the population estimate. The population estimate of grizzly bears in the Swan Hills using the data set without the 4 cubs mentioned above (cubs identified only during the last session) is 118.6 bears (CI=62–226). As a result, the estimates from this project are relatively imprecise and should be interpreted with caution.

Given the high CV and lack of estimate precision found with BMA 7 data, we conducted an additional analysis where a similar detection function found for BMA 2 (2008) was applied to the Swan Hills data set The results of this analysis showed that when the cubs detected during the final sampling session were removed from the analysis and a similar detection rates for BMA 7 and BMA 2 were assumed, population estimates changed to 56 - 64 grizzly bears and densities were 3.5 - 5 bears per 1,000 km^2 with an increase in precision to a CV of 14%. These results, based on detection rates which were similar to those found in most other grizzly bear inventory work in Alberta, provided grizzly bear density estimates similar to what has been observed in other provincial BMAs.

Using the new Alberta grizzly bear genetic database, we did not find previous history on any of the 39 unique bears identified within this inventory, nor did we identify any offspring from the 10 grizzly bears that were captured and collared in 2005 and 2006 as part of other research efforts in BMA 7. This is in stark contrast to the 2018 BMA 4 inventory where 40% of the identified grizzly bears had a known history, as determined through genetic sampling. This may indicate elevated mortality rates in BMA 7 but we recognize that no ongoing grizzly bear collaring efforts have taken place in this area since 2006. We also did not detect any grizzly bear movement across Highway 43 during our sampling period. Genetic analysis of grizzly bears detected in BMA 7 clearly showed that these bears are from a genetically distinct population, suggesting no or very limited immigration.

The main challenge for the 2018 Swan Hills DNA inventory is low precision, resulting in wide confidence limits on population estimates. **For this reason, we suggest that these estimates be interpreted cautiously, and that the lower bound of the confidence limit of 62 bears be used for management purposes at this time. We note that the lower bound of the confidence limit (62) roughly corresponds to the population estimate of grizzly bears if a detection function similar to BMA 2 is assumed (56–64 bears).**

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x

GRIZZLY BEAR DNA SPATIALLY EXPLICIT CAPTURE-RECAPTURE (SECR) INVENTORY FOR BEAR MANAGEMENT AREA 7

INTRODUCTION

As part of ongoing provincial grizzly bear recovery efforts, it has been widely recognized that there is a persistent need to determine population status and trend within the various provincial grizzly bear management areas. In the 2008–2013 provincial recovery plan, it was recommended that population inventory work be undertaken at five-year intervals within each of the 7 provincial BMAs (Bear Management Areas; Alberta Grizzly Bear Recovery Team, 2008). Although this has not taken place in every BMA, two BMAs (3 and 4) have had two DNA population inventories completed. For BMA 3 (Yellowhead), the first estimate took place in 2004 and the second in 2014 (Stenhouse et al., 2015), which found that the population had doubled in size during the 10-year time period. More recently, Stenhouse et al. (2020) also found the grizzly bear population in BMA 4 (Clearwater) had doubled in size between 2005 and 2018.

In an effort to determine grizzly bear population status in BMA 7 (Swan Hills), a collaborative project was undertaken between regional forest tenure holders and the Alberta Government (Alberta Environment and Parks) in 2018. Since BMA 7 never had a DNA based population estimate undertaken, this project was intended to provide a base level for future comparisons to monitor trends. This report details the results of our 2018 spatially explicit capture-recapture (SECR) based population inventory of grizzly bears in the Swan Hills BMA.

In 2009, management boundaries within the BMA were divided into core and secondary conservation areas (more recently combined as recovery zones; Alberta Environment and Parks, 2016) that provided guidance for the assessment of grizzly bear populations relative to habitat states and anthropogenic risks (Nielsen et al., 2009). The current primary management emphasis is on recovery of grizzly bears within these zones that consist of higher quality habitat with lower open all-weather road densities. The core and secondary conservation areas provide a management-based stratification of the BMAs, as well as a delineation of core habitat, that should harbor the highest densities of bears within BMAs (Nielsen et al., 2006). Therefore, sampling consideration of core and secondary areas was of primary consideration in the design of the BMA 7 2018 inventory with an emphasis being on estimation of densities within these areas. The study design for this project (see details in Appendix A) incorporated our current knowledge of the study area and resident bear populations, previously used spatially explicit capture-recapture methods, and relied on established DNA hair sampling methodologies that use non-invasive approaches.

The primary objectives of this BMA 7 inventory were to:

1. Provide an estimate of the current size and density of the grizzly bear population within this BMA.
2. Investigate possible movement of grizzly bears into and out of this BMA in relation to neighboring BMAs.
3. Determine if grizzly bears were crossing Highway 43 during the sampling period.

Study Area

The 2018 DNA inventory of BMA 7 consisted of a systematic sampling grid with 200, 7x7 km grid cells covering approximately 9,800 km^2 (Figure 1). Because population closure is an important assumption of our population estimators, we designed the sampling of the study area to minimize the movement of bears across the boundaries. Our study area encompassed almost all habitat designated as core and secondary grizzly bear conservation areas in BMA 7. The sampling area was bounded by Highway 43, Highway 2, and the Athabasca River providing relative closure surrounding the study area, with Lesser Slave Lake just to the north. Highway 33 and 32 ran right through the region.
The study area consists of upper and lower foothills, with elevations that ranged from 650 m to 1,450 m with a diversity of habitats throughout. Upland forests consisted of aspen (*Populus tremuloides*), Paper birch (*Betula papyrifera*), white spruce (*Picea glauca*), and open stands of lodgepole pine (*Pinus contorta*). Lowland forests were characterized by mixed forests of black spruce (*Picea mariana*), tamarack (*Larix laricina*), and lodgepole pine while wetlands and riparian areas were dominated by willow (*Salix spp*.) and shrub-graminoid communities. Important grizzly bear foods include buffaloberry (*Shepherdia canadensis*), alpine sweet vetch (*Hedysarum alpinum*), cow parsnip (*Heracleum lanatum*), and various blueberry species (*Vaccinum spp*.; Munro et al., 2006). Other large predators in the region are black bears (*Ursus americanus*), wolf (*Canine lupus*), and cougar (*Puma concolor*).

BMA 7 has various land-use activities including forestry with intensive logging, oil and gas exploration and development, and outdoor recreation. There are a few small parks and wildlands scattered within the BMA, but no significant protected areas. The land has been heavily developed by industrial activity, with a high density of roads in some areas. The landscape has a number of linear features including roads, pipelines, seismic lines, and all-terrain vehicle (ATV) trails. Access to the study area was primarily by vehicle and foot while some areas required helicopter support for access. Access was also dynamic in that weather events could change access type. Road access in dry conditions would at times require helicopter support during periods of heavy or prolonged rains.

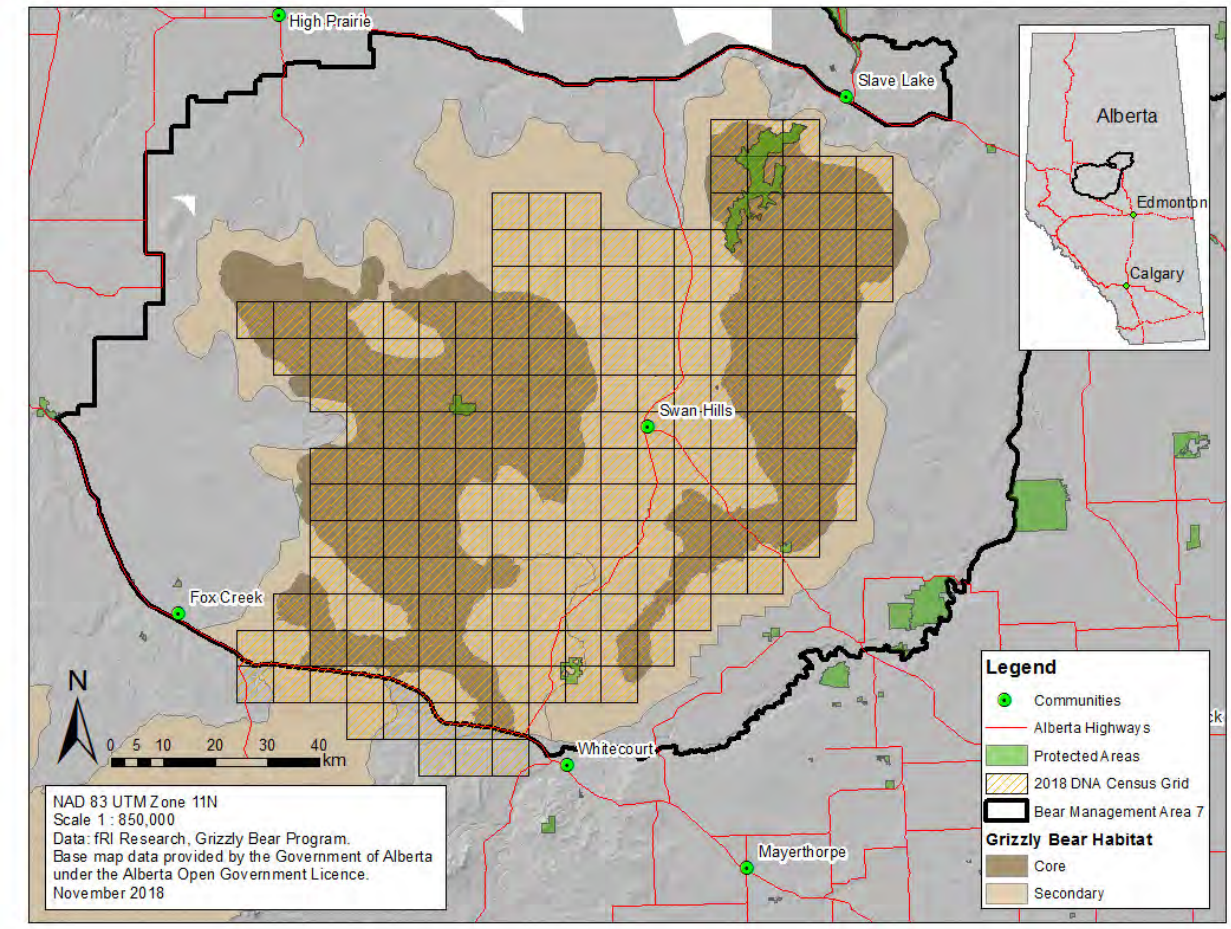

Figure 1. The Swan Hills Bear Management Area (BMA 7), including provincial lands, protected areas, core and secondary grizzly bear habitat areas, and the 2018 DNA census grid.

METHODS

Barb wire hair-snag sampling of grizzly bears in western Canada is generally based on a spatial sampling design that places one or more hair snag sites in each cell of an arbitrary square grid (Woods et al. 1999; Proctor et al. 2010; Boulanger, Nielsen, and Stenhouse 2018). This ensures sufficient spatial coverage while allowing some leeway for the placement of hair snags within each cell. Overall sampling intensity is governed by the grid cell size, the number of sites per cell, and the duration of sampling.

During sampling design, funding partners expressed interest in learning more about the possible movements of grizzly bears across Highway 43 (Figure 2), which forms the southern boundary of BMA 7. To gather more data on this question, we established sampling grid cells on either side of this transportation corridor. There were 12 grid cells that were established to the south and north of Highway 43.

Field Data Collection

Site Selection

We selected site locations based on the 200-cell 7×7 km grid system (Figure 2). We designed the grid to reflect core and secondary grizzly bear conservation areas (Nielsen et al., 2009), and sampled every cell in the core areas, a reduced portion of the secondary areas, and an extended area on the southern side of Highway 43. The sampling design was similar to that employed in the 2014 BMA 3 population inventory (Boulanger and Efford, 2014; Stenhouse et al., 2015) and in the BMA 4 population inventory in 2018.

One hair snag site was placed in each grid cell. Sites were not moved throughout the field season since spatially explicit methods are theoretically more robust to heterogeneity caused by site placement relative to home range centers (Boulanger and Efford, 2014; Stenhouse et al., 2015). We generated site locations in a geographic information system (GIS) prior to fieldwork using a grizzly bear resource selection function (RSF) model (Nielsen et al., 2002), aerial photographs, and expert opinion. Preference was given to areas of high RSF and reasonable access for field crews. In the field, we targeted site locations near riparian areas, linear clearings, natural meadows, and forestry cutblocks. Research has shown that placing sites in these areas is important for maximizing detection at fixed hair snag sites (Rovang et al., 2015). To minimize the risk of bear-human encounters and to address public safety concerns, sites were also placed at least 200 m from roads, pipelines, and heavily used seismic lines (i.e. ATV trails), and 500 m from facilities (e.g. wellsites, industrial camps, trapper cabins, campgrounds, or private homes).

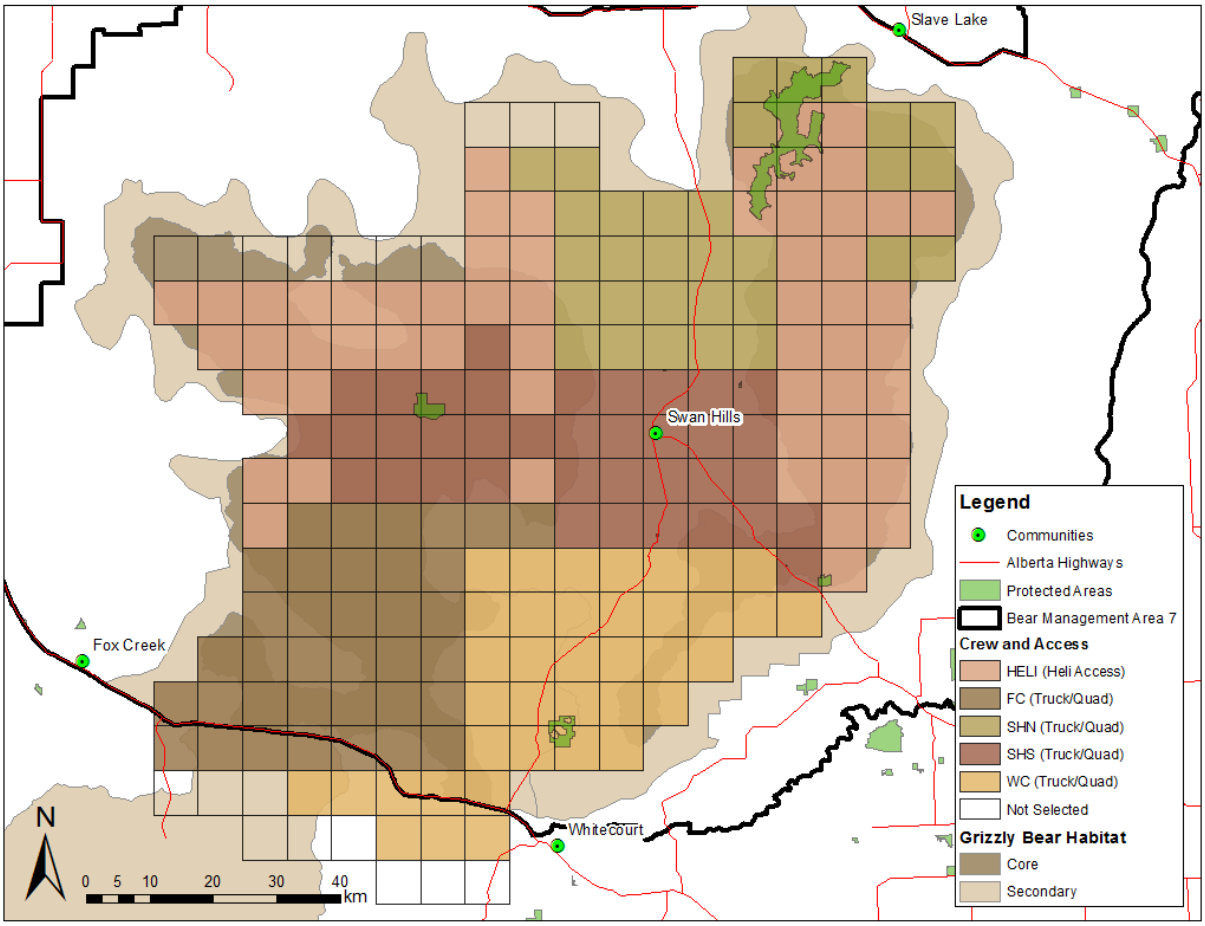

Figure 2: DNA sampling grid used in the grizzly bear population inventory of the Swan Hills Bear Management Area (BMA 7) in 2018 (200-cells) including crew areas and access.

Site Set-Up and Sampling

We built hair snag sites (corrals) using approximately 30 m of barbed wire strung around 3-6 trees at a height of 55 cm above ground following protocols adapted from previous studies (Boulanger et al., 2006, 2005; Woods et al., 1999). We constructed a scent lure pile in the center of corrals using branches, rotten wood, and other forest debris, topped with a thick layer of moss or other absorbent material available at the site. Corrals were large enough that the lure pile could be reached only when a bear crossed over or under the barbed wire. Uneven ground (low or high spots) below the wire was filled or obstructed to prevent bears from entering the corral without coming into contact with the wire. During site setup and every two weeks thereafter, we baited each site with 2.5 L of scent lure (2 L of aged cattle blood mixed with 500 mL of canola oil), topped with conifer branches to protect the lure from rain. Each site was set up with caution tape and a warning sign to deter the public from entering the sampling area.

Our field season consisted of 5 field sessions from May 22nd to July 25th 2018. Following our first shift of site set-up with no hair collection (Session 0), we checked sites for hair every 14 days for 4 sampling periods (Sessions 1, 2, 3, and 4; with hair collection). Once sites were set up, all sites were sampled each session except two cells (560 and 561) which were visited one day after Session 1 due to flooding, and two additional cells that were not visited at all during Session 1 (413 and 474).

Hair samples were collected and placed in paper envelopes. Each barb on the wire with hair was treated as a single sample that was placed into its own envelope. Hair samples on adjacent barbs were labelled as a group, and groupings were split by one or more empty barbs. Samples from the ground, trees, shrubs and the bait pile were considered as separate groupings. Samples on the wire (but not on a barb) were also a separate grouping, unless known to be immediately adjacent to a barb. Based on these designated groupings, we selected the best hair sample in each group.

During the field season, we implemented a sub-sampling protocol for hair samples which staff could identify as black bear hair with a high degree of confidence due to the high abundance of black bears at sites and the time required for sampling. As of June 20th 2018 (Session 2), barb groups with 2 or more adjacent black bear samples, regardless of the total number of samples at a site were sub-sampled. We selected the best sample for each set of three black bear samples within a barb group. All grizzly bear samples were collected, and any samples that were deemed as potential grizzly bear hair were collected.

We collected data regarding sample location on wires, adjacency to other samples, and sample quality to facilitate the final sub-selection of hair samples for DNA analysis. Following collection of samples, we removed any remaining hair from the wire with a lighter to ensure that hair found during subsequent visits was from the correct sampling session. Throughout the field season, hair samples were stored with silica desiccant both in the field and in the office.

In this study bear scat samples were searched for at site or collected opportunistically to supplement hair results. Once all hair samples were collected, a 25 m radius from the site center was searched for bear signs (e.g. digging, anting, foraging on vegetation or berry bushes, beds, or scat). Any suspected bear scat found at hair snag sites was collected and documented with additional information (e.g., likelihood of the same bear for multiple scats, scat contents, etc.). Bear scat was sampled using a wooden sampling stick to collect 1 cm^3 of scat. Samples were stored in vials containing silica desiccant. Scat samples were also collected opportunistically during the walk to and from sites and while driving along roads within the grid sampling area. If scat samples were located on a road, the remaining scat was cleared off to prevent duplicate samples.

