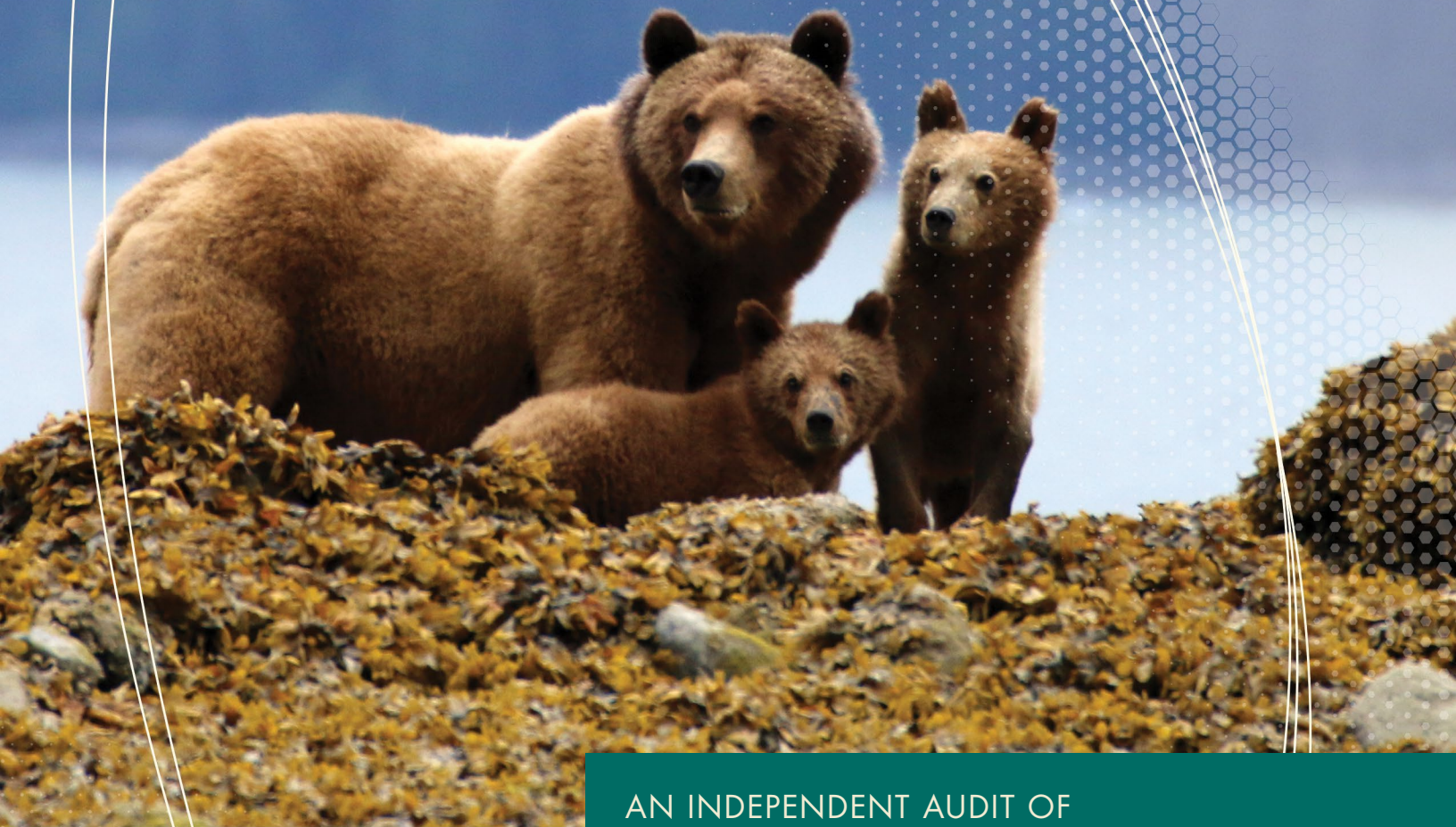


October 2017



AN INDEPENDENT AUDIT OF GRIZZLY BEAR MANAGEMENT

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OFFICE OF THE
Auditor General
of British Columbia

CONTENTS

<i>Auditor General's comments</i>	3
<i>Report highlights</i>	5
<i>Summary</i>	6
<i>Summary of recommendations</i>	11
<i>Response from the ministries</i>	13
<i>Background</i>	19
<i>Audit objective and conclusion</i>	25
<i>Audit approach and scope</i>	26
<i>Key findings and recommendations</i>	29
<i>PLAN: we expected MoE and MFLNRO to have a current plan for grizzly bear management</i>	29
<i>DO: we expected MoE and MFLNRO to carry out activities to manage grizzly bears</i>	32
<i>CHECK: we expected MoE and MFLNRO to evaluate their activities to ensure they are effective</i>	56
<i>ADJUST: we expected that MoE and MFLNRO would adjust its grizzly bear program (continuous improvement)</i>	59
<i>REPORT: we expected MoE and MFLNRO to report to the public and legislators on their management of grizzly bears</i>	60
<i>Why is the implementation of a grizzly bear program not working?</i>	62
<i>Appendix A: criteria (expectations) for conducting the audit</i>	64
<i>Appendix B: case study of the south rockies - challenges in population estimates</i>	65
<i>Appendix C: case study of Bella Coola - human-bear conflicts</i>	67
<i>Appendix D: case study of the North Cascades - grizzly bear recovery planning</i>	69
<i>Appendix E: case study of the Kettle-Granby - road density in grizzly bear habitat</i>	70
<i>Appendix F: responsibilities in the Ministry of Environment Act</i>	72

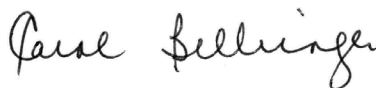
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The Honourable Darryl Plecas
Speaker of the Legislative Assembly
Province of British Columbia
Parliament Buildings
Victoria, British Columbia
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Dear Mister Speaker:

I have the honour to transmit to the Speaker of the Legislative Assembly of British Columbia the report *An Independent Audit of Grizzly Bear Management*.

We conducted this audit under the authority of section 11 (8) of the *Auditor General Act* and in accordance with the standards for assurance engagements set out by the Chartered Professional Accountants of Canada (CPA) in the CPA Handbook - Assurance and Value-for-Money Auditing in the Public Sector, Section PS 5400.



Carol Bellringer, FCPA, FCA
Auditor General
Victoria, B.C.
October 2017

Cover photo credit: Grant MacHutchon

AUDITOR GENERAL'S COMMENTS

BRITISH COLUMBIA IS one of the last areas in North America where grizzly bears live in their natural habitat. The health of grizzly bear populations is an indicator of how well the ecosystem (and the species that live there) is doing. In other words, if grizzly bears aren't faring well, it's a sign that the ecosystem as a whole is facing challenges. This is one of the reasons we undertook this audit.

In 1995, the B.C. government publicly committed, in its Grizzly Bear Conservation Strategy, to maintain healthy grizzly bear populations and the ecosystems that they depend on. Two ministries—Forests, Lands and Natural Resource Operations (MFLNRO) and Environment (MoE)—share these responsibilities. MoE has the responsibility of providing leadership to ensure B.C.'s natural legacy for future generations.

In our audit, we expected that these two ministries would be managing B.C.'s grizzly bear populations co-operatively and effectively. In establishing and defining the roles of these two ministries, however, government created an unclear organizational structure for wildlife management. This makes it difficult for MoE to deliver on its mandate to provide leadership in pursuit of healthy grizzly bear populations.

While government has undertaken activities to conserve grizzly bears, some of their commitments have gone unfulfilled. These include identifying and securing key grizzly bear habitats, creating a grizzly bear management plan and implementing a recovery plan for the North Cascades grizzly bear population.

When my office first announced this audit, we received many comments from the public and interested stakeholders, who expressed concern over the grizzly bear hunt. The hunt is a policy decision and under the *Auditor General Act*, my office does not comment on the merits of policy.



CAROL BELLRINGER, FCPA, FCA
Auditor General

AUDITOR GENERAL'S COMMENTS

However, our report does include details about the overall management of the hunt. For example, we found a lack of transparency in MFLNRO's procedures for setting the number of hunting licences issued.

The greatest threat to grizzly bears is not hunting, but rather, human activities that degrade grizzly bear habitat. The ministries have taken action to reduce some of these impacts, but they have not evaluated whether their actions are effective. For other risks, government has taken little action or has been slow to respond. For example, there are 600,000 km of resource roads with on the order of 10,000 km more added each year. This expansion allows greater human access into wilderness areas, which results in increased illegal killing of grizzly bears, and greater human-bear conflicts. Yet, long-promised resource road legislation that could address this risk is not yet in place.

Grizzly bear populations in some areas of B.C. are now increasing. Our report shows this is likely happening independently from an adequate management framework. We have made ten recommendations in this report to improve government's management of grizzly bears, including a recommendation for government to clarify roles and responsibilities between MoE and MFLNRO. Without such clarity, the improvements necessary will be difficult to achieve.

I'd like to thank the ministries, and the many stakeholders we communicated with, for their interest and co-operation during this audit.



Carol Bellringer, FCPA, FCA
Auditor General
Victoria, B.C.
October 2017

REPORT HIGHLIGHTS

B.C. one of
LAST AREAS
in North America
where grizzly bears
live in
**NATURAL
HABITAT**



**DEGRADED
HABITAT,**



is the
MAJOR RISK
to grizzly bears



Unknown if
government's key
tools to mitigate
risks to grizzly
bears are working

Ministries
**HAVEN'T FULFILLED
LONG-STANDING
COMMITMENTS**
for managing
grizzly bears



Ministries have
**IMPROVED
HUNTING
PROCEDURES**



Ministry management
of grizzly bears
DID NOT MEET
many of our
EXPECTATIONS



Grizzly bear populations
INCREASING
in parts of B.C.

HOWEVER,

Likely happening
independently of an
adequate management
framework

Ten recommendations,
including
CLARIFYING ROLES
between ministries

1.
2.
3.
4.
5.
6.
7.

SUMMARY

GRIZZLY BEARS ARE an indicator of government's overall effectiveness in managing B.C.'s wildlife and maintaining healthy ecosystems. In B.C., grizzly bears invoke heated debate as to how they are managed. Much of this attention comes from the ecological, economic and cultural importance of grizzly bears, and the fact that B.C. is one of the last places in North America with grizzly bears in their natural habitat.

We expected the Ministry of Environment (MoE) and the Ministry of Forests, Lands and Natural Resource Operations (MFLNRO) to be effectively managing grizzly bear populations throughout B.C.

We expected the ministries to have instituted a program that includes a cycle of continuous improvement—the Plan-Do-Check-Adjust cycle (see [Audit Approach](#)) and to be reporting out to the public on their performance.

There is no plan to implement the strategic direction for grizzly bears in B.C.

MoE and MFLNRO are responsible for grizzly bear management. They are guided by a grizzly bear strategy from 1995 and a high-level wildlife program plan from 2010. However, although management plans have been developed for other species, there is no grizzly bear management plan to provide priorities and clear accountabilities for implementing the direction provided in these two documents.

In the absence of a grizzly bear management plan, we expected that MoE and MFLNRO would still be carrying out activities to manage grizzly bears. We focused on four key components: inventory and monitoring of populations and habitats, managing

human-related threats, recovering populations of concern, and providing secure habitat.

There is a lack of organized inventory and monitoring of grizzly bears in B.C.

In the 1995 Grizzly Bear Conservation Strategy, government made a commitment to increase its research on grizzly bear ecosystems, including a province-wide inventory and assessment of grizzly bears and their habitats. We expected the ministries to have an inventory and monitoring strategy that identifies and prioritises areas based on risk.

We found that such a strategy was put in place in 2010 but is no longer being used, due to MFLNRO's change in the way it extrapolates population estimates. However, MFLNRO's method still requires inventory and monitoring to improve the population estimate.

Currently, there is no organized inventory and limited monitoring of grizzly bears. We found that one of the reasons this work is not being carried out is that there is no dedicated ministry funding; instead, government has created a user-pay model for funding conservation efforts. To hunt a grizzly bear, a resident of B.C. must pay \$80 for a license, of which \$16 is a surcharge,

SUMMARY

and a non-resident must pay \$1,030, of which \$30 is a surcharge. The surcharges go to the Habitat Conservation Trust Foundation for grizzly bear conservation, who carry out conservation activities (which can include inventory and monitoring), and the remainder of the fee that is collected goes into government's general revenue. For 2015, the ministry collected \$366,400 in total from hunters of which approximately \$34,000 went to the foundation. We could find no evidence as to how either the allocation of what goes to the foundation, or the fees that are being charged for hunting, were determined.

Management of human-related mortalities has improved in some areas

In only a few hundred years, human activities have resulted in the extirpation (local extinction) of over half the grizzly bear population that once roamed North America. In B.C. historically some populations experienced significant declines and today there are areas where populations are extirpated. However, grizzly bear populations in some areas of B.C. are now increasing. To ensure that populations are either maintained or increase, government will have to carefully manage human threats.

We focused on four key areas for managing human threats:

- i) grizzly bear hunting
- ii) reducing illegal activities
- iii) reducing grizzly bear/human conflicts
- iv) regulating bear viewing

i) Grizzly bear hunting

Over the years, MFLNRO has made advances in its hunting policy and procedures. However, reviews of grizzly bear hunting by external experts in both 2003 and 2016 indicated that government can still make improvements. Both reviews called for area-specific management objectives, which have not yet been established.

In the absence of objectives, MFLNRO is guided by the Grizzly Bear Harvest Management Procedure (2012). According to this procedure, hunted grizzly bear populations should be managed to avoid a decline in that population. However, this procedure does not adequately account for uncertainty in populations and unreported mortalities, and is not transparent as to how the ministry considers uncertainty when allocating hunting licences.

ii) Reducing illegal activities

The Conservation Officer Service (COS) within the Ministry of Environment works to reduce illegal activities such as poaching, attracting wildlife, or failing to report a bear killed due to conflict. We expected the COS to be evaluating the tools and resources it has available (warnings, tickets and formal charges) to ensure they are effective and sufficient, but no such evaluations have taken place.

iii) Reducing grizzly bear/human conflicts

From 2006 to 2015, there have been 389 grizzly bears killed from human/bear conflict (non-hunt

SUMMARY

mortalities). This has resulted in an increasing number of grizzly bear incidents attended by a Conservation Officer. The COS has revised its procedures to evaluate the conflict and not automatically assume that a grizzly bear should be destroyed.

The COS relies on WildSafe BC to deliver an education program to prevent conflict with bears but the program is limited and the COS has not evaluated it for its effectiveness.

iv) Regulating bear viewing

Bear viewing is on the rise in B.C. It may seem like a harmless activity, however, it can have negative impacts, such as grizzly bears temporarily abandoning important feeding sites or changing their behaviour. Government is aware of these impacts but does not regulate bear viewing, even though it is noted as an issue in the Grizzly Bear Conservation Strategy.

Limited recovery actions taken for threatened grizzly bear populations

Out of the 56 grizzly bear populations, nine are threatened. The government's primary objective for these is to recover them to sustainable levels. However, sustainable levels have not been defined and there have been limited recovery actions taken for these populations.

Government has created a recovery plan for one population (the North Cascades) but it has not been implemented. This lack of implementation has not been publicly disclosed. Instead, government has

stated, "A plan of action was created to focus recovery efforts on the North Cascades population—its small size and isolated location made it the **highest conservation priority**."

Key tools that mitigate industries' impacts on grizzly bear habitat have not been evaluated for their effectiveness.

Ensuring healthy grizzly bear populations throughout B.C. is only possible if government is able to provide secure habitat for this species. We examined the following tools to determine if they are effective in mitigating industries' impacts on grizzly bear habitat:

Land use plans

Many land use plans have objectives for maintaining grizzly bear habitat. We found that over half of these plans have not been monitored or evaluated.

Forest stewardship plans

MFLNRO's Forest and Range Evaluation Program has not provided an overall evaluation as to whether the forest stewardship plans have been effective in achieving their objective of protecting wildlife, and specifically, grizzly bears (which the program lists as a high priority).

Proposed Natural Resource Roads Act

We found very few mitigation measures that government has undertaken to address resource roads. Government has been working on the

SUMMARY

development of a *Natural Resource Roads Act* since 2011, but two years ago, removed access management planning from the draft in favour of “resolving access management conflict.” It is not clear how government will resolve conflict when there is no overall plan for resources roads.

MoE’s oversight of the Oil and Gas Commission (OGC)

MoE, under the *Oil and Gas Activities Act*, has the power to order an independent audit of the performance of the oil and gas commission to ensure the protection and effective management of the environment. However, to date, MoE has not carried out an independent audit of the OGC, nor are staff clear as to how such an audit would be triggered.

Environmental assessment certificates

The Environmental Assessment Office (EAO) had not evaluated whether certificate conditions related to grizzly bears are effective in mitigating impacts. EAO has recently put in place a requirement for a qualified professional to monitor effects to ensure the certificates are meeting the intended outcomes.

Draft Cumulative Effects Assessment Protocol for Grizzly Bear in British Columbia

We found that the draft *Assessment Protocol for Grizzly Bear in British Columbia* compiles known information on grizzly bears and their habitat. However, there is little direction to decision makers on how to evaluate activities within threatened grizzly bear population

units—other than to say that government will develop a process to confirm management direction. We also found that this protocol neither accounts for uncertainty in the data, nor identifies the need for a precautionary approach in the decision-making process when data is limited.

Key tools that conserve grizzly bear habitat have not been evaluated for their effectiveness

We examined the tools that MoE and MFLNRO have in place for providing secure, connected habitat for grizzly bears. We examined Wildlife Habitat Areas, Grizzly Bear Management Areas and Parks and Protected Areas.

Overall, we found that none of these tools have been evaluated for their effectiveness and there has been little effort to address the issue of connectivity for grizzly bears or to provide wildlife corridors and safe transition areas for those populations in the south that may have limited migration and may experience genetic inbreeding.

The recently announced Great Bear Rainforest Agreement was too new to gauge its effectiveness, but it has the potential to be effective in providing grizzly bear habitat conservation.

Monitoring and evaluation are critical tools to track progress and facilitate decision-making. Evaluation should be systematic and include an unbiased assessment of the activities, programs and policies that government has instituted to ensure it is meeting

SUMMARY

its objective of healthy grizzly bear populations. MFLNRO has undertaken two reviews of its hunting procedures. However, as noted in the previous sections, neither MoE nor MFLNRO have evaluated the effectiveness of other activities and policies that are designed to mitigate impacts on grizzly bears and their habitat.

MoE and MFLNRO do not have a process for ensuring continuous improvement

Neither the Grizzly Bear Conservation Strategy nor the Wildlife Program Plan have been adjusted for several years and government has not indicated how it intends to implement the recommendations from the 2016 review of hunting. We found the main reason is that neither MoE nor MFLNRO have a formal process for improving grizzly bear management in B.C. This is of concern, given the amount of change that is happening on provincial Crown lands.

MoE and MFLNRO are not being transparent about their management of grizzly bears

We found that government is publicly reporting on grizzly bear populations and mortalities in the province via its website. What it doesn't describe, is the level of confidence as to the accuracy of these estimates. There is no clear indication as to when the website information will be updated. The population information is from 2012, and although there is some discussion at MFLNRO on updating the estimate, there is no policy requirement to do so.

In addition, MoE's website contains information that is incomplete. For example, the website states that there is a plan for recovery of the North Cascades grizzly bear population, but it does not state that the plan was never operationalized.

Overall, we found that even though there is transparency of information regarding grizzly bears, there is little information on management activities and performance measures.

Why is implementation of the grizzly bear program not working?

So why is the grizzly bear program not working? A primary reason is that MoE and MFLNRO have an unclear organizational structure and unclear accountabilities for wildlife management.

We found that, while MoE retains the sole responsibility “**to manage, protect and conserve** all water, land, air, plant life and animal life...” MFLNRO has the authority to manage wildlife. The result is that the two ministries have overlapping roles and responsibilities. MFLNRO has most of the authority to make decisions that impact grizzly bear populations and habitat, leaving MoE with limited powers to carry out its mandate to manage and protect. This creates a tension between the two ministries that is unresolved.

SUMMARY OF RECOMMENDATIONS

WE RECOMMEND THAT THE MINISTRY OF FORESTS, LANDS AND NATURAL RESOURCE OPERATIONS AND THE MINISTRY OF ENVIRONMENT:

- 1** create and implement a grizzly bear management plan that includes:
 - ♦ clear indication of how the plan fits into the ministries' overall wildlife management planning (where is it in the priority)
 - ♦ clear goals and targets
 - ♦ prioritized activities and timelines, including accountabilities for those activities
 - ♦ resources and expertise required to undertake the activities in the plan
 - ♦ requirement for monitoring of program effectiveness
 - ♦ a process for evaluating and adjusting activities as needed
- 2** develop and implement an adequately resourced inventory and monitoring strategy for grizzly bears.

