

SUBMISSION TO THE COAL POLICY COMMITTEE

COAL DEVELOPMENT PUTS ALBERTA'S NATURAL VALUES AT RISK: A CONSERVATION AND POLICY ANALYSIS

PREPARED BY



TABLE OF CONTENTS

ACKNOWLEDGEMENTS	3
EXECUTIVE SUMMARY	4
INTRODUCTION	7
ORGANIZATION INTRODUCTION	8
CANADIAN PARKS AND WILDERNESS SOCIETY (CPAWS)	8
YELLOWSTONE TO YUKON CONSERVATION INITIATIVE (Y2Y)	9
CHALLENGES WITH CURRENT POLICIES	9
ORIGINAL COAL POLICY (1976)	10
LAND USE FRAMEWORK	11
REGIONAL PLANNING IS INCOMPLETE	11
SUBREGIONAL PLANS ARE INCOMPLETE	12
GAPS IN REGULATION	13
APPROVALS AND ENFORCEMENT OF ENVIRONMENTAL POLICY	13
PUBLIC CONSULTATION	14
CONSERVATION VALUES	15
WATER	15
WATER QUANTITY	16
WATER QUALITY	17
SPECIES AT RISK	19
NATIVE TROUT	19
WHITEBARK AND LIMBER PINES	22
GRIZZLY BEAR	23
CARIBOU	24
MOUNTAIN AND BIGHORN SHEEP	26
LANDSCAPE ECOLOGICAL INTEGRITY	26
ENVIRONMENTALLY SIGNIFICANT AREAS	26
LANDSCAPE CONNECTIVITY	27
FESCUE GRASSLANDS	29
BIODIVERSITY	30
OTHER LAND-USES AND CUMULATIVE EFFECTS	30

CLIMATE RESILIENCE AND CHANGE	31
CLIMATE RESILIENCE	31
CLIMATE CHANGE	32
IMPACTS TO ALBERTA ECONOMIES AND QUALITY OF LIFE	33
THE POTENTIAL TO UNDERMINE EXISTING, MORE LONG-TERM SUSTAINABLE, ECONOMIES	34
EMERGING ECONOMIES	35
THE FUTURE OF FOSSIL FUELS	36
FINANCIAL LIABILITIES	37
QUALITY OF LIFE	38
ECOSYSTEM SERVICES: THE BENEFITS PEOPLE GET FROM NATURE	39
TREATY RIGHTS AND INDIGENOUS PEOPLES	45
THERE IS NO PLACE FOR COAL ON ALBERTA'S EASTERN SLOPES	45
CONCLUSION	48
REFERENCES	50
APPENDIX 1: ALL FIGURES	56

ACKNOWLEDGEMENTS

The areas about which we write encompasses Treaty 6, 7 and 8 territories. These are the traditional meeting grounds and home for many Indigenous Peoples and Regions 3 and 4 of the Métis Nation in Alberta. We wish to honour the Elders, Knowledge Keepers and traditionalists who have stewarded these lands since time immemorial and who continue to walk with us today. We acknowledge that we have ongoing responsibilities to protect and honour all of life within our shared reality as treaty people.

We would also like to acknowledge the considerable work of the panel and support teams in developing and leading this public engagement to inform Alberta's long-term approach to coal development.

This report is a culmination of efforts of many people and expertise. CPAWS and Y2Y are the messengers of this important information.

This submission was written by:

Yellowstone to Yukon Conservation Initiative

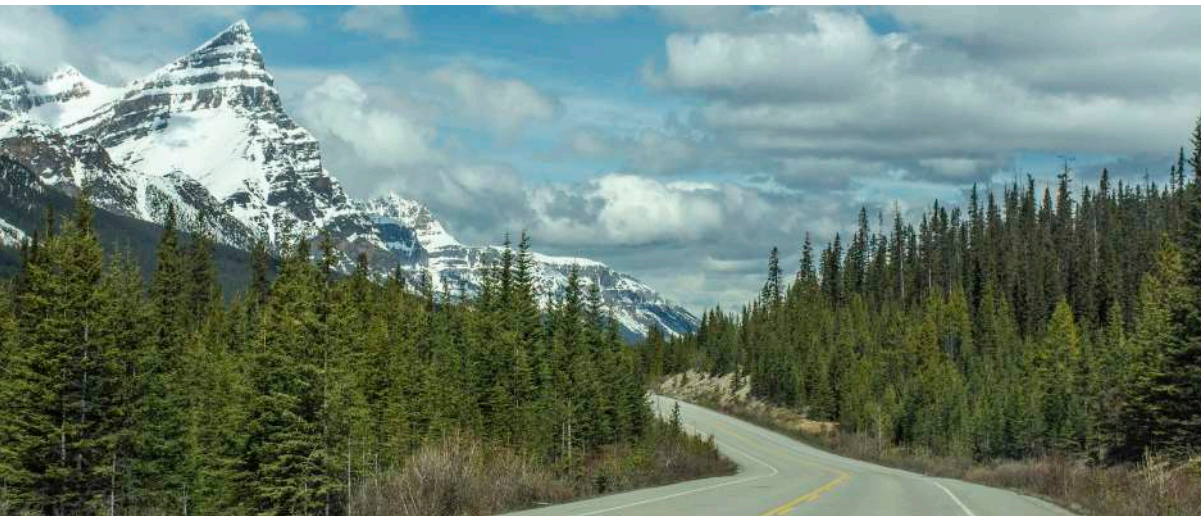
Canadian Parks and Wilderness Society Southern Alberta

Canadian Parks and Wilderness Society Northern Alberta

Suggested citation: Y2Y and CPAWS. Coal Development is at odds with the natural values of Alberta's Eastern Slopes: A Conservation and Policy Analysis. Report prepared for the Coal Policy Committee. Canmore, Calgary, and Edmonton, Alberta. 30 August 2021. 76 p.