Sub-Selection of Samples for DNA Analysis

As is the case for most large-scale grizzly bear inventory projects, and because of budget constraints, it was not possible to genotype all hair samples collected during 2018. To select a sub-sample of hair for the DNA analysis, we followed a series of sub-selection criteria based on those previously used for DNA surveys in Alberta (Stenhouse et al., 2015). These sub-sampling criteria have been shown to result in a

minimal reduction of the number of individual bears identified. Initial screening of hair samples excluded those identified as non-bear species, and those with a high confidence of species identified as black bear. In some cases, it was possible to confirm bear species using wildlife camera data from the hair snag site. Previous research (David Paetkau, pers. comm.) indicates that for successful genotyping, bear hair samples must include at least one guard hair, or five or more underfur hairs. Samples that did not meet these minimum criteria were excluded based on the likelihood that they did not contain sufficient genetic material.

For hair snag sites, we reviewed each site and session separately, and further criteria were only applied to samples not excluded by the initial screening criteria. At a minimum, we selected the best sample for each site/session, as indicated by field data, hair sample size, and probability of grizzly bear species. In addition, we selected 1 in every 3 from adjacent samples, starting with the best sample in each barb group. If there were more than 3 samples in a barb group, for the remaining samples, greater preference was given to samples with a greater number of guard hairs and samples with greater confidence in grizzly bear species identification. Less preference was given to samples with unknown species, samples with black bear and grizzly bear hair on the same barb, and directly adjacent samples.

Scat samples were also sub-selected for DNA analysis. Bear scat found at hair snag sites, any scat found on the path to sites, and scat found on roads were selected for genetic analysis. Those samples excluded were samples collected during training and site set-up (session 0).

Lab Methods

In order to gather population estimates and supplement hair analysis results, while also comparing the population estimate capabilities of both method, both hair and scat samples were collected and sent to labs.

Hair samples were sent to Wildlife Genetics International, Nelson, Canada, for genotyping to identify species, gender, and unique individuals. Samples that did not contain sufficient material (no guard hair roots and less than 5 underfur hairs), that were of notably different species (ungulates), or that had a jet-black colouration from root to tip (associated with black bears) were not analysed. DNA was extracted using QIAGEN DNeasy Blood and Tissue kits following standard protocols (Paetkau, 2003a). The lab aimed to use 10 clipped guard hair roots, if available, or up to 30 whole underfur hairs, if needed to supplement guard hairs. Multilocus genotyping was used to analyze the DNA extracts with the established set of 8 ‘Alberta grizzly bear’ markers (7 microsatellites [G10B, G10H, G10J, G10M, G10P, G1A, G1D] plus a ZFX/ZFY sex marker) to identify unique individuals. The samples went through multiple passes and error checking during genotyping (Paetkau, 2003b). An individual was defined for each unique multilocus genotype using the 8-locus analysis to produce full genotypes. The sample that provided the best result for each bear had an additional 13 microsatellites run (CPH9, CXX110, CXX20, G10C, G10L, G10U, G10X, MSUT2, MU23, MU50, MU51, MU59, REN145P07), so each bear had a final

genotype consisting of 20 microsatellites plus a sex marker (Kendall et al., 2009; Paetkau, 2003a; Waits and Paetkau, 2005).

Scat DNA analysis was conducted at NIBIO (Norwegian Institute of Bioeconomy Research) in Ås, Norway. DNA was extracted from the samples, and a species-specific test was conducted to determine the species, identity, and gender of individuals using STR markers. Each sample then underwent a mitochondrial DNA (mtDNA) species-specific test to differentiate grizzly from black bear scat. For all samples identified as grizzly bear, genotypes were determined based on 12 STR markers (G10B, G10J, G10L, G1A, G1D, MU50, G10P, Mu23, Mu51, Mu59, G10X and G10U) and one sex-specific marker (BIK-F XY). Samples determined to have unique profiles were analysed using nine additional STR-markers (GIOH, G10M, G10C, REN145P07, CPH9, CXX20, MSUT2, MSUT6 and CXX110).

For both lab methods, individual profiles were compared with known individuals in the new provincial grizzly bear genetic database.

Analysis Methods

SECR methods (Efford, 2011, 2004; Efford et al., 2009, 2004) estimate population density, allowing for movement estimated from sites where bears are repeatedly detected. Unlike closed models that pool data from multiple hair snag sites within each session for each bear, the SECR method uses multiple detections of bears at unique hair snag sites within a session to model bear movements and detection probabilities. We used this information to estimate the detection probabilities of grizzly bears at their home range center (g_0), the spatial scale of grizzly bear movements (σ) around the home range centers, and the density of grizzly bears.

An assumption of this method is that grizzly bear home range can be approximated by a circular symmetrical distribution of use (Efford, 2004), but the method is robust to deviations from circularity (Efford, 2019). The configuration of the sampling sites is used in the process of estimating the scale of movements and density, and lack of geographic closure (incursion of bears centered outside the grid) is modeled directly. Therefore, there is no need to adjust for study-area size and closure violation as with previous closed models.

SECR methods model the detections of bears with home ranges centered either directly on the sampling grid or in adjoining habitat; the grid and adjoining habitat together comprise the habitat 'mask'. Considering too little adjoining habitat as the potential source of detected bears can cause positive bias in density estimates. We conducted an initial analysis with sexes combined to determine the size of the mask needed to control bias in density estimates relative to study area size. We ran the esa.plot and suggest.buffer functions of the R package 'secr' for a g_0(sex), σ (sex) conditional likelihood model. These suggested a buffer width of 26 km to obtain unbiased estimates; estimation is also expected to be unbiased with a wider buffer but computation is then slower for a given spatial resolution. We ran subsequent analyses separately for male and female grizzly bears to test for variation in detection probability at the home range center and scale of movements.

Spatially explicit capture-recapture model fitting had three distinct phases:

1. Tests for temporal, behavioural, and individual variation in g_0 and σ to establish a 'baseline' model of detection
2. Addition of site covariates to baseline model to describe heterogeneity induced by site placement
3. Fit strata-specific and other density covariate models, using the most supported model from step 2.

We used terrain ruggedness index (TRI) and canopy closure (CC) as site covariates and evaluated at two spatial scales as potential predictors influencing detection probability parameters (g_0 and σ;Table 1;Boulanger et al., 2009). The two scales ('site' and 'home-range') corresponded respectively to the distance at which bears encountered (responded to) hair snags and the typical home-range radius. We used 1.96 km as the site scale based on estimates by Boulanger et al. (2004), and 10 km as the home range scale corresponding to bear home range areas (Nielsen et al., 2004). In most cases, the site scale was used as a covariate for detection probabilities (g_0) and the home range scale was used as a covariate for the σ scale parameter. For this phase of the analysis, we assumed that grizzly bear density was constant across the extent of the survey area.

Table 1: Site habitat and sampling covariates used to describe scale of movement and detection of bears

Habitat variable	Description
TRI	Terrain ruggedness index (Riley et al., 1999)
CC	Percent canopy cover

Some sites were not sampled in all sessions and the resulting temporal variation was represented with a binary 'usage' matrix – a series of 1s and 0s for each site indicating the sessions in which it was active (1) or non-active (0). We used a discrete cell size (mask spacing) of 3 km for the habitat mask for all SECR analyses. A sensitivity analysis of mask spacing suggested 3 km was a good compromise between processing time and minimizing bias in estimates (no change in density with spacing of 3.5–2.5 km). Mask cells were categorized according the stratum of their centroid.

To estimate home range centers of the detected bears we used baseline SECR detection models. This approach takes into account the configuration of detectors relative to bear detections as well as modelled sources of variation in detection. It is therefore a better indicator of home range center than the mean locations of where individual bears were detected.

We used 7x7 km cells for our sampling grid with one hair snag site placed per cell. Core grizzly bear habitat and a relatively high proportion of the secondary habitat was sampled.

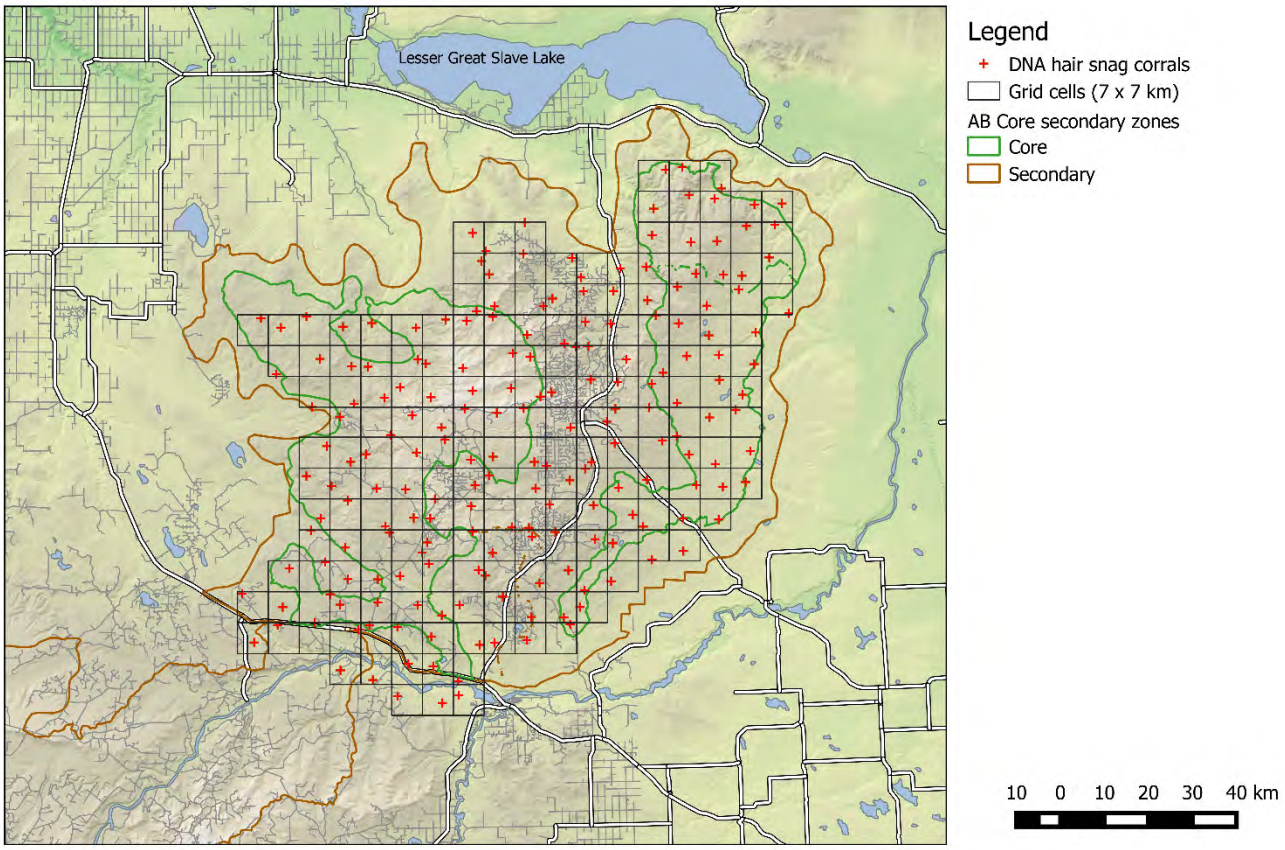

Figure 3: Layout of DNA sampling grids and DNA sites in Swan Hills (BMA 7).

We suspected that the sample size of detected bears available for estimates in the Swan Hills might be limited from past work in this area. Therefore, we also ran a meta-analysis estimation strategy that utilized data from the Grande Cache (BMA 2) inventory project (Figure 4). The BMA 2 survey occurred to the west of Swan Hills in 2008 utilizing a similar sampling design (Alberta Grizzly Bear Inventory Team, 2009; Boulanger et al., 2018). The meta-analysis strategy allows joint pooling of detection parameters with potential gains in estimate precision especially for sparse data sets (Boulanger et al., 2002). This approach tests the support of models with project-specific detection parameters versus models that pool detection parameters between projects.

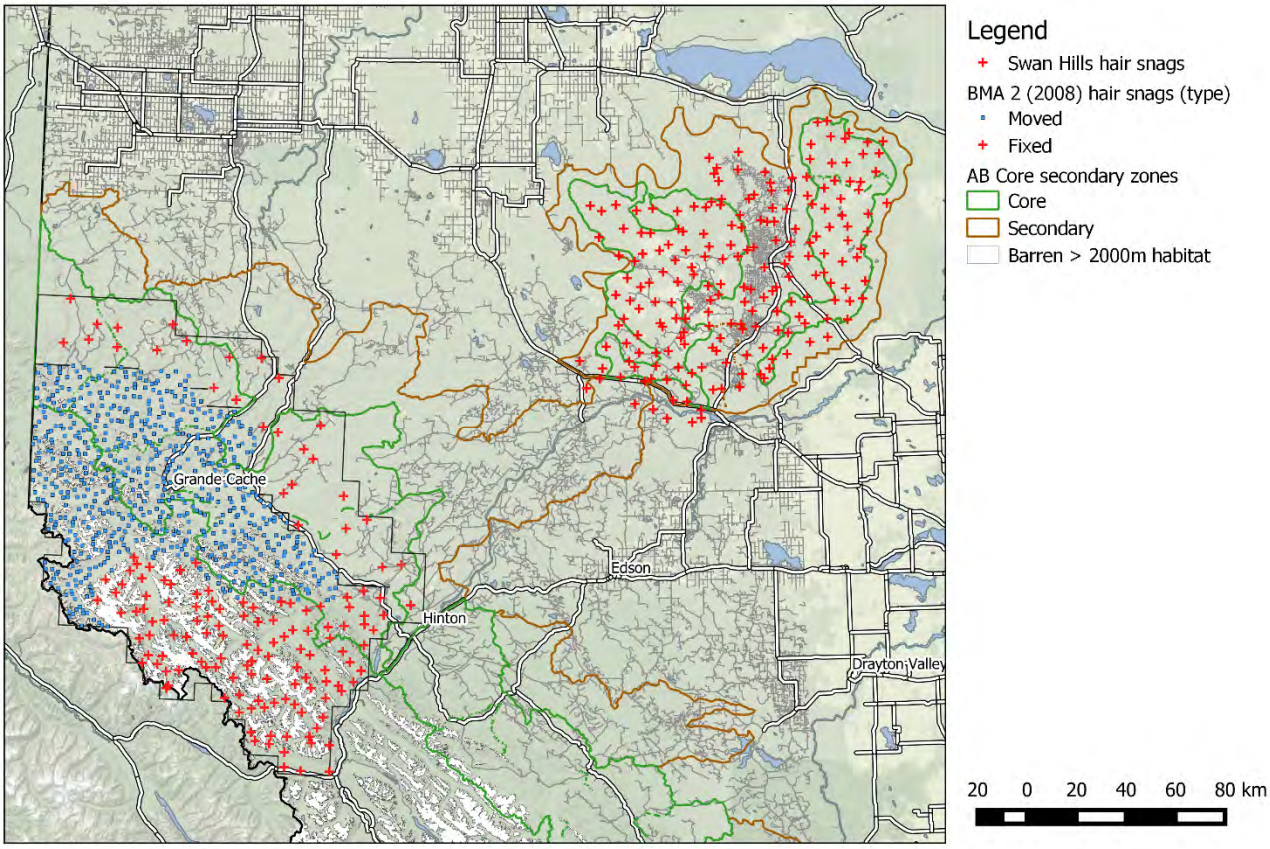

Figure 4: The Grande Cache (BMA 2: 2008) and Swan Hills (BMA 7: 2018) inventory sampling layouts.

We derived expected population size and density estimates from the most supported models for each sex. Expected population size is the expected number of bears that would be contained within the study area or regional area at one time (Efford and Fewster, 2013). It is analogous to the average number of bears on the sampling grid given in previous survey reports. Density is then estimated as the expected number of grizzly bears divided by the entire area of the grid, or the habitat area within the grid. We generated Log based confidence intervals on expected population size and density using formulas from Efford and Fewster (2013). The precision of SECR estimates is primarily related to the number of bears on the sampling grid and the number of recaptures during sampling (Efford and Boulanger, 2019). The precision of the estimate is indexed by the coefficient of variation (CV_d), which is the standard error of an estimate divided by the estimate. One central question in study design is whether precision of estimates are limited by the number of bears on the sampling grid or by the estimation of detection parameters, which relates to recaptures and the complexity of detection models. To explore this question, we dichotomized the precision of estimates into binomial variation caused by the number of bears detected on the sampling grid (CV_n) in contrast to the variance caused by the estimation of effective sampling area and related detection parameters (CV_a). These two components add up to the

CV of the density estimate using the equation $\mathrm{CV_d} = \sqrt{\mathrm{CV_n^2} + \mathrm{CV_a^2}}$ (Borchers and Efford, 2008; Efford, 2019; Huggins, 1991).

All spatially explicit analyses were done in package *secr* (Efford, 2014a) in the R statistical software (R Development Core Team, 2020). Map and data figures were produced using the *QGIS* program (QGIS Development Team, 2020) and *ggplot* (Wickham, 2009), and *ggmap* (Kahle and Wickham, 2013) R packages.

RESULTS

DNA Sample Extraction Rates from Hair and Scat

Of 6,767 collected samples, 750 hair samples were sent to the Wildlife Genetics International (WGI) lab for DNA analysis. Of these samples, 5% (39/750) were not analyzed because they were visually determined to be black bear or other species, and 8% (58/750) were not analyzed due to lack of sufficient materials. Of the 653 remaining samples analyzed, 93% (607/653) of the samples were successfully identified to the bear species level, with 17% (100/607) determined as grizzly bear and 85% (507/607) determined as black bear (*Ursus americanus*). Of the 100 grizzly bear samples, 93 samples successfully identified unique individuals, and determined to come from 39 unique grizzly bears (18 male and 21 female).

There were 205 scat samples collected by field crews during visits to hair sampling sites and we sent 168 of these samples to the lab. Of these samples, 133 (79%) were determined to be black bears, 10 samples (6%) were from grizzly bears and 25 samples (15%) were from other species. None of the 10 grizzly bear samples could be genotyped to the 7 markers required to identify individuals but all were found at sites where grizzly bear hair was collected. The large number of black bear scats is in line with the large amount of black bear hair collected at the barbwire hair snag sites.

Table 2: Extraction rate comparisons between hair sampling and scat sampling techniques for species and individual level analyses.

	Hair Sampling	Scat Sampling
Number of Samples Collected	6,767	205
Number of Samples Sent to the Lab	750	168
Number of Samples Analyzed	692	168
Percentage of Samples Identified to Bear Species	93% (607/653)	85% (143/168)
Percentage of Samples Determined Grizzly Bear	17% (100/607)	7% (10/143)
Percentage of Samples Determined Black Bear	85% (507/607)	93% (133/143)
Percentage of Grizzly Bear Samples Identified to Individual	93% (93/100)	0% (0/10)
Number of Individual Grizzly Bears	39	0

Sampling and Distribution of Bear Species in BMA 7

Of the 200 sites in BMA 7, 94% of sites had bear hair collected from them at least once during the hair collection sessions. One site only had grizzly bear hair while all other sites had either only black bear hairs, or black bear and grizzly bear hairs (Figure 5).

We found suspected bear scat at 17% of sites, while there was no scat found at 83% of sites (Table 2). Additional scat samples were encountered and collected along the path to hair snag sites, ATV trails, and roads within the study area (Figure 6).