WE RECOMMEND THAT THE MINISTRY OF FORESTS, LANDS AND NATURAL RESOURCE OPERATIONS:

- 3** revise its policy and procedures to determine how uncertainty will be accounted for when determining grizzly bear hunt allocations and to be transparent about the process.

WE RECOMMEND THAT THE MINISTRY OF ENVIRONMENT:

- 4** ensure the Conservation Officer Service has the appropriate resources and tools for preventing and responding to grizzly bears/human conflicts.

Continued...

SUMMARY OF RECOMMENDATIONS

WE RECOMMEND THAT THE MINISTRY OF FORESTS, LANDS AND NATURAL RESOURCE OPERATIONS AND THE MINISTRY OF ENVIRONMENT:

- 5** develop clear policies and procedures for bear viewing.
- 6** identify those grizzly bear populations that are in need of recovery and outline what actions will be taken and when.
- 7** evaluate and adjust as needed the tools used to mitigate industries' impacts on grizzly bear habitat.
- 8** evaluate and adjust as needed the tools used to conserve grizzly bear habitat.
- 9** report out to the public and legislators on how well they are managing grizzly bear populations throughout British Columbia.

WE RECOMMEND THAT GOVERNMENT:

- 10** review the legislation, policies and accountabilities for wildlife management and ensure that roles, responsibilities and accountabilities allow the Ministry of Forests, Lands and Natural Resource Operations and the Ministry of Environment to be fully effective in delivering on grizzly bear management.

RESPONSE FROM THE MINISTRIES

WE WOULD LIKE to thank the Office of the Auditor General for their assessment and report on grizzly bear management within British Columbia. The 10 recommendations are accepted and will help inform the development of a new Provincial Grizzly Bear Management Plan in collaboration with First Nations, industry, stakeholders and the public. This Plan will enhance the transparency and ongoing inventory and monitoring of populations and habitats and the management of human-related threats, populations of concern, and habitat. All of these activities will help to ensure that British Columbia is a leader in grizzly bear conservation through government activity in partnership with First Nations, in respect of their cultural, ceremonial and conservation practices and priorities, as well as through consultation with communities and the public. The ministries involved in grizzly bear management worked diligently on these issues in the context of the government policies in place at the time. Both ministries will be providing direction as we develop a new plan to enhance grizzly bear management.

These recommendations will also help inform delivery of the Government's mandate commitments. The Government has committed to improving wildlife management and habitat conservation in part through effective landscape planning, enacting endangered species legislation, enhanced inventory and monitoring, restoration, and revitalizing the Environmental Assessment process.

B.C.'s inventory and monitoring initiatives have produced more DNA-based population and trend estimates for grizzly bears than any similar jurisdiction (province or state) for any bear species, anywhere in the world. Today, it is estimated that over 15,000 grizzly bears remain across 90% of their historic range in B.C. and populations in some areas of the province are increasing and expanding. Almost all grizzly bears in B.C. are part of a single, connected population that extends from Alaska to Montana. We acknowledge

in our response to the recommendations that more resources for inventory and monitoring will ensure greater confidence in population estimates.

Currently, there are special management requirements and constraints on industrial development across more than 340,000 km² of grizzly bear habitat, or 45% of the provincial grizzly bear range. Grizzly bears are identified as a valued species requiring mitigation strategies in the environmental assessment of every major project that has potential to impact individual bears or habitat. British Columbia places a high priority on the management of this iconic species. Accomplishments include increased habitat protection while at the same time balancing the management of grizzly bears with numerous other important values and benefits. The staff implementing management of grizzly bears in B.C. have published this work in peer-reviewed journals (>25 articles on grizzly bears

RESPONSE FROM THE MINISTRIES

specifically). B.C. Government biologists are highly regarded internationally for their leadership with the International Union of Conservation of Nature (IUCN) Bear Specialist Group and International Association for Bear Research and Management.

A particular focus of public and media attention has been the grizzly bear trophy hunt. The decision by Government to close the grizzly bear hunt in the Great Bear Rainforest and prohibit the trophy hunt in the remainder of the province will allow government staff to focus resources on preventing and mitigating human activities that degrade grizzly bear habitat.

The Province is committed to continuous improvement of grizzly bear management in the face of increasing pressures on the landscape. The audit report contributes to the recommendations made through two independent reviews of grizzly bear management commissioned by the Province to inform and improve program implementation.

The Province looks forward to working collaboratively with First Nations, natural resource industries, stakeholders and the public to action the Office of the Auditor General's recommendations.

RECOMMENDATION 1: *We recommend that the Ministry of Forests, Lands and Natural Resource Operations and the Ministry of Environment create and implement a grizzly bear management plan that includes:*

- ◆ *clear indication of how the plan fits into the ministries' overall wildlife management planning (where is it in the priority)*
- ◆ *clear goals and targets*
- ◆ *prioritized activities and timelines, including accountabilities for those activities*
- ◆ *resources and expertise required to undertake the activities in the plan*

The ministries will work together to complete a Provincial Grizzly Bear Management Plan to guide the development of area-based management plans where they are needed. The Plan will build upon the existing management approach outlined above and provide principles to inform development of area-specific objectives, prioritization of activities, alignment with other management objectives, and estimates of the resourcing and expertise required.

The Province is also committed to a collaborative process with First Nations, stakeholders and the public to improving wildlife management and habitat conservation for all species. A public consultation period will help inform the content of a renewed wildlife management strategy and will provide overall context to link species-specific management plans and their priority.

RESPONSE FROM THE MINISTRIES

RECOMMENDATION 2: *We recommend that the Ministry of Forests, Lands and Natural Resource Operations and the Ministry of Environment develop and implement an adequately resourced inventory and monitoring strategy for grizzly bears.*

As part of the Grizzly Bear Management Plan, the Province will prepare a B.C. grizzly bear inventory and monitoring strategy. The strategy will include considerations to inform selection of priorities and make recommendations for research, inventory, and population and forage monitoring. To support the resourcing of identified priorities, Government is exploring options for dedicated funding for wildlife and habitat conservation as well as engaging in discussions regarding budgetary prioritization.

RECOMMENDATION 3: *We recommend that the Ministry of Forests, Lands and Natural Resource Operations revise its policy and procedures to determine how uncertainty will be accounted for when determining grizzly bear-hunt allocations and to be transparent about the process.*

The Grizzly Harvest Management Procedure will be modified to address uncertainty explicitly, and guidance for reporting uncertainties in population estimates will be developed. This work will be done so it aligns with the Province's broader objective to improve wildlife management and habitat conservation in the province.

The Province has announced, effective November 30, 2017, the closure of the grizzly bear hunt in the Great Bear Rainforest and a ban on trophy hunting, while allowing food and First Nations hunting opportunities for grizzly bears in the remainder of the province. Regulations will be put in place, following public consultation, to ensure that the intent to end the trophy hunt is reflected in practice and experience, and reviews will be conducted to ensure that the intent of the ban is upheld.

RECOMMENDATION 4: *We recommend that the Ministry of Environment ensure the Conservation Officer Service has the appropriate resources and tools for preventing and responding to conflicts with grizzly bears.*

The Province is committed to greater investment in the Conservation Officer Service. The Ministry of Environment and Climate Change Strategy will work closely with the Ministry of Forests, Lands, Natural Resource Operations and Rural Development to increase activities that aim to reduce human-bear conflicts and lethal methods of control. The ministries will also work closely together to ensure effective implementation of changes to the grizzly bear hunt and other enforcement priorities that protect grizzly bear populations and habitats.

RECOMMENDATION 5: *We recommend that the Ministry of Forests, Lands and Natural Resource Operations and the Ministry of Environment develop clear policies and procedures for bear viewing.*

RESPONSE FROM THE MINISTRIES

In 2016, representatives from the Ministry of Forests, Lands, Natural Resource Operations and Rural Development, the Ministry of Environment and Climate Change Strategy and the Ministry of Jobs, Trades, Skills and Tourism began meeting with the Commercial Bear Viewing Association and other stakeholders to discuss concerns and opportunities with the bear viewing industry. Government is committed to formalizing a collaborative process with First Nations, industry and stakeholders to develop clear policies and procedures for wildlife viewing in the interest of bear conservation and viability of bear viewing businesses.

RECOMMENDATION 6: *We recommend that the Ministry of Forests, Lands and Natural Resource Operations and the Ministry of Environment identify those grizzly bear populations that are in need of recovery and outline what actions will be taken and when.*

Over a decade ago, the Province classified nine grizzly bear population units where populations were in decline or had the potential to become extirpated (locally extinct). Today, four population units (the Granby, South Selkirk, South Chilcotin and Squamish Lillooet) which have been the focus of research, monitoring and enhanced management have increasing grizzly bear numbers.

As part of the Provincial Grizzly Bear Management Plan noted above, a formal process to prioritize specific populations for enhancement activities will be developed. For population units where senior

government has approved objectives to increase populations, specific management plans will be developed outlining the actions, costs and timelines.

RECOMMENDATION 7: *We recommend that the Ministry of Forests, Lands and Natural Resource Operations and the Ministry of Environment evaluate and adjust as needed the tools used to mitigate industries' impacts on grizzly bear habitats.*

Government is committed to improving wildlife management and habitat conservation. Based on reviews and evaluations conducted to date, the Ministry of Forests, Lands, Natural Resource Operations and Rural Development (FLNR) is implementing new guidance to statutory decision makers and professionals to ensure enhanced consideration of wildlife values including grizzly bear. For example, the Chief Forester has communicated guidance, as have FLNR District Managers through letters of expectations to professional foresters responsible for preparing forest stewardship plans. The Province's Natural Resource Ministries also recently endorsed the Interim Cumulative Effects Framework Policy which identifies grizzly bear as a priority value and assessment information is being developed for most areas within the province. These assessment results are already informing statutory and operational decisions.

The Environmental Assessment Office (EAO) has monitoring requirements and conducts inspections on the conditions of Certificates issued under the

RESPONSE FROM THE MINISTRIES

Environmental Assessment Act. Over the next 12 to 18 months, the EAO has scheduled a number of administrative inspections and effectiveness evaluations of conditions, including specifically in relation to grizzly bear conditions. These recommendations will also be considered during revitalization of the Environmental Assessment process.

Further to these actions, FLNR will review and recommend guidelines and policies under the Forest and Range Practices Act for commercial berry harvesting to ensure this important food source for grizzly bears is not overly impacted. FLNR will continue to review and make improvements to tools used to mitigate industry impacts through ongoing commitment to updating the cumulative effects assessment and reporting on the status of select values.

RECOMMENDATION 8: *We recommend that the Ministry of Forests, Lands and Natural Resource Operations and the Ministry of Environment to evaluate and adjust as needed tools to conserve grizzly bear habitats.*

British Columbia has established management provisions for approximately 340,000 km² (150,000 km² of high quality) of grizzly bear habitat through establishment of designations under the Forest and Range Practices Act, Land Act, Parks Act and Great Bear Rainforest Land Use Order. The Ministry of Forests, Lands, Natural Resource Operations and Rural Development and the Ministry of Environment and Climate Change Strategy are currently evaluating

these designations at the stand- and landscape-scale through the Forest and Range Evaluation Program and Cumulative Effects Framework assessments, respectfully. The effectiveness review of these tools will continue and adjustments (e.g., updates to the Forest and Range Practices Act, development of guidance, creation of fines) will be recommended as required.

RECOMMENDATION 9: *We recommend that the Ministry of Forests, Lands and Natural Resource Operations and the Ministry of Environment report out to the public and legislators on how well it is managing grizzly bear populations throughout British Columbia.*

Grizzly bears are already a key “[Environmental Reporting B.C.](#)” value that the Ministry of Environment and Climate Change Strategy reports to the public about the status of grizzly bear populations in the province. The Province uses web-based tools, updated regularly, to report on key aspects of grizzly bear management. Documents will continue to be web-posted as they are developed. The Province will revise its provincial status assessment, web-based metrics and maps, and associated reporting pages as required, while reviewing the effectiveness of ongoing efforts in making the information available to the public and legislators.

RECOMMENDATION 10: *We recommend that government review the legislation, policies and accountabilities for wildlife management and ensure that roles, responsibilities and accountabilities allow the Ministry of Forests, Lands and Natural Resource Operations and the Ministry of Environment to be fully effective in delivering grizzly bear management.*

RESPONSE FROM THE MINISTRIES

Legislation, policy, and accountabilities for grizzly bear management span both ministries. The Natural Resource Agencies have a governance structure and processes that foster collaboration and integration. The ministries will continue to work collaboratively with the other Natural Resource Ministries to continuously improve grizzly bear management in B.C. In addition, the Ministry of Forests, Lands, Natural Resource Operations and Rural Development and the Ministry of Environment and Climate Change Strategy will work together to review the roles, responsibilities and accountabilities for grizzly bear management and include them in the Provincial Grizzly Bear Management Plan. If changes are needed to ensure greater coordination, effectiveness and accountability they will be brought forward and considered.

BACKGROUND

WHY GRIZZLY BEARS?

GRIZZLY BEARS ARE an indicator of government's overall effectiveness in managing B.C.'s wildlife and maintaining healthy ecosystems.

In British Columbia, grizzly bears are an iconic species that invoke heated debate as to how they are managed. The legislative assembly has spent time discussing the issue. The public, non-government organizations, First Nations and industry have also dedicated extensive resources to provide data and opinions to the ongoing conversation. Much of this attention is because of the ecological, economic and cultural importance of grizzly bears.

Exhibit 1: Kwakwaka'wakw (Kwakiutl) Totem Pole, called Ga'akstalas, at Brockton Point, Stanley Park, Vancouver, B.C



Ecological importance

Grizzly bears are considered an *umbrella species*, meaning they represent a variety of other species that share a habitat with them. It's too difficult to study and monitor all species in an ecosystem, so scientists look at umbrella species to understand the health of other species and their habitats.

Aside from being an umbrella species, grizzly bears also play an important role in maintaining healthy ecosystems and biodiversity. For example, in ecosystems where grizzlies feed on salmon, the bears transport nutrients from salmon into the forested ecosystem.

Economic importance

There are two commercial industries that benefit from healthy grizzly bear populations in B.C. — hunting and commercial bear viewing.

The hunt of grizzly bears has been ongoing throughout B.C.'s history, with the exception of a brief moratorium in 2001. According to the B.C. government, grizzly bear hunting brings in an estimated \$6 to \$7.6 million annually to the province's economy.

The commercial bear viewing industry has expanded significantly since the 1990s, and now there are

BACKGROUND

over 45 viewing operators throughout the province. According to the Commercial Bear Viewing Association, activities by operators in the Great Bear Rainforest alone were worth \$15 million in 2012.

Cultural importance

Grizzly bears have a cultural and spiritual importance for various First Nations who may see grizzly bears as healers, teachers or guides. Grizzly bears are featured in ceremonies, stories, dances and cultural traditions. Some First Nations communities have grizzly bear houses or clans where the grizzly bear is revered (see [Exhibit 1](#)).

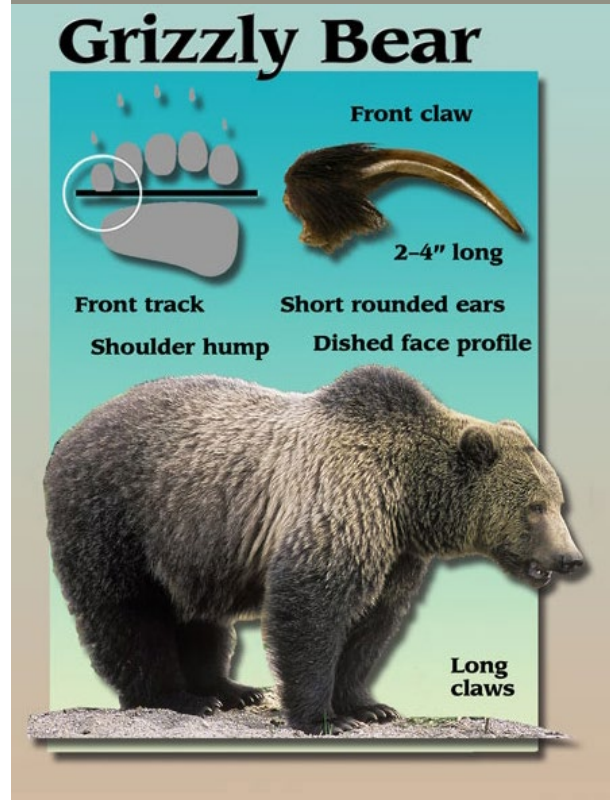
ABOUT GRIZZLY BEARS

Grizzly bears (*Ursus arctos*) are identified by a broad head, small rounded ears, prominent muscular shoulder humps and long narrow claws. These features make it distinct among bear species (see Exhibit 2).

Grizzly bears vary in size and colour – based on age, sex, season, habitat type, location (coastal versus interior) and food availability. In the spring, the average grizzly bear weighs between 200 to 300lbs (female) or between 450 to 600lbs (male), and by the fall, both sexes will be 30% to 40% bigger. Exceptionally large bears can weigh over 1100lbs. The maximum life span of a grizzly bear in the wild can be more than 30 years.

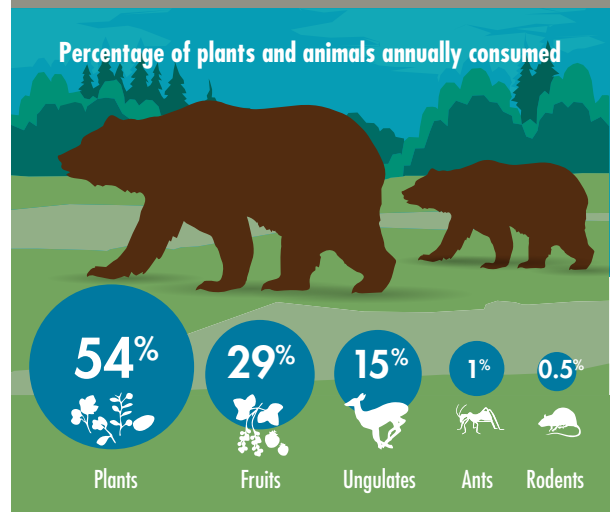
Grizzly bears live in a variety of habitats, including: coastal rain forests, alpine tundra, mountain slopes, upland boreal forest, taiga and dry grasslands. A grizzly bear's use of habitat tends to vary between seasons

Exhibit 2: Grizzly bear characteristics



Source: Center for Wildlife Information.

Exhibit 3: Grizzly bear diet in the Flathead River drainage



Source: Office of the Auditor General of British Columbia, adapted from "The diet of grizzly bears in the Flathead River drainage of southeastern British Columbia," McLellan & Hovey. 1995

BACKGROUND

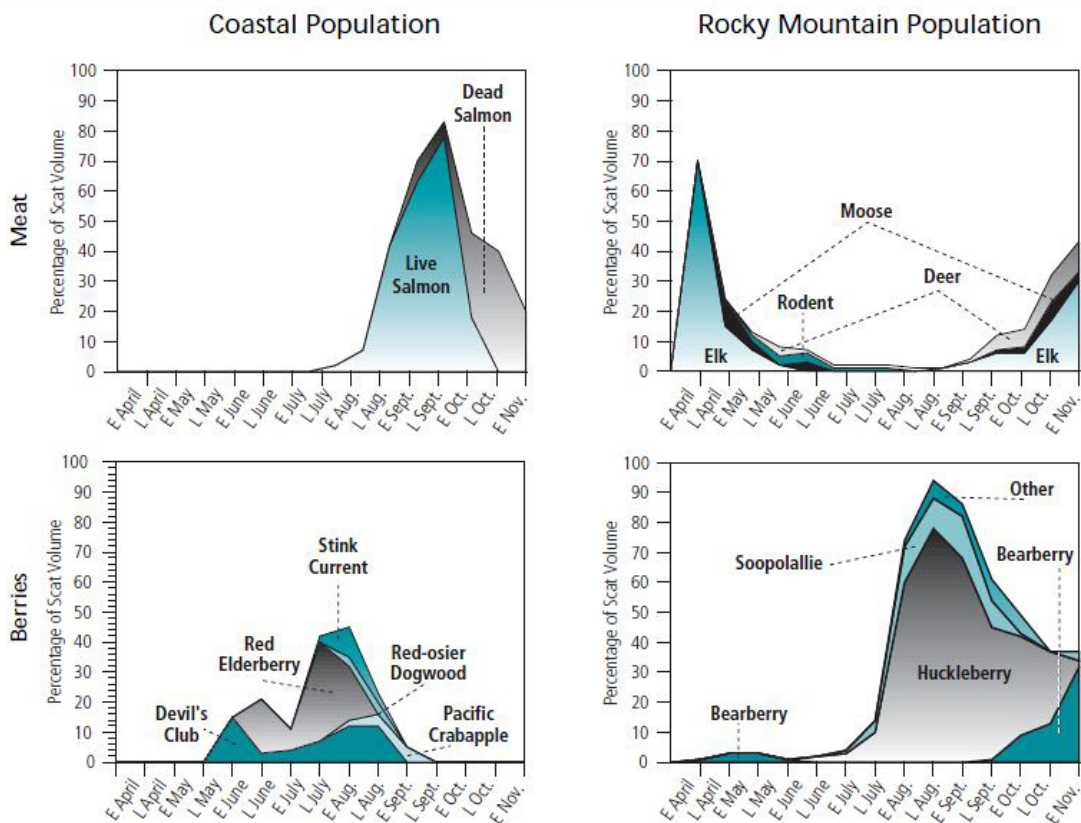
and is often dependent on vegetation growth and prey concentrations. Home range sizes vary based on habitat quality. The average home range of a female grizzly bear is between 60 km² and 1,800km², and for males, it's between 500 and 1,800km². Neither males nor females are territorial, and ranges of many bears overlap extensively.