EXECUTIVE SUMMARY

Collectively, Albertans understand that in order to have healthy, sustainable communities, our ecosystems and water supply must also be healthy and sustainable. Our daily lives rely on nature and the services it provides. Drinking water, crop pollination, fresh air, flood prevention, human mental and physical well-being, and employment are all benefits that people get from nature. The Eastern Slopes of Alberta stand out nationally for their combination of freshwater, carbon storage, and recreation opportunities, as well as their provision of critical wildlife habitat. These areas are part of the 0.6 percent (or 56,000 km²) of the country that have been identified as hotspots for delivering these critical benefits to people (Mitchell et al., 2021). Coal mine exploration and development fragments important habitat, leaches hard metals into our source waters, and cannot be remediated or mitigated to the standard Albertans and the prairie provinces need. For these reasons, coal development should not occur in the Eastern Slopes of Alberta.



ABRAHAM LAKE TO NORDEGG, PHOTO CREDIT: JAN MOSIMANN, CC BY-ND 2.0

When the Coal Policy was created in 1976, certain lands were set aside as too valuable and too sensitive for open-pit mining – these were labeled as Category 2. Other areas that had some previous small scale mine activities were left open for potential future mining and zoned as Category 4. However, these lands and waters were no less culturally or ecologically valuable. Furthermore, the scale of mines proposed by coal companies today is much bigger than those proposed in decades past.

Forty-five years after its creation, the 1976 Coal Development Policy (“Coal Policy”) no longer addresses the complex nature of human use on the Eastern Slopes. These uses have grown in volume and type, and include forestry, oil and gas activity, and an array of recreational pursuits. Additionally, regional and sub-regional plans for portions of the Eastern Slopes have not been completed. There are also substantive gaps in regulation that result in ineffective management of the area as a whole.

It is also important to note that the public consultation requirement for the Alberta Energy Regulator’s assessment of coal exploration and development permits is woefully inadequate. Above all else, conservation and community values must be protected. It is time for a new vision and plan for Alberta’s Eastern Slopes.

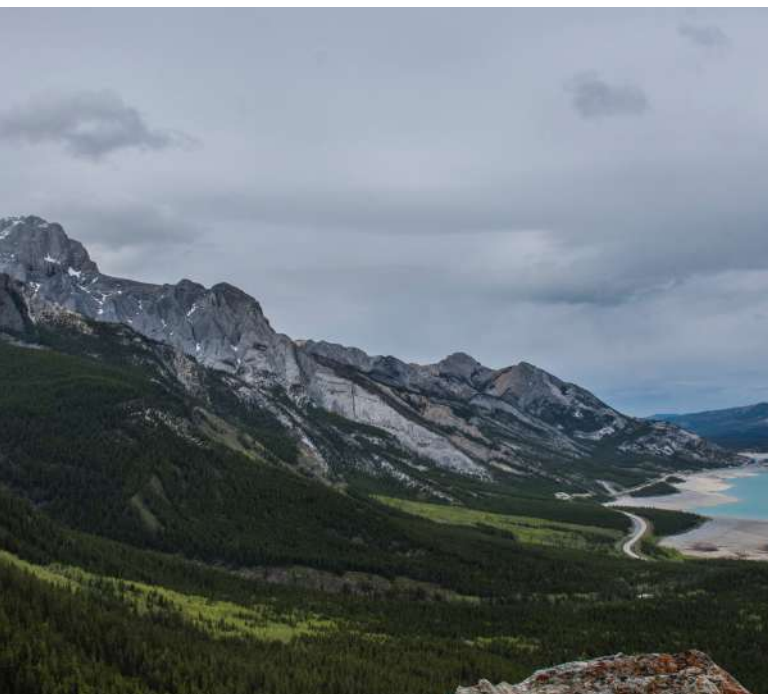
Coal mine exploration and development fragments important habitat, leaches hard metals into our source waters, and cannot be remediated or mitigated to the standard Albertans and the prairie provinces need.

WE OUTLINE THE VALUES THAT EASTERN SLOPES PROVIDE ALBERTANS, INCLUDING:

1. Water quality and quantity
2. Species at risk, including
 - a. Native trout
 - b. Five-needled pines
 - c. Grizzly bears
 - d. Caribou
3. Environmentally-sensitive areas
4. Landscape connectivity
5. Fescue grasslands
6. Biodiversity
7. Climate refugia

Importantly, the Eastern Slopes are also the traditional territories of Treaty 6 ,7, and 8 First Nations, as well as Alberta Metis Nation 3. This comes with a responsibility to honour and uphold Indigenous and Treaty rights on these lands. A number of these Nations have stated that they do not feel that they have been adequately consulted nor been engaged in meaningful dialogue about their vision for the landscape.

The Eastern Slopes are the traditional territories of Treaty 6 ,7, and 8 First Nations, as well as Alberta Metis Nation 3. This comes with a responsibility to honour and uphold Indigenous and Treaty rights on these lands.