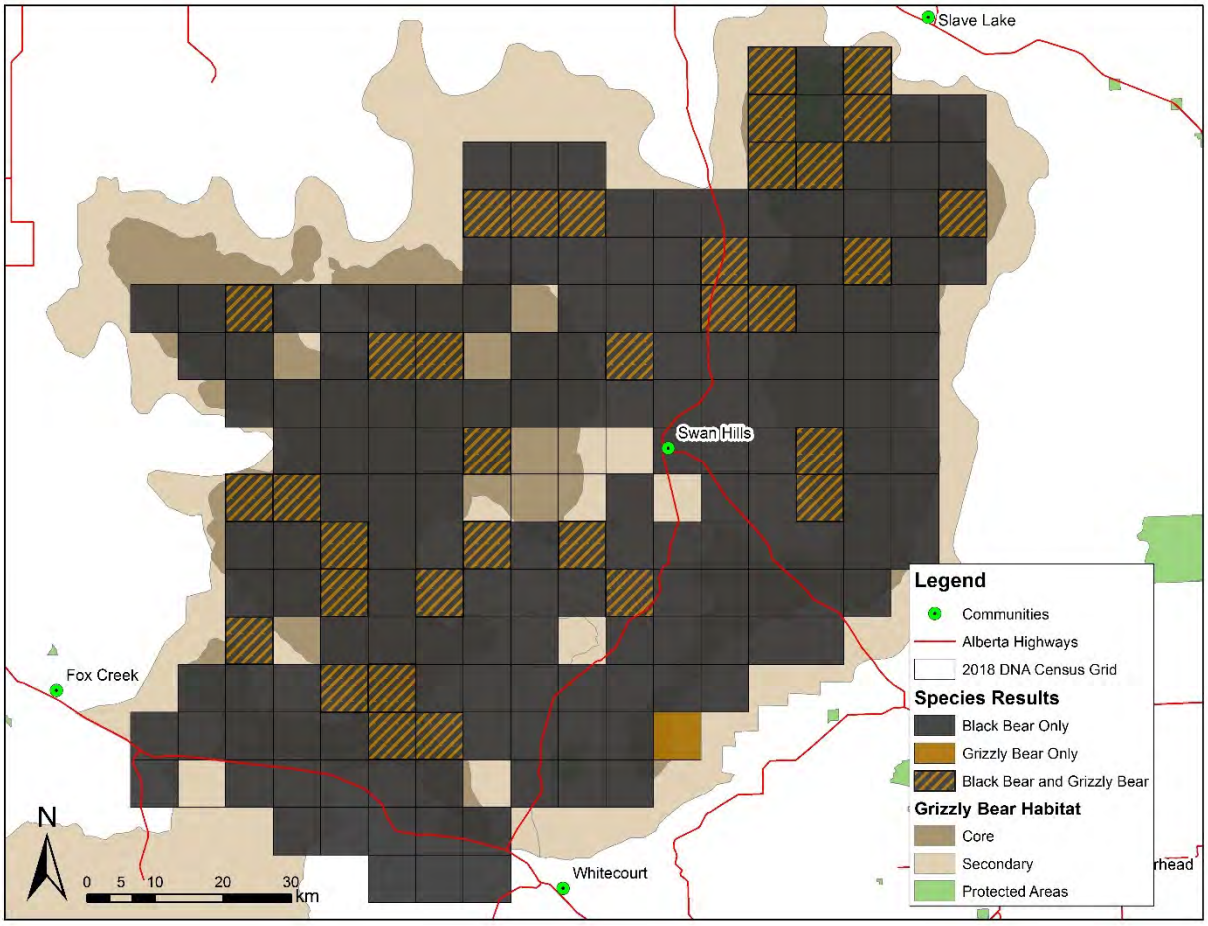

Figure 5: Bear species sample locations across the Swan Hills BMA (BMA 7). Black bear results include lab results and black bear samples that were not sent to the lab, but were identified with a 90-100% confidence level in the field. Grizzly bear results include all samples identified at the species and individual level from the lab.

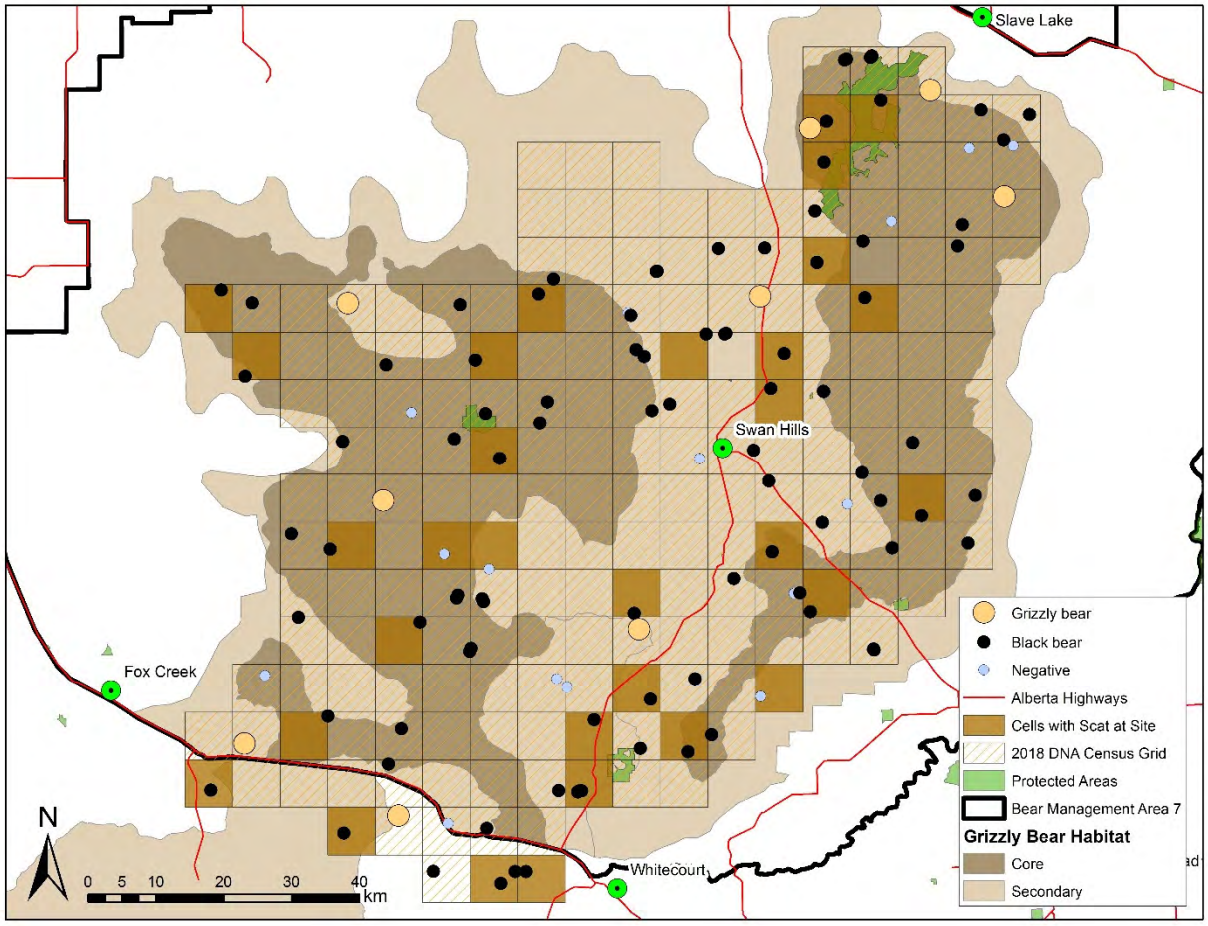

Figure 6: Location of scat samples, the bear species they represent, and the grid cells with scat samples found at hair snag sites in 2018 during the DNA inventory of the Swan Hills Bear Management Area (BMA 7). Negative samples indicate samples that were identified as neither black or grizzly bear.

Data Summary for Population Analysis – Hair

Overall, 39 grizzly bears (21 females and 18 males) were detected during this inventory. The number of bears detected increased in latter sessions, especially for females. We detected 5 bears in more than one session, with only one male detected in more than one session. The number of new bears detected was highest in session 4, suggesting that sampling efficiency was moderate to low (Table 3).

Table 3: Summary statistics for BMA 7 inventory.

Statistic	1	2	3	4	Total
Females + Males					
Animals detected (nj)	8	5	13	19	45
Newly detected (uj)	8	5	12	14	39
Total individuals detected (Mj)	8	13	25	39	39
Frequencies of detections (fj)	34	4	1	0	39
Unique detections	8	5	13	20	46
Detectors visited	5	5	13	13	36
Females					
Animals detected (nj)	2	3	10	11	26
Newly detected (uj)	2	3	9	7	21
Total individuals detected (Mj)	2	5	14	21	21
Frequencies of detections (fj)	17	3	1	0	21
Unique detections	2	3	10	11	26
Detectors visited	2	3	10	8	23
Males					
Animals detected (nj)	6	2	3	8	19
Newly detected (uj)	6	2	3	7	18
Total individuals detected (Mj)	6	8	11	18	18
Frequencies of detections (fj)	17	1	0	0	18
Unique detections	6	2	3	9	20
Detectors visited	4	2	3	8	17
Detectors employed	190	190	192	192	764

The low redetection frequencies and the relatively large number of new bears detected in session 4 was anomalous compared to other grizzly bear DNA mark-recapture projects (Figure 7). The curve of detections of new bears per session was low and as a result, 74% of bears detected in session 4 had not been previously detected (Figure 7). This contrasts with the 2018 BMA 4 grizzly bear inventory project results which found that 60% of bears detected in session 4 were new bears.

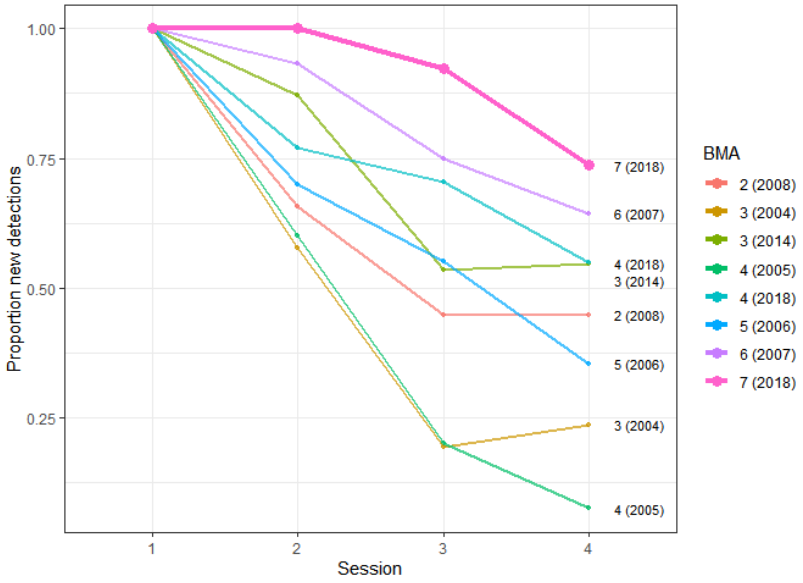

Figure 7: Comparison of the sampling efficiency of DNA inventory projects indicated by the proportion of new bears detected by session.

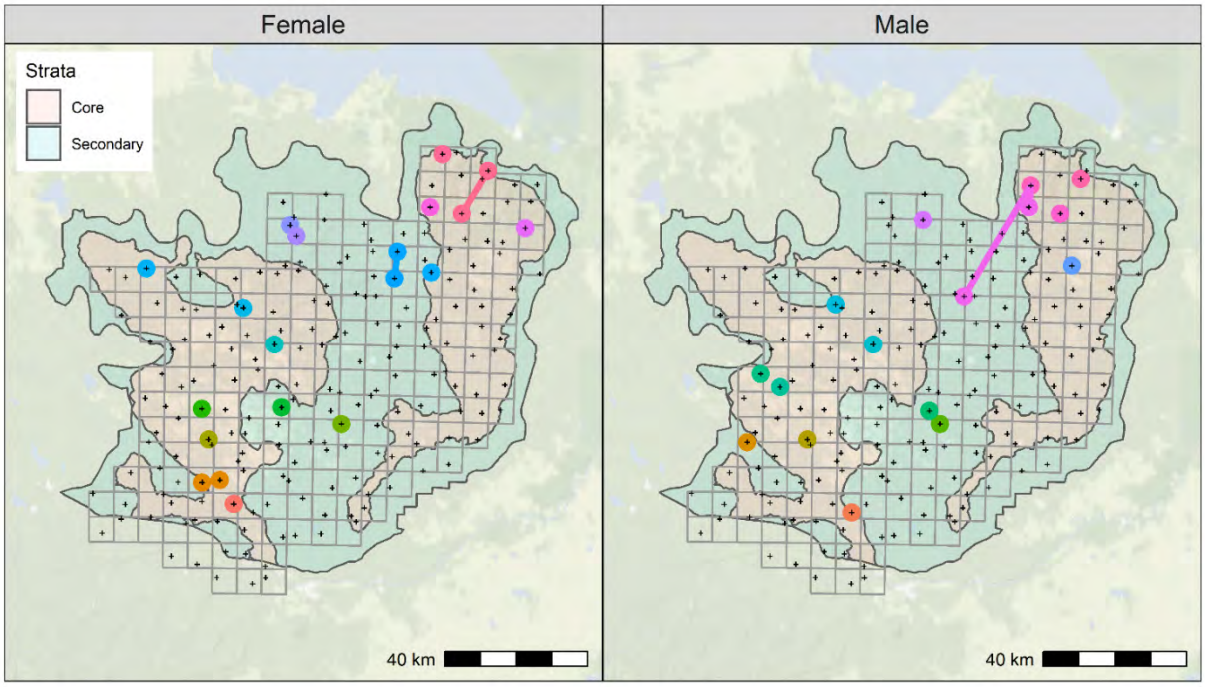

Figure 8: Detections and redetections for all sessions of male and female grizzly bears on the BMA 7 sampling grid. A line connects redetections.

The locations of detections and redetections of male and female bears suggests detections in both core and secondary areas with few movements detected (Figure 8).

A plot of detection frequencies per site (Figure 9) reveals two sites in session 4 where 3 bears were detected, indicating detection of potential family groups. In most other sessions, all sites detected single bears with the exception of one site in session 1 where 3 bears were detected.

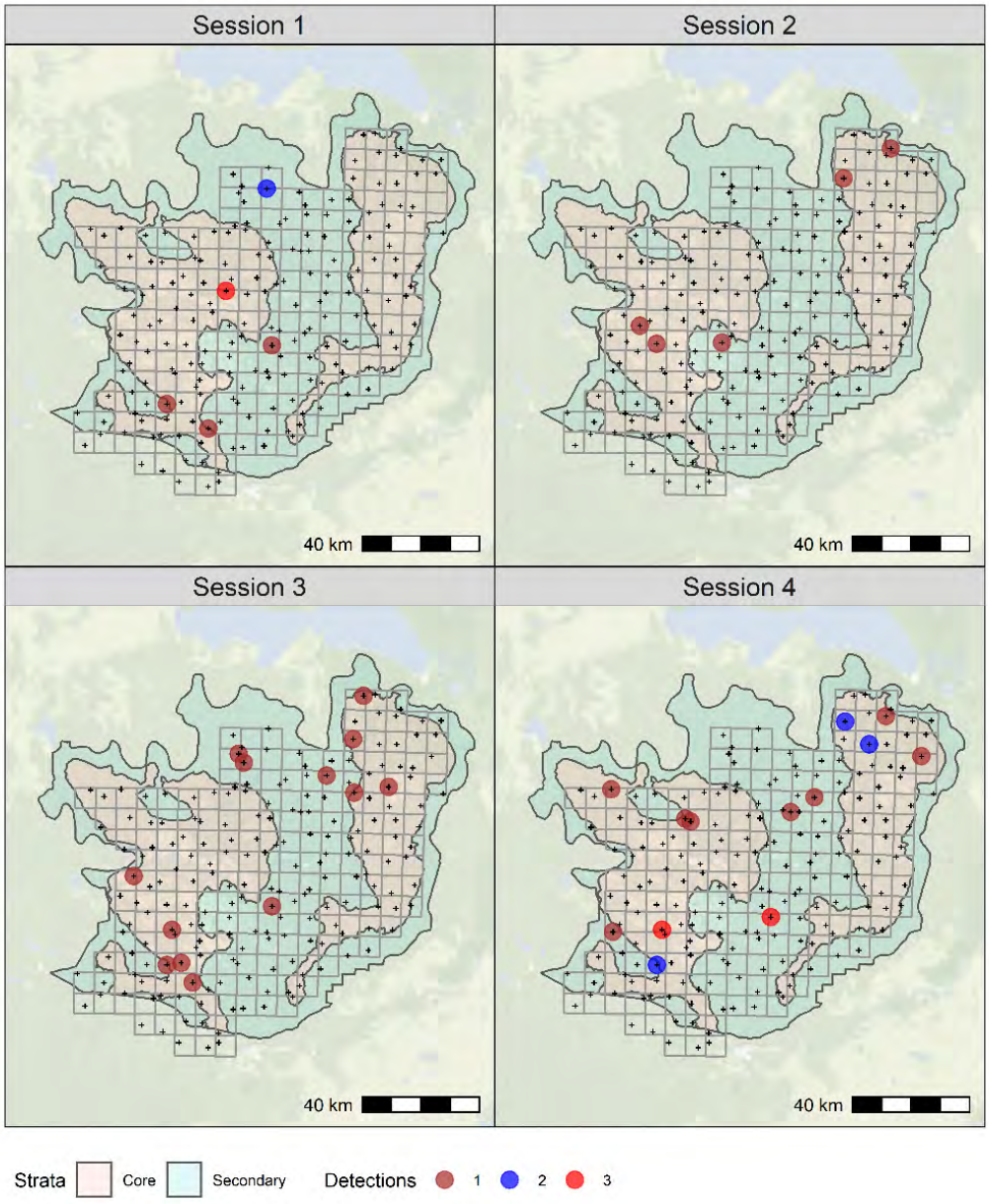

Figure 9: Spatial distribution of hair snag sites (+ signs) and frequencies of bears detected at sites for each sampling session.

One potential factor that may have reduced rates of detection of grizzly bears was the large proportion of sites that were visited by black bears during sampling (Figure 10). While visitation of sites by grizzly bears and black bears is expected to occur, the high visitation rates of black bears might have reduced the likelihood of obtaining grizzly bear hair if barbs on wires were already saturated with black bear

hairs. It is also possible that the high number of black bears at sites reduced the attractiveness of lures for grizzly bears, especially for females or family groups. The number of sites visited by black bears, as assessed by field identification of hair, was 93, 115, 130, and 153 sites of the 198-200 sites in each session. The proportion of sites visited by black bears therefore increased from 32% (64/198) to 58% (153/200) from session 1 to session 4. Overall, of 796 site visits, 573 had hair deposited on the hair snags. Of these 573 visits, 516 (90%) had occurrences of black bears as determined by field staff and/or genetic identification of hair samples.