The majority of a grizzly bear's diet is comprised of berries, vegetation and insects. However, as omnivores (they eat both plants and animals), they also eat fish,

small mammals and ungulates, such as caribou and moose (see [Exhibit 3](#)).

The time of year and food availability will affect a grizzly bear's diet. Coastal bears consume very different food than interior bears. For example, in the fall, coastal bears are dependent on salmon—whereas interior bears are dependent on berries. And in drier areas, bears can depend on whitebark pine nuts which are currently declining, partly due to the mountain pine beetle outbreak (see Exhibit 4).

Exhibit 4: Coastal and rocky mountain grizzly bears' primary food sources



Source: Grizzly Bear Biology, David Denning. 1998

BACKGROUND

WHY THE CONCERN ABOUT GRIZZLY BEARS?

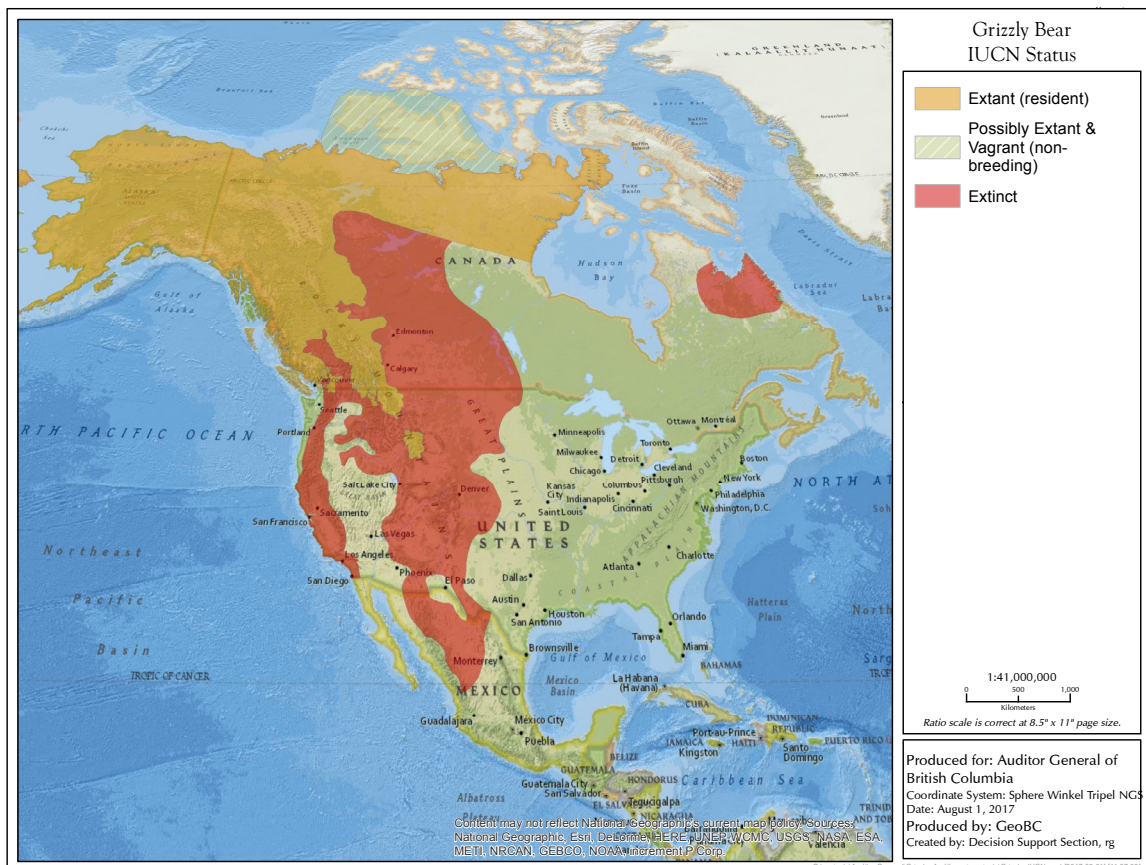
During the 1800s when Europeans colonized North America, grizzly bears were killed in large numbers because they were considered a threat to crops, livestock and human safety. The result was a 50% decline of the overall grizzly bear distribution, with a total extirpation (local extinction) occurring in a significant proportion of the bears' historic range (see Exhibit 5).

Although grizzly bears once existed as far south as Mexico and as far east as Manitoba, the vast majority of the North American population now resides in Yukon, Alaska, and B.C.

British Columbia

Similar to the rest of North America, grizzly bear populations in B.C. historically declined as a large number of bears were killed from either hunting, settlers defending their property, or safety. However, due to changes to hunting regulations in the 1970s and

Exhibit 5: Approximate boundaries of the current and historic distribution of the grizzly bear in North America



Source: International Union for Conservation of Nature (IUCN)

BACKGROUND

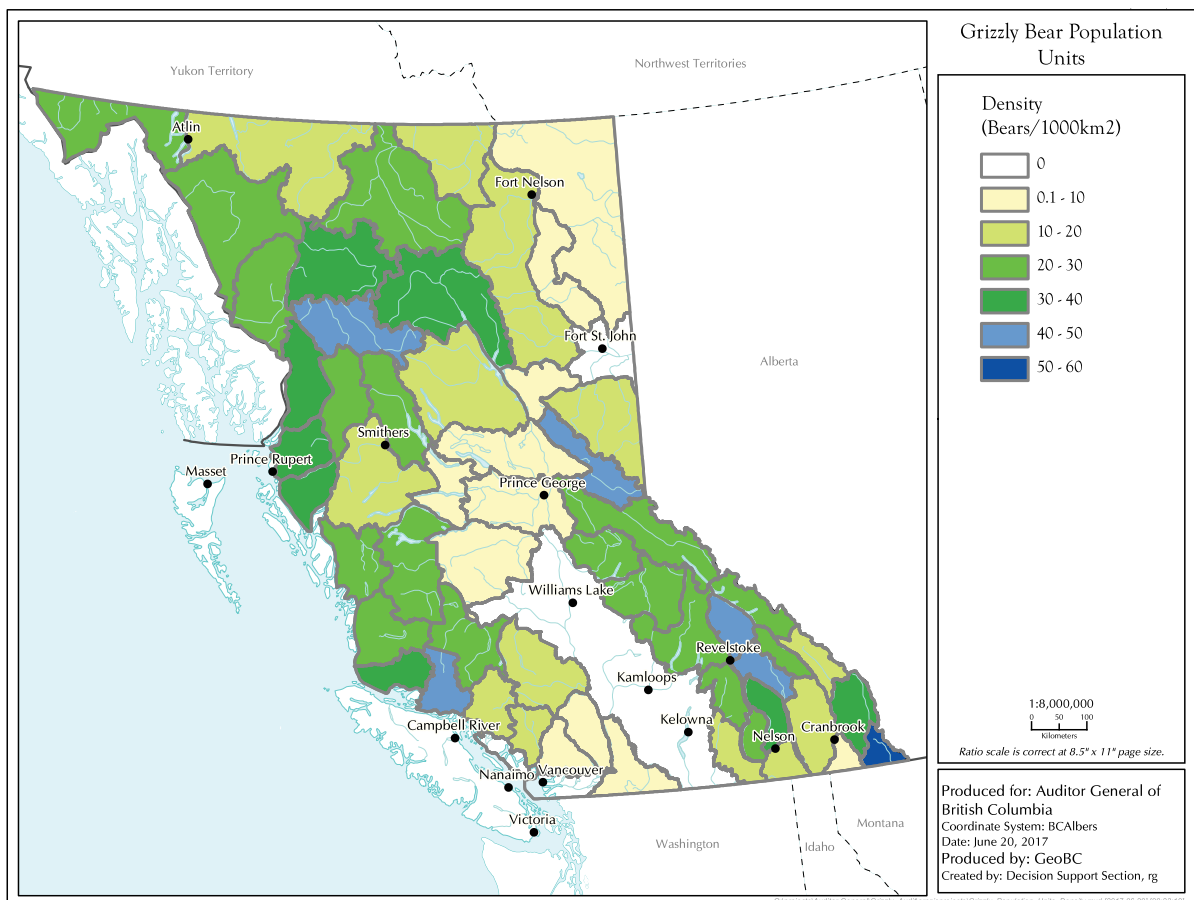
changing societal values, the province's grizzly bear populations have not seen dramatic declines in recent decades. Some trend data is indicating that in certain areas, grizzly bears are likely increasing. Overall, government estimates there are approximately 15,000 grizzly bears in B.C.

Grizzly bears in B.C. still occupy almost 90% of their historic range, but grizzly bear density varies greatly across the landscape, based on habitat quality (see Exhibit 6). In some areas with high human population

density, intensive agriculture or livestock grazing, grizzly bears have become extirpated (locally extinct).

For management purposes, grizzly bears are separated into 56 Grizzly Bear Population Units (GBPUs). Boundaries for GBPUs are identified by similar behaviour, due to the geography, and are classified as sub-populations that are viable, threatened or extirpated (see [Exhibit 17](#)). These areas are further divided into management units.

Exhibit 6: Density of grizzly bears in each Grizzly Bear Population Unit (GBPU).



Source: GeoBC, adapted from the British Columbia Grizzly Bear Population Estimate for 2012

BACKGROUND

WHO IS RESPONSIBLE FOR GRIZZLY BEAR MANAGEMENT?

In B.C., under the *Wildlife Act*, the government has ownership of all wildlife in the province. Prior to 2011, the Ministry of Environment (MoE) carried out grizzly bear management. However, this changed when the Fish and Wildlife Branch was moved from MoE to the newly created Ministry of Forests, Lands and Natural Resource Operations (MFLNRO).

Most activities related to grizzly bear management are now carried out by MFLNRO. These include the administration of the *Wildlife Act*, determination of the annual allowable hunt and implementation of key

policies that mitigate impacts to grizzly bears, such as Wildlife Habitat Areas.

Under Section 4 2(e) of the *Ministry of Environment Act*, the Ministry of Environment (MoE) also has responsibility to “manage, protect and conserve all water, land, air, plant life and animal life, having regard to the economic and social benefits they may confer on British Columbia.” MoE’s primary focus is on the conservation of grizzly bears, including policy development, providing scientific expertise, reducing bear/human conflicts and educating the public.

The overall strategic direction for grizzly bear management is described in government’s Wildlife Program Plan (2010) and the Grizzly Bear Conservation Strategy (1995) (see Exhibit 7).

Exhibit 7: Government’s strategic direction for grizzly bear management

Document	What it says
Wildlife Program Plan	<p>The Wildlife Program Plan’s Vision: a naturally diverse and sustainable wildlife supporting varied uses for current and future direction. It has three goals:</p> <ol style="list-style-type: none">1. Deliver a coordinated and proactive Wildlife Program2. Conserve species and maintain the health of wildlife populations in collaboration with our partners3. Provide a variety of opportunities for the use, enjoyment, and appreciation of wildlife
Grizzly Bear Conservation Strategy	<p>The mandate of the strategy is to ensure the continued existence of Grizzly Bears and their habitats for future generations. The Grizzly Bear Conservation Strategy has four goals:</p> <ol style="list-style-type: none">1. To maintain in perpetuity the diversity and abundance of Grizzly Bears and the ecosystems on which they depend throughout British Columbia.2. To improve the management of Grizzly Bears and their interactions with humans.3. To increase public knowledge and involvement in Grizzly Bear management.4. To increase international cooperation in management and research of Grizzly Bears.

Source: Compiled by the Office of the Auditor General of British Columbia

AUDIT OBJECTIVE AND CONCLUSION

AUDIT OBJECTIVE

OUR AUDIT EXAMINED government's management framework for grizzly bears to determine if government is meeting its objective of ensuring healthy grizzly bear populations throughout British Columbia.

AUDIT CONCLUSION

We concluded that government does not have an adequate management framework for grizzly bears. This represents a significant deficiency in government's ability to ensure healthy grizzly bear populations throughout British Columbia.

BASIS FOR CONCLUSION

We found that the Ministry of Environment and the Ministry of Forests, Lands and Natural Resource Operations lack clear accountabilities and do not have an adequate plan in place for grizzly bear management. Nor are the ministries monitoring and evaluating the effectiveness of activities undertaken to mitigate impacts on habitat or conserve habitat.

AUDIT APPROACH AND SCOPE

AUDIT APPROACH

WE SOURCED OUR objective and criteria from a number of commitments that government has made, including the following:

Healthy

- ♦ Ministry of Environment (MoE) Service Plan Goal 3: *Healthy and diverse native species and ecosystems.*
- ♦ MoE and MFLNRO's Wildlife Program Plan Goal: *Conserve species and maintain the health of wildlife populations in collaboration with our partners.*

Populations

Government [website](#): Grizzly bears are an integral part of maintaining ecosystems in B.C. —having a healthy population makes the province better able to sustain many other species.

Government [website](#): [Grizzly bears] are an important “umbrella” species, as landscapes that support healthy grizzly bear populations will be able to sustain many other species.

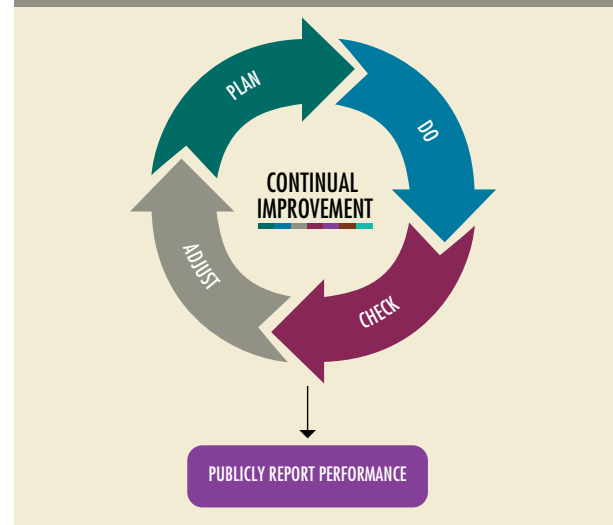
Healthy populations throughout British Columbia

The Grizzly Bear Conservation Strategy has four goals, one of which is: *To maintain in perpetuity the diversity and abundance of Grizzly bears and the ecosystems on which they depend throughout British Columbia.*

We based our audit approach on a continuous improvement framework. Such a framework is based on a four step cycle known as Plan-Do-Check-Adjust (see Exhibit 8). This system is recognized internationally as a good standard for program management. As well, we expected government to report publicly on its performance.

Based on these expectations, we developed our lines of enquiry and criteria (see [Appendix A](#)).

Exhibit 8: Basis for audit criteria



Source: Office of the Auditor General of British Columbia, adapted from the W.E. Deming approach

AUDIT APPROACH AND SCOPE

AUDIT SCOPE

The audit was limited to the activities of the Ministry of Environment (MoE) and the Ministry of Forests, Lands and Natural Resource Operations (MFLNRO). Out of scope was the Oil and Gas Commission (OGC), under the Ministry of Natural Gas Development; however, we did examine MoE's oversight of the OGC.

When looking at MoE, we primarily examined the Ecosystems Branch. We also gathered information from the Environmental Assessment Office, the Conservation Officer Service, BC Parks and the Knowledge Management Branch, as appropriate.

When looking at MFLNRO, we primarily examined the Resource Stewardship Division, which includes the Fish and Wildlife Branch. We also gathered information and interviewed staff from Regional Operations.

This audit covered the activities of MoE and MFLNRO from 1995 (when the Grizzly Bear Conservation Strategy was created) to 2017. We conducted this audit from September 2016 to May 2017.

Our work involved:

- ♦ reviewing documents from MoE and MFLNRO
- ♦ conducting interviews with ministry staff
- ♦ speaking to numerous stakeholders, including non-government organizations, guide outfitters, academics, bear viewing operators and First Nations

- ♦ visiting various grizzly bear habitats
 - ♦ consulting with two subject matter experts

The report is dated October 12, 2017. This is the date the audit team completed obtaining the evidence used to base the findings and conclusions of the report. It is also the date that a written representation from the Deputy Ministers of MoE and MFLNRO confirmed that our office has been:

- ♦ given access to all the information we requested
- ♦ provided with any additional information that would substantially impact the findings and conclusions of the audit report

AUDIT QUALITY ASSURANCE

We conducted this audit under the authority of section 11 (8) of the *Auditor General Act* and in accordance with the standards for assurance engagements set out by the Chartered Professional

Accountants of Canada (CPA) in the CPA Handbook – Canadian Standard on Assurance Engagements (CSAE) 3001 and Value-for-money Auditing in the Public Sector PS 5400. These standards require that we comply with ethical requirements, and conduct the audit to independently express a conclusion whether or not the subject matter complies in all significant respects to the applicable criteria.

The office applies the CPA Canadian Standard on Quality Control 1 (CSQC) and, accordingly,

AUDIT APPROACH AND SCOPE

maintains a comprehensive system of quality control, including documented policies and procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements. In this respect, we have complied with the independence and other requirements of the code of ethics applicable to the practice of public accounting issued by the Chartered Professional Accountants of BC which are founded on the principles of integrity, objectivity, professional competence and due care, confidentiality and professional behaviour.

KEY FINDINGS AND RECOMMENDATIONS

OUR EXPECTATIONS

WE EXPECTED THE Ministry of Environment (MoE)¹ and the Ministry of Forests, Lands and Natural Resource Operations (MFLNRO) to be effectively managing grizzly bear populations throughout British Columbia. We expected the ministries to have instituted a program that includes a cycle of continuous improvement – the Plan-Do-Check-Adjust cycle (See [Audit Approach](#)) and be reporting out to the public on their performance.

PLAN: WE EXPECTED MOE AND MFLNRO TO HAVE A CURRENT PLAN FOR GRIZZLY BEAR MANAGEMENT

There is no plan to implement the strategic direction for grizzly bears in B.C.

The key document that guides grizzly bear management in B.C. is the Grizzly Bear Conservation Strategy. Created in 1995, it has not been revised in over 20 years. It has four goals that both MoE and MFLNRO still recognize as applicable. They include:

- ♦ To maintain in perpetuity the diversity and abundance of Grizzly Bears and the ecosystems on which they depend throughout British Columbia.
- ♦ To improve the management of Grizzly Bears and their interactions with humans.
- ♦ To increase public knowledge and involvement in Grizzly Bear management.

- ♦ To increase international cooperation in management and research of Grizzly Bears.

We expected that government would have incorporated these goals into a grizzly bear management plan, which would include the following:

- ♦ population targets that government is attempting to maintain
- ♦ prioritized activities and timelines
- ♦ clear accountabilities, resources and expertise
- ♦ a program for monitoring the effectiveness of the activities

The Minister of Environment committed to creating a grizzly bear management plan in 2004, but there is still no plan. Since 2010, government has focussed on completing management plans for the grey wolf

¹ At the conclusion of this audit, a change of government resulted in changes to the ministries' names and how they are referenced. The Ministry of Environment (MoE) is now the Ministry of Environment and Climate Change Strategy (ENV) and the Ministry of Forests, Lands and Natural Resource Operations (MFLNRO) is now Forests, Lands, Natural Resource Operations & Rural Development (FLNR). However, our evidence collection occurred under the former names and we therefore used MoE and MFLNRO throughout this report.