NORDEGG, PHOTO CREDIT: SHARISSA JOHNSON, UNSPLASH

A coal policy that protects the Eastern Slopes from coal exploration and development would provide certainty to policymakers and entrepreneurs aiming to diversify Alberta's economy in a sustainable, regenerative way. This coal policy should say no to coal exploration and development across the Eastern Slopes and be followed by legislation that protects the Eastern Slopes from coal mining. Opportunities to nurture new, emerging economies that would support Canada's climate goals, create green jobs, and last for generations are within arms' reach. Studies have clearly shown that amenity migration into rural communities is accelerated when nearby parks, wilderness, and natural areas are valued and protected, rather than exploited by industry (Johnson, 2006). The declining use and acceptance of fossil fuels and the potential liability associated with coal exploration and development makes a focus on sustainable economies even more timely.

Given the extremely high social, environmental, and economic value of the Eastern Slopes, as well as commitments to honour Treaty rights and advance reconciliation efforts with Indigenous Peoples, CPAWS and Y2Y believe that a precautionary approach must be taken in the creation of a new coal policy. Particularly, given that comprehensive cumulative effects assessments and detailed land-use planning has not been completed for the region, it is inappropriate to designate any area along the Eastern Slopes for new coal mines. As leading conservation organizations in the province and in the country, we are pleased to have our knowledge, perspectives and opinions considered and included in The Committee's recommendations.

WE RECOMMEND INCLUSION OF FIVE KEY PRINCIPLES IN A NEW COAL POLICY:

- 1** No further coal exploration or development will be permitted on the Eastern Slopes of Alberta, including expansions of existing operations. The new coal policy should cover the entire area previously covered by the 1976 Coal Development Policy and prohibit new exploration and development in this entire area.
- 2** Existing thermal and metallurgical coal mining operations in this region will be permitted to reach the end of their lives but must meet all provincial and federal guidelines and regulations, including water quality guidelines, for the duration of operations, post-closure and post-reclamation.
- 3** Reclamation of lands disturbed by coal exploration activities with coal exploration permits must be reclaimed by the company no later than December 31, 2025. Reclamation costs should be covered in full by the companies and not fall to the taxpayer.
- 4** Closure and reclamation of mines no longer in operation should occur as soon as possible. Re-opening of mines in Care and Maintenance should be considered as 'new mine operation' and not be permitted.
- 5** Comprehensive land-use planning, including cumulative effects assessment and threshold planning, should be conducted across the Eastern Slopes to address the impacts of all other land-uses and activities in the region as soon as possible. The Land Use Framework contains the tools for Regional Plans and/or subregional plans that take this comprehensive approach.

OUR RATIONALE FOR THESE FIVE PRINCIPLES IS AS FOLLOWS:

1. The inherent value of the Eastern Slopes only exists if the landscape is restored and remains intact.
2. The headwaters and landscapes of the Eastern Slopes are critical to the future of our province. Our communities, agricultural production, food production, tourism, and recreation all rely on these landscapes existing in as intact a state as possible and their watersheds providing clean water. Water is an increasingly at-risk limited resource critical to present and future generations.
3. The long-term negative impacts on the environment, human health, animal health and existing and emerging economies far outweigh the new jobs, taxes, royalties or economics that may be generated in the relative short-term as a result of coal development in this area.

INTRODUCTION

The Government of Alberta is interested in developing a twenty-first century coal development policy that reflects the needs of Albertans. The Coal Policy Committee, appointed by the Minister of Energy, is asking Albertans for advice and recommendations about strategic goals, considerations, and desired outcomes for this coal policy. The terms of reference for the Coal Policy Committee (hereafter: the Committee) outlines the process by which the Committee will provide recommendations to the Minister regarding the nature, scope and intent of the restrictions under the current Coal Policy.

We define the Eastern Slopes in this document as the region outlined in the Government of Alberta's Eastern Slopes Policy (Government of Alberta, 1984), which covers approximately 90,000 square kilometers of mainly forest-covered mountains and foothills adjacent to Alberta's Rocky Mountains. The current exploration and proposed development of coal mines along Alberta's Eastern Slopes raises significant concerns regarding biodiversity and headwater health, the value of the Rocky Mountains as an iconic recreation destination for millions of Albertans, and local community economic diversification.

Given the extremely high social, environmental, and economic value of the Eastern Slopes, as well as commitments to honour Treaty rights and advance reconciliation efforts with Indigenous nations, CPAWS and Y2Y believe that a precautionary approach must form the foundation of how coal development is considered in the new Coal Policy. The precautionary principle is particularly relevant given that comprehensive cumulative effects assessments and detailed land-use planning has not been completed for the region. Without including cumulative effects and land-use planning in the scope of the current consultation and resulting recommendations, it is inappropriate to designate any area for new coal mines.

Any policy decisions relating to land-use on the Eastern Slopes, including that of coal, must take an interdisciplinary approach and consider social, environmental, and economic factors in depth. All land use policies must also adhere to the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP; United Nations, 2021), honour Treaty rights, and address Canada's Truth and Reconciliation Commission calls to action (Truth and Reconciliation Commission of Canada, 2015). Any future coal policy has significant implications for other Ministries and must include an analysis of the potential cumulative impacts and trade-offs for all rightsholders and stakeholders that stand to be impacted by mining.