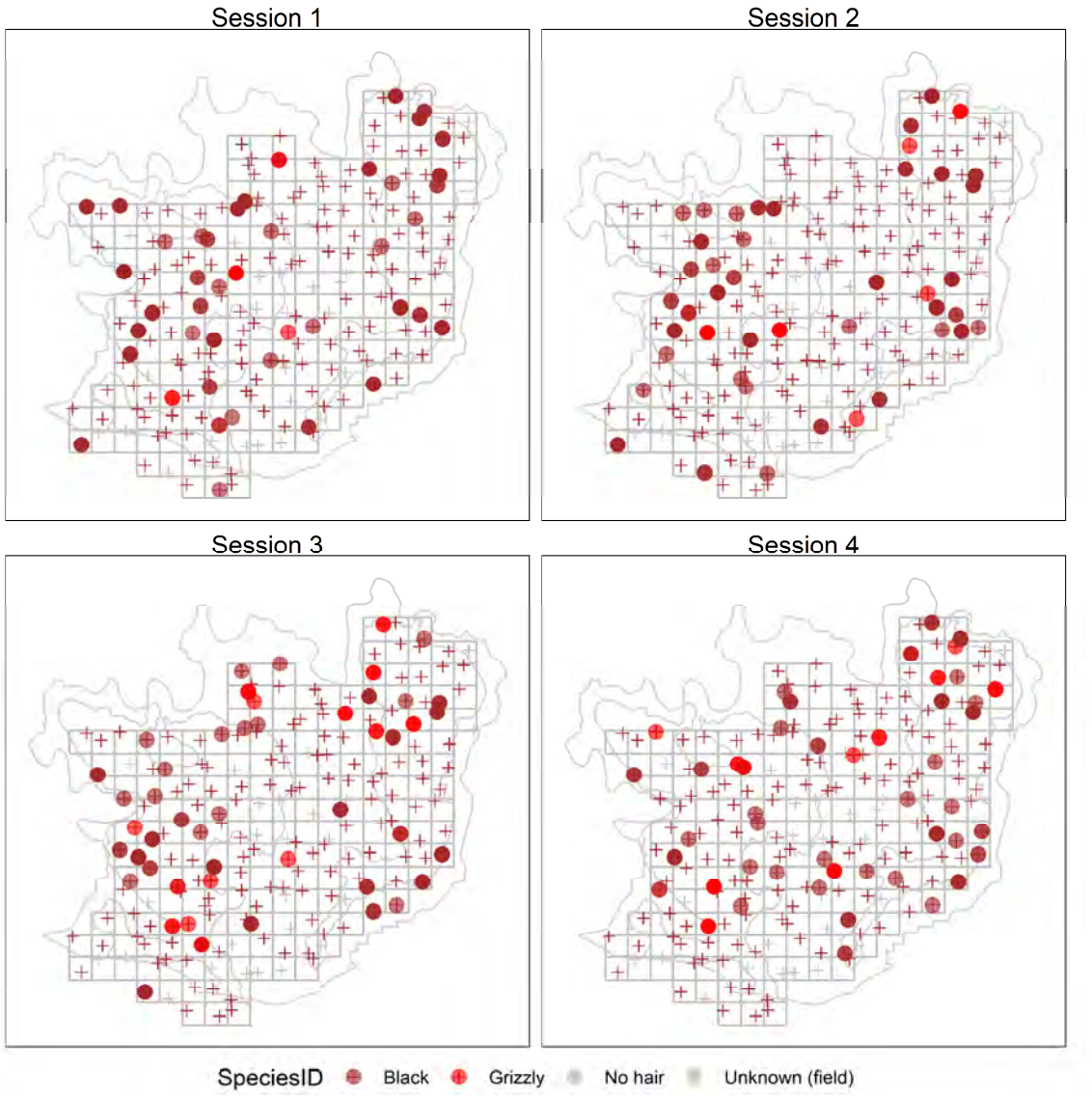

Figure 10: Occurrence of black bears as denoted by field detection of black bear hair (brown + signs) or genetic identification of grizzly bear hair (brown dots) in comparison to grizzly bear detections (red dots) by session. Grey + signs denote sites where no hair was detected. Unknown (field) pertains to hair detected at sites but not classified as black or grizzly bear. Note that only a subset of sites where black bears hair is detected are genotyped.

Another potential reason for the larger number of new bears detected in session 4 was the possible presence of cubs that may have displayed lower detection probabilities, in earlier sessions. Our parentage analysis found that 2 sites with 3 grizzly bear detections were likely family groups (Table 5). This potentially created a violation of demographic closure, which is the assumption that all bears in the study area are available for detection in all sessions (if cubs had 0 probability of detection in earlier sessions). If the family groups were not available for detection in previous sessions due to the low height of cubs relative to the barbed wire, or if only the mother of the family group was available for detection

in earlier sessions, then our estimates could be biased high. We cannot conclude definitively that cubs were not available, or whether these young were cubs of the year or yearlings (yearlings would have been more detectable because of their larger size), however, given the low redetection frequencies across sessions in the data set, we felt that this topic was worthy of further investigation. We note that spatially explicit methods confront geographic closure (bears moving in and out of the study area during sampling) but are not robust to violation of demographic closure. To assess sensitivity of estimates to this issue, we ran the most supported models with the cubs detected in session 4 included and excluded.

Table 4: Relationships between grizzly bears that were detected at the same site and session during the Swan Hills inventory. Of particular interest were potential cubs that were detected in session 4 and highlighted in red.

Names	Session	Relationship
221-258-2D-4 (m) 221-258-2H-4 (f) 221-258-1A-4 (mom)	4	Likely parent offspring Detected by both Parente and Relate Likely cubs-of-the-year
500-1014-2D-2 (m) 530-1061-1E-4 (m)	4	No relation in both Parente and Relate
161-134-1B-1 (f) 162-143-1C-3 (f)	4	Full siblings by Relate Could be 2-year-olds or independent young
227-288-1A-4 (mom) 227-288-1K-4 (F) 227-288-2L-4 (m)	4	Likely parent offspring Detected by both Parente and Relate Likely cubs-of-the-year
314-507-1D-1 (m) 314-507-1F-1 (f) 314-507-8F-1 (m)	1	Unclear; no relation in Parente but Relate shows 314-507-1F-1 (f) and 314-507-1D-1 (m) as parent offspring
466-944-2A-1(m) 466-944-2B-1 (m)	1	No relation
501-1019-1D-4 (m) 562-1098-2D-2 (f)	4	No relation

Stand-alone Analysis of Swan Hills

Lower sample sizes of male redetections (1 of 17 males was detected in more than one session) precluded sex-specific modelling. As an alternative, sex was modelled using a mixture-model approach that allowed us to incorporate sex-specific detection functions and allowed for estimation of sex-specific density using full-likelihood models.

Initial model selection focused on parsimonious detection models, followed by modelling the density variation within the sampled area. Models with trap-specific covariates were considered, however, sparse recaptures resulted in unstable estimates from these models and they were not considered further. However, these trap-specific covariates were considered again in the meta-analysis. Of all detection models considered, the model with sex-specific detection at the home range center and sex-

specific movement (σ) was supported, with σ increasing linearly with sessions (as symbolized by a *T* term; Model 1, Table 5). As a next step, we modelled density variation on the sampling area, however, none of the density surface models were more supported than the constant density model (presumably due to sparse data). A model with density varying by RSF score was tied for support, further re-affirming the delineation of the sampling area using core/secondary and RSF scores (Figure A1).

Table 5: Model selection for stand-alone analysis of Swan Hills BMA 7 data set. AIC_c = sample size adjusted Akaike Information Criterion, ΔAIC_c = the difference in AIC_c between the model and the most supported model, AIC_c weight = w_i, K, the number of model parameters and log-likelihood (LL) are given. Baseline constant models are shaded for reference with covariate models. A half-normal detection function was used for the analysis.

No	Density	Detection at HR center (g_0)	Scale (σ)	AIC_c	ΔAIC_c	w_i	K	LL
1	constant	sex	sex+T	470.14	0.00	0.26	7	-226.3
2	constant	sex+trend	sex	470.70	0.56	0.20	7	-226.5
3	RSF	sex	sex+T	470.94	0.80	0.18	8	-225.1
4	strata	sex	sex+T	471.94	1.80	0.11	8	-225.6
5	RSF+RISK	sex	sex+T	472.35	2.21	0.09	9	-224.1
6	RISK	sex	sex+T	472.51	2.37	0.08	8	-225.9
7	constant	sex+session	sex	474.61	4.47	0.03	9	-225.2
8	RSF*RISK	sex	sex+T	476.00	5.86	0.01	10	-224.1
9	constant	sex	sex	476.16	6.02	0.01	6	-230.8
10	constant	sex+sessions2&3	sex	476.82	6.68	0.01	7	-229.6
11	RSF	sex	sex	477.15	7.01	0.01	7	-229.8
12	constant	sex	sex+t23	477.28	7.14	0.01	7	-229.8
13	strata	sex	sex	477.51	7.37	0.01	7	-229.9
14	constant	sex+T	constant	479.14	9.00	0.00	6	-232.3
15	constant	bk+t	constant	479.69	9.55	0.00	5	-233.9
16	constant	t	constant	480.25	10.11	0.00	7	-231.3
17	constant	sex+bk	constant	481.58	11.44	0.00	6	-233.5
18	constant	sex+t	constant	482.73	12.59	0.00	8	-231.0
19	constant	constant	sex	482.82	12.68	0.00	5	-235.5
20	constant	constant	constant	482.85	12.71	0.00	4	-236.8

We estimated the locations of home range centers using the most supported model (Figure 11), revealing a relatively even spread of centers across the full sampled area with home range centers in both core and secondary areas. The actual locations were similar to detection locations given that few bears were recaptured.

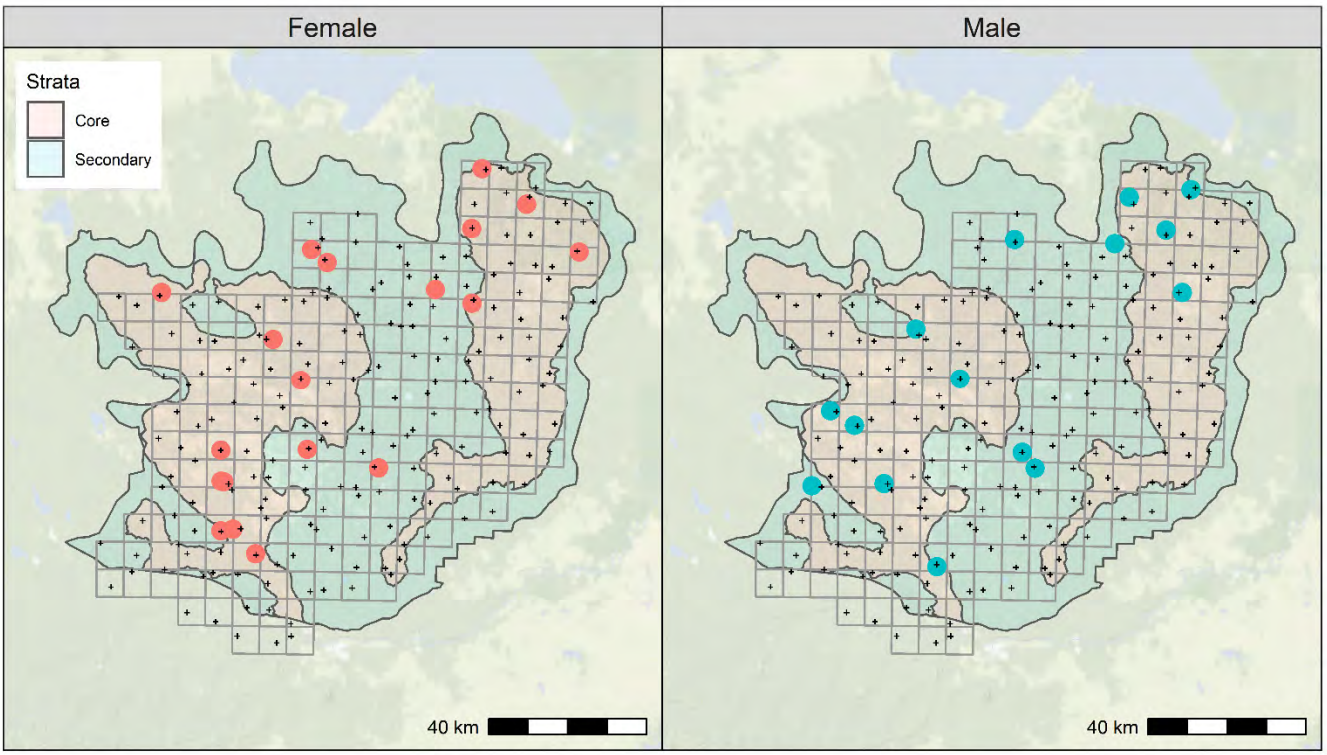

Figure 11: Estimated home range centers for female and male bears detected in the Swan Hills inventory.

Meta-analysis of Swan Hills and Grande Cache Data Sets

One of the challenges with the stand-alone analysis of Swan Hills was the low number of redetections, especially for males, that challenged valid estimation of scale of movement. The meta-analysis approach with BMA 2 allowed us to incorporate additional information from the BMA 2 data set, which could potentially refine detection parameter estimates for the Swan Hills. This approach also allowed a sensitivity analysis of estimates to detection by running a model that assumed similar detection functions for BMA 7 and BMA 2. We used a conditional likelihood approach was used for the analysis which allowed flexible modelling of sex-specific detection functions across the two BMA sampling areas. This approach does not directly estimate density but does allow density estimates as a derived parameter.

One of the key objectives of the meta-analysis was to develop models that would allow joint modelling of sex-specific detection functions across BMAs without the use of BMA-specific detection terms. If this could be achieved, the effect sample size used for detection would be the combined sample size of BMAs. To facilitate this, we used hair snag site covariates in the analysis, in addition to traditional covariates. We also considered covariates pertaining to whether a site was fixed or moved each session.

Of models considered, a model with BMA-specific detection at home range center with the additive effects of sex and canopy cover was the best model. Spatial scale (σ) was influence by terrain ruggedness index (TRI) of sites and sex (Table 6, model 1). A model that did not include BMA was less supported (Table 6, model 3).

Table 6: Model selection for meta-analysis AIC_c = sample size adjusted Akaike Information Criterion, ΔAIC_c = the difference in AIC_c between the model and the most supported model, AIC_c weight = w_i, K, the number of model parameters and log-likelihood (LL) are given. Baseline constant models are shaded for reference with covariate models. A half-normal detection function was used for the analysis.

No	Detection at HR center (g_0)	Scale (σ)	AIC_c	ΔAIC_c	w_i	K	LL
1	BMA+Sex+CC	Sex+TRI	4368.68	0.00	0.92	7	-2177.2
2	BMA+Sex	Sex+fix*Sex	4374.89	6.21	0.04	7	-2180.3
3	Sex+CC	Sex*TRI	4376.04	7.36	0.02	7	-2180.8
4	BMA+Sex+Fixsite	Sex	4378.55	9.87	0.01	7	-2182.1
5	BMA+Sex+Fixsite	Sex	4380.14	11.47	0.00	6	-2183.9
6	BMA+Sex	Sex+TRI	4383.62	14.94	0.00	6	-2185.7
7	BMA+Sex	Sex	4383.79	15.12	0.00	5	-2186.8
8	BMA+Sex	Sex	4383.79	15.12	0.00	5	-2186.8
9	BMA+Sex	Sex	4384.83	16.15	0.00	6	-2186.3
10	BMA+Sex	BMA+Sex	4385.60	16.93	0.00	6	-2186.7
11	BMA*Sex	BMA*Sex	4385.78	17.10	0.00	8	-2184.6
12	BMA+Sex	BMA+Sex	4386.73	18.06	0.00	7	-2186.2
13	Sex+CC	Sex+TRI	4388.01	19.34	0.00	6	-2187.9
14	Sex+CC	Sex	4396.24	27.56	0.00	5	-2193.0
15	Sex	BMA+Sex	4399.70	31.03	0.00	5	-2194.8
16	Sex	Sex	4416.80	48.13	0.00	4	-2204.3
17	Sex+fix	Sex	4418.86	50.18	0.00	5	-2204.3
18	constant	Sex	4467.35	98.67	0.00	3	-2230.6
19	Sex	constant	4546.88	178.20	0.00	3	-2270.4
20	constant	constant	4548.74	180.06	0.00	2	-2272.3

Plots of detection functions for BMA 2 and the Swan Hills from model 1 illustrate the large difference in detection at home range centers for BMAs with similar overall scales of movement (Figure 12). This result highlights the main distinction of the Swan Hills BMA, which is that bears were less likely to be detected regardless of trap placement. Covariates such as canopy cover also influenced detection of bears; however, the effect of site covariates could not explain differences in detection between BMA 2 and the Swan Hills.

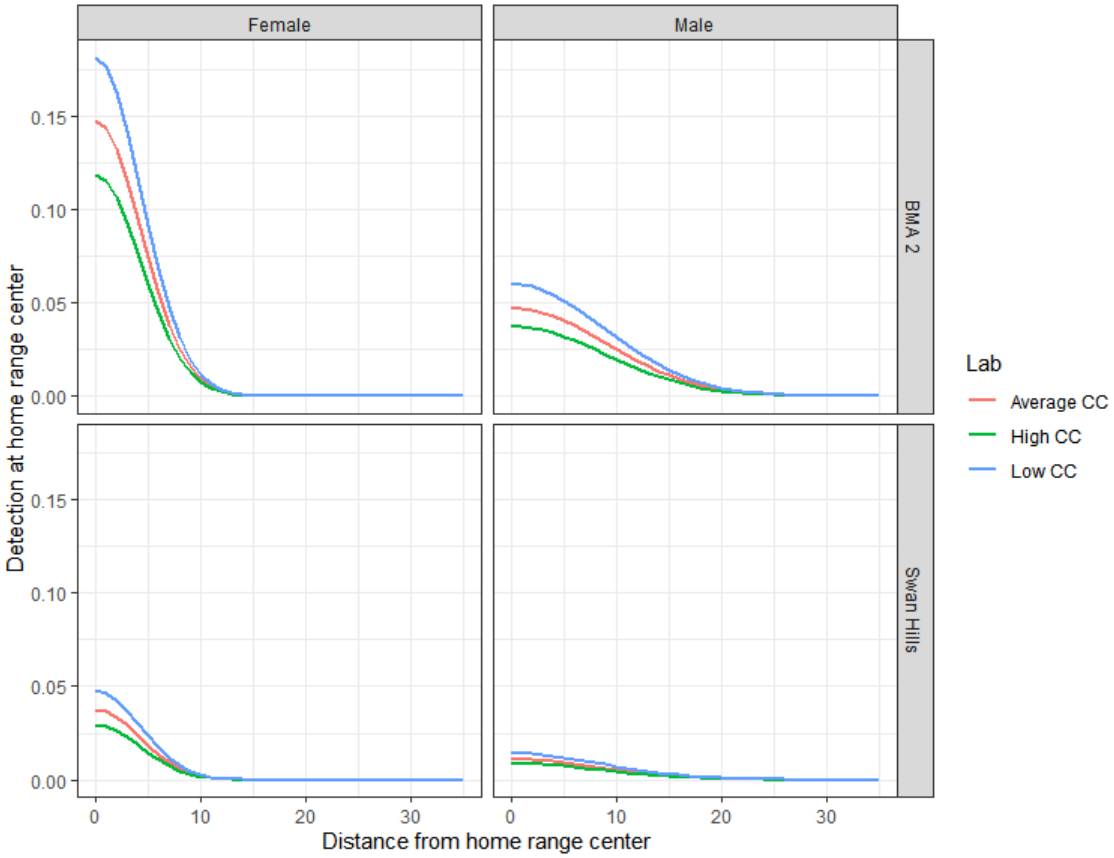

Figure 12: Detection functions from Grande Cache (BMA 2) inventory (2008) and Swan Hills (BMA 7) inventory in 2018.

Estimates of Density and Average Number of Bears in Core and Secondary Areas

We estimated the average numbers of bears by multiplying the estimated density by the area of core and secondary habitat (11,984 km^2) in the BMA 7 under the assumption that bear home range centers would be located in this area. Estimated home range centers, which all fell within the core and secondary area (Figure 11), along with gradients in bear habitat, suggest that this assumption was justified (Figure A1).