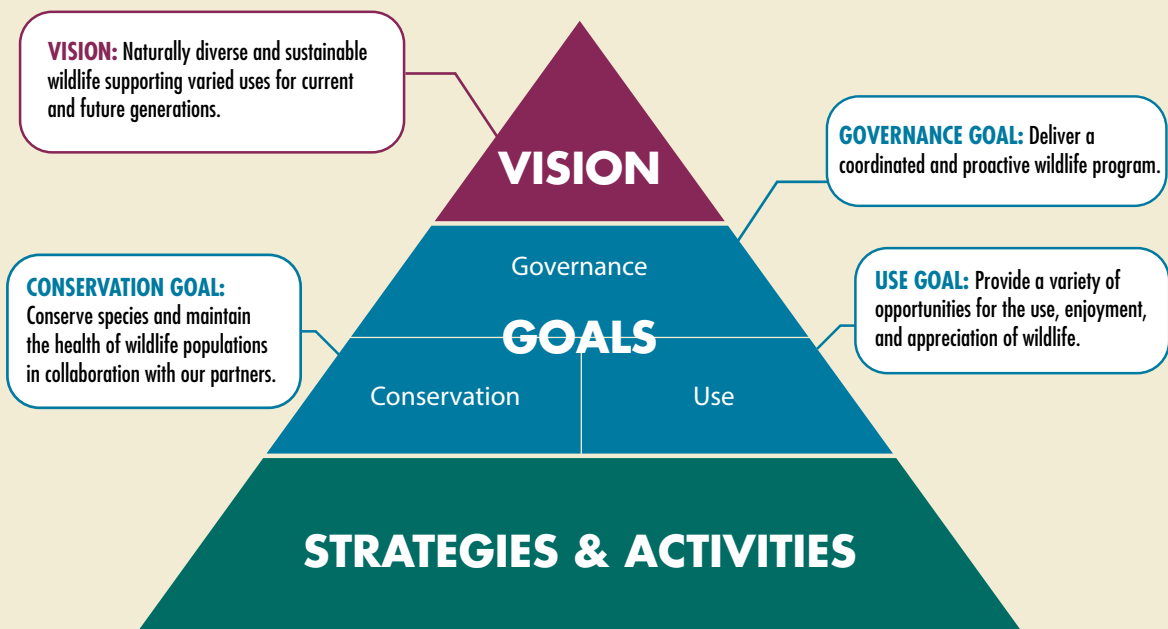
KEY FINDINGS AND RECOMMENDATIONS

PLAN: We expected MoE and MFLNRO to have a current plan for grizzly bear management

(2014), for Roosevelt elk (2015), and a strategy for moose (2016). However, it is not clear why these species were prioritized over grizzly bears. One of the potential causes could be the lack of clear responsibilities within government's Wildlife Program Plan.

In 2010, MoE created the Wildlife Program Plan. This plan guides the framework for prioritizing species and ecosystems for conservation and management action across government. It includes many of the components of a good plan: vision, goals, prioritization tool, strategies and activities (see Exhibit 9).

Exhibit 9: Ministry of Environment's Wildlife Program Plan structure



Source: Office of the Auditor General of British Columbia, adapted from MoE's Wildlife Program Plan

KEY FINDINGS AND RECOMMENDATIONS

PLAN: We expected MoE and MFLNRO to have a current plan for grizzly bear management

At the time the plan was created, MoE had responsibility for wildlife management. But in 2011, most of these responsibilities shifted to the newly created Ministry of Forests, Lands and Natural Resource Operations (MFLNRO).

Both ministries refer to the plan as a guiding document, but neither ministry has taken responsibility for updating the plan and assigning clear responsibilities for the strategies and activities, or monitoring the success of efforts and actions necessary for successful implementation. This gap in the wildlife program makes it difficult to discern where government has prioritized grizzly bears for management action.

RECOMMENDATION 1: *We recommend that the Ministry of Forests, Lands and Natural Resource Operations and the Ministry of Environment create and implement a grizzly bear management plan that includes:*

- ◆ *clear indication of how the plan fits into the ministries' overall wildlife management planning (where is it in the priority)*
- ◆ *clear goals and targets*
- ◆ *prioritized activities and timelines, including accountabilities for those activities*
- ◆ *resources and expertise required to undertake the activities in the plan*
- ◆ *requirement for monitoring of program effectiveness*
- ◆ *a process for evaluating and adjusting activities as needed*

KEY FINDINGS AND RECOMMENDATIONS

DO: WE EXPECTED MOE AND MFLNRO TO CARRY OUT ACTIVITIES TO MANAGE GRIZZLY BEARS

In the absence of a grizzly bear management plan, we expected that MoE and MFLNRO would still be carrying out activities to manage grizzly bears. We focused on four key components:

1. inventory and monitoring of populations and habitats
2. managing human-related threats
3. recovering populations of concern
4. providing secure habitat

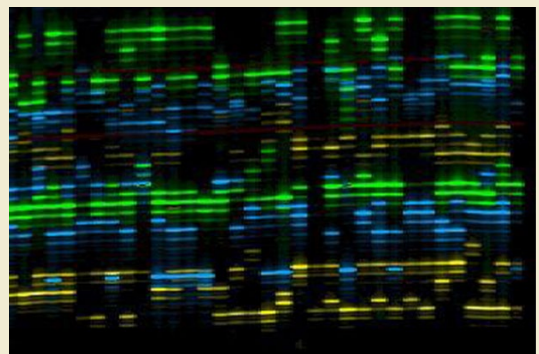
1. INVENTORY AND MONITORING OF POPULATIONS AND HABITATS

There is a lack of organized inventory and monitoring of grizzly bears in B.C.

The Grizzly Bear Conservation Strategy notes that, “Government will increase its research on Grizzly Bear ecosystems, including a province-wide inventory and assessment of Grizzly Bears and Grizzly Bear habitats.” However, we found that such an inventory and assessment has not been completed for either grizzly bear populations or their habitats.

Government’s grizzly bear population estimates

Exhibit 10: Hair snagged in a grizzly bear hair trap.



Source: Trans-border Grizzly Bear Project Progress Summary, 2017

KEY FINDINGS AND RECOMMENDATIONS

DO: We expected MoE and MFLNRO to carry out activities to manage grizzly bears

have fluctuated over time. This does not represent an increase or decrease in the population, but rather, improvements to the analytical methods for inventorying grizzly bears.

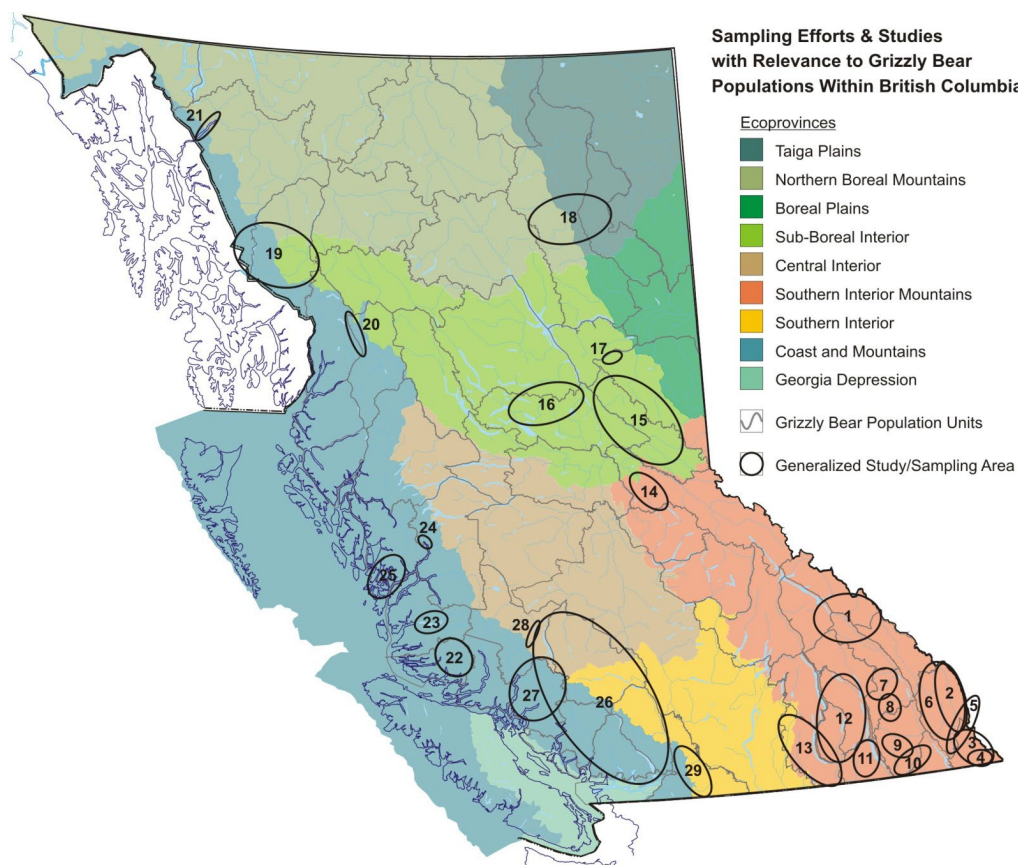
In the mid-1990s, there were significant advances in the tools and techniques for estimating grizzly bear populations. This included using DNA that is gathered from grizzly bear hair traps (see [Exhibit 10](#)).

Using the information gathered from these DNA-based inventories, government staff can estimate grizzly bear densities throughout the province.

However, much of the data is dated and clustered in the southern portion of the province (see Exhibit 11).

The emphasis on inventory in the south may have been logical (due to a number of risks that are particularly high in this area, such as roads, hunting, industrial impacts, and a large and expanding human population). But, much of the province has not been inventoried. These un-inventoried areas can have high-risk activities that can influence grizzly bear populations. We expected that such areas would be identified and prioritized, based on identified risks.

Exhibit 11: Sampling efforts & studies with relevance to grizzly bear populations within B.C.



Source: Grizzly Bear Population Inventory & Monitoring Strategy for British Columbia. Apps. 2010.

KEY FINDINGS AND RECOMMENDATIONS

DO: We expected MoE and MFLNRO to carry out activities to manage grizzly bears

In 2010, MoE commissioned a population inventory and monitoring strategy that became obsolete in 2013 when MFLNRO changed the way population estimates were extrapolated. However, MFLNRO's new method of extrapolation still requires inventory and monitoring to improve the output. The more inventories that go into the statistical model, the less uncertainty there will be in the population estimates, and the less that ministry staff will have to rely on their professional judgement to modify the estimate. There is also a need for a revised monitoring strategy to identify the top priorities for determining population trends particularly in the threatened GBPU, or parts of the province where there are higher risks.

As previously noted, under the Grizzly Bear Conservation Strategy, government committed not only to inventory and assess grizzly bears, it also made a commitment to identify critical grizzly bear habitat. Identifying and providing a level of protection to important foraging sites, as well as important connectivity habitats, can contribute to the health and sustainability of a population (see sidebar).

“It is not possible to fully address the issues pertinent to the persistence of bear populations in B.C. without consideration of bear habitat. Harvest management and population estimation issues could be adequately addressed but populations would still decline if the habitat base on which bears depend is deteriorating.” ~Management of Grizzly Bears in British Columbia: A Review by an Independent Scientific Panel, Peek et al. (2003)

We found that government has conducted limited habitat inventories and mapping at an appropriate scale to identify key and critical grizzly bear habitats. This lack of information can create a risk that these areas are not managed carefully for grizzly bear use, which in turn, could have implications to the long-term viability of grizzly bear populations in B.C.

We found that funding for inventory and monitoring is limited

Inventory and monitoring of grizzly bears is costly. A trend monitoring program for one GBPU can cost approximately \$250,000-400,000, and to carry out a one-time population estimate can cost \$50,000-100,000. We expected government to provide sufficient resources to carry out prioritised inventory and monitoring. However, we found that government does not provide specific funding to MFLNRO to carry out this work. Ministry staff, academia, First Nations, guide outfitters and bear viewing operators all noted that limited funding for inventory and monitoring is a significant barrier to making informed decisions on grizzly bear management (see sidebar).

“It was clear throughout our consultations that resources were a limiting factor in grizzly bear management in B.C. and that this contributed directly to the uncertainty of harvest levels due to 'excessive dependence on extrapolation methods' rather than population inventory and monitoring.” ~Scientific Review of Grizzly Bear Harvest Management System in British Columbia (2016)

KEY FINDINGS AND RECOMMENDATIONS

DO: We expected MoE and MFLNRO to carry out activities to manage grizzly bears

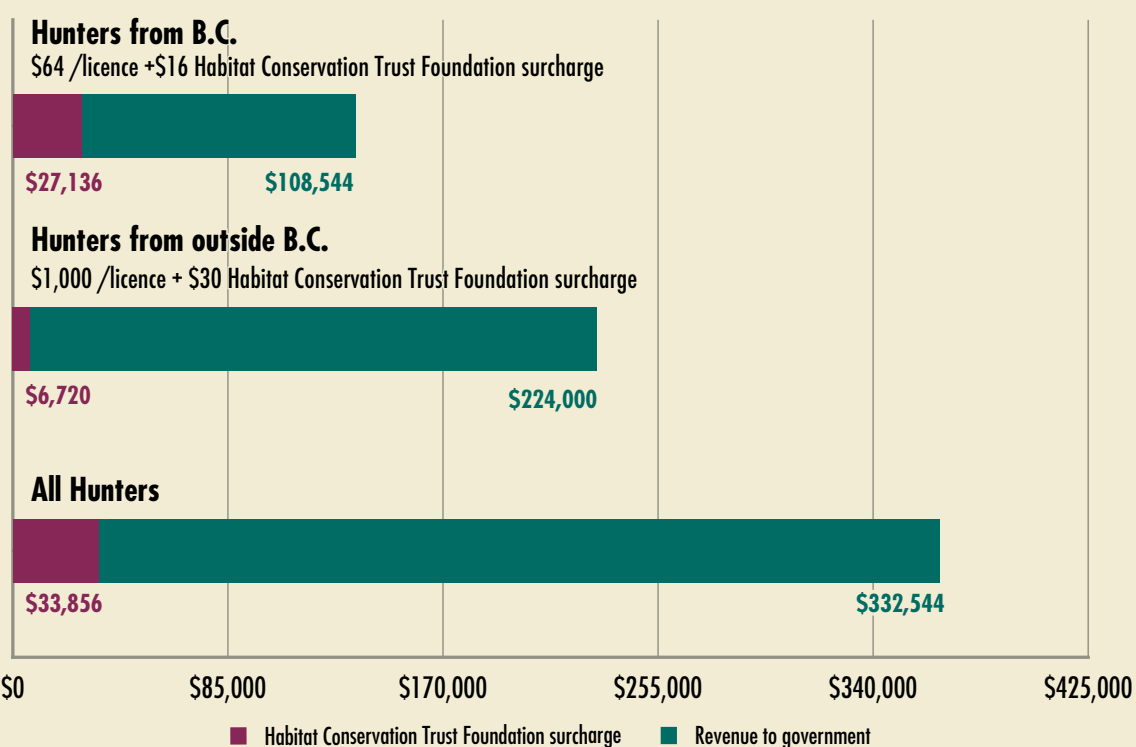
Our office also noted this as an issue in our 2013 [Audit of Biodiversity in B.C.](#), where we recommended that government make a long-term commitment to collect sufficient and reliable information about the status of biodiversity in B.C. and apply this information to make informed decisions about the conservation of biodiversity. Government has not fully implemented this recommendation.

Government did establish a user-pay system to support conservation through a Habitat Conservation Fund under the *Wildlife Act* in 1981. Users of wildlife (anglers, hunters, trappers and guides) would make a direct investment in conservation by paying an

additional licence surcharge. In 1998, the fund was transferred to the newly created Habitat Conservation Trust Foundation (the foundation). In 2007, the *Wildlife Act* was amended to make the foundation entirely independent from government.

To hunt a grizzly bear, a resident of B.C. must pay \$80 for a licence, of which \$16 is a surcharge, and a non-resident must pay \$1,030, of which \$30 is a surcharge (see Exhibit 12). The surcharge goes to the foundation, who carries out conservation activities, which can include inventory and monitoring. The remainder of the fee (for both B.C. residents and non-residents) goes into government's general revenue. For 2015, the

Exhibit 12: Revenue and surcharge fees from grizzly bear licences sold in 2015



Source: Compiled by the Office of the Auditor General of British Columbia

KEY FINDINGS AND RECOMMENDATIONS

DO: We expected MoE and MFLNRO to carry out activities to manage grizzly bears

ministry collected \$366,400 in total from hunters, of which approximately \$34,000 went to the foundation (see Exhibit 12). The foundation also receives, on average, an additional \$200,000 from the black bear hunt, and these funds also go towards supporting grizzly bear conservation projects.

Government sets the licencing fees for resident and non-residents, as well as the surcharge that goes to the foundation. We could find no evidence as to how these fees were determined. MFLNRO has not revised licence and royalty fees since 2002 and there was no evidence that MFLNRO has reviewed these fees—even though government encourages ministries to do so on an annual basis.

Because there is limited internal funding, government staff must seek outside support, and some staff apply to the foundation for grizzly bear inventory and monitoring projects. This is inefficient, as staff must invest significant time into developing proposals and the majority are rejected.

The overall result of an inadequately resourced inventory and monitoring strategy is that decisions may be based on limited information. These decisions may result in a failure to adequately address threats to grizzly bear populations or their habitat.

RECOMMENDATION 2: *We recommend that the Ministry of Forests, Lands and Natural Resource Operations and the Ministry of Environment develop and implement an adequately resourced inventory and monitoring strategy for grizzly bears.*

2. MANAGING HUMAN-RELATED THREATS

Management of human-related mortalities has improved in some areas

In only a few hundred years, human activities have resulted in the extirpation (local extinction) of over half of the grizzly bear population that once roamed North America. In B.C., some populations were extirpated, and it is likely some populations experienced significant declines. However, grizzly bear populations in some areas of B.C. are now increasing. To ensure that populations either are maintained or increase, government will have to continue to carefully manage human threats.

Based on the government's Grizzly Bear Conservation Strategy, we focused on four key areas for managing human threats:

- i) grizzly bear hunting
- ii) reducing illegal activities
- iii) reducing grizzly bear/human conflicts
- iv) regulating bear viewing

KEY FINDINGS AND RECOMMENDATIONS

DO: We expected MoE and MFLNRO to carry out activities to manage grizzly bears

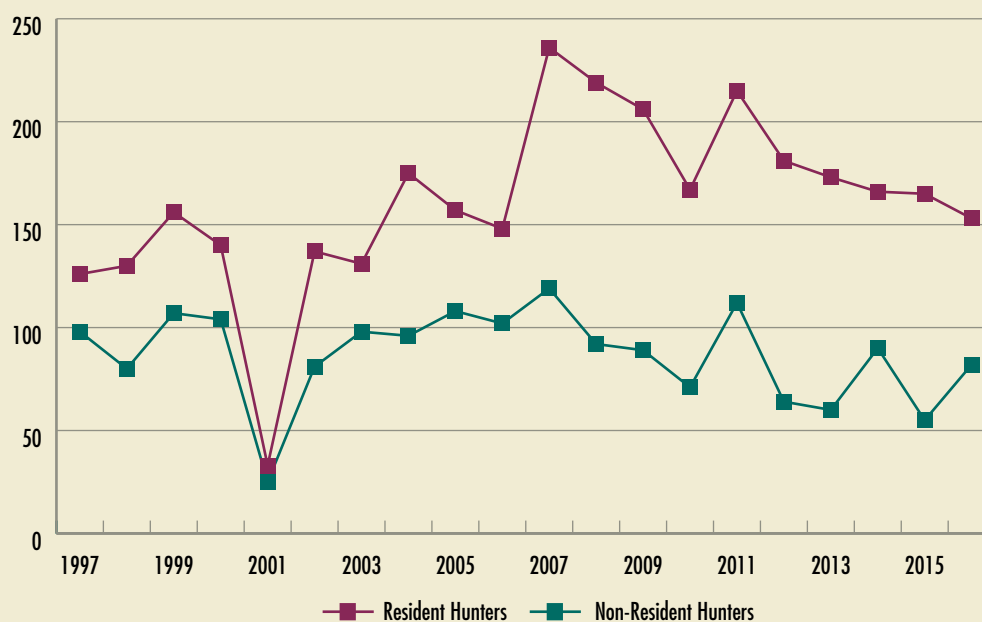
i) Grizzly bear hunting

The provincial government identified grizzly bears as a game species in the mid-1900s and managed the hunt through a general open season. Limited entry hunting (LEH) was introduced by the government in 1977 across portions of the province. LEH is a lottery system where government grants a limited number of hunting authorizations for B.C. resident hunters in specific areas. Government also sets a maximum number of grizzly bears that can be hunted by non-B.C. resident hunters (usually) within a guide outfitter's territory (known as quota). From 1997 to 2016, on average, hunters have killed approximately 250 to 300 bears annually (see Exhibit 13).

MFLNRO staff determine the number of grizzly bears that can be killed in any given year by resident hunters and guided hunters (known as the annual allowable harvest). MFLNRO staff are guided by the Grizzly Bear Harvest Management Procedure (2012).