We hope our feedback will help ensure policies and regulations developed resulting from this broad public consultation will reflect the best interests of Albertans while assisting in broader efforts to balance stringent environmental protections with responsible and appropriate resource development.

ORGANIZATION INTRODUCTION

CANADIAN PARKS AND WILDERNESS SOCIETY (CPAWS)

The Canadian Parks and Wilderness Society, Southern and Northern Alberta Chapters (CPAWS), have long been involved in conservation and public lands management in Alberta since their inception in the 1960s. Today, these CPAWS chapters are supported by tens of thousands of members, supporters, and donors across the province, and staffed by a diversity of Albertans who have devoted their careers to appreciating and conserving Alberta's wilderness. We work collaboratively with provincial and federal governments, industry, Indigenous Peoples, and other stakeholders to provide landscape-scale, science-based support and advice for the protection and effective management of our parks and wilderness areas. We pride ourselves on being a voice for practical conservation solutions of Alberta's lands and waters. CPAWS Northern and Southern Alberta chapters have been recognized stakeholders in various land-use planning processes and decisions along Alberta Eastern Slopes over the past few decades.

OUR WORK INCLUDES:

South Saskatchewan Regional Plan and the Alberta Land Stewardship Act.

Engaging communities in the public consultation processes, formal invitation by the government to stakeholder consultation sessions, meetings with Ministers and government staff, submission of formal input. (2009-2014)

Castle Provincial Parks.

Worked with diverse stakeholders on the Castle Special Places Working Group to present a proposal to protection to the Alberta Government. Member of the Government's Castle Advisory Group discussing development of the Castle Wildland and Provincial Parks Management Plan. (2009-17)

Southwest Alberta Recreation Advisory Group.

Advised on the development of the Land Footprint Management Plan and Recreation Management Plan for the Livingstone-Porcupine Region. Submitted formal input, meetings with Ministers and government staff, submission of formal input and public engagement. (2017-18)

Alberta Bull Trout Recovery Team.

Advised on development of the provincial Bull Trout Recovery Plan. (2007-2020)

North Saskatchewan Regional Plan.

Participated in consultation with the Regional Advisory Council, completed a Conservation Blueprint of Northern Alberta to inform planning (CPAWS, 2015).

Castle Livingstone Porcupine Hills Bob Creek Black Creek Recreation Advisory Group.

Alternate Environmental Non-Profit Organization (ENGO) representation (CPAWS Northern Alberta), advised on the implementation and changes to the Land Footprint management plan and recreation plan, submitted input regarding potential changes with Y2Y and Alberta Wilderness Association. (2010-present)

Government of Alberta Native Trout Collaborative.

Worked with AEP and other ENGOS on native trout recovery including in the Livingstone region. (2018-2020)

Grassy Mountain Coal Mine Public Hearing.

CPAWS Southern Alberta held full intervener status, submitting evidence to the Joint Review Panel on the decision to approve or reject the Grassy Mountain Coal Project. (2020)

Statements of Concern to Alberta Energy Regulator (AER).

CPAWS Southern Alberta has submitted formal Statements of Concern on all exploration permits in the Livingstone Region. (2020-2021)

Caribou Recovery Task Forces.

CPAWS Northern Alberta is a Government of Alberta appointed task force member for caribou sub-regional task forces to advise on actions for caribou recovery and on land-use planning. (2019-2021)

YELLOWSTONE TO YUKON CONSERVATION INITIATIVE [Y2Y]

Yellowstone to Yukon Conservation Initiative's (Y2Y) mission is connecting and protecting habitat so people and nature can thrive. The 3,400-kilometre Yellowstone-to-Yukon region is one of the most intact mountain systems in the world and retains the full complement of large and medium-sized mammals that lived here before European colonization. Along with over 450 diverse partners, Y2Y has worked for over 25 years to ensure that wildlife populations in this region remain connected, healthy, and genetically diverse. Our vision of an interconnected system of wild lands and waters in the Yellowstone-to-Yukon region also aims to harmonize the needs of people with those of nature by working to ensure development is consistent with the long-term needs of wildlife species.

We have been active in the Eastern Slopes for decades, specifically working with partners to improve protection and conservation of the Whaleback (1999), the Flathead (since the 1990s) and the Castle Provincial Parks.

Also, Y2Y has worked with the Miistakis Institute of the Rockies and the Nature Conservancy of Canada on mitigations and solutions for wildlife crossings on Highway 3 in Alberta and B.C.

OTHER RECENT EXAMPLES OF OUR WORK ALONG THE EASTERN SLOPES INCLUDE:

Government of Alberta Castle Ecological Working Group.

Advised on development of the Castle Wildland and Provincial Parks Management Plan. (2016-17)

Southwest Alberta Recreation Advisory Group.

Advised on the development of the Land Footprint Management Plan and Recreation Management Plan for the Livingstone-Porcupine Region. Submitted formal input, meetings with Ministers and government staff, submission of formal input and public engagement. (2017-18)

Connectivity Across Highway 3.

Helped analyse wildlife data and define wildlife corridors, including the Rock Creek Corridor, along Highway 3 through Alberta and BC. Working with partners to ensure inclusion of corridors in highway twinning and local land use planning. (2008-present)

North Saskatchewan Regional Plan.

Involved in stakeholder engagement process for Regional Advisory Council (2018)

Bighorn Wildland and Provincial Parks, and Public Land Use Zone.