Estimates from the stand-alone and meta-analysis of grizzly bears resulted in a density of bears of 12.6 bears per 1,000 km^2, and a corresponding average estimated number of bears of 150–152 in core and secondary areas. The precision of estimates was low (CVs of 35–41%). The meta-analysis improved precision of estimates, especially for males, which had limited detections in BMA 7. Components of precision suggest, precision due to the number of bears detected CV_n was reasonable with CV_ns of 15–20%. The main factor reducing precision was the estimation of detection parameters (CV_a), which

ranged from 32–64%. Basically, the low numbers of redetections was the primary factor associated with low precision of estimates.

Table 7: Estimates for the Swan Hills BMA from the meta-analysis (with BMA 2) and for a stand-alone analysis. The full data set, including cubs detected in session 4 was used for estimates. Estimates were based on the most supported models from each analysis. Density is expressed as bears per 1,000km^2. Precision components pertain to the contribution of sample size of bears detected (CV_n), the estimation of detection parameters (CV_a) and the overall precision (CV_D).

Analysis/sex	Average bears in core/secondary area				Density (bears per 1,000km^2)				Precision components		
	Ave N	SE	Conf. Limit		Density	SE	Conf. Limit		CV_n	CV_a	CV_D
Meta-analysis											
Females	88.8	33.2	43.7	180.3	7.41	2.77	3.65	15.04	0.20	0.32	0.37
Males	61.6	23.6	29.9	127.1	5.14	1.97	2.49	10.60	0.21	0.32	0.38
Males+Females	150.4	51.9	77.9	290.2	12.55	4.33	6.50	24.22	0.15	0.31	0.35
Stand-alone analysis											
Females	68.3	27.2	32.2	144.9	5.70	2.27	2.69	12.09	0.20	0.35	0.40
Males	83.4	56.4	25.1	277.7	6.96	4.71	2.09	23.17	0.22	0.64	0.68
Males+Females	151.7	62.8	69.6	330.9	12.66	5.24	5.81	27.61	0.15	0.39	0.41

As noted earlier, we had a potential issue with demographic closure due to cubs that may have been detected in session 4 but likely had lower or no detection in earlier sessions. We removed these 4 cubs (Table 4) but retained the mother bears and re-ran the most supported models from each analysis. Removing the cubs from session 4 resulted in a reduction of overall estimates by approximately 30 bears, demonstrating the potential effect of demographic closure on these population estimates, and the sparse nature of the data set. Namely, when detection rates are low, individual detected bears have a high influence on estimates (Table 8 and Figure 13).

Table 8: Estimates for Swan hills with cubs detected in session 4 removed. Density is expressed as bears per 1,000km^2. Precision components pertain to the contribution of sample size of bears detected (CV_n), estimation of detection parameters (CV_a) to overall precision (CV_D).

Analysis/sex	Average bears in core/secondary area				Density (bears per 1,000km^2)				Precision components		
	Ave N	SE	Conf. Limit		Density	SE	Conf. Limit		CV_n	CV_a	CV_D
Meta-analysis											
Females	70.6	26.1	35.0	142.3	5.89	2.17	2.92	11.87	0.21	0.31	0.37
Males	48.0	18.2	23.4	98.6	4.01	1.52	1.95	8.22	0.22	0.31	0.38
Males+Females	118.6	40.2	62.1	226.4	9.90	3.36	5.19	18.89	0.15	0.30	0.34
Stand-alone											
Females	55.8	21.9	26.6	117.1	4.66	1.82	2.22	9.77	0.21	0.33	0.39
Males	64.3	42.7	19.6	210.2	5.36	3.56	1.64	17.54	0.23	0.62	0.66
Males+Females	120.1	48.1	56.4	255.9	10.02	4.02	4.70	21.36	0.16	0.37	0.40

Figure 13 provides a graphical interpretation of estimates and demonstrates the relative agreement of the meta-analysis and stand-alone estimates and the improvement of precision of the male estimate for the meta-analysis. Finally, the reduction in estimates by removal of cubs in session 4 is demonstrated in the context of overall certainty in estimates (as indicated by more narrow confidence limits).

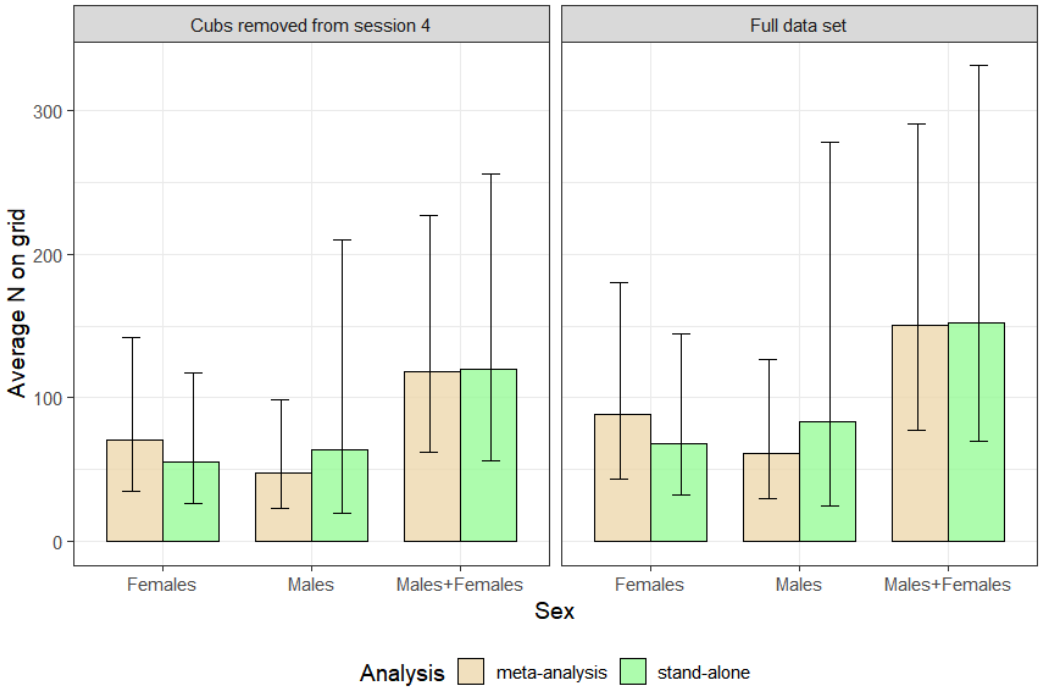

Figure 13: Comparison of estimates from the meta-analysis and the stand-alone analysis that included detection data from BMA 2.

One final estimate considered was from the meta-analysis where a similar detection function for BMA 2 and the Swan Hills was assumed (Table 6, model 3). More exactly, the model assumes that the differences in detection was primarily due to differences in canopy cover and terrain ruggedness in grid areas rather that BMA-specific differences. The support of model 3 was marginal for the full data set, however, support for this model increased when cubs in session 4 were removed (ΔAIC_c=2.68, w_i=0.20). The resulting estimates ranged from 56 to 64 bears and densities of 3.5 to 5 bears per 1,000 km^2 with a noted increase in precision. Figure 14 shows the range of density estimates from the meta-analysis.

Table 9: Estimates for Swan Hills from meta-analysis assuming similar sex-specific detection functions for BMA 2 and the Swan hills. Density is expressed as bears per 1,000km².

Analysis/sex	Average bears in core/secondary area			Density (bears per 1,000km²)			Precision components		
	Ave N	SE	Conf. Limit	Density	SE	Conf. Limit	CV_n	CV_a	CV_D
Full data set									
Females	37.7	7.0	26.3 54.2	3.15	0.59	2.19 4.52	0.17	0.07	0.19
Males	25.9	4.8	18.0 37.3	2.17	0.40	1.51 3.11	0.17	0.07	0.19
Males+Females	63.7	8.8	48.6 83.4	5.31	0.74	4.05 6.96	0.12	0.06	0.14
Cubs removed from session 4									
Females	33.3	6.4	22.9 48.5	2.78	0.54	1.91 4.05	0.18	0.07	0.19
Males	22.5	4.4	15.4 32.8	1.88	0.36	1.29 2.74	0.18	0.07	0.19
Males+Females	55.8	8.0	42.2 73.9	4.66	0.67	3.52 6.17	0.13	0.06	0.14

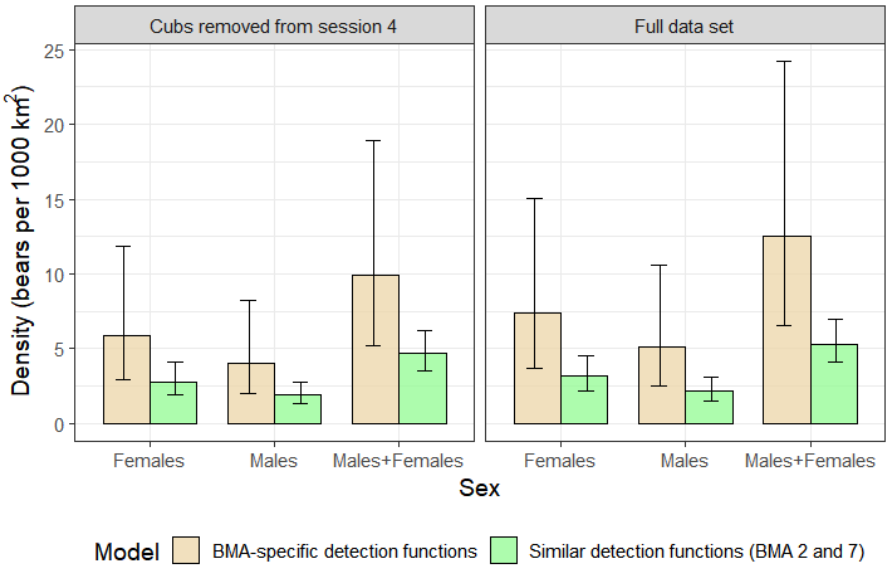

Figure 14: Estimates of density from the meta-analysis with and without session 4 cubs removed. In addition, estimates from a model that assumes similar detection functions for BMA 2 and Swan Hills are displayed.

Comparison of the Swan Hills Density with Other BMAs

The Swan Hills inventory had lower sampling efficiency than other DNA based inventories conducted in Alberta, as indicated by the low proportion of bears detected in more than one session and the comparatively high proportions of new bears detected each session (Figure 7). As a result, the precision of density estimates was lower (Table 9).

The estimated density for the Swan Hills is in the range of other BMAs sampled in Alberta (Figure 15). Two estimates are shown for Swan Hills; one with the full data set and one with session 4 cubs removed.

Table 10: Summary of most recent estimates from Alberta BMAs along with density estimates. Efficiency is the number of bears detected in more than one session divided by the total number of bears detected. Estimates from surveys prior to 2014 are summarized in Boulanger et al. (2018). The 2014 BMA 2 survey is summarized in Stenhouse et al. (2015) and the 2018 BMA 4 survey is summarized in Stenhouse et al. (2020).

BMA	BMA name	Year	Bears detected			Efficiency	Density				
			F	M	Total		Estimate	SE	Conf. Limit		CV
2	Grande Cache	2008	161	108	269	0.45	17.10	0.89	14.88	19.66	0.05
3	Yellowhead	2014	45	63	108	0.47	7.71	1.09	5.86	10.15	0.14
4	Clearwater	2018	29	36	64	0.28	9.23	1.35	6.25	13.67	0.15
5	Livingston	2006	45	40	85	0.42	9.98	1.07	7.43	13.41	0.11
6	Castle	2007	13	19	32	0.19	12.59	2.81	7.12	22.46	0.22
7	Swan Hills (full)	2018	21	18	39	0.13	12.55	4.33	6.50	24.22	0.35
7	Swan Hills (no cubs)	2018	21	18	39	0.13	9.90	3.36	5.19	18.89	0.34

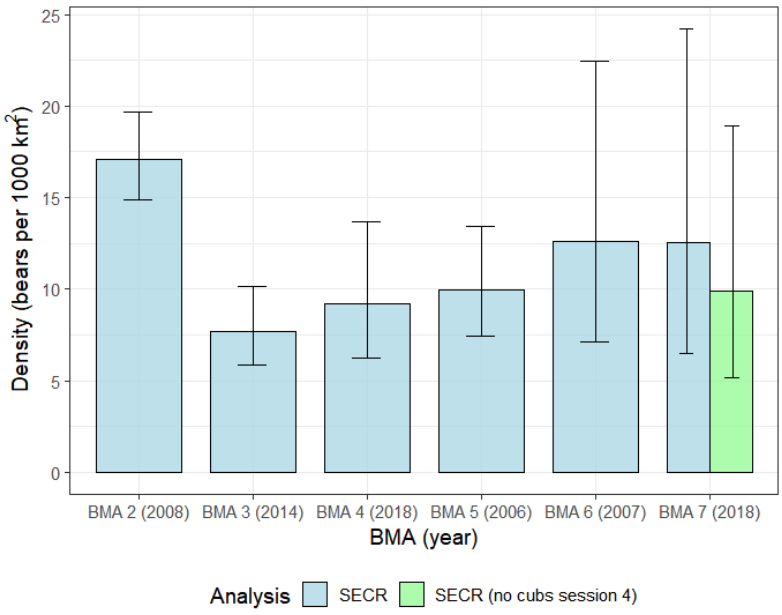

Figure 15: Estimated density from other BMAs compared.

Parentage and Detailed Genetic Analysis Results

The 39 genotypes found from the collected hair samples were compared with all available genetic samples of grizzly bears from across the province (WGI unpublished data; Graham and Stenhouse 2019) to determine if any of these bears were previously known. This analysis found that all genotypes were new bears, except for one that matched a bear from a "Swan River" 2018 project where the sample was collected within BMA 7 following our own sampling sessions.

A parentage analysis using software *Parente* was also performed by WGI as a way to check for possible errors in scoring. The program highlights perfect matches as mother-father-offspring triads and triads that mismatch at 1 or 2 markers. Any mismatched markers were then double-checked to ensure that an error was not made. In conducting this error check, we found one grizzly bear (G278), which had been previously captured and collared in the Grande Cache BMA in the spring of 2012 as an adult and again in 2017, who originated from parents in the Swan Hills BMA (Figure 17). No genetic matches were found for grizzly bears that were captured and collared in the Swan Hills area from 2005 to 2006 (n=10) as part of our long term research program. This compares to 10 bears in the BMA 4 2018 inventory that matched as previously known bears from a 2005 inventory effort (Stenhouse et al., 2020). We do know that, of the 10 previously collared research bears in the BMA 7, 3 died before the 2018 inventory and 1 bear was known to have left BMA 7, which would leave 6 previously known bears available for detection in 2018.

There were also no offspring detected within the 2018 sample of 39 individual bears from the known research bears monitored in 2005 and 2006 in BMA 7. This compares to 6 offspring from the 63 unique

grizzly bears found in BMA 4 also in the 2018 season. Both of these results; not finding any previously known bears or their offspring in 2018, is difficult to explain but may suggest that BMA 7 has lower grizzly bear survival rates compared to BMA 4 (Stenhouse et al., 2020), where both survival of known bears was seen along with reproductive output from genetic analysis. With 30% mortality of our collared research bears in BMA 7 after 2006 (when the spring hunt was suspended), we believe that bears in BMA 7 have low survival rates.

The Swan Hills population was also compared with the populations from neighboring BMAs (Grande Cache BMA 2 and Yellowhead BMA 3; Proctor et al., 2010). Using principle components analysis (PCA) software Genetix, the BMA 7 bears appeared to be genetically distinct from grizzly bears in the Grande Cache and Yellowhead BMAs (Figure 16). Interestingly, G278 who was captured in the Grande Cache BMA, clustered within the PCA with the BMA 7 bears, which further supports the interpretation of the genetic data that his parents were from the Swan Hills BMA.

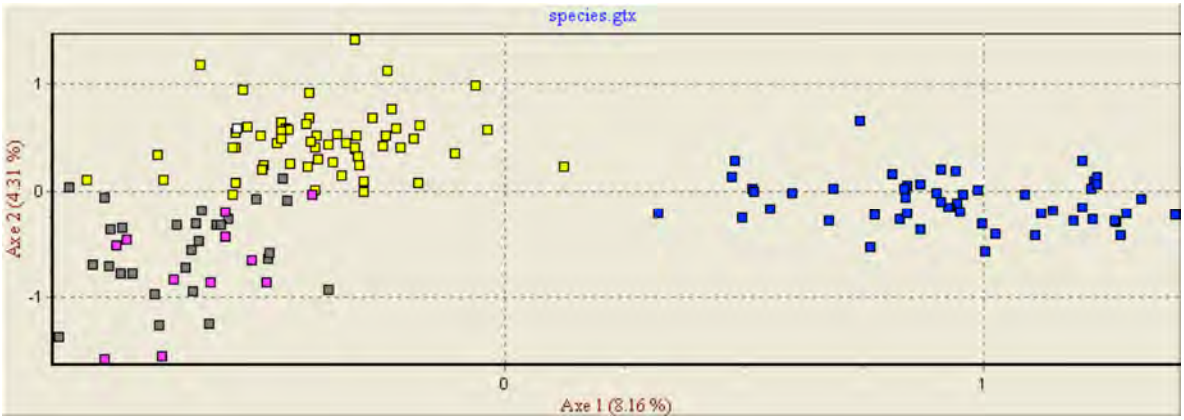

Figure 16: Principle component analysis of 6-locus genotypes from 53 black bears (blue) and 61 grizzlies (yellow) from BMA 3, alongside 39 individuals from BMA 7 that were either diagnosed as grizzly bears by their G10J genotypes (gray; n=28) or that have the non-diagnostic genotype 194.194 (pink; n=11).

Based on data from our long-term genetic database, we also determined that grizzly bears do disperse (emigrate) out of BMA 7, but we have no data suggesting that grizzly bears have immigrated into BMA 7 during the period of the provincial grizzly bear research and inventory efforts (1999–2020). Our dispersal cases are G278 (male) found in BMA 2 and from genetic analysis we believe his mother was from BMA 7 (Figure 17), and G202 (male) captured in BMA 7 as a yearling in 2005 and then redetected in BMA 3 in 2011 and 2014 in population inventory work (Figure 18).

Our results showed no detections of grizzly bears within the 12 cells or those adjacent in the north of Highway 43, suggesting that these habitats were not being used by grizzly bears. Thus, we concluded that during the sampling period in 2018, there was no movement of grizzly bears across this highway.