Hunting is managed by Grizzly Bear Population Units (GBPU). There is no grizzly bear hunting in extirpated areas, threatened GBPU, Grizzly Bear Management Areas and National Parks. Some GBPU may not be hunted because of low population density, or they may be temporarily closed, where known grizzly bear mortality has met or exceeded allowable limits (see [Exhibit 14](#)).

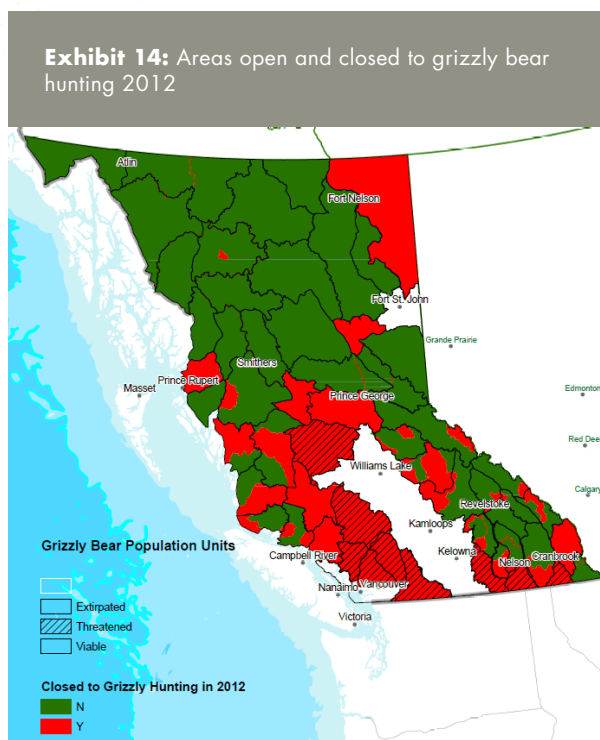
Exhibit 13: Number of grizzly bears killed in the annual hunt, 1997 – 2016



Source: Adapted by the Office of the Auditor General of British Columbia, based on government data

KEY FINDINGS AND RECOMMENDATIONS

DO: We expected MoE and MFLNRO to carry out activities to manage grizzly bears



Source: MFLNRO's British Columbia Grizzly Bear Population Estimate for 2012

Over the years, MFLNRO has made advances in its hunting policy and procedures, and in 2003 and 2016, it initiated extensive reviews by external experts. Both reviews found that management of the hunt was adequate. However, they both also indicated that improvements could be made, and called for each GBPU to have specific management objectives, which MFLNRO has not yet established.

In the absence of specific GBPU objectives, the management objective for all hunted GBPUs is that populations should be managed to avoid a decline in the population. MFLNRO staff determine the annual allowable hunt by estimating the population size and

the number of human-caused mortalities that the population could sustain. Human-caused mortalities are categorized as:

1. legal hunting
2. reported mortalities (these bears are killed for reasons other than hunting, such as defence of life or property, or road and train kills)
3. unreported mortalities (these bears are killed but not reported)

MFLNRO determines the annual allowable hunt by calculating these numbers, as well as incorporating other information, such as the sex and age of bears that have died due to human causes. In addition, MFLNRO calculates the success rate of B.C. resident hunters. This allows the ministry to sell a higher number of B.C. resident licences, because only a small portion of hunters will actually kill a grizzly bear.

Since 1997, after government introduced the Limited Entry Hunting system across the entire province, the number of licences sold to B.C. residents has been increasing, while the number of non-resident, guided hunters has declined (see [Exhibit 15](#)).

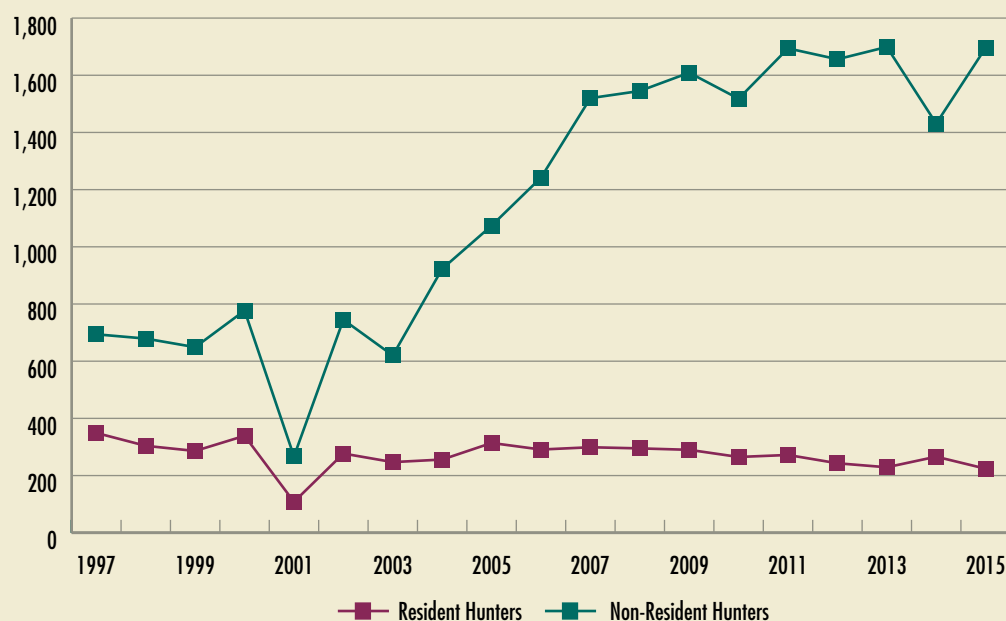
It is the actual grizzly bears killed (success rate), rather than the licenses sold that are used to calculate the allowable mortality.

Given the uncertainty that exists in estimated population sizes, unreported mortalities and the sex and age of those grizzly bears killed that are unreported, we expected government to be setting a harvest level that was conservative. According to

KEY FINDINGS AND RECOMMENDATIONS

DO: We expected MoE and MFLNRO to carry out activities to manage grizzly bears

Exhibit 15: Quantity of grizzly bear licences sold (1997-2015)



Source: Office of the Auditor General of British Columbia, based on MFLNRO data

the grizzly bear harvest management procedure, the annual allowable human-caused mortality (including both hunter and non-hunt kills) for each GBPU is set at a **maximum** allowable mortality rate of 6%.

The 6% is considered sustainable by scientists, based on modelling and demographic information. However, government scientists have recommended that this maximum rate of 6% should be used only when there is good biological information about the population. Therefore, where the risks were higher and the information was poor, we expected government to be setting a conservative harvest level that was lower (precautionary approach).

However, in practice, government has mostly used a higher maximum mortality rate of 5 to 6%. In the South Rockies, this lack of a precautionary approach contributed to that population's decline (see [Appendix B: Case Study of the South Rockies](#)).

We also found that MFLNRO's harvest management procedure does not adequately account for these uncertainties in population changes. The 2003 and 2016 independent reviews of these procedures found them to be reasonable. However, both reviews noted that there are a number of issues that need to be addressed, including the need to develop a transparent and repeatable process for calculating the allowable harvest in each GBPU.

KEY FINDINGS AND RECOMMENDATIONS

DO: We expected MoE and MFLNRO to carry out activities to manage grizzly bears

RECOMMENDATION 3: *We recommend that the Ministry of Forests, Lands and Natural Resource Operations revise its policy and procedures to determine how uncertainty will be accounted for when determining grizzly bear hunt allocations and to be transparent about the process.*

ii) Reducing illegal activities and non-hunting mortality

The Conservation Officer Service (COS) within the Ministry of Environment works to reduce illegal activities that negatively affect grizzly bears, such as poaching, attracting wildlife, failing to report a bear killed due to conflict, or hunting against the regulations (see Exhibit 16). We expected the COS to have effective tools and resources to reduce these illegal activities.

Exhibit 16: Conservation Officer investigating an illegal grizzly bear kill



Source: The Conservation Officer Service

COS tools

The COS has a number of tools to resolve non-compliance with the *Wildlife Act*, including warnings, tickets and formal charges. We expected the COS to be evaluating these tools to ensure effectiveness.

In 2011, the *Wildlife Act* was amended to give Conservation Officers the ability to issue tickets or notices for a court appearance to deal with people who repeatedly and negligently fail to secure attractants, like garbage. The ticket fine is \$230, and was expected to reduce the incidence of people coming into conflict with large predators (such as grizzly bears). However, the COS has not evaluated if these fines are effective deterrents.

COS resources

In total, there are 148 Conservation Officers that are responsible for more than 30 pieces of legislation—including the *Wildlife Act*. In addition, as the public continues to gain access into wildlife areas, the COS has to expand its oversight into areas that previously may have not been of concern.

In 2011, a former Chief Conservation Officer drafted a report that identified the need for an increase of 40 positions within the COS. However, since that time, the COS has added one additional Conservation Officer, and there has been no updated evaluation to determine if the current number is sufficient.

We found that some First Nations are compensating for what they perceive as a lack of COS presence by

KEY FINDINGS AND RECOMMENDATIONS

DO: We expected MoE and MFLNRO to carry out activities to manage grizzly bears

creating their own watchmen. We were told that the Coastal First Nations fund six seasonal watchmen, at a total cost of \$210,000. However, they have no recognized authority within government.

Government has been working to increase First Nations involvement with the COS by developing an Aboriginal Liaison Program that could include grizzly bear monitoring.

iii) Reducing grizzly bear/human conflicts

Two of the four goals of the Grizzly Bear Conservation Strategy are:

- ♦ to improve the management of grizzly bears and their interactions with humans
- ♦ to increase public knowledge and involvement in grizzly bear management

From 2006 to 2015, the COS has responded to an increasing number of human-bear conflicts, which resulted in 389 grizzly bears having to be killed. Some humans experienced injuries from these conflicts, but no humans were killed.

The COS has revised its procedures for responding to bears in conflict with people. While human safety remains the top priority, the COS has updated its conflict response matrix where the response varies, based on actions of the bear in each particular circumstance. A grizzly bear is not automatically

destroyed; instead, it could be trapped and hazed (known as aversive conditioning), and/or relocated, depending on its actions.

The procedure also calls for public education to prevent conflicts with grizzly bears. For this, the COS relies heavily on WildSafe BC.

WildSafe BC is a registered society and charity with a mission to reduce human-wildlife conflicts through “education, innovation and cooperation.” For the past three years, the COS has allocated \$275,000 to help fund WildSafe BC. WildSafe BC has used this funding to subsidize its activities, but has noted it is limited in its abilities to deliver a province-wide program. The COS has not evaluated whether this funding is sufficient, or if WildSafe BC’s programs are effective.

For example, WildSafe BC’s cost-sharing electric fence program is limited, even though such a program can reduce bear/human conflicts. In Washington, Montana, Idaho and Wyoming, both state and federal governments and non-governmental organizations, provide funding for an electric fence cost-sharing program. In one application of this program, 50% of an electric fence (up to \$500) is granted for securing bear attractants, such as fruit trees and livestock. There is no such government program available in B.C.

With limited Conservation Officer presence, education program, and tools such as fencing, there is an increased risk that citizens will address grizzly bear conflicts themselves. This could result in a decline of

KEY FINDINGS AND RECOMMENDATIONS

DO: We expected MoE and MFLNRO to carry out activities to manage grizzly bears

certain grizzly bear populations, as citizens may kill the bears rather than try alternative methods, such as proactive attractant management (see [Appendix C: Case Study of Bella Coola](#)).

RECOMMENDATION 4: *We recommend that the Ministry of Environment ensure the Conservation Officer Service has the appropriate resources and tools for preventing and responding to grizzly bears/human conflicts.*

iv) Regulating bear viewing

Bear viewing is on the rise in B.C. (see [sidebar](#)). It may seem like a harmless activity however, it can have negative impacts.

Research has shown that bear viewing can cause grizzly bears to temporarily abandon important feeding sites or change behaviour to avoid viewers, which in turn could impact a grizzly bear's health and ability to reproduce. The research also notes that these negative effects can be reduced in a number of ways, including: ensuring consistent viewing times and sites, maintaining distance, limiting the number of viewers and ensuring that there is alternative, high-quality habitat nearby without viewers. It also states that viewing plans should be site specific, as each bear viewing area will have its own unique challenges.

Government is aware of these impacts but does not regulate bear viewing, even though it is noted as an issue in the Grizzly Bear Conservation Strategy.

We found there were 47 bear viewing operators, as of 2014. This number is thought to be increasing, as small boat owners are beginning to offer grizzly bear viewing as a service. The Commercial Bear Viewing Association (CBVA) and their 2012 Best Practices Guidelines provide a mechanism for bear viewing operators to self-regulate. However, in 2014, only 15 of 47 (32%) viewing operators were members of the CBVA. Additionally, there is no enforcement mechanism to ensure all CBVA members are following the best management guidelines.

GRIZZLY BEAR VIEWING BY THE ATNARKO RIVER NEAR BELLA COOLA



Source: Office of the Auditor General of British Columbia

KEY FINDINGS AND RECOMMENDATIONS

DO: We expected MoE and MFLNRO to carry out activities to manage grizzly bears

In our interviews with some of the grizzly bear viewing operators, we heard concern over the lack of government's recognition of them as having a vested interest in grizzly bear management. They felt there was need for government to clearly establish bear viewing areas that are excluded from hunting.

According to the CBVA, and a recent study by the Center for Responsible Travel and Stanford University, grizzly bear viewing in 2012 in the Great Bear Rainforest alone was worth \$15.1 million to B.C. However, government does not collect any of this revenue for the conservation of the species. Some of the operators told us they make donations towards grizzly bear conservation, but this may be only a proportion of operators and the funds that are donated may not be allocated to where they are most needed. This means that one user, the hunter, makes a financial investment in grizzly bears while the other user, the bear viewer, may not.

CBVA bear viewing operators told us that, in recent years they have hosted more than 5,000 visitors annually, most of whom come from international jurisdictions. Without adequate oversight of this steadily increasing industry, there may be site-specific impacts to grizzly bear populations.

RECOMMENDATION 5: *We recommend that the Ministry of Forests, Lands and Natural Resource Operations and the Ministry of Environment develop clear policies and procedures for bear viewing.*

3. RECOVERING POPULATIONS OF CONCERN

Limited recovery actions taken for threatened grizzly bear populations

Nine Grizzly Bear Population Units (GBPUs) are designated as threatened (see [Exhibit 17](#)). The term threatened means the grizzly bear population in that unit is less than 50% of what one would expect, given the quality of habitat. Four of these GBPUs are small (less than 50 bears) and one is likely genetically isolated. In some of the other threatened GBPUs, there is evidence that populations are increasing.

According to government's website, its primary objective for threatened GBPUs is to recover the population to sustainable levels. However, *sustainable levels* have not been defined.

We found that there have been limited recovery actions taken in threatened GBPUs. Government has created a recovery plan for the North Cascades GBPU, but it has not been implemented (see [Appendix D: Case Study of the North Cascades](#)).

It is not just these threatened populations that require recovery actions. In order to prevent GBPUs from becoming threatened, government should be taking

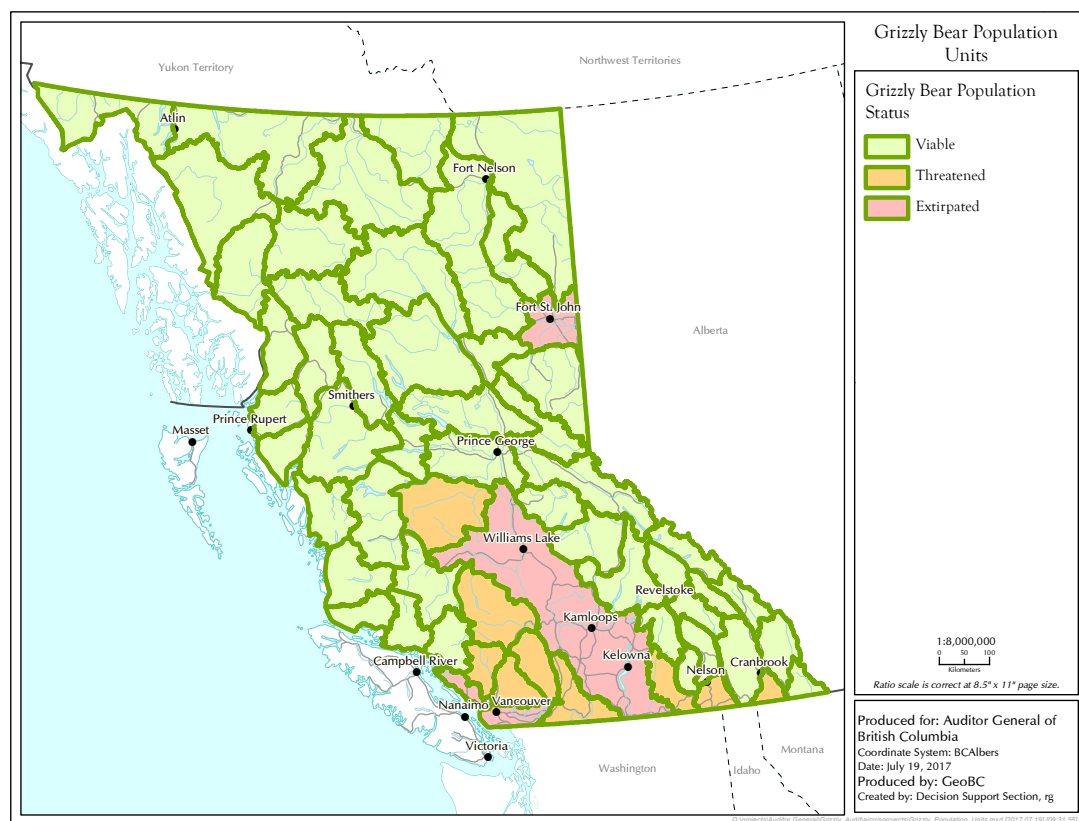
KEY FINDINGS AND RECOMMENDATIONS

DO: We expected MoE and MFLNRO to carry out activities to manage grizzly bears

actions when populations are becoming of conservation concern. Instead, government has a limited monitoring program that does not include all high-risk areas, where the grizzly bear population may be trending downward.

RECOMMENDATION 6: We recommend that the Ministry of Forests, Lands and Natural Resource Operations and the Ministry of Environment identify those grizzly bear populations that are in need of recovery and outline what actions will be taken and when.

Exhibit 17: Threatened Grizzly Bear Population Units



Source: GeoBC, adapted from Ministry of Forests, Lands and Natural Resource Operation's web site.

KEY FINDINGS AND RECOMMENDATIONS

DO: We expected MoE and MFLNRO to carry out activities to manage grizzly bears

4. PROVIDING SECURE HABITAT FOR GRIZZLY BEARS

Ensuring healthy grizzly bear populations throughout B.C. is only possible if government is able to provide secure habitat for this species (see sidebar).

We examined a number of key tools that MoE and MFLNRO have in place in order to:

- a) mitigate industries' impact on grizzly bear habitat
- b) conserve habitat

Mitigating industries' impacts

Key tools that mitigate industries' impacts on grizzly bear habitat have not been evaluated for their effectiveness

We examined the following tools to determine if they are effective in mitigating industries' impacts on grizzly bear habitat:

- i) Land use plans
- ii) Forest stewardship plans
- iii) Proposed *Natural Resource Roads Act*
- iv) The Ministry of Environment's oversight of the Oil and Gas Commission
- v) Environmental assessment certificates
- vi) Draft Cumulative Effects Framework Assessment Protocol

“Harvest management and population estimation issues could be adequately addressed but populations would still decline if the habitat base on which bears depend is deteriorating. The fundamental issues of habitat loss, habitat alienation, adverse habitat changes, and increase in human access are high management priorities for the conservation of grizzly bears in B.C. Moreover, these issues have consequences for all wildlife, not just grizzly bears.”

~Boyce, M. S., et al., 2016. Scientific Review of Grizzly Bear Harvest Management System in British Columbia. Commissioned by the Ministry of Forests, Lands and Natural Resource Operations.

i) Land use plans

In 1992, government established the Commission on Resources and Environment (CORE). CORE was to develop a provincial land use strategy that would resolve conflicts over protected areas and develop integrated land use planning for all resource values.

From 1992 to 1994, CORE used the consensus-seeking model of land use planning in three regions of B.C. CORE was then disbanded and smaller, sub-regional land and resource management plans were started, which continued to use a consensus-seeking approach. In 2006, government announced its *New Direction for Strategic Land Use Planning in B.C.* In this new direction, there is no commitment to review these plans on a timely basis. Government noted that the cost of creating, implementing and monitoring these plans was prohibitive.