Actively involved in stakeholder engagement process. (2018-19)

Castle Livingstone Porcupine Hills Bob Creek Black Creek Recreation Advisory Group.

Primary ENGO representative advising on the implementation and potential changes to the Land Footprint Management Plan and Recreation Management Plan. (2019-present)

Alberta Coal Mining.

Engagement in changes related to Alberta's Coal Development Policy, including conducting scientific research; synthesizing published ecological research; engaging in the AER's regulatory process for coal exploration proposals; communicating and meeting with stakeholders, First Nations, and Albertans. (2020-21)

CHALLENGES WITH CURRENT POLICIES

ORIGINAL COAL POLICY (1976)

The development of the [1976 Coal Policy](#) was progressive for its time involving multiple Government Ministries and extensive public consultation. Over the past 45 years, however, the Eastern Slopes have become a much more complex landscape with significantly more industrial, commercial, and recreational use and impact. Scientific research has also advanced considerably, improving our understanding of those impacts over the long-term and the sensitivity of the Eastern Slopes. In addition, Indigenous consultation with tribal governments and community members

was not included in the development of the 1976 Coal Policy. Just as our understanding of Western Science has enhanced our understanding of this landscape, Indigenous Knowledge needs to be integrated into our decision-making processes to address an array of ecological, social, and cultural objectives.

The 1976 Coal Policy separated the landscape into four categories. Certain lands, defined as Categories 1 and 2, were considered too valuable and sensitive for open-pit mining. Other areas that had some previous small scale mine activities were left open for potential future mining and zoned as Category 3 or 4. Research over the past few decades has shown that these Category 3 and 4 lands are still ecologically and culturally valuable (See Section 3a and Figure 8). The current scale and scope of coal mining proposals is much larger than previous development on the landscape, and potentially larger than anything that had been foreseen in the mid-1970s. For example, the proposed Grassy Mountain Coal Mine proposed to disturb an area of much greater than what was historically mined (Riversdale Resources, 2015). Comprehensive scientific research has also demonstrated a growing extent of impacts spatially and temporally associated with mine operations and associated infrastructure (Lemly 2019; Redmond, 2021).

Following the rescission of the 1976 Coal Policy, Albertans gained a new appreciation for all the policy had been protecting but also what was left out. By removing the 1976 Coal Policy, the government not only opened up Category 2 lands to mining, but they also opened Albertans' eyes to the extent of planned coal mining across the entire Eastern Slopes. Albertans became aware of what the 1976 Coal Policy did and did not protect and began to understand the risk that massive industrial developments pose to our waters, lands and communities.

We agree that the 1976 Coal Policy is now outdated. Scientific evidence and Indigenous consultation efforts have repeatedly demonstrated the importance of a healthy, intact Eastern Slopes region for providing water to downstream communities, ensuring the protection Indigenous Rights and Treaty rights, supporting and growing local economies, maintaining critical habitat for the last populations for threatened native trout and providing places to find solitude or to connect with family and friends.

LAND USE FRAMEWORK

REGIONAL PLANNING IS INCOMPLETE

The Land Use Framework was established as part of the Government's recognition that individual land use planning initiatives did not work in conjunction with each other and did not acknowledge the cumulative effects of multiple activities occurring on the land base. Creating a new Coal Policy is one part of the need for a comprehensive process to assess and regulate the cumulative impacts on the entire Eastern Slopes under the land use planning framework. The Alberta Land Stewardship Act (ALSA), the legislative component of the Land Use Framework, defines planning principles that direct the regulator to act in accordance with any other application land use plans. Therefore, any new policy must align with regional plans developed under ALSA and consider its principles.

There are three regions defined in the Land Use Framework that contain portions of the Eastern Slopes: the Upper Athabasca, the North Saskatchewan, and the South Saskatchewan. Currently, the only regional plan completed and passed into legislation along the Eastern Slopes is the South Saskatchewan Regional Plan (SSRP). Thus, large portions of Eastern Slopes lack a regional

plan. The SSRP speaks to the need to review the coal categories defined in the 1976 Coal Policy, as they pertain the South Saskatchewan Region lands, to confirm whether these classifications should remain in place or be adjusted (Government of Alberta, 2017). This assessment has not been completed and a new Coal Policy should adequately incorporate the commitments already made in the SSRP, as well as examining the broader landscape.

Having completed regional plans is essential to addressing cumulative effects along the Eastern Slopes, and is a process that the Government of Alberta has already committed to. As it currently stands, cumulative effects planning remains outstanding within the SSRP and has not begun in other regions along the Eastern Slopes. While the North Saskatchewan Regional Planning process is underway, it has been continually delayed, and planning for the Upper Athabasca region has yet to begin.

There is no modern regulatory process in place for determining if coal is appropriate in the Eastern Slopes. Given the new coal policy is being created in the absence of regional land-use plans, it should contain recommendations regarding how coal development will (or will not) be considered along the entire Eastern Slopes that will guide development of each of the pertinent regional plans.

SUBREGIONAL PLANS ARE INCOMPLETE

One of the main subregional plans associated with the SSRP is that of the Livingstone-Porcupine Hills, which is still underway. While the Livingstone-Porcupine Hills Land Footprint Management Plan (LFMP; Albertan Environment and Parks, 2018) determines thresholds for motorized access, including industrial access roads, it does not assess non-linear disturbance footprints such as forestry or coal mines. To address these footprints, it specifies the completion of Spatial Human Footprint Targets to guide spatial human footprint until 2045. These targets are currently more than a year overdue.