G278 Adult Male (red) and his likely Mother (yellow)

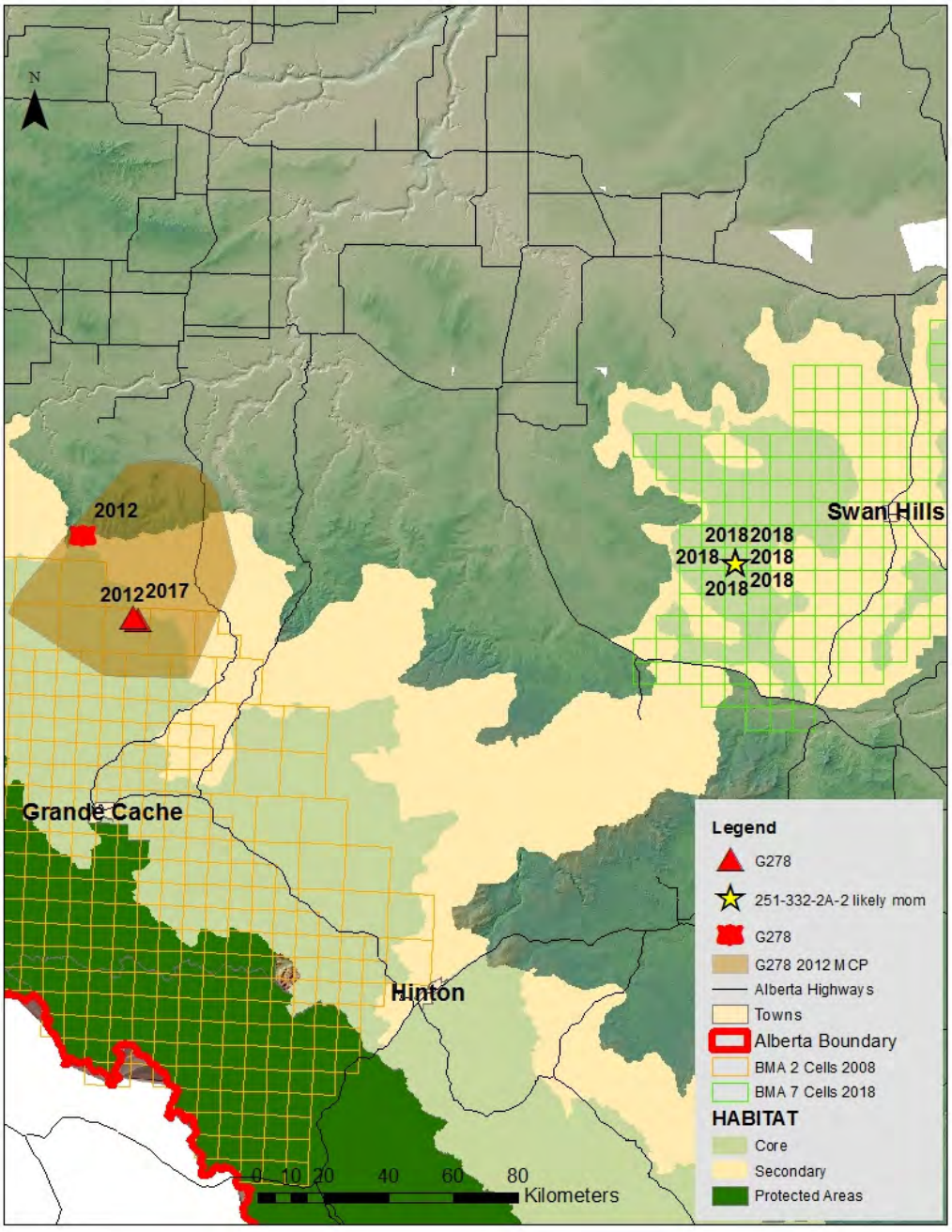

Figure 17: Demonstrating the location of G278 and his likely mother.

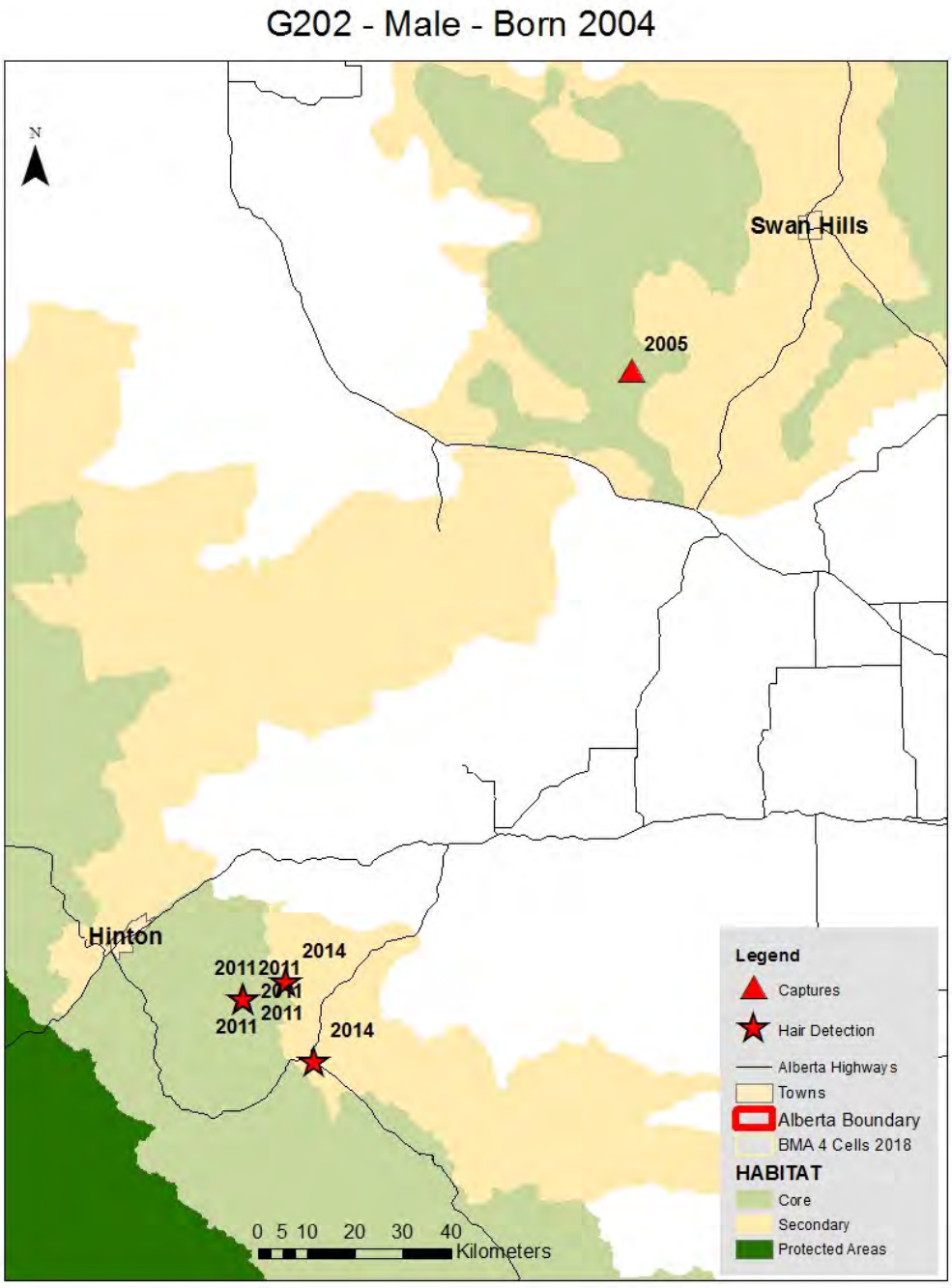

Figure 18: Demonstrates movement of G202 who was captured in the Swan Hills BMA (BMA 2) and then detected in the Yellowhead BMA (BMA 3).

DISCUSSION

This project provides the first estimates of grizzly bear abundance and density for the Swan Hills grizzly bear population unit (BMA 7). While DNA sampling was successful in detecting a moderate sample size of grizzly bears (39), the rates of detection falls below all other BMAs sampled in Alberta, despite the fact that similar sampling designs and methodologies were used during all inventories. We suspect that the large number and density of black bears in the area reduced our ability to detect grizzly bears and may have affected grizzly bear behaviour around the sampling sites. As a result, the estimates from this project are relatively imprecise and should be interpreted cautiously. We suggest that the lower bound of the confidence limit (62) be used for management purposes until higher precision can be obtained for grizzly bear population estimates in the area. We note that the lower bound of the confidence limit (62 bears) roughly corresponds to the estimate of bears if a similar detection function to BMA 2 is assumed (Table 8: 56–64 bears).

The main issue confronting estimates is lack of precision as indexed by wide confidence intervals. This means that if the project were repeated, a dissimilar estimate may result. In this context, discussion about potential biases is secondary to the issue of precision. We note that low detection rates, if they are similar across all sessions, should not inflate mark-recapture estimates. If detection rates are evenly low for bears, and they do not change after detection, then unbiased albeit imprecise estimates will result. However, factors such as demographic closure violation (addition of new bears into the sampled population such as young cubs suggested in session 4) can inflate estimates, which may have occurred if young cubs were detected in session 4 that were not available for detection in earlier sessions. Spatially explicit methods help confront geographic closure, the likelihood that some bears may be off the grid during sampling, by estimating a detection function that considers bear movement during sampling. However, SECR methods still assume demographic closure.

We note that the issue at hand with potential cubs in session 4 is not necessarily demographic closure but instead, the overall effect of low detection probabilities. Because detection rates were low, the reduction of the 4 potential cubs changed estimates by 30 bears. The reason for this can be thought of in terms of the basic mark-recapture estimating equation which is the number of bears detected (M) divided by their detection probability. When detection rates are higher (>=0.25), each detected bear will contribute about 4 bears to the estimate (1/0.25). When detection rates are lower (approximately 0.1-0.12 for Swan Hills), each bear contributes about 8-10 bears to the estimate (1/0.12) and therefore

the 4 cubs increase the estimate by about 30 bears. In most previous Alberta inventories, detection rates have ranged from 0.2-0.52 (Alberta Grizzly Bear Inventory Team 2008) and therefore, estimates have been more robust to the addition or subtraction of marked bears from the estimate. The general robustness of mark-recapture estimators when detection rates are higher is one of the prime reasons for the intensive sampling designs employed in the Alberta Inventories.

Behavioural response can potentially inflate estimates if bears become less inclined to visit a site and snag hair after initial visits. Behavioural response has been detected using site-specific detection models in other analyses, however, the overall magnitude of the behavioural response has not been high and often trap covariate models have had higher support than behavioural response models (Boulanger et al., 2018; Stenhouse et al., 2015). The challenge with the Swan Hills data set is that redetection rates were low and therefore the data set lacked power to sufficiently test for behavioural response or other more complicated forms of detection probability variation. The use of the meta-analysis allowed for enhanced modelling of scale of movement with a resulting increase in precision.

The issue with black bears potentially compromising detection of grizzly bears is difficult to investigate without having conducted genetic analysis of all black bear hair samples. Although we identified 507 black bear hair samples through lab results, we did not run genotypes to identify unique black bears, as this was not a focus of our project. However, these data do suggest a high density of black bears within the sampling area. We believe it is likely that this high density of black bears, reflected by the high number of black bear samples collected at sites, had an impact on both visits and revisits by grizzly bears. Grizzly bears could be avoiding sites where the presence of a high number of black bears was determined. It is also possible that visits by a large number of black bears to scent lure sites could have influenced the “attractiveness” of these sites to grizzly bears within the 10 day sampling period. Field observations did find that lure stations at sites that had significant black bear hair captures were largely destroyed at the end of the sampling period.

The issue of black bears interfering with sampling of grizzly bears could be investigated with data from BMA 1 where a large number of black bears were also identified. The question of whether heavy black bear use (or high density of black bears) of hair snag sites reduces the number of snags available for grizzly bears, compromises lures, or influences grizzly bear behaviour around sampling sites remains unanswered. Other studies of grizzly bears and black bears suggest segregation of species, however,

these studies occurred in mountainous areas with alpine terrain (Boulanger et al., 2016; Sawaya et al., 2012; Stetz et al., 2014). It is likely that there is less segregation in the Swan Hills given the relatively closed nature of the area without alpine habitats. If this is the case, measures such as reduction of session lengths or use of combined detection methods such as cameras, rub trees, scat and hair snags should be considered for future inventory efforts within this BMA.

Parentage analysis provides a potential way to identify cubs in DNA data sets. This approach was not developed in previous DNA inventories and often can be difficult to apply to large data sets. The question of whether cubs-of-the-year are detectable in DNA data sets was addressed in previous studies and it was suggested that cubs-of-the-year are likely more detectable in later sessions due to their larger size in late summer (Boulanger et al., 2004). It might be possible to further investigate this issue with other data sets if parentage analysis can be conducted. Still, the degree of bias caused by this issue is likely related to overall detection probabilities in the data set since, as mentioned above, high detection probabilities are more robust to 'missed bears'. Namely, if detection rates are high, addition or deletion of individual bears will likely not greatly affect overall estimates. However, when detection rates are lower, data sets become very sensitive to the addition or deletion of detections or redetections, which results in larger confidence intervals.

Given the lower detection rates obtained during this inventory, other detection (sampling) methods, such as systematically sampling roads for scat (Phoebus et al., 2020), rub trees (Kendall et al., 2019) and trail cameras could be used in unison with hair snags, to prevent low precision of estimates and overcome limitations of any single data source (Boulanger et al., 2008). Recent mark-resight approaches that use camera data and radio collared/individual natural marks also have promise to augment data sets and allow estimates of abundance (Efford and Hunter, 2018; Whittington et al., 2018). All of these potential modifications should be considered if further estimation of abundance in the Swan Hills BMA is to be pursued.

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APPENDIX: DESIGN OF SWAN HILLS PROJECT

This appendix details work to design the Swan Hills sampling project.

METHODS AND RESULTS

Delineation of Target Study Area and Potential Stratification

Habitat models have been developed from a previous collared bear study for the Swan Hills BMA (Figure A1). From this model, core and secondary zones were developed based mainly on habitat value and road density. There is a rather abrupt cut-off in habitat quality outside of secondary areas and therefore it is likely that most home range centers are contained within the core/secondary areas, however, this boundary is not a “hard edge” and bears most likely venture into areas adjoining the secondary zone especially if the population is increasing. However, it is likely that the majority of home range centers occur in core and secondary areas.

It can be seen that the majority of the core and secondary areas have high habitat value, however, the central region has high road density and therefore it is categorized as secondary habitat. In the case of Swan Hills, it is not certain whether core and secondary areas will necessarily translate into expected densities of grizzly bears given that reasonable habitat occurs in secondary zones. In addition, forestry activities and road can potentially increase bear density by creating habitat (if mortality risk is managed) and therefore high road densities may not directly translate into lower bear densities. Density surface modelling of BMAs in Alberta suggested that RSF and Risk (road density) were associated with bear density in the adjacent Grande Cache (BMA 2), however, RSF alone was most associated with density in the Yellowhead (BMA 3) and Clearwater (BMA 4;Boulanger et al., 2018). The degree in which road density influences bears is a function of historic mortality as well as present management of road access and bear mortality risk (Boulanger and Stenhouse, 2014).

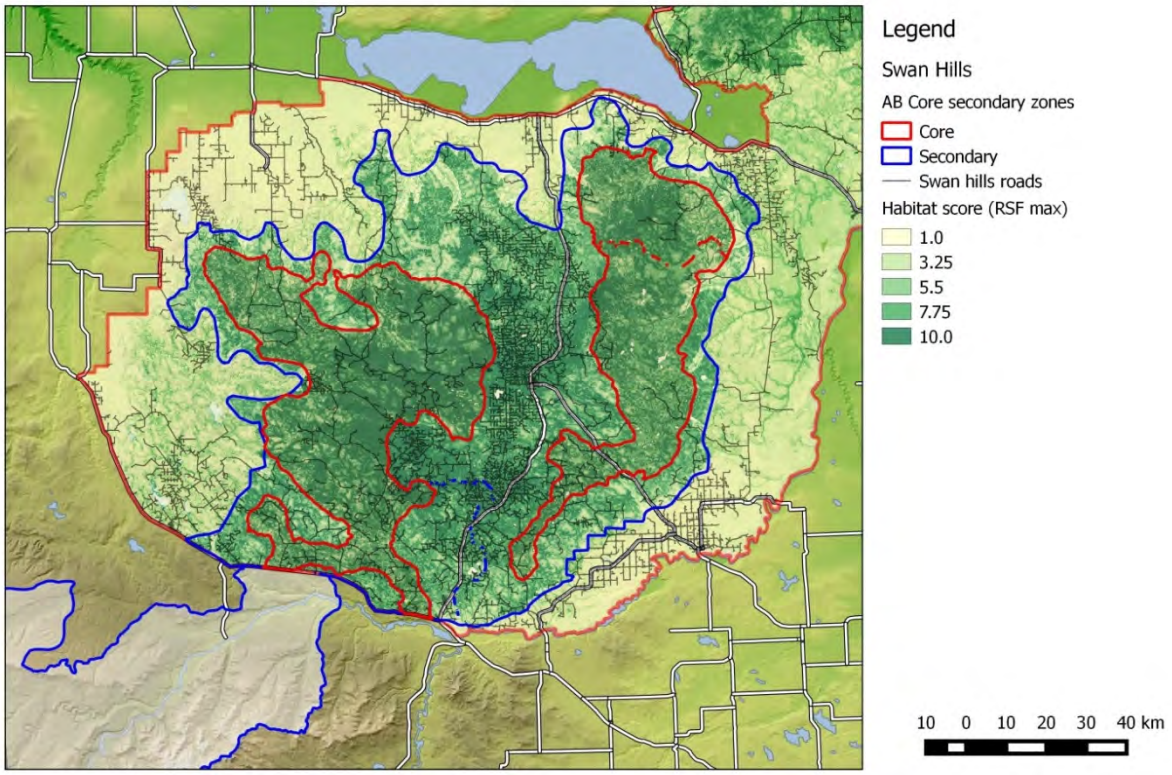

Figure A1: RSF habitat model scores for the Swan Hills and delineation of core and secondary areas.

Inference on Movement from Collared Bears

One of the challenges in designing the Swan Hills survey was the lack of previous data on movements of grizzly bears relative to other BMAs, which was required to determine optimal trap spacing. In addition, a question of interest was whether bear movements and potential densities were associated with the core and secondary areas within the BMA. A limited data set of collared bears from the Swan Hills was used to help answer these questions and inform the design of the Swan Hills DNA survey (Figure A2).

Seven bears were radio collared from 2005 to 2007 in the Swan Hills BMA. Individual paths and kernel home range areas (Worton, 1989) were analyzed for these bears using the *adehabitatHR* (Calenge, 2006) and *ggplot2* (Wickham, 2009) packages in program R (R Development Core Team, 2020). Data was only used for bears that had at least 10 locations for a given year.

The paths and kernel home range areas of collared bears (Figure A2) indicate that movements occur across core and secondary zones. It is possible that the distribution of collared bears was influenced by the location of collaring which did occur in the central, secondary area. However, even with limited data, it is apparent that bears traverse a reasonably large extent of bear habitat within the BMA which includes secondary and core areas. Therefore, stratification based on core and secondary zones, as was done in previous studies (Stenhouse et al., 2015), may not be optimal given that these zones may not predict bear density especially for secondary areas in-between the two core zones.