KEY FINDINGS AND RECOMMENDATIONS

DO: We expected MoE and MFLNRO to carry out activities to manage grizzly bears

Many of these land use plans have objectives for maintaining grizzly bear habitat. We found that as of 2013, over half of these plans have not been monitored or evaluated and there has been no comprehensive evaluation as to what degree government is attaining the grizzly bear objectives within them. In addition, most of the land use plans were created prior to 2002 and may not reflect new information on identified, high-quality grizzly bear habitat, or the changing needs of wildlife in general. For example, the unforeseen events, such as the extensive salvage logging associated with the mountain pine beetle infestation many not have been considered.

ii) Forest stewardship plans

Forest practices can have significant impacts on grizzly bear habitat. On one hand, cutting trees opens the canopy for better berry and forage production. However, cutting trees followed by extensive site preparation and soil disturbance by heavy machinery can reduce berry productivity. In addition, replanting trees can cause the tree canopy to close in a much shorter time frame than what would occur naturally, resulting in a more sudden loss of berry production.

Under the *Forest and Range Practices Act*, forest licensees must submit a forest stewardship plan (FSP). An FSP must specify results or strategies for how a forest agreement holder will meet the objectives set by government for wildlife, and in some cases specifically, grizzly bears. In doing so, agreement holders may refer to land use plans. However, as noted above, much of the land use planning is dated.

We expected MFLNRO to be monitoring and evaluating forest stewardship plans to ensure that the plans were effective in protecting grizzly bear habitat. The Forest Resource Evaluation Program (FREP) within MFLNRO is responsible for this task. However, FREP has not provided an overall evaluation as to whether the FSPs have been effective in achieving their objective of protecting wildlife, and specifically, grizzly bears (which the program lists as a high priority).

In addition to MFLNRO not evaluating FSPs, it has also not evaluated its guidance to foresters. In 2004, a guidance document for managing grizzly bears (*Accounts and Measures for Managing Identified Wildlife*) was created for government planners, foresters and wildlife managers. These are the goals for grizzly bears, stated in the document:

- ◆ Protect known areas of concentrated seasonal use by Grizzly Bears.
- ◆ Maintain the ecological integrity of important seasonal habitats.
- ◆ Ensure the security of the bears using these habitats

There are a number of recommendations in the document on how to achieve these goals. However, the document has not been updated, nor has MFLNRO evaluated whether or not the recommendations have been implemented.

This means there is a risk of inadequate direction and oversight provided by MFLNRO to the forest industry to ensure that habitat for grizzly bears is protected—both now and in the future.

KEY FINDINGS AND RECOMMENDATIONS

DO: We expected MoE and MFLNRO to carry out activities to manage grizzly bears

iii) Proposed *Natural Resource Roads Act*

Roads can displace grizzly bears from their preferred habitats and can increase direct mortality from hunters and poachers. Roads also tend to foster greater human access, and human proximity to grizzly bears increases chances for human/bear conflict. In these situations, bears may have to be destroyed.

This risk to grizzly bears is increasing every year. According to the Forest Practices Board's 2015 report, *Access Management and Resource Roads: 2015 update*, there are over 600,000 km of resource roads in B.C. that are growing by on the order of 10,000 km per year.

We found that government has undertaken few mitigation measures to address resource roads. Government has been working on the development of a *Natural Resource Roads Act* since 2011, but two years ago, removed access management planning from the draft in favour of "resolving access management conflict." It is not clear how government will resolve conflict when there is no overall plan for resources roads.

Lowering densities of roads can be achieved through such tools as government issued orders under the Government Actions Regulation of the *Forest and Range Practices Act*. However, even this tool may not be effective (see [Appendix E: Case Study of the Kettle-Granby](#)).

iv) MoE's oversight of the Oil and Gas Commission

Seismic lines are linear clearings of forests that are used for oil and gas exploration. There are approximately 223,000 km of seismic lines in B.C. (see [Exhibit 18](#)).

Like roads, seismic lines can also create risks to grizzly bears and their habitat. In the northeast of the province where seismic lines are predominant, grizzly bear density is naturally low due to the poor quality of habitat. This means the loss of even a few bears can have significant ramifications to this area.

As previously noted, we did not include the Oil and Gas Commission (OGC) under the Ministry of Natural Gas Development in our audit scope. However, we did note that MoE, under the *Oil and Gas Activities Act*, has the power to order an independent audit of the performance of the OGC to ensure the protection and effective management of the environment. To date, MoE has not carried out an independent audit of the OGC, nor are staff clear as to how such an audit would be triggered.

v) Environmental assessment certificates

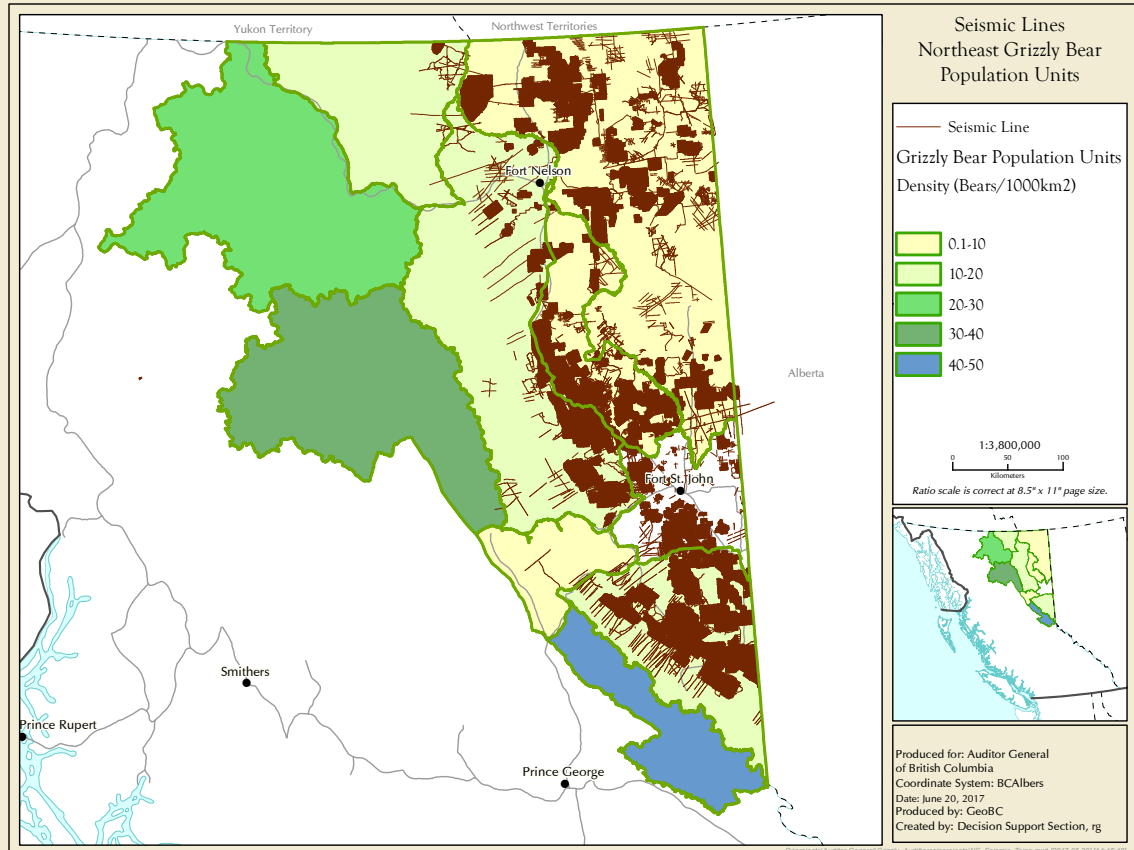
The Environmental Assessment Office (EAO) assesses major projects for potential environmental, economic, social, heritage and health effects. An environmental assessment certificate sets out the conditions that industry must adhere to in order to mitigate its impact. We examined a sample of these certificates that have conditions related to reducing grizzly bear mortality,

KEY FINDINGS AND RECOMMENDATIONS

DO: We expected MoE and MFLNRO to carry out activities to manage grizzly bears

Exhibit 18: Seismic lines in B.C.

Grizzly bear density by GBPU in the northeast of B.C. with seismic lines



Source: GeoBC

Photo of seismic lines in the Fort Nelson Forest District



Source: Ministry of Forests Lands and Natural Resource Operations

KEY FINDINGS AND RECOMMENDATIONS

DO: We expected MoE and MFLNRO to carry out activities to manage grizzly bears

as well as mitigating impacts to grizzly bear habitat. We found that while there was adequate compliance and enforcement of the certificate conditions, EAO had not evaluated whether the conditions were effective in mitigating impacts to grizzly bears. Although, EAO has recently put in place a requirement for qualified professionals to monitor effects to ensure mitigation measures are meeting the intended outcomes.

vi) Draft Cumulative Effects Assessment Protocol for Grizzly Bear in British Columbia

Across the province, there are multiple industries that can have impacts on grizzly bears and their habitat. A single activity might not be significant, but the cumulative effects of multiple activities could be. In 2014, government initiated a cumulative effects framework that was to identify potential concerns. In the first phase of the project, government identified grizzly bears as a priority species that would have an assessment procedure or protocol to guide decision makers in evaluating the cumulative effects on the species. Although this protocol for grizzly bears is still in draft, we concluded that it had been developed enough to be evaluated.

We found that the *Cumulative Effects Framework: Assessment Protocol for Grizzly Bear in British Columbia – Draft, January 2017*, compiles known information on grizzly bears and their habitat. However, there is little direction to decision-makers on how to evaluate activities within threatened grizzly bear population units—other than to say that government will develop a process to confirm management direction.

We also found that this protocol neither accounts for uncertainty in the data, nor identifies the need for a precautionary approach in the decision-making process when data is limited. We also noted that the testing of the protocol (validation) to ensure that it is meeting its objectives is based on inventory and monitoring, but the ministries do not have an inventory strategy and currently conduct limited inventory and monitoring.

RECOMMENDATION 7: *We recommend that the Ministry of Forests, Lands and Natural Resource Operations and the Ministry of Environment evaluate and adjust as needed the tools used to mitigate industries' impacts on grizzly bear habitat.*

Conserving habitat

Key tools that conserve grizzly bear habitat have not been evaluated for their effectiveness

Providing secure and connected habitat for grizzly bears is critical for conservation of the populations. We examined key tools available within MoE and MFLRNO for conserving and connecting grizzly bear habitat. They included:

- i) Wildlife Habitat Areas
- ii) Grizzly Bear Management Areas
- iii) BC Parks and Protected Areas
- iv) Great Bear Rainforest Agreement

KEY FINDINGS AND RECOMMENDATIONS

DO: We expected MoE and MFLNRO to carry out activities to manage grizzly bears

i) Wildlife Habitat Areas

Under the *Forest and Range Practices Act* and the *Oil and Gas Activities Act*, government has identified grizzly bears as a species at risk from impacts of forest, range, oil or gas activities, and therefore, requires additional protection. It should be noted that the provincial government's use of the term *species at risk* is **not** in relation to the federal *Species at Risk Act*.

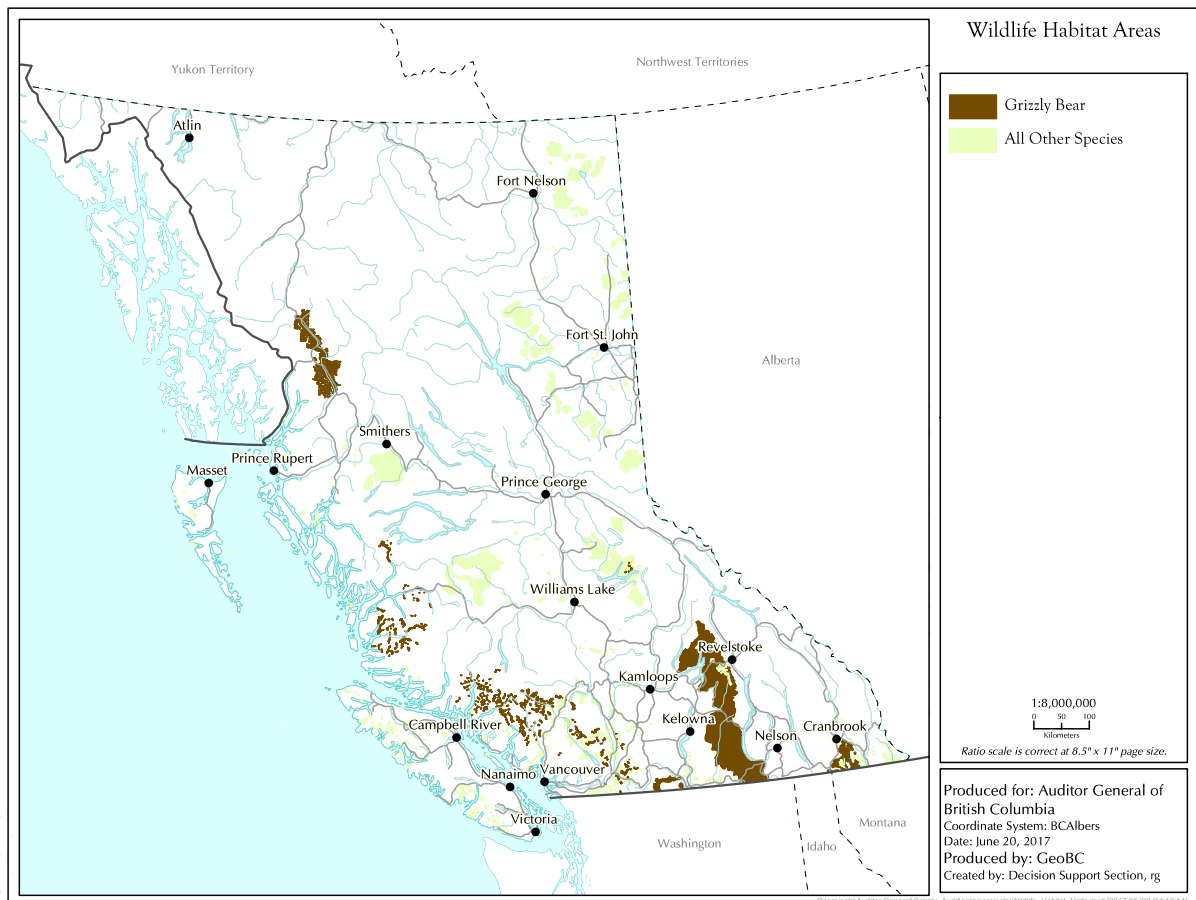
One of the tools that government uses to provide this additional protection are Wildlife Habitat Areas (WHA). WHAs are designated as critical habitats and

are generally small in size. Industrial activities, such as forestry and oil and gas are managed to limit their impact on the Identified Wildlife element for which the area was established.

There are 1,991 WHAs in B.C., of which 737 (37%) are designated as critical grizzly bear habitat (see Exhibit 19).

Government has not evaluated whether WHAs are achieving their objective. However, the Forest and Range Evaluation Program is currently developing and

Exhibit 19: Grizzly Bear Wildlife Habitat Areas



Source: GeoBC

KEY FINDINGS AND RECOMMENDATIONS

DO: We expected MoE and MFLNRO to carry out activities to manage grizzly bears

testing an approach to monitoring the condition and effectiveness of WHAs. This development and testing has taken a significant amount of time. During our 2012 audit on biodiversity, we found that the Forest and Range Evaluation Program was working on this evaluation - yet five years later, it still has not been implemented.

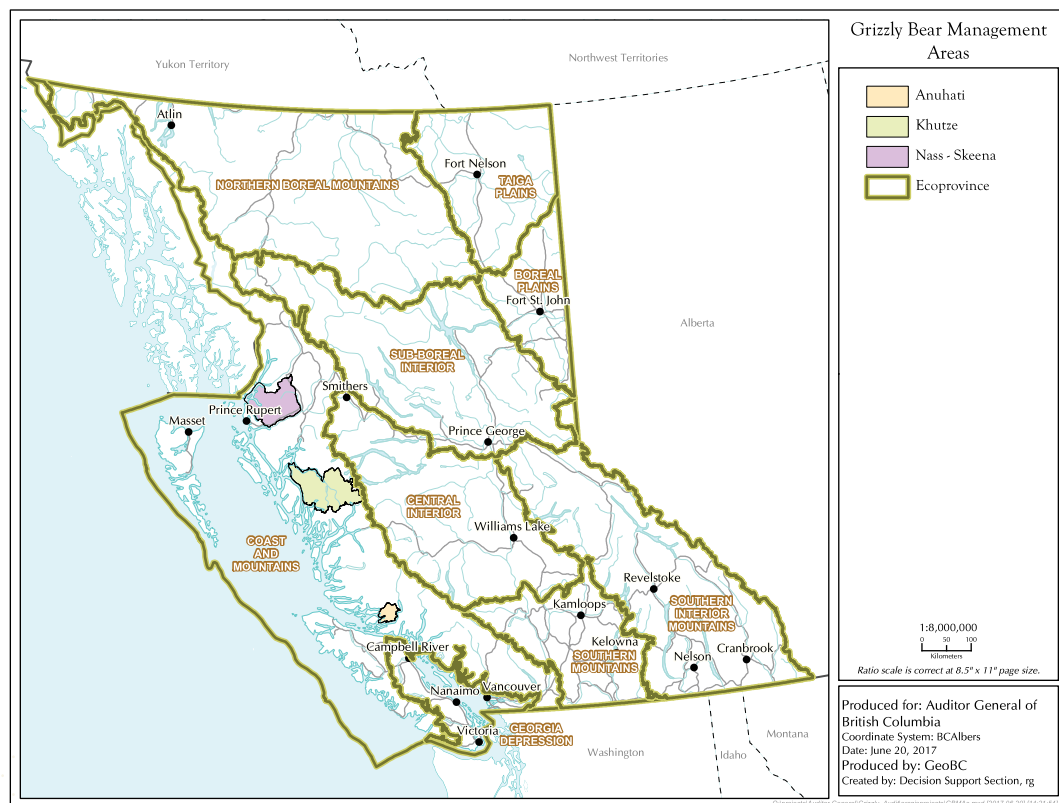
ii) Grizzly Bear Management Areas

According to the Grizzly Bear Conservation Strategy, government was to create a provincial network of Grizzly Bear Management Areas, with one large area in seven of B.C.'s eco-provinces (an area where the climate and geography are similar).

These management areas were to contain high-quality habitat, be closed to grizzly bear hunting, have controlled recreational use, and where possible, be connected by linking corridors.

However, government created a more limited version of what was anticipated. This new version has only one restriction—no hunting. And, the areas are not linked. They were even renamed to reflect the limited application and are now called Grizzly Bear No Hunting Areas. There are three of these areas in B.C., and are limited to one eco-province – Coast and Mountains (see Exhibit 20).

Exhibit 20: Grizzly Bear Management Areas and eco-provinces



Source: GeoBC

KEY FINDINGS AND RECOMMENDATIONS

DO: We expected MoE and MFLNRO to carry out activities to manage grizzly bears

Government is not taking full advantage of this tool, and therefore, is not providing the connected areas of refuge within high-quality habitat that were envisioned by the Grizzly Bear Conservation Strategy for maintaining grizzly bear populations.

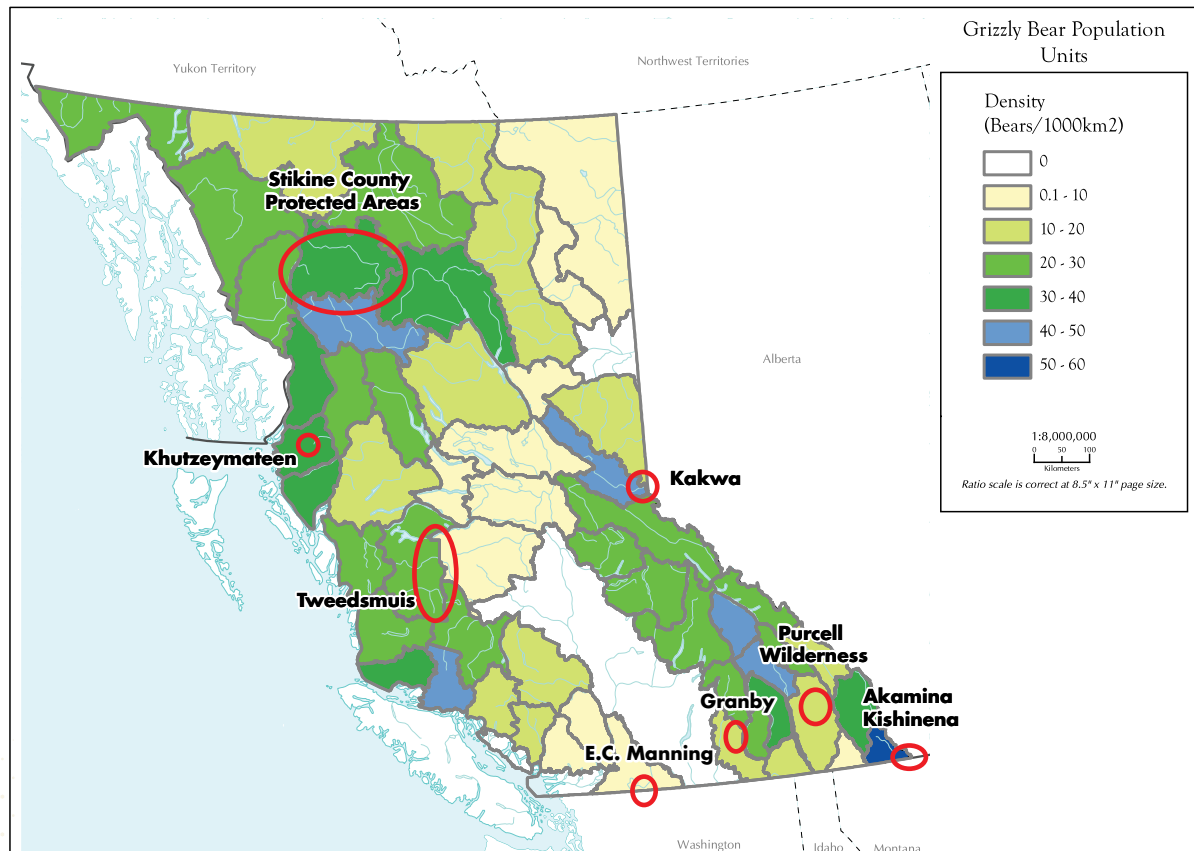
iii) BC Parks and protected areas

While most BC Parks and protected areas are not specifically designed to provide areas of refuge for grizzly bears, they do overlap with grizzly bear habitat and are an important part of grizzly bear conservation planning. We looked at eight parks that either had high grizzly bear density, and therefore, likely high-

quality habitat, or because they were located within a threatened GBPU (see Exhibit 21).