Despite the intentions of the LFMP to minimize cumulative footprint to address multiple ecological and recreational objectives, coal exploration in the Livingstone has not adequately considered the regulatory limits defined in the LFMP or in the scientific literature in exploration approvals. For example, the LFMP defines linear disturbance limits of 0.6 km/km² for industrial access, and 0.4 km/km² - 0.6 km/km² for public recreational access in two zones, defined based on their values and sensitivity. Although these two disturbance limits combined are higher than defined limits to reduce impacts to several species at risk, such as grizzly bears (Boulanger and Stenhouse 2014, Lamb et al. 2018; Farr et al. 2018) and native trout (Ripley et al., 2005; Valdal and Quinn, 2011; Alberta Westslope Cutthroat Trout Recovery Team, 2013; Farr et al., 2018; Alberta Environment and Parks, 2020a), and to retain water quality (Welsh, 2008; Fiera Biological Consulting, 2014), CPAWS and Y2Y supported the LFMP as a first step towards managing linear footprint and motorized access on the landscape. During the development of the plan, we were assured that forestry, a primary contributor to linear disturbance density, would never reach or exceed this limit. Coal exploration was not included in these discussions but can be a significant contributor to linear disturbance with exploration roads and operational access roads.

Using data layers obtained from all the recently approved exploration applications (since 2018), as received from the AER, CPAWS calculated that approved applications included an estimated ~450 km of linear disturbance in the Livingstone PLUZ, which if all built would add to an additional density of ~0.32km/km² (half of the total allowable limit for all industrial access). The applications also include access features that are identified in the applications as roads that might be

used but are not specifically included in the Coal Exploration Program. Many of these roads appear to be legacy features including seismic lines and old forestry roads and include 1,585 km of additional potential access. Our requests to see the current data regarding linear disturbance density along the Eastern Slopes have not been fulfilled, but we remain concerned that given the existing access the addition of coal exploration has exceeded the regulated limits.

Since 2015, recreation planning has been ongoing in the Livingstone-Porcupine Hills region. The Livingstone-Porcupine Hills Recreation Management Plan provides direction for recreational opportunities and management so that Albertans and visitors can enjoy these public lands responsibly. Coal development in this region would undermine the entire planning process, adding additional disturbance to the landscape that affects recreation quality and infrastructure.

GAPS IN REGULATION

The Government of Alberta asserts that all proposed coal projects submitted to the AER are rigorously reviewed, yet we have serious reservations regarding existing review processes and their application of current cumulative effects research, wildlife and habitat research, and Indigenous Knowledge. In addition, regulation is not a substitute for a good policy or proper land-use planning. Regulation is designed to minimize or mitigate damages in areas that have been deemed less environmentally or socially sensitive (and as a result are not managed under policy or legislation), but mitigation alone rarely eliminates impacts or risks completely. In cases where risk is high and mitigation is unproven (for example, mining activity that risks selenium contamination), regulations focus more on monitoring damage that has already occurred during the exploration and operations stages than on actively reducing the impact of the contaminant.

APPROVALS AND ENFORCEMENT OF ENVIRONMENTAL POLICY

The AER is responsible for reviewing coal proposals and providing approvals. According to their web-site, the AER ensures that companies mine coal in Alberta responsibly from before a mine is built until after extraction is complete. The AER oversees and regulates each phase of coal development from the proposal to exploration to operations and reclamation. The AER reviews and makes decisions on applications, conducts inspections, and monitors for compliance and enforcement during exploration and operations, and issues reclamation certificates. The AER does not make policy or regulations but serves to ensure that existing regulations and policies are implemented fully and effectively. While these responsibilities are clearly described, some coal exploration approvals have appeared to occur without the rigorous assessment promised to Albertans.

For example, in 2020 CPAWS submitted a Statement of Concern (SOC) regarding an application from Elan Coal Ltd. to undertake road building and test pit drilling in a designated Critical Wildlife Zone during a restricted activity window (sheep and lambing and season; spring and early summer). After requesting the information from the AER, CPAWS received the files and learned that the application had already been approved. In fact, the application had been made by Elan Coal on Friday, May 29th (dated June 1st) and approved on Monday, June 1st with an expected start date of the very same day. Upon further investigation, we learned that the 'rigorous review' conducted by AER consisted of a single question to the applicant. Elan Coal's justification for needing an exemption was that if they were not allowed to disturb sheep and goats during their exploration in the spring, they would have to alter their schedule and apply for another exemption in the fall.

We have serious concerns with the sequence of events and called to question the effectiveness of the proposal review process, especially given the application's approval prior to public input. On June 29th working with the Public Interest Law Clinic, CPAWS Southern Alberta submitted another SOC. On June 30th, the AER rejected our SOC because it was received after the approval was issued.

In the fall of 2020, Elan Coal Ltd. submitted a second application to once again drill in Critical Wildlife Habitat during the restricted activity window. Given the importance of this restriction, we once again submitted a formal SOC. Again, the response from the AER stated that our concerns had not been registered because the application in question had already been approved. Read more about these issues [here](#) and [here](#).