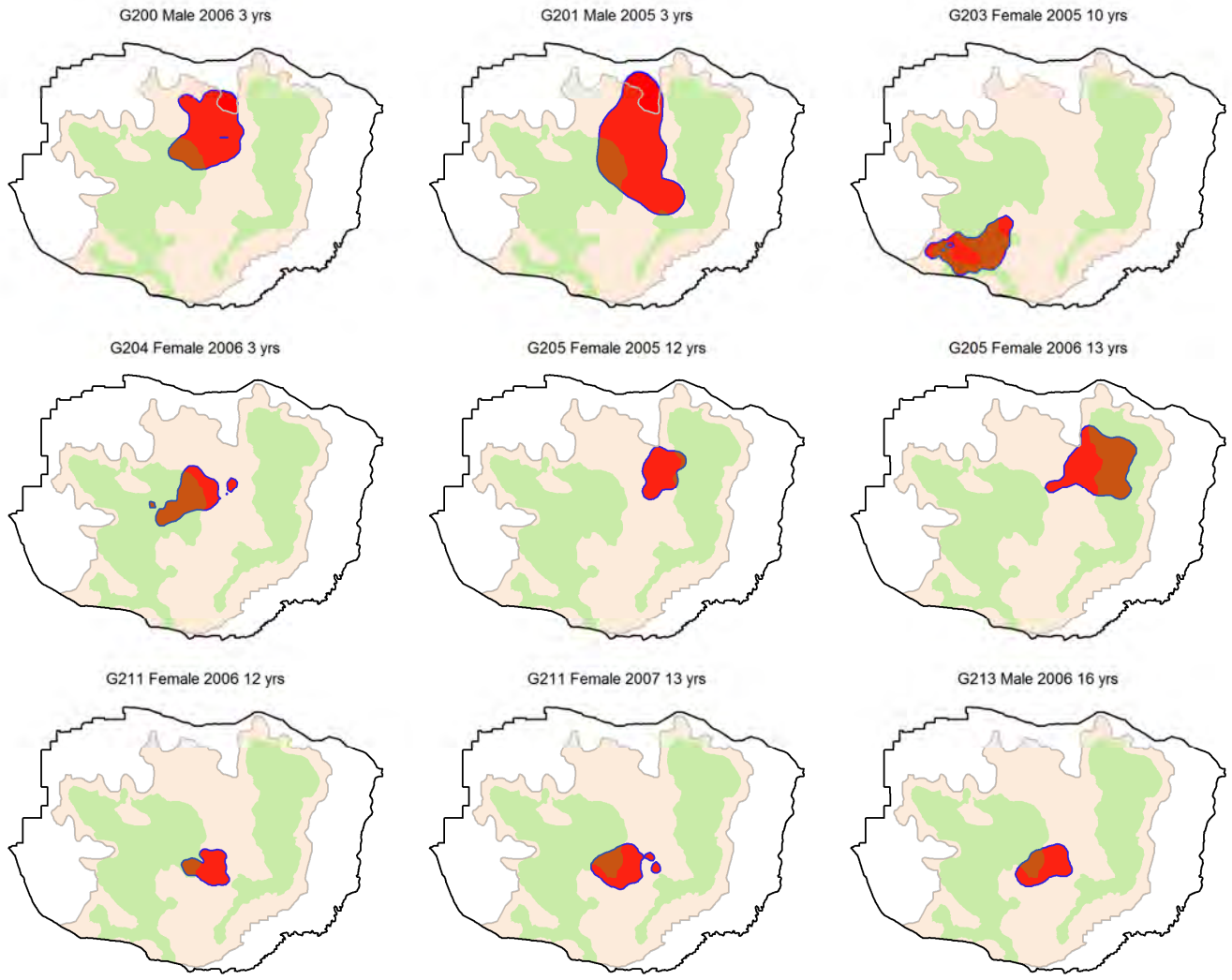

Figure A2: Collared bear kernel home range areas (red) for June and July relative to core (green), secondary (tan), and overall BMA 7 boundaries. The bear id, sex, year of locations, and age of bear is given above each figure.

A related question is whether the rather small area of habitat within the Swan Hills restricts movements and home range size. For this comparison, kernel 95% home range areas for June and July (when DNA sampling occurs) were estimated for the Swan Hills BMA and compared to adjacent BMAs (Figure A3). From this, it can be seen that the Swan Hills home range areas were relatively similar in size to other BMAs.

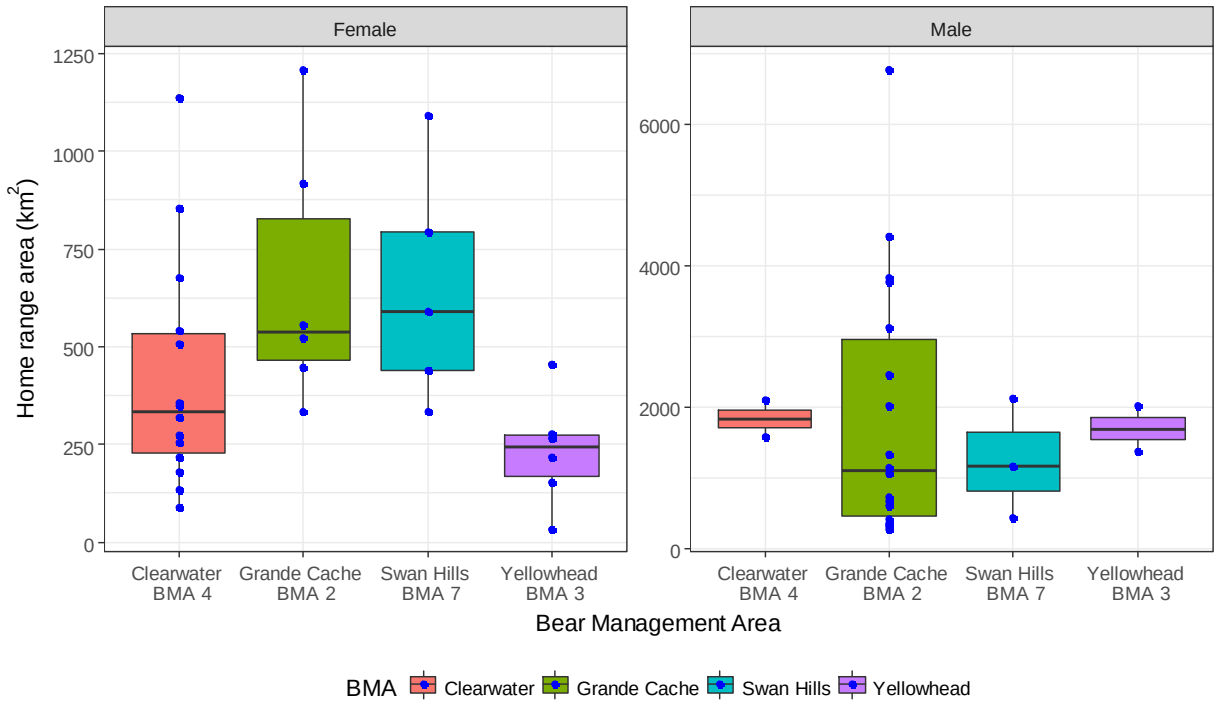

Figure A3: Boxplots of estimated June-July kernel home range areas for Swan Hills compared to other BMAs.

The collar analysis also documents the crossing of one male bear (G207,4 years old in 2005) crossing into the Swan Hills from the Grande Cache BMA. There was only one location of this male in Swan Hills BMA before it turned around and went back to the Grande Cache BMA. Therefore, data from this bear was not used in the analysis of home range size.

Simulation Methods

Previous DNA sampling has not occurred in Swan Hills, and likely ranges of spatially explicit parameters were derived from previous surveys conducted elsewhere in Alberta (Table 10). All previous surveys (conducted from 2004 to2008) utilized a systematic 7x7 km grid cell design with a single site per cell sampled for 4 sessions. In terms of study design, we were most concerned with detection and redetection of females which exhibit smaller home ranges than males and therefore simulation parameters were mainly based on females. In addition, a home range based estimate of the spatial scale parameter (σ) from previous collaring was derived. Table 1 also provides "rule of thumb" trap spacing guidelines (Murray Efford, per. comm.) which suggests a range of site spacing from 3.8 to 10.1 for females (using the lower 1.5 σ guideline). These guidelines, which should be verified by simulations, suggest the current spacing of 7 km used for Alberta projects is adequate and that it might be possible to increase site spacing if larger σ values can be assumed.

Table A1: Ranges of SECR parameters from previous studies in Alberta. Density is in bears per 1,000 km². Home range area (HRA) was estimated for Swan Hills (BMA 7) using a 95% kernel home range model (Figure A2) and converted to a σ value.

Parameter	BMA 2	3	4	5	6	7 (HRA)
Females						
Detection and HR center (g_0)	0.17	0.10	0.18	0.17	0.40	
Spatial scale (σ)	4369	6754	5782	4705	2547	4315
Density (bears per 1000 km²)	11.38	1.99	2.38	5.60	5.68	
Rule of thumb site spacing (1.5 σ) (km)	6.6	10.1	8.7	7.1	3.8	6.5
Rule of thumb site Spacing (2.5 σ)	10.9	16.9	14.5	11.8	6.4	10.8
Males						
Detection and HR center (g_0)	0.05	0.07	0.06	0.04	0.06	
Spatial scale (σ)	9119	10255	12749	12678	6158	5973
Density (bears per 1000 km²)	6.23	1.30	1.15	3.37	8.43	
Rule of thumb site spacing (1.5 σ) (km)	13.7	15.4	19.1	19.0	9.2	8.9
Rule of thumb site Spacing (2.5 σ)	22.8	25.6	31.9	31.7	15.4	14.9

An inverse relationship (Figure A4) can be seen between g_0 and σ (lower g_0 values correspond to higher σ values) as well a weaker relationship between density and σ (higher density values have lower σ values) as suggested in other studies (Efford et al., 2016; Efford and Mowat, 2014). For the main simulations we used the g0/σ values for females from the Grande Cache (g0=0.17/σ=4369) which used a σ value that was close to the home range area based estimated for BMA 7.

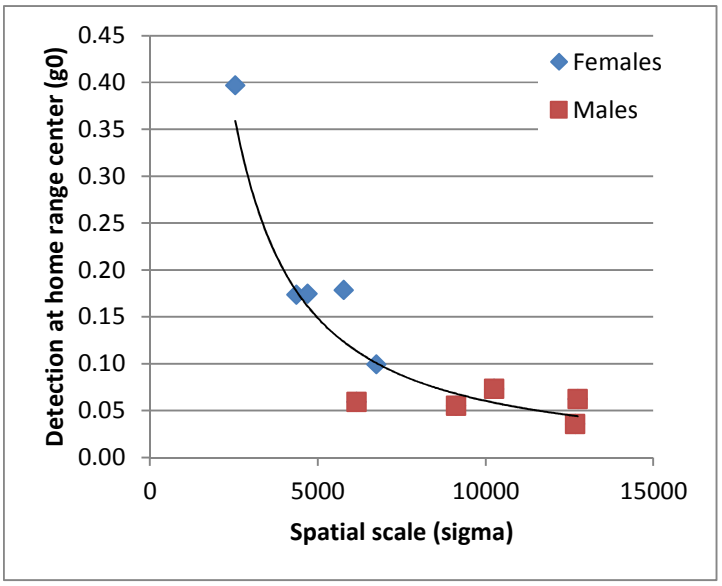

Figure A4: Relationship between detection at home range center (g_0) and spatial scale (sigma/σ) from Alberta DNA mark-recapture projects (Table 10). A power curve was fit to the data ($g0=10058\sigma^{-1.3}$) was fit to describe the relationship between g0 and σ. More direct parameterizations between g0 and σ are available (Efford et al., 2016; Efford and Mowat, 2014).

Previous estimates of abundance for the Swan Hill were based on RSF extrapolation of densities from other DNA studies. The estimate from this exercise was 23.2 (CI=5.9–70.9) bears. From this, we considered a range of 20 to 50 bears in the Swan Hills secondary and core areas. This translated into a density range of 0.84 to 4.19 bears per 1,000 km^2 if it is assumed that all home range centers are contained within the core and secondary area (11,937 km^2).

Simulations results were evaluated in terms of relative standard error (RSE) which is similar to the coefficient of variation. Namely, it is an estimate of standard error scaled by the point estimate therefore allowing comparison of precision across different levels of abundance. In addition, simulations were evaluated in terms of relative bias which is the difference between the point estimate and true value divided by the true value. Density was mainly used as the metric for comparison under the assumption that precision and bias of density would directly relate to estimates of population size. Population size in simulations would simply be the area of the SECR mask times the simulated density under the assumption that all simulated bears within the mask were part of the sampled population.

Designs Considered in Simulations

The main constraint on sampling was the relatively large area of the Swan Hills BMA which limited the number of total sites that could be employed. A target number of 200 sites sampled for 4 sessions was considered as a ball-park target for sampling intensity. The challenge in this context was that densities of bears were potentially low in the Swan Hills and bear distribution was likely to be spread out across all core, secondary, and peripheral areas. The requirement of equal access of all bears to all sites during

sampling is relaxed with SECR methods, however, sampling still needs to be representative of the landscape and habitat within the entire BMA.

There were two primary objectives to the Swan Hills inventory project. First, an estimate of abundance was desired for the BMA area. Second, an assessment of distribution of bears within the BMA is required to prioritize management of bear habitat areas within the BMA. Given these objectives, a systematic grid sampling design was mainly considered for sampling as opposed to stratified or subgrid designs. A stratified design was problematic given uncertainty of the distribution of bears within the BMA area (as discussed previously). An SECR sub grid design could potentially provide unbiased estimates of density and abundance but would give less inference on overall distribution of bear within the core and secondary areas.

The main aspects that varied in simulations were site spacing and the extent of the grid relative to the core and secondary areas (Figure A5). Four main designs were considered which sampled the main extent of the core and secondary area but with different cells sizes and trap spacing. For the *secr* package, evenly spaced sites were simulated which could be easily converted to a cell-based design used in previous DNA mark-recapture studies. Simulations were conducted in the *secrdesign* package (Efford, 2015) with further analysis using the *secr* (Efford, 2014a) package in program R.

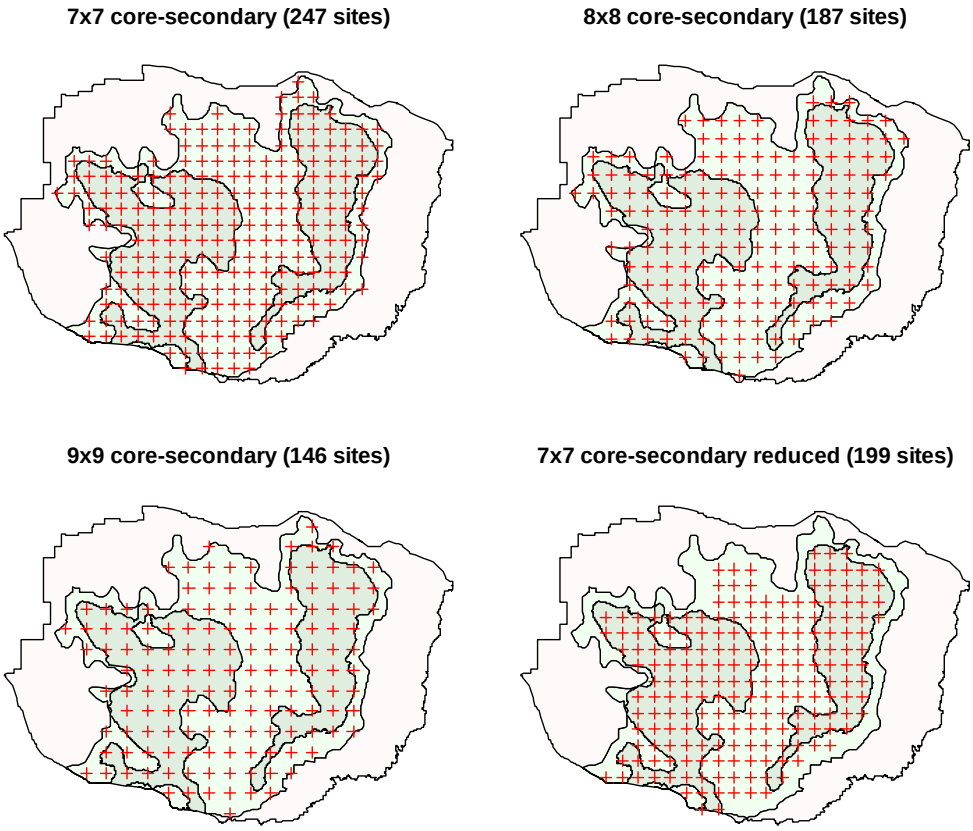

Figure A5: Designs considered in simulations with core (green) and secondary areas delineated. Each red + is a DNA site location.

Simulations assumed that all home range centers of bears were contained within the core and secondary areas (Figure A6). Bears could still traverse outside the core and secondary areas (as dictated by σ) as long as the home range center was within the core or secondary area. A similar density between core and secondary areas was assumed given the configuration of the core and secondary areas and likelihood, as indicated by radio collar data (Figure A2) that bear home ranges straddled both areas.

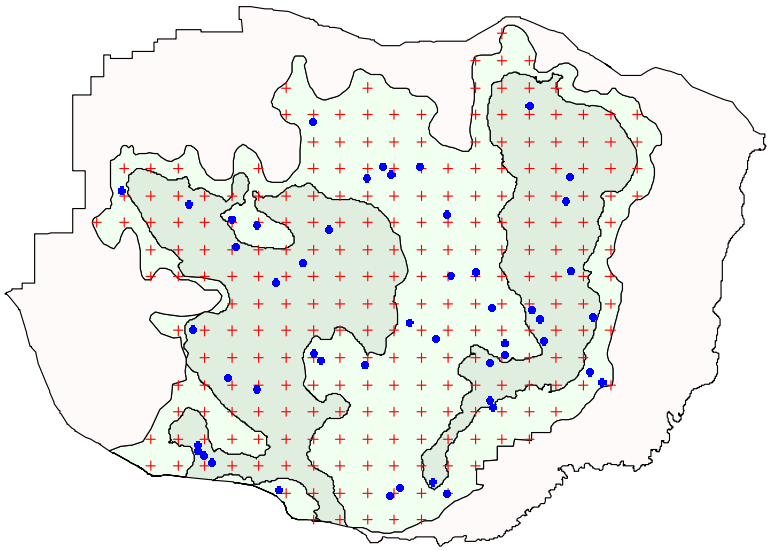

Figure A6: Exam *e range centers (blue dots) in the* *re and secondary areas (based on σ values), however, home range centers were assumed to be within the core and secondary areas.*

Simulation Results

Simulation results (Figure A6) suggest that only the 7x7 km cell designs achieved adequate precision across all simulated population sizes. The reduced site 7x7 km design achieved adequate precision; however, RSE was close to the threshold cutoff of 0.2 when population size was 20. The 8x8 km design achieved adequate precision, if the population size was above 28 bears. The 9x9 km cells size design only achieved adequate precision if the population size was close to 50 bears. Relative bias was within ±5% of estimates in all designs with nominal CI coverage for estimates.

Additional designs were considered, for example a 7x7 3 session design which achieved similar precision to the 8x8 km 4 session design (Figure A5). Designs which sampled outside of the core-secondary area achieved similar precision to designs, which sampled just the core/secondary area. This result was a partial artifact of the how the population was sampled, namely that all bear home range centers fell within the core/secondary area.

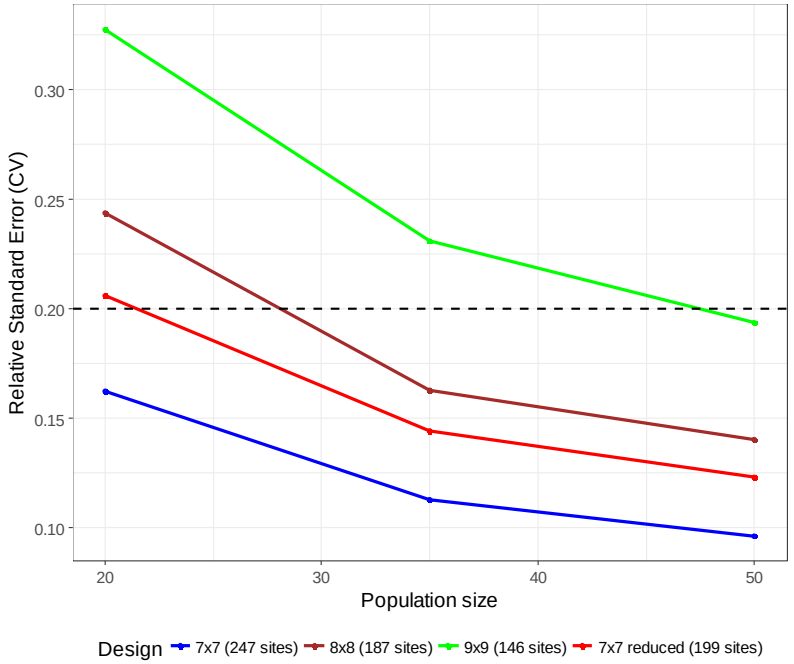

Figure A7: Female simulation results with RSE estimates each design (Figure 6) as a function of assumed population size. The population size (x-axis) is the population size simulated across the SECR mask (D=N/mask area).