We found that each of these parks had developed park plans with commitments for monitoring and inventorying wildlife populations. And in some of the parks, the plans specifically noted the need for inventory and monitoring of grizzly bears. However, there have only been a few cases where this has occurred. BC Parks staff noted that they defer to MFLNRO for grizzly bear inventory and monitoring, as BC Parks does not have the budget to carry out this work.

Exhibit 21: General locations of sampled BC Parks



Source: Adapted GeoBC, adapted by the Office of the Auditor General of British Columbia

KEY FINDINGS AND RECOMMENDATIONS

DO: We expected MoE and MFLNRO to carry out activities to manage grizzly bears

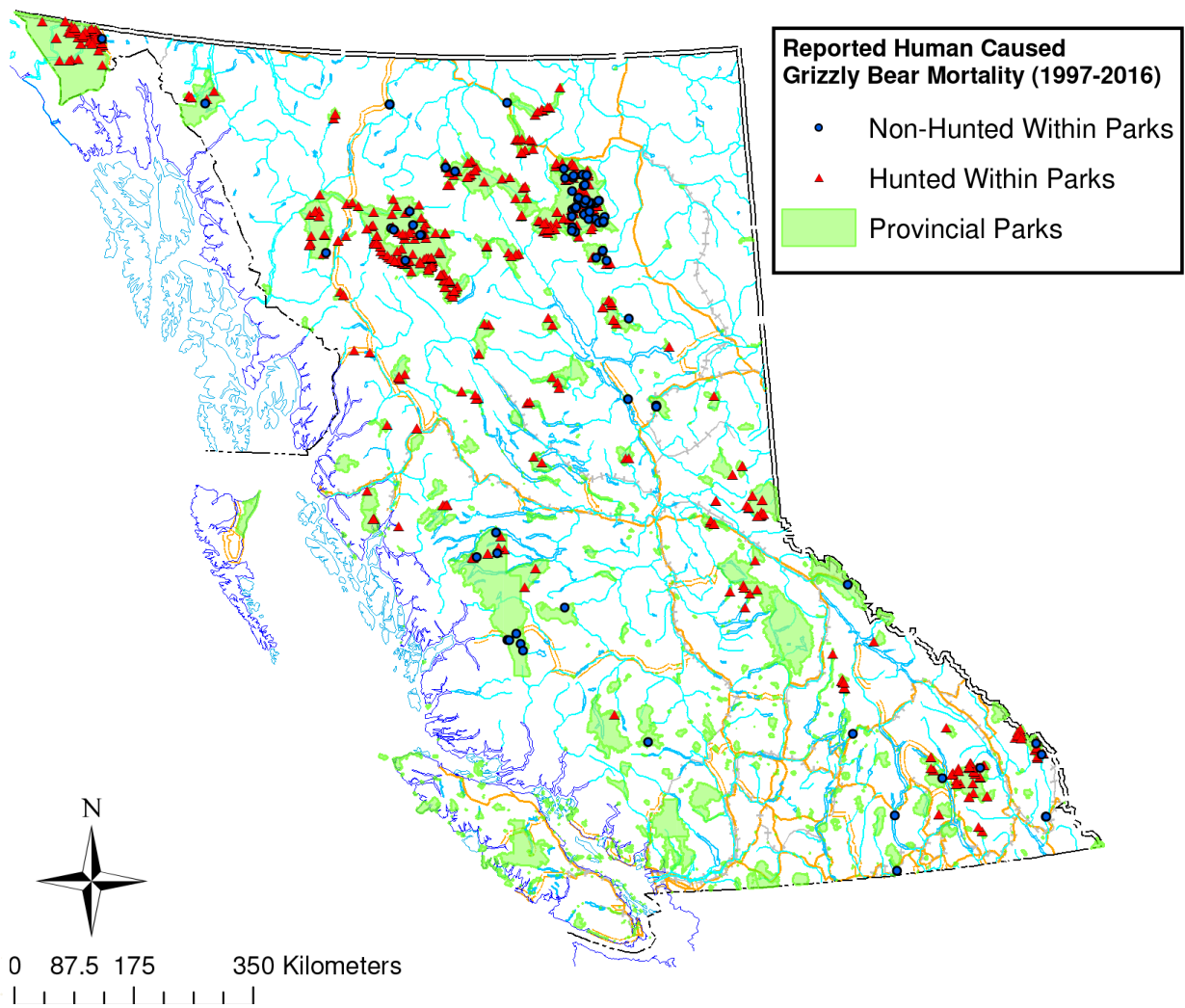
MFLNRO sets the hunting allocations within BC Parks boundaries. From 2004 to 2016, there have been 347 grizzly bears killed in BC Parks. 84% of these mortalities were from hunting (see Exhibit 22).

Despite both BC Parks and MFLNRO having a policy of setting harvest levels that are more conservative than areas adjacent to provincial parks, neither agency

could indicate how it calculated a more conservative estimate for grizzly bears.

Better connectivity of the parks system would create corridors for the extensive range that grizzly bears inhabit. In our 2010 Audit of BC Parks, we noted that BC Parks had limited influence over connectivity. BC Parks staff reiterated this when we interviewed

Exhibit 22: Human-caused grizzly bear mortality in BC Parks from 2004-2016



Source: Ministry of Forests Lands and Natural Resource Operations

KEY FINDINGS AND RECOMMENDATIONS

DO: We expected MoE and MFLNRO to carry out activities to manage grizzly bears

them for this audit. Government's announcement in November 2016 of its BC Parks Future Strategy does not include connectivity of the parks system (however, it does include an initiative to increase park visitors). Without a connectivity strategy, this increase could result in more human/bear conflicts—both within the park, and the surrounding areas.

That said, connectivity of the parks system will not address critical issues that exist in the smaller southern populations. In these areas, grizzly bear populations have the combined risk of elevated human-caused mortality (due to extensive human activities around them) and limited migration of grizzly bears from

neighbouring, larger populations. Limited migration will increase genetic inbreeding and reduce the resilience of the population. For these small, southern B.C. grizzly bear populations, wildlife corridors and safe transition areas through the valley bottoms will need to be put in place to allow these populations to connect.

Overall, there has been limited involvement by government staff and little funding for initiatives to address the lack of connectivity in B.C. Some private efforts to address fragmentation are underway, but government's participation in these initiatives has been limited (see sidebar).

The Yellowstone to Yukon Conservation

Initiative (also called Y2Y) is a joint Canada-U.S. not-for-profit organization that works to connect habitat from Yellowstone to Yukon. Many of Y2Y's projects are focussed at the umbrella species level (grizzly bear and caribou) with the assumption that protection for these species will benefit many other species and ecosystems.

The Coast to Cascades Grizzly Bear Initiative

is a local and regional coalition of non-profit organizations whose goal is to restore the five threatened grizzly bear populations in southwest B.C. and to connect grizzly bear habitat, while encouraging environmentally responsible development.

The Trans-border Grizzly Bear Project

is a joint partnership between American and Canadian scientists. It was formed to address the conservation issues of the South Selkirk and South Purcell-Yaak grizzly bear populations. The project includes enhancing connectivity and habitat quality, reducing human-bear conflicts and documenting the success of conservation efforts through rigorous scientific monitoring. Over the years, it has grown into a project with a larger goal to reconnect and secure habitat for the entire regional system of fragmented grizzly bears in the northern U.S. and southern Canada – from Missoula, Montana, up through Revelstoke, B.C.

KEY FINDINGS AND RECOMMENDATIONS

DO: We expected MoE and MFLNRO to carry out activities to manage grizzly bears

iv) Great Bear Rainforest Agreement

In February 2016, the B.C. government, in conjunction with local First Nations, environmental groups, and forest industry representatives, announced the Great Bear Rainforest Agreement

The Great Bear Rainforest is 6.4 million hectares along B.C.'s northern and central Pacific coastline (see Exhibit 23).

The Great Bear Rainforest Agreement involves an *ecosystem-based management* conservation approach and includes provisions to protect grizzly bear habitat.

We found that although the agreement is too new to gauge its effectiveness, it has the potential to be valuable in providing grizzly bear habitat conservation.

RECOMMENDATION 8: *We recommend that the Ministry of Forests, Lands and Natural Resource Operations and the Ministry of Environment evaluate and adjust as needed the tools used to conserve grizzly bear habitat.*

Exhibit 23: Great Bear Rainforest map



Source: [Government web site](#)

KEY FINDINGS AND RECOMMENDATIONS

CHECK: WE EXPECTED MOE AND MFLNRO TO EVALUATE THEIR ACTIVITIES TO ENSURE THEY ARE EFFECTIVE

We found that MoE and MFLNRO have not evaluated the effectiveness of most of their activities

Monitoring and evaluation are critical tools to track progress and facilitate decision-making. Evaluation should be systematic and include an unbiased

assessment of the activities, programs and policies that government has instituted to ensure it is meeting its objective of healthy grizzly bear populations. However, as noted in the previous sections, both MoE and MFLNRO have not evaluated the effectiveness of most activities and policies to mitigate impacts on grizzly bears and their habitat (see Exhibit 24).

Exhibit 24: Our assessment of MoE and MFLNRO's evaluation of key activities

Activities	Did government evaluate them for their effectiveness?		
	Yes	No	N/A
1. Monitoring and inventorying of populations and habitats			
a. Populations While there has been a number of evaluations completed on the hunt there has been no evaluation on the inventory and monitoring of populations or habitats. The Grizzly Bear Population Inventory & Monitoring Strategy for BC (2010) is no longer being used government.		X	
b. Habitats		X	
2. Managing human-related mortality			
a. Grizzly Bear Hunting MFLNRO has undertaken evaluations of grizzly bear hunting in 2003 and in 2016	X		
b. Reducing Illegal Activities The COS has not undertaken an evaluation to determine if they are reducing illegal activities		X	

KEY FINDINGS AND RECOMMENDATIONS

CHECK: We expected MoE and MFLNRO to evaluate their activities to ensure they are effective

Activities	Did government evaluate them for their effectiveness?		
	Yes	No	N/A
c. Reducing Grizzly Bear/Human Conflicts In the COS when a conflict incident occurs reports are reviewed and assessed. However the COS does not evaluate its public education program for its effectiveness.	X (Conflict Incident Reports)	X (Public Education Program)	
3. Recovering declining populations			
There has been only limited activities undertaken in threatened GBPU's and some evaluation to indicate that they are effective.		X	
4. Providing secure habitats			
Mitigating industry's impacts on grizzly bear habitat			
i. Land Use Plans Only a few land use plans have been evaluated for implementation. There is no indication of effectiveness		X	
ii. Forest Stewardship Plans FREP has not provided an overall evaluation as to the effectiveness of FSPs in achieving their objective of protecting wildlife		X	
iii. Environmental Assessment Certificates EAO does carry out compliance and enforcement of certificate conditions but there is no evaluation on whether certificate conditions are effective although recent certificates require a qualified professional to monitor for results		X	
iv. Draft Natural Resource Roads Act			N/A- in draft
v. Draft Cumulative Effects Framework Assessment Protocol			N/A- in draft

KEY FINDINGS AND RECOMMENDATIONS

CHECK: We expected MoE and MFLNRO to evaluate their activities to ensure they are effective

Activities	Did government evaluate them for their effectiveness?		
	Yes	No	N/A
vi. MoE's oversight of the Oil and Gas Commission			N/A - never been used
Conserving habitat			
i. Wildlife Habitat Areas The Forest and Range Evaluation Program has not evaluated WHAs for their effectiveness		X	
ii. Grizzly Bear Management Areas Grizzly Bear Management Areas have been replaced with the narrowly focused Grizzly Bear No Hunting Areas which have not been evaluated for their effectiveness		X	
iii. Parks and Protected Areas Of the parks we sampled which had grizzly bear objectives, many had not been evaluated for their effectiveness in meeting their objectives		X	

KEY FINDINGS AND RECOMMENDATIONS

ADJUST: WE EXPECTED THAT MOE AND MFLNRO WOULD ADJUST ITS GRIZZLY BEAR PROGRAM (CONTINUOUS IMPROVEMENT)

We found that overall MoE and MFLNRO do not have a process for reviewing and adjusting their grizzly bear activities

As noted above, government has evaluated very few of its activities. However, government has spent significant effort reviewing its policies and procedures on hunting.

In 2003 and again in 2016, government commissioned independent reviews of grizzly bear hunting in B.C. The 2003 review recommended the establishment of management objectives for bear populations (i.e., GBPU) using a formalized planning process. However, the 2016 review noted that some of the 2003 recommendations have not been implemented. In particular, government did not set management objectives for each Grizzly Bear Population Unit (GBPU).

Each GBPU is unique, and has its own challenges and needs different actions. Therefore, each GBPU needs to have its own prescribed objectives, along with an estimate on what population number or target government is working to achieve. Without this, it is very difficult for government to evaluate and adjust its activities to ensure grizzly bear populations throughout B.C. are being maintained.

We expected MoE and MFLNRO to adjust their grizzly bear planning based on their evaluations. However, neither the Grizzly Bear Conservation Strategy nor the Wildlife Program Plan have been adjusted for several years and government has not indicated how it intends to implement the recommendations from the 2016 review of hunting. We found the main reason is that neither MoE nor MFLNRO have a formal process for improving grizzly bear management in B.C. This is of concern, given the amount of change that is happening on provincial Crown lands.

KEY FINDINGS AND RECOMMENDATIONS

REPORT: WE EXPECTED MOE AND MFLNRO TO REPORT TO THE PUBLIC AND LEGISLATORS ON THEIR MANAGEMENT OF GRIZZLY BEARS

We found that MoE and MFLNRO are not being transparent about their management of grizzly bears

Performance reporting supports government's core values of transparency, accountability and fiscal responsibility. Both MoE and MFLNRO have committed to transparency in reporting on wildlife management. MFLNRO's Wildlife Program Plan acknowledges the need for decisions to be made in a structured and transparent manner. MoE's Service Plan calls for information used to manage species and ecosystems to be publicly available.

We found that government is publicly reporting on grizzly bear populations and mortalities for each GBPU via its website, in peer reviewed scientific journals and through some First Nations consultation.

MoE's website has detailed information that describes the area of useable habitat, the estimated density and the percentage of roads. What it doesn't describe, is the level of confidence as to the accuracy of these estimates. For example, if the confidence in the estimates is low, government should be taking a more precautionary approach with activities that impact grizzly bears or their habitat.

There is no clear indication as to when the website information will be updated. The population information is from 2012, and although there is some discussion at MFLNRO on updating the estimate, there is no policy requirement to do so.

We also found that government's website contains information that is incomplete, including the following:

MoE website	OAG assessment
<i>A plan of action was created to focus recovery efforts on the North Cascades population.</i>	The website does not indicate that, although a plan was created, it has never been implemented.
Currently, 11 grizzly bear populations are designated as "threatened."	The website does not mention that the term threatened invokes only limited recovery actions, such as closing the hunt.
Get an overview of the planning and funding used for grizzly bear population inventory and monitoring across the province: [see the] Grizzly Bear Population Inventory & Monitoring Strategy for B.C.	The website does not state that ministry staff no longer use this inventory and monitoring strategy and it does not state that there is no specific funding attached to the strategy.

KEY FINDINGS AND RECOMMENDATIONS

REPORT: We expected MoE and MFLNRO to report to the public and legislators on their management of grizzly bears

Overall, we found that even though there is transparency of information regarding grizzly bears, there is little information about management activities and performance measures.

RECOMMENDATION 9: *We recommend that the Ministry of Forests, Lands and Natural Resource Operations and the Ministry of Environment report out to the public and legislators on how well they are managing grizzly bear populations throughout British Columbia.*

WHY IS THE IMPLEMENTATION OF A GRIZZLY BEAR PROGRAM NOT WORKING?

WE CONCLUDED THAT for most of the aspects of the plan-do-check-adjust cycle of grizzly bear program, government either did not meet our expectations, or its efforts were limited. We found that the underlying cause is an unclear organizational structure and unclear accountabilities.

In 2011, government created the Ministry of Forests Lands and Natural Resource Operations (MFLNRO). Most of the responsibilities under the *Wildlife Act* moved from the Ministry of Environment (MoE) to MFLNRO. And, the *Ministry of Environment Act* was divided between these two ministries (see [Appendix F](#) that shows the breakdown of responsibility).

Under the *Ministry of Environment Act*, MoE retains the sole responsibility “**to manage, protect and conserve** all water, land, air, plant life and animal life...” However, under the *Wildlife Act*, MFLNRO has the authority to manage wildlife. The result is that the two ministries have overlapping roles and responsibilities. MFLNRO has most of the authority to make decisions that impact grizzly bear populations and habitat, leaving MoE with limited powers to carry out its mandate to manage and protect. This creates a tension between the two ministries that has not been resolved.

Government has noted in a number of its own reviews that this is an issue (see [Exhibit 25](#)).

Not only have these government-commissioned reports called for legislative and policy review, MoE and MFLNRO have also recognized the need to review and modernize the existing regulatory framework for wildlife management (see sidebar).

Objective of the Wildlife Program Plan:

Evaluate and modernize the existing regulatory framework for wildlife management

Ministry of Forests, Lands and Natural Resource Operations 2016/17 – 2018/19 Service Plan:

- ♦ Goal 2: Coordinated, sustainable management of B.C.’s natural resources.
- ♦ Objective 2.1: Sustainable natural resource management through effective policy, legislation and external relationships.
- ♦ Strategies: Work in partnership with other natural resource ministries to renew natural resource policies that recognize requirements for resilient ecosystems and species.

WHY IS THE IMPLEMENTATION OF A GRIZZLY BEAR PROGRAM NOT WORKING?

Our office also recognized the need for such a review in our 2013 report, *An Audit of Biodiversity in B.C.* Our recommendation was for government to review its legislative framework to ensure that any significant gaps, inconsistencies or barriers to achieving conservation of biodiversity are identified. To date, this recommendation has not been completed. In the absence of clear roles and responsibilities, it is unclear how grizzly bear management – and more broadly, wildlife management – will be achieved.

MoE's mission is “**to provide leadership** in ensuring our natural legacy for future generations and to support positive economic outcomes for British Columbia.” However, we found the lack of clarity in

relation to roles and responsibilities within MoE and MFLNRO did not allow MoE to fulfill this leadership role. Changes are required if MoE is to provide the leadership that government has directed it to provide.

RECOMMENDATION 10:

We recommend that government review the legislation, policies and accountabilities for wildlife management and ensure that roles, responsibilities and accountabilities allow the Ministry of Forests, Lands and Natural Resource Operations and the Ministry of Environment to be fully effective in delivering on grizzly bear management.