CPAWS has also expressed concern about how exploration roads are being accounted for and potential exceedance of these limits in various Statements of Concern related to Coal Exploration Program (CEP) Applications. The responses from the AER suggest these concerns are best addressed by Alberta Environment and Parks (AEP), but AEP suggest that it is AER as the regulator who is equipped to honour the limits in these sub-regional plans. The response to our concerns from one company also did not address or mention the Land Footprint Management Plan limits. It appeared to us that neither the AER, the company or AEP was monitoring or enforcing land-use limits described in the Porcupine-Livingstone subregional plan.

These examples have created a strong sense of distrust in the process by which coal mining and exploration is reviewed and approved by the AER, and thus AEP. In addition, we question how cumulative effects can be effectively addressed if existing policies are not enforced. This makes it appear that the AER prioritizes expediting resource development at the expense of environmental regulation and public participation. Our experience with the AER also suggests the regulator cannot be solely relied upon in the absence of responsible, thoughtful, and inclusive land use planning as the Government of Alberta suggests.

In addition, decreasing AER funding and timelines are limiting the ability to rigorously review and ensure fulsome stakeholder and public participation. Given these regulator's conditions, the AER appears to quickly and inadequately review new projects that should not be approved. This decreases certainty for industry, communities, and the environment.

PUBLIC CONSULTATION

One of the advantages of updating the Coal Policy is the opportunity for a thorough public consultation. The public consultation process and requirements of the AER are wholly inadequate, inconsistent, and ineffective. First, the AER asks Albertans to evaluate each individual project and only invites their input if they are directly affected. There is no process set up for Albertans to consider the cumulative effects of multiple developments, nor is there a process for Albertans to express concern if they are not directly affected by a coal mining development. Second, each individual piece of each individual project is applied for separately (i.e., the water withdrawal application is separate from the exploration application, which is separate from the application to deep drill or to waive wildlife restrictions). This is assuming that one can keep up with all the activities and find them on the various AER websites (see [here](#) for more on the process of finding and submitting Statements of Concern). There is also no consistent timeline for public consultation and input. As described above, for some of these activities' applications are approved much more quickly than reasonable to elicit public input.

Like several other organizations, we take issue with the requirement that people be "directly

affected” to be able to participate in a project’s public consultation from submitting an SOC for exploration activities to the full project hearings. The narrow definition of “directly affected” includes someone who owns land on or adjacent to the project and who may have impacts to their water, for example. Yet, current coal mining proposals take place largely on Crown Land, which is owned by all Albertans. This requirement effectively rules out most of the public in this “public engagement” process. CPAWS has submitted at least a dozen SOCs since June of last year and have never been considered directly affected. On occasion we have received a response from the AER or the company responsible for the proposal, but it is consistently to inform us that we are not directly affected and the AER should proceed with the project approval.

Full participation in a project hearing is onerous and requires retaining lawyers and experts at great cost. This is not public consultation on whether coal is socially acceptable at a landscape scale. The lack of real public consultation at the leasing, exploration and project stages emphasizes the real need for comprehensive planning and meaningful public consultation on whether these activities are appropriate for the landscape in the first place.

CONSERVATION VALUES

WATER

The Eastern Slopes of the Rocky Mountains are in part characterized by the fact they contain the headwaters for Alberta and the Canadian prairies. While the Rocky Mountains and foothills make up only 10% of Alberta’s land base, the Southern East Slopes alone provide 80% of southern Alberta’s water supply for the year (Obad and Droitsch, 2009). This relatively small area supplies drinking water to millions of people downstream across provincial boundaries and into some of Alberta most drought-prone landscapes supplying essential water to support Alberta’s agriculture industry. The area covered by the current Coal Policy covers 98% of Edmonton’s headwaters, 90% of Red Deer’s headwaters and 91% of Lethbridge’s headwaters (Figure 1).

The importance of these headwaters and the need to protect them has been acknowledged, reiterated, and prioritized in multiple government policies over the decades, including the Eastern Slopes Policy, the South Saskatchewan Regional Plan, and most recently the [Joint Review Panel report](#) on the Grassy Mountain mine proposal. Water availability and quality for Alberta agriculture businesses contributes to the livelihood of many residents, and the provincial economy. Furthermore, many streams and rivers along the Eastern Slopes are highly regarded fly-fishing tourism destinations in Alberta, and the surrounding landscape provides an array of opportunities for Albertans to experience and appreciate our diverse landscapes. Outdoor tourism and recreation are important economic drivers across the region. Indigenous Peoples have also stewarded these waters since time immemorial and have critical relationships to this landscape, which lies within their traditional territories.

With over [1000 active coal agreements](#) as well as ongoing exploratory activities to advance the development of Alberta’s metallurgical coal resources, our entire Eastern Slopes headwaters are at high risk of degradation that will result in impacts to Alberta’s economy and the way of life of millions of Albertans, as well as species at risk and overall ecological function.

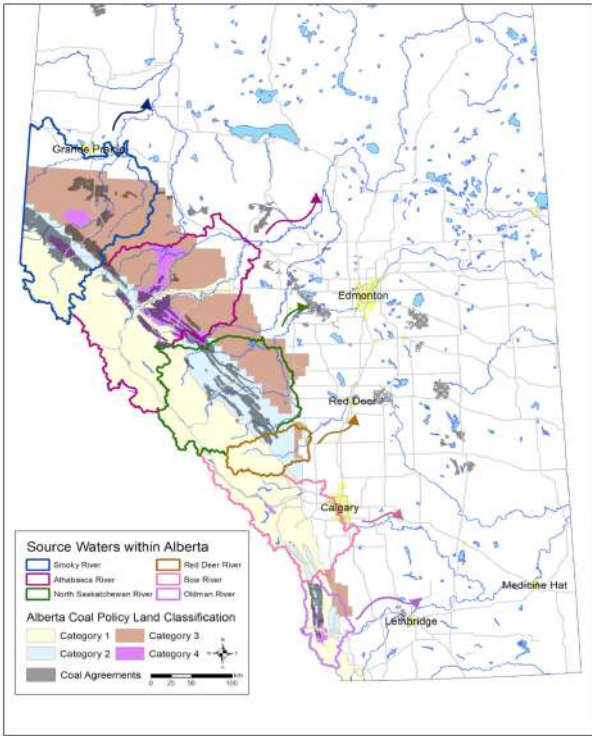


FIGURE 1: SOURCE WATERS WITHIN ALBERTA AND 1976 COAL POLICY LAND CLASSIFICATIONS.

WATER QUANTITY

Central and Southern Alberta are drought-prone landscapes (Sauchyn and Skinner, 2001; Bon-sal et al. 2013), and climate change models suggest that droughts will become more frequent and severe in coming years (Tam et Al, 2018). In 2003, a decade after completion of the Oldman Dam and amid rising concerns about water shortage in the Oldman Basin, the Oldman River Basin Water Allocation Ministerial Order reserved 11,000-acre feet (13.5 million m³) of water for annual irrigation use within the boundaries of the M.D. of Pincher Creek, M.D. of Ranchland and the Municipality of Crowsnest Pass. The Approved Water Management Plan for the South Saskatchewan River Basin closed the Oldman basin to additional water allocations (Alberta Environment, 2006). First Nations water rights remain unresolved and are being negotiated through a different process. The Alberta Government has also prohibited new water allocation licenses in the Bow watershed. These decisions contradict with the fact that coal mine operations use large amounts of water in both the exploration and operations. All proposed projects, including Grassy Mountain, would require 5,510 acre-feet of water, equivalent to 2,717 Olympic sized swimming pools (Alberta Environment and Parks 2020b). During exploration, water is used for drill hole flushing and/or dust control. During operations water is used primarily for washing raw coal prior to shipping and lesser amounts for washing down equipment and dust control on haul roads.

In fall of 2020, the Alberta Government started holding private meetings with select First Nations and stakeholders on changing the Water Allocation Policy to allow for new water licenses for industrial uses, including coal mines, in Oldman watershed. While water allocations have not yet changed, it is unclear how new licenses can be allocated based on previous commitments without changing the Water Allocation Policy. In addition, there are other commercial operators and government departments who have been denied for water licenses in the Oldman Basin. Coal mining is the only large-scale, industrial use in the region limited by lack of water licenses and coal projects cannot go forward without new water allocation. As a solution, the Alberta Government has proposed reserving just twenty percent (2,200 acre-feet) of the basin's allocation for fish and the aquatic environments. This is problematic given there are no studies in the region to determine what the water quantity requirements are for maintaining a healthy system, sup-

porting threatened native fish and providing security to existing license holders and downstream communities. Any decisions regarding changes to the Water Allocation Policy should be based on data defining the minimum requirements for ecosystem functionality, as well as other existing users of water. A review of the SSRB (South Saskatchewan River Basin) Water Management Plan concluded that we need to increase efforts to restore and protect the long-term health of the aquatic and riparian environment, particularly changes in water use patterns through allocation transfers (Basin Advisory Committees for the Bow River, Oldman River, Red Deer River, and South Saskatchewan (sub-basin) River, 2018).

Alberta also has the obligation to meet water quality and quantity requirements of the Master Agreement on Apportionment (MAA). The MAA has for more than half a century ensured that the provinces of Alberta, Saskatchewan, and Manitoba collaborate on the best uses of the waterways that connect them. A comprehensive study is needed to ascertain the impact that the cumulative effects of multiple coal mining projects in the headwaters will have on all downstream users.

WATER QUALITY

Research has demonstrated that coal mines are pose a risk to water quality including potential for elevated concentrations of selenium, aluminum, cadmium, cobalt, lead, and thallium (Lemly, 2019; Redmond, 2021). The risk of these pollutants entering waterways increases with multiple coal mining operations in the same area. Much of the research and public debate focus has been on selenium (Se) due to the substantial risk of release into surface and ground water (Lemly, 2019; Casey and Siwik, 2000) the lack of proven effective mitigation, and the potential of long-term contamination (Lemly, 2019). Selenium is a naturally occurring element found within coal deposits and their associated geologic formations. When exposed to water and oxygen as part of the mining process, Selenium is released in much greater quantities than through natural processes. Selenium contamination can cause birth defects and reproductive failure in fish and wildlife and can also jeopardize human health if consumed in high quantities or over prolonged periods of time (Holm et al., 2005; Beatty and Russo, 2014; Kuchapski and Rasmussen, 2015; Health Professionals Advisory Board, 2020).

Selenium leaching from coal mining has contaminated water sources for communities in British Columbia's Elk Valley (Lemly, 2014; District of Sparwood, 2014; Cobb, 2020). Additionally, while Elk Valley developer and operator Teck Resources Limited (Teck) has piloted the newest mitigation technology, called saturated backfill, they have not publicly released the monitoring data. Therefore, the effectiveness of this mitigation remains uncertain.

As part of CPAWS Southern Alberta's intervention in the Grassy Mountain hearing, we commissioned