One potential issue with the 7x7 km reduced design was that it did not fully sample the core and secondary areas therefore leading to potential bias if there was non-uniform densities within these areas. The most likely scenario in this case would be higher densities in the core compared to the secondary areas. To investigate this issue further, a set of simulations were run where the core area had twice the density of the secondary areas. Relative precision and bias of the 7x7 full core secondary and 7x7 reduced design was then compared.

Results suggested that precision was slightly improved for both designs when there were higher densities of bear in the core area (Figure A7). This was presumably due to more bears being resident on the grid (given that core areas were located in the central area of the BMA) which resulted in higher overall recapture rates.

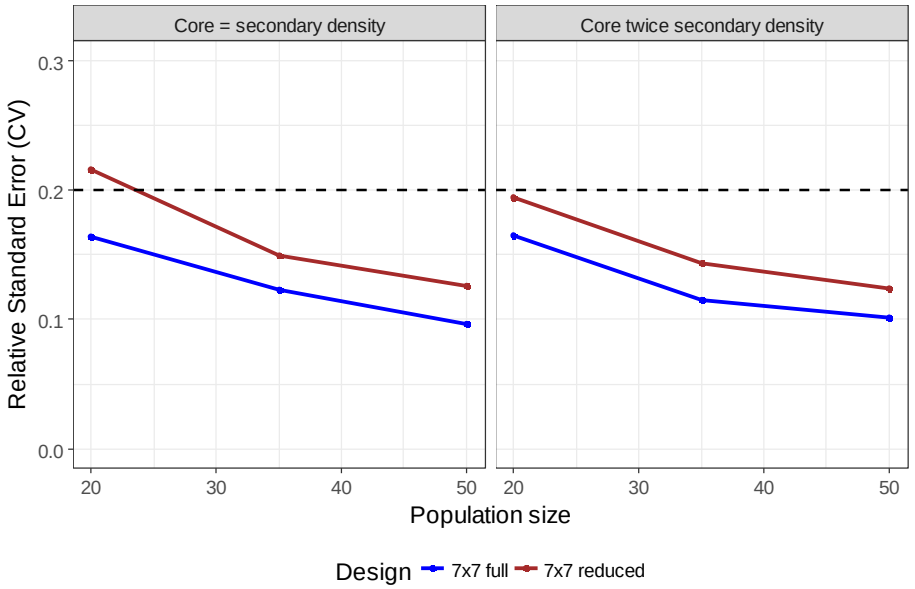

Figure A8: Relative standard error of the 7x7 km full and reduced designs with uniform and with the core density twice that of the secondary area.

Relative bias was within the ±5% levels for both designs across the population sizes simulated, suggesting that the lower coverage by the reduced design did not create a noticeable level of bias in overall estimates. The robustness of spatial mark-recapture to non-even densities has also been documented in previous studies (Efford, 2014b).

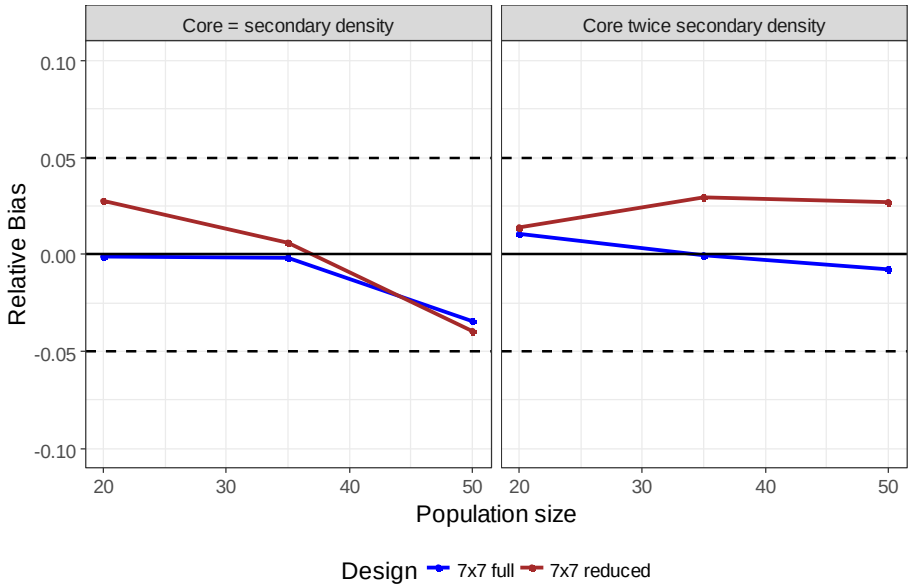

Figure A9: Relative standard error of the 7x7 km full and reduced designs with uniform and with the core density twice that of the secondary area.

As noted before, the actual design for sampling is easily converted to cell format (Figure A9). Below is a map with the 7x7 km reduced design with a cell rather than a site. These cells correspond to the full grid and are partially cross-referenced in terms of site access.

An additional study objective was to determine if bears were crossing the road in the southern part of the BMA. The current design could easily accommodate this objective by simply including the cells on the other side of the highway for the southern part of the grid. This would add 7 cells to the design, if every cell on the other side of the highways was sampled. Sites from these cells were not used for estimation but the information could be used to detect bears crossing the highway.

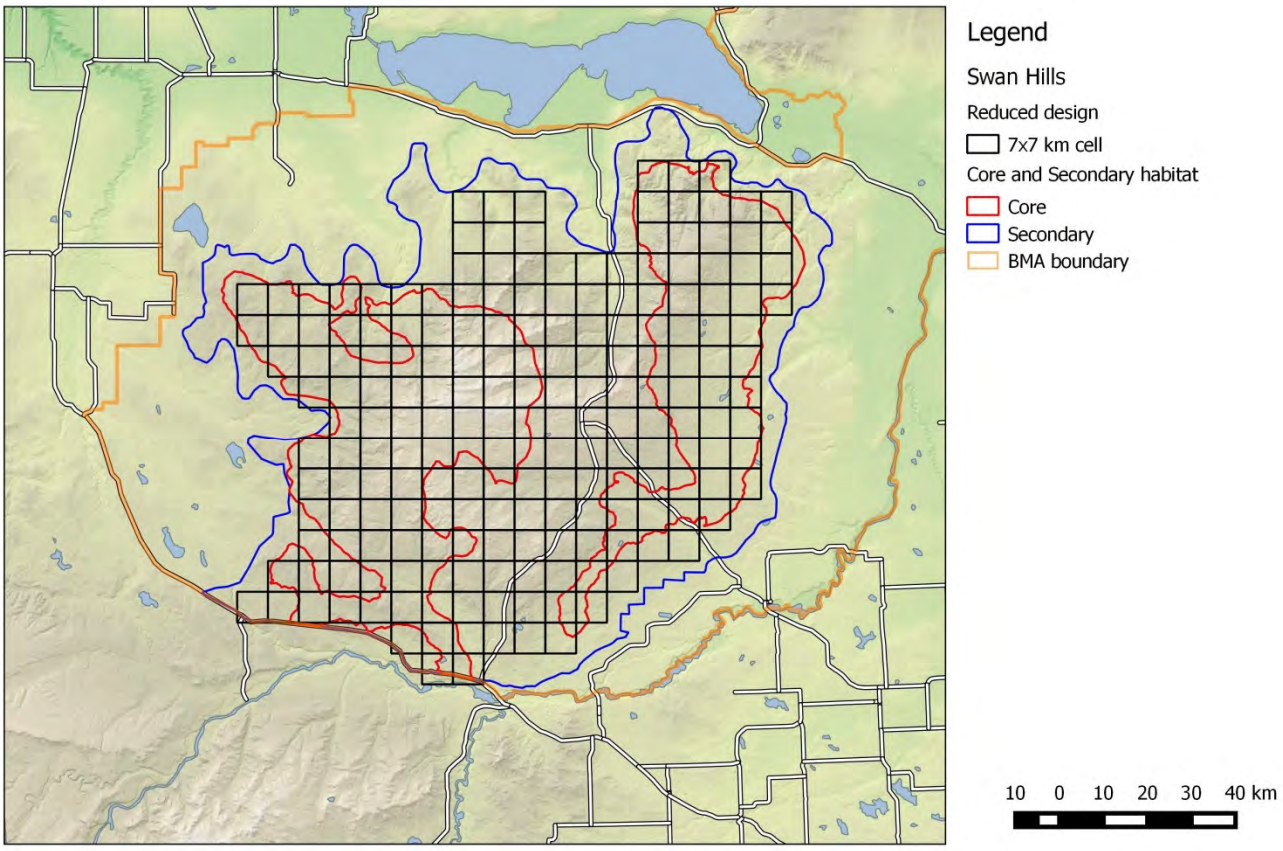

Figure A10: Reduced 7x7 km design with 199 cells relative to core and secondary boundaries.

Simulation Discussion

The results of the simulations conducted in this report highlight the relative risks of sampling smaller populations of grizzly bears. Namely, at lower population sizes, a larger degree of sampling effort is required to obtain enough initial captures and recaptures of bears to obtain precise estimates. Spatially explicit methods provide estimates of higher precision than closed models (Boulanger et al., 2018) for many grizzly bear data sets. However, there are still limits in terms of estimate precision that can be achieved when abundance is low.

The design of Swan Hills represents a trade-off between obtaining an adequate estimate of abundance while achieving adequate spatial coverage of bear habitat within the BMA given the limitations on the number of sites that can be employed. Smaller scale (7x7 km designs) potentially result in more recaptures of bears, therefore increasing precision, which is essential when population size is lower under the assumption that Swan Hills SECR parameters are similar to those from the Grande Cache BMA. Larger scale (8x8 km) designs are still reasonable especially if population sizes of bears are likely to be larger than 30 bears.

The reduced 7x7 km cell design achieved adequate precision with a reduced number of sites (compared to the full 7x7 km design), however, one risk with this design is that spatial coverage of bears in secondary areas was reduced which could bias results if the secondary area at the periphery displays markedly different densities than the other sampled areas. Simulation results suggest that the degree of bias caused by non-even densities was not large with either design simulated.

One of the main assumptions of simulations is that bear home range centers will occur in the core and secondary areas. This assumption could be further tested by sampling areas peripheral to the core and secondary area to assess if a substantial number of bears occur outside of this area. However, this would also require increasing the number of sites which may be problematic given that the designs that achieved adequate precision were above or close to the target number of 200 sites per session. Designs with lesser site intensity could be considered for adjacent areas; however, to incorporate these into estimates would require a stratified design given differences in site densities. As it stands, the proposed designs would be estimating the population size of bears that occur in core and secondary areas with the assumption that densities of bears (as indicated by locations of home range centers) will be very low in areas outside of the core and secondary.

CALGARY | News

Provincial data says Alberta grizzly bear populations thriving, raising questions of future management

Bill Macfarlane
CTV News Calgary Video Journalist
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Published Thursday, April 1, 2021 11:42AM MDT

Based on DNA analysis in each of the seven Bear Management Areas, there are between 856 and 973 grizzly bears in Alberta.

CALGARY -- For the first time since grizzly bears were listed as a threatened species in Alberta, the province has completed a comprehensive population estimate.

Based on DNA analysis in each of the seven, bear management areas, there are between 856 and 973 grizzly bears in Alberta.

The studies, conducted by the Foothills Research Institute also found the grizzly population has doubled in the foothills areas east of Banff National Park.

Related Stories

- **2 charged after illegally killing grizzly bear, assaulting witness**
- **Family of grizzlies spotted near Kananaskis Village**

The province says the newly released research will help inform future policy and management decisions.

In an unpublished interview with provincial wildlife staff conducted in 2019, one official said a recommendation to remove grizzly bears' provincial "threatened" status was expected in 2020. Last year the province denied that recommendation had been received.

If grizzly bears lose their threatened status, it would allow the province to issue a tightly controlled number of hunting licenses.

Alberta stopped issuing grizzly bear hunting licenses after the 2005 season. The last year of the hunt, 73 licenses were issued through a draw lottery and a total of 10 bears were shot.

Hunting is not the only implication of delisting the charismatic species. It would also reduce legal implications for people who shoot grizzlies in self defence, which happened on average three times per year between 2005 and 2014.

It could also change the way the province treats management boundaries and areas where bear populations are encouraged to expand.

Grizzlies once lived all the way to Manitoba, but intensive agriculture and the loss of the great bison herds have limited how much of the prairie would be suitable habitat.

The growth in population has already had implications for individual grizzly bears. Bear 148, a well documented female that spent much of its early life around the town of Banff, was ultimately shipped to northern Alberta.

The six-year-old bear was in poor physical condition and had repeated close and sometimes aggressive encounters with people around Canmore until she was trapped in late July 2017.

Documents obtained through an Access to Information request showed Parks Canada and the province were both unable to find a protected area with few enough grizzly bears for her to have a reasonable chance of survival.

She was legally shot by a guided American hunter near McBride BC in late September 2017, two months after her release.

WATCH MORE FROM CTV NEWS

Extremely dangerous conditions on Hwy 93S

Manager's Report

Department: **Agricultural Service Board**

Submitted by: **Sheila Kaus, Manager, Agricultural Services**

Date: **11/24/2021**

Administration is happy to report on the proposed storage location for agricultural plastics recycling. After conferring with Environmental Services, a paddock within the New Fish Creek transfer site was chosen. The area is delineated on the thumbnail map with a red border. Agricultural Plastics do not require a building for storage if the length of time at the site is less than two years.

The Regional Agricultural Service Board Conference took place on November 19th, 2021. At this time, Saddle Hills County has submitted one late resolution with an invitation to second being extended to Greenview ASB. The Conference included an update from the Provincial ASB Manager and the election of the Peace Region Provincial Committee Representative.

Administration would like to make the Board aware of events they may wish to attend:

- *FarmTech* — *Jan 25 & 26, Edmonton,* ***Hybrid***
- *Alberta Beef Industry Conference* — *Mar 2-4, Red Deer,* ***In Person***
- *AgEx by Farm Management Canada* — *Nov 24-26,* ***Virtual****, Free*
- *Farm Forum Event* — *December 7-9,* ***Virtual***
- *Provincial ASB Conference* — *January 25-27, Edmonton,* ***In Person***

If members are interested in attending, letting Administration know in advance eases preparation for attendance. The Provincial ASB Conference requires two representatives to vote on resolutions.

The 3-pt hitch seeder has been ordered but will arrive in 2022 due to delays in delivering large pieces of equipment. The pull-blade replacement is slated to arrive the week of November 15th.

Administration has submitted a late 2022 capital project to construct lean-to storage along the north end of the Valleyview Agricultural Services Building. The storage this lean-to would provide includes a place for the small but bulky equipment currently located on the cement pad outside the building's north bay, preventing damage to the small equipment and organizing the area efficiently.

The VSI AGM was held on November 5th, with the Directors Board approving an anticipated increase to ABVMA rates. Greenview will continue with current levels of coverage.

Rental Equipment stands at 577 rental days for 2021

Up to November 15th, 56 wolves have been submitted for incentive, totalling $16,800, and 456 beavers have been submitted for incentive, totalling $13,680.

Problem Wildlife Work Orders, up to October 21st

File Status	Beaver-MD	Beaver-Ratepayer	Customer Service	Predation	TOTAL
In Queue					
Open	0	0	0	2	2
Closed	25	27	17	10	80
TOTALS	**25**	**27**	**17**	**12**	**77**

PWO Culls: Over 300 beaver, 17 skunks, 19 muskrats.

Other highlights: Solved multiple black bear and roadkill issues.

Blasting has been the priority this month for the Problem Wildlife Officer. Administration has caught up to the blasting backlog, with 17 dams blasted and countless others removed by hand and with equipment. Blasting supplies for 2022 have been procured to facilitate rapid response in the spring. The Problem Wildlife Officer has completed the Resident Trapline Management and Snaring Certificates with Alberta Trapping Association (ATA) and has been active in the local ATA to build relationships and ensure healthy communication with trappers in Greenview. Decembers focus switches to depredation, working with producers and all relevant parties to implement long-term solutions in problem areas, training, planning, and catching up on office work.

VSI Quarterly Reports and Service Breakdown- 3rd quarter

	# Services	2021	2020	+/-(%)
Total 1st Quarter	99	$19,269.77	$21,172.35	-8.99%
Total 2nd Quarter	231	$33,953.33	$36,569.40	-7.15%
Total 3rd Quarter	53	$ 8,382.80	$ 8,342.09	+0.50%
2021 Claims	**383**	**$61,605.90**	**$66,083.84**	**-6.80%**

Semen Testing: 614 claims; $24,809.71
Preg Checks: 2389 claims; $6,689.20
C-Sections: 22 claims; $5,893.25
Exams: 108 claims; $5,367.00

REQUEST FOR DECISION

SUBJECT:	**Correspondence**		
SUBMISSION TO:	AGRICULTURAL SERVICES BOARD	REVIEWED AND APPROVED FOR SUBMISSION	
MEETING DATE:	November 24, 2021	CAO:	MANAGER: SK
DEPARTMENT:	AGRICULTURE	GM:	PRESENTER:
STRATEGIC PLAN:	Level of Service	LEG:	

RELEVANT LEGISLATION:
Provincial (cite) – N/A

Council Bylaw/Policy (cite) – N/A

RECOMMENDED ACTION:
MOTION: That the Agricultural Service Board accept the "Upcoming Events" as information.

ATTACHMENT(S):

UPCOMING EVENT(S):

1. November 23, 2021 Alberta Pulse Growers Fairview Regional Meeting (Zone 4)
2. November 23, 2021 Alberta Wheat Commission Regional Meeting
3. November 24, 2021 Alberta Beekeepers Commission 2021 AGM, Conference
4. November 24, 2021 Environmental Farm Plan Webinar
5. November 30, 2021 FCC: Your Role in Farm Transition – Whose Job is it Anyway?
6. Nov 30 – Dec 2, 2021 Forage Focus 2021 (Virtual Conference)
7. December 7, 8 & 9, 2021 Farm Forum Event
8. January 25 & 26, 2022 Farmtech
9. January 25, 26, 27 2022 Provincial ASB Conference

BENEFITS OF THE RECOMMENDED ACTION:

1. The benefit of the Agricultural Service Board accepting the recommended motion is that the Board will be made aware of the events, seminars and conferences within the agricultural community throughout the Province.

DISADVANTAGES OF THE RECOMMENDED ACTION:

1. There are no perceived disadvantages to the recommended motion.

ALTERNATIVES CONSIDERED:
Alternative #1: The Agricultural Service Board has the alternative to alter or deny the recommended motion.

FINANCIAL IMPLICATION:

There are no financial implications to the recommended motion.

STAFFING IMPLICATION:

There are no staffing implications to the recommended motion.

PUBLIC ENGAGEMENT LEVEL:

Greenview has adopted the IAP2 Framework for public consultation.

INCREASING LEVEL OF PUBLIC IMPACT

Inform

PUBLIC PARTICIPATION GOAL

Inform - To provide the public with balanced and objective information to assist them in understanding the problem, alternatives, opportunities and/or solutions.

PROMISE TO THE PUBLIC

Inform - We will keep you informed.

FOLLOW UP ACTIONS:

There are no follow up actions to the recommended motion.