Exhibit 25: Recommendations for legislative and policy review

Year	Organization/report	Recommendation
2011	Report of the B.C. Task Force on Species at Risk ~Commissioned by the Government of British Columbia to advise Cabinet	<i>Fragmented Accountability: Review the components of existing legislation dealing with the province's natural capital to determine the effectiveness of existing legislation in dealing with the species and ecosystem challenges noted in this report, and identify any gaps that might exist.</i>
2015	Getting the Balance Right: Improving Wildlife Habitat Management in British Columbia ~ Strategic Advice to the Minister of Forests, Lands and Natural Resource Operations by Mike Morris, Parliamentary Secretary to the Minister of Forest	<i>Undertake a comprehensive review of all resource statutes with a view to consolidation where it is determined to add value and benefit.</i>
2016	A Strategy to Help Restore Moose Populations in British Columbia ~Prepared for MFLNRO by R.A (Al) Gorley, RPF, Triangle Resources Incorporated	<i>Although this report is focused on the immediate matter of moose, it could be a first step toward more holistic change. ... the province's ability to proactively manage for greater moose abundance is seriously constrained by some aspects of the legislation governing other resources.... any sustainable effort to restore and maintain moose numbers will have to occur in conjunction with changes to public policy.</i>

Source: Compiled by the Office of the Auditor General of British Columbia

APPENDIX A:

CRITERIA (EXPECTATIONS) FOR CONDUCTING THE AUDIT

1. Plan – Government has an effective plan to ensure healthy grizzly bear populations in B.C.

1.1 We expect MoE and MFLNRO to have a grizzly bear management plan based on current and relevant data.

1.2 MoE and MFLNRO have identified risks to grizzly bear management and incorporated them into the management plan.

1.3 The plan has specific goals, objectives and timelines.

1.4 The plan is coordinated between MoE and MFLNRO.

1.5 The plan includes the resources, expertise and tools to deliver on planned objectives.

1.6 The plan includes stakeholder input.

2. Do – MoE and MFLNRO's activities are ensuring healthy grizzly bear populations in B.C.

2.1 MoE and MFLNRO have the resources to carry out planned activities.

2.2 MoE and MFLNRO have the expertise to carry out planned activities.

2.3 MoE and MFLNRO have effective tools to carry out planned activities.

2.4 MoE and MFLNRO are carrying out activities to ensure they have appropriate habitat capability information for Grizzly Bear habitats

2.5 MoE and MFLNRO are carrying out activities to ensure they have complete, accurate and appropriate data for grizzly bear populations.

2.6 MoE and MFLNRO have an effective grizzly bear education program.

2.7 MoE and MFLNRO are carrying out activities to

reduce the likelihood of bear/human conflicts.

2.8 MoE and MFLNRO's activities are recovering grizzly bear in threatened Grizzly Bear Population Units.

2.9 MoE and MFLNRO activities are conserving critical grizzly bear habitat.

2.10 MFLNRO activities are ensuring that the grizzly bear harvest is sustainable.

2.11 MoE and MFLNRO's activities are reducing illegal activities.

2.12 MoE and MFLNRO are regulating grizzly bear viewing.

2.13 MoE and MFLNRO are undertaking research to better their understanding of grizzly bear management.

3. Check – MoE and MFLNRO are continuously improving the management of grizzly bears.

3.1 MoE and MFLNRO evaluate the effectiveness of their activities.

4. Adjust – Government would adjust ineffective actions and revisit planning if needed.

4.1 MoE and MFLNRO implement recommendations for improvement on a timely basis

5. Reporting - MoE and MFLNRO are reporting to the public, legislators and key stakeholders on the effectiveness of their management activities of grizzly bears.

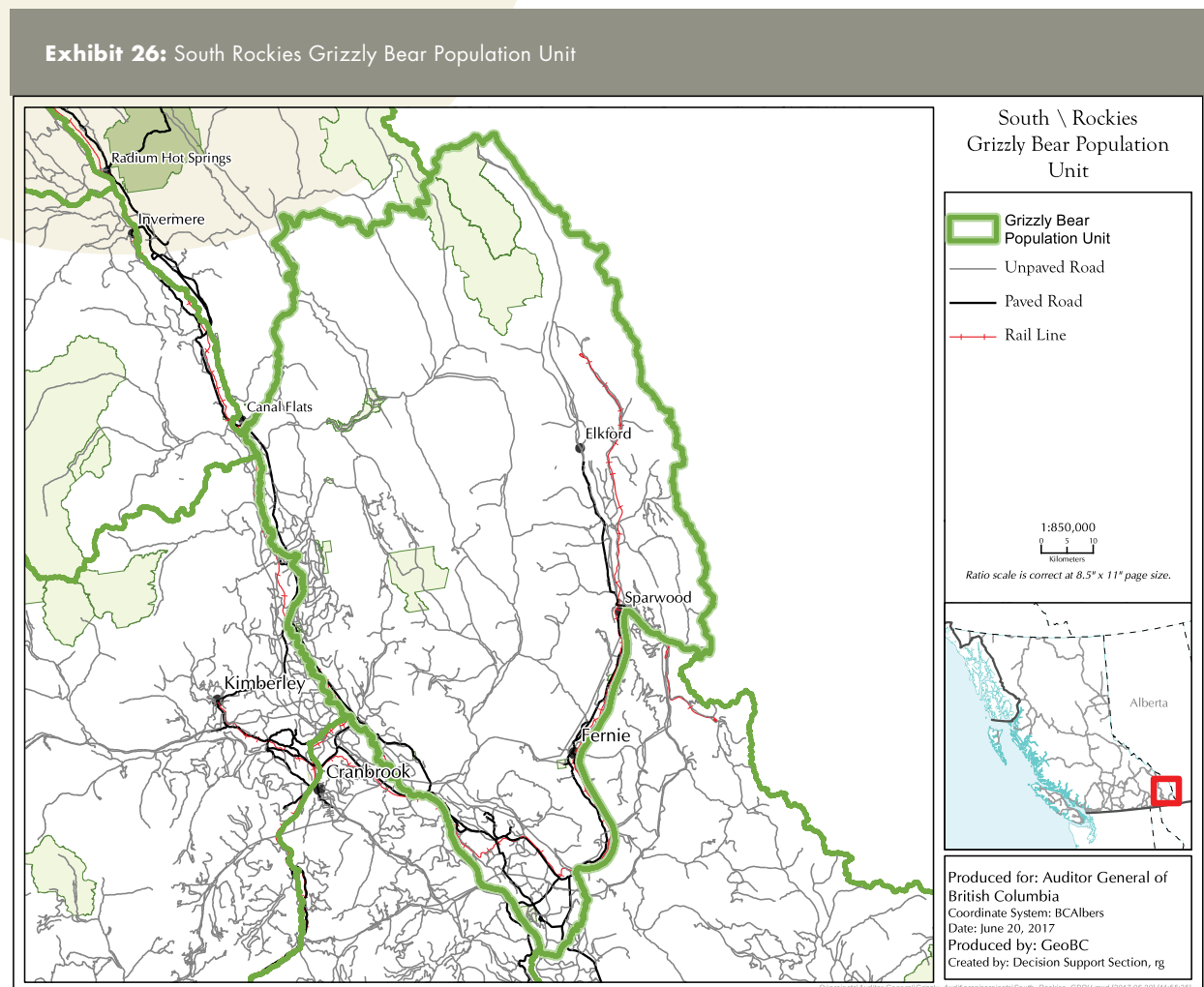
5.1 MoE and MFLNRO are reporting on grizzly bear management to legislators

APPENDIX B: CASE STUDY OF THE SOUTH ROCKIES - CHALLENGES IN POPULATION ESTIMATES

THE SOUTH ROCKIES Grizzly Bear Population Unit is in southeastern B.C. (see Exhibit 26).

B.C.'s southeast is one of the areas of highest risk to grizzly bears, due to industrial activity, hunting interest, the CP railway, Highway 3 and associated settlements. It is also one of the more intensively inventoried areas and one of the few areas that has been targeted for population monitoring because of

the risk of excessive human-caused bear mortality. However, even with this intense scrutiny, and even after reaching a high density of bears, the population declined by 40 – 50% (8% per year) between 2006 and 2013.



Source: GeoBC

APPENDIX B

What went wrong? In a recent analysis, scientists found the following:

- ♦ wildlife managers' expert opinion for population density did not detect the decline
- ♦ an unrecognized reduction in food during a series of summers where it was unusually dry may have occurred, although no data on foods were collected
- ♦ an unrecognized, non-hunting, human-caused mortality in this unit was likely high and may not have been accounted for

It is unclear as to the ramifications of this decline, but it has been noted that the Flathead Grizzly Bear Population Unit, immediately south of the South Rockies, experienced a similar decline, but is increasing again.

APPENDIX C:

CASE STUDY OF BELLA COOLA - HUMAN-BEAR CONFLICTS

LOCATED ON THE central coast of B.C., the Bella Coola valley encompasses the settlements of Bella Coola proper (townsite), Lower Bella Coola, Hagensborg, Saloompt, Nusatsum, Firvale, Stuie and Q'umk'uts' (a Nuxalk community).

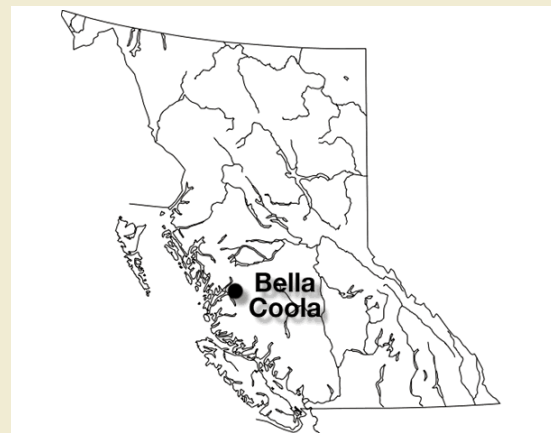
The situation in the Bella Coola valley is unique because the communities are situated in high-quality grizzly bear habitat. The bears are drawn to the spawning salmon, as well as the fruit trees in people's yards (see Exhibit 27).

This creates a high likelihood for human-bear conflict. According to the Conservation Officer Service (COS) grizzly bear conflict statistics, Bella Coola has had, for most of the years from 2003 to 2016, one of the highest incidence rates of reported grizzly bear conflicts in B.C. Despite this, in 2007, the COS removed the full-time Bella Coola Conservation

Officer, and replaced that position in 2016 with a BC Parks Ranger who is also trained as a Conservation Officer.

From 2008 to 2016, calls for grizzly bear conflicts were addressed by Conservation Officers in Williams Lake—a distance of over 450 km and a driving time of five hours. Due to the lengthy response time, anecdotal reports indicated that citizens in Bella Coola addressed problems with grizzly bears themselves, and that a number of grizzly bears were shot and these killings went unreported.

Exhibit 27: Bella Coola aerial photo and map



Source: [Ministry of Environment Lands and Parks](#)

APPENDIX C

The extent of impact these conflicts have had on the grizzly bear population is unknown, as there are very few studies of grizzly bears in the area.

Government has made limited progress in addressing the risk and impacts of human-bear conflict in the Bella Coola Valley. The staff member, whose duties are split between BC Parks Ranger and Conservation Officer, must still rely on other Conservation Officers in Williams Lake for support when responding to a grizzly bear call. This double duty leaves little time for preventative measures, such as education. To fill in the gap, the Nuxalk Nation Stewardship Department has its own education program for the

Nuxalk community and has also donated money to the WildSafe BC program to help fund a part-time community coordinator. In addition, MoE and MFLNRO staff are involved in the Bella Coola Human-Bear Safety Committee, which provides advice and recommendations for increasing human safety through prevention and resolution of human-caused bear conflicts.

Grizzly bear and human conflict may continue to grow in Bella Coola as tourists are drawn to the area for bear viewing opportunities. This in turn puts further demands on both the need for education, proactive actions, and a strong CO presence.

APPENDIX D: CASE STUDY OF THE NORTH CASCADES - GRIZZLY BEAR RECOVERY PLANNING

THE NORTH CASCADES Grizzly Bear Population Unit (GBPU) is in southwestern B.C. and extends into the State of Washington (see Exhibit 28).

Government prepared a North Cascades recovery plan in 2001 that was approved by the Minister of Environment in 2004. However, in 2006, a new minister rejected the implementation of the plan because the public was concerned about trans-locating additional bears into the area.

Government has not publicly disclosed that the plan is not being implemented, stating instead, “A plan of action was created to focus recovery efforts on the

North Cascades population—its small size and isolated location made it the **highest conservation priority.**”

In the Grizzly Bear Conservation Strategy, one of the goals is to increase international cooperation in management and research of grizzly bears. The intent was that the Government of British Columbia would “lead the way in international grizzly bear conservation.” However, in recent years, the United States, not Canada, has been leading recovery efforts in the North Cascades. Ministry of Environment staff have been involved in this effort through the Interagency Grizzly Bear Committee. But to date, government has made no commitments as to how it will work with its cross-border partners to assist them with recovery.

For the North Cascades population, it may be that recovery actions have been too little, too late. Since 2004, only one grizzly bear (an adult male) has been confirmed as still living in the B.C. portion, which could mean that this sub-population is locally extinct.

These southern periphery populations are critical for maintaining the current range of grizzly bears. They are the bottom end of a population range that once extended as far south as Mexico.

Exhibit 28: North Cascades Grizzly Bear Population Unit



Source: Adapted from the Ministry of Environment

APPENDIX E: CASE STUDY OF THE KETTLE-GRANBY - ROAD DENSITY IN GRIZZLY BEAR HABITAT

THE KETTLE-GRANBY GRIZZLY Bear Population Unit (GBPU) is in the middle, southern area of B.C. Due to low population estimates, it has been classified as one of the nine GBPUs that is threatened.

Government has established a number of protective measures in this area, including 14 Wildlife Habitat Areas (WHA). WHAs are designated as critical habitats, where industrial activities such as forestry and oil and gas activities, are limited.

Government also attempted to limit the road density in the area, as research had identified a link between road density and negative impacts on grizzly bear behaviour and bear mortality. Survival is affected in areas with road densities exceeding 0.6 km/km².

In 2010, government issued an order for forestry companies, stating that it was “necessary to protect and conserve grizzly bears” (Government Actions Regulation [GAR] Order 8-373). Although a draft of the order initially had a general wildlife measure on road density, it was not included in the final approved order. Instead, targets for road density and secure core area were included as non-legal recommendations in an appendix to the order (see [Exhibit 29](#)).

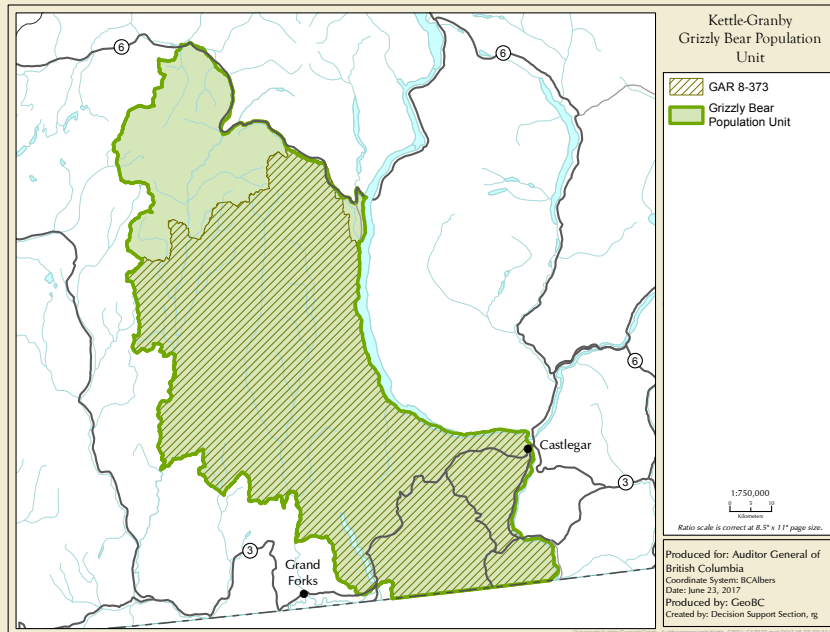
In 2017, the Forest Practices Board reported that these road density targets had not been met in a significant number of areas. They concluded that the GAR order was not effective in reducing road density—primarily because industry was not obligated to meet the targets, as they were not legally binding. The Board went on to state that government has not taken adequate action to address the road density situation in this area. They concluded that the grizzly bear population will likely remain at risk until government implements meaningful action to reduce road use and/or road density (see Forest Practices Board report [Forest Roads and Grizzly Bear Management in the Kettle-Granby Area, 2017](#)).

Their concerns were partially verified in 2015 when government scientists surveyed (counted) grizzly bears in the area and found that, even though the grizzly bear population had more than doubled from an estimated 38 bears in 1997 to 86 bears in 2015, bear density was lower in areas with road density exceeding 0.6 km/km² of road per square kilometer.

APPENDIX E

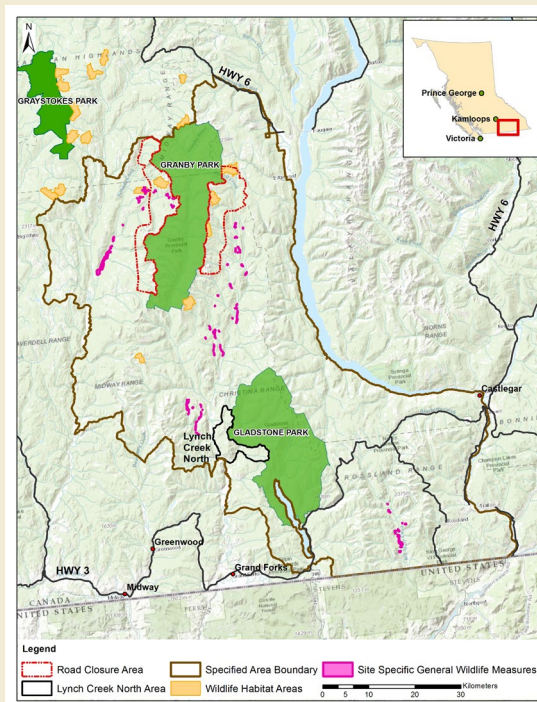
Exhibit 29: Kettle-Granby Grizzly Bear Government Actions Regulation Order 8-373

GAR order area within the GBPU



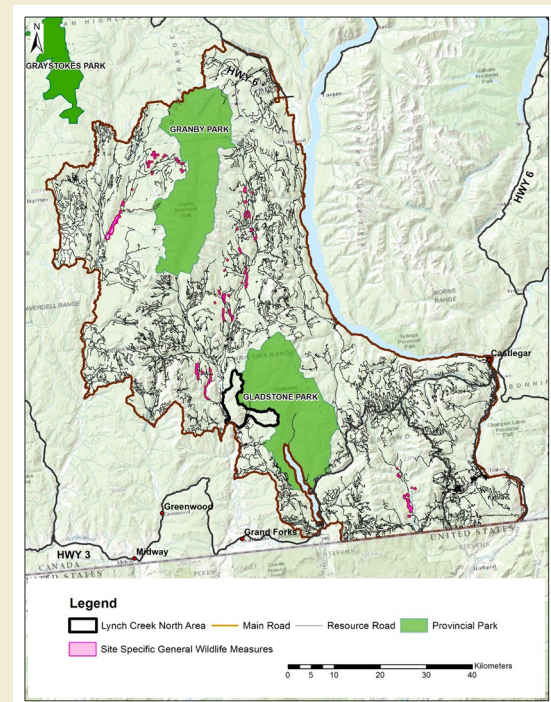
Source: GeoBC

Protected areas within the GAR order area



Source: Forest Practices Board

Existing roads within the GAR order area



Source: Forest Practices Board

APPENDIX F:

RESPONSIBILITIES IN THE MINISTRY OF ENVIRONMENT ACT

Section of the Act	Ministry responsible
4 Purposes and functions of the ministry	
(1) The purposes and functions of the ministry are, under the direction of the minister, to administer matters relating to the environment.	
(2) Without limiting subsection (1), the purposes and functions of the ministry include the following:	MoE
(a) to encourage and maintain an optimum quality environment through specific objectives for the management and protection of land, water, air and living resources in British Columbia	
(b) to undertake inventories and to plan for and assist in planning, as required, for the effective management, protection and conservation of all water, land, air, plant life and animal life	MoE and FLRNRO
(c) to manage, protect and conserve all water, land, air, plant life and animal life, having regard to the economic and social benefits they may confer on British Columbia	MoE
(d) to set standards for, collect, store, retrieve, analyze and make available environmental data	MFLNRO
(e) to monitor environmental conditions of specific developments and to assess and report to the minister on general environmental conditions in British Columbia	MoE and MFLNRO
(f) to undertake, commission and coordinate environmental studies	MoE and MFLNRO
(g) to develop and sustain public information and education programs to enhance public appreciation of the environment	MoE and MFLNRO
(h) to plan for, design, construct, operate and maintain structures necessary for the administration of this Act or for another purpose or function assigned by the Lieutenant Governor in Council	MoE

Source: Office of the Auditor General of British Columbia, based on information from the Ministry of Environment and the Ministry of Forests, Lands and Natural Resource Operations, and the [Ministry of Environment Act](#).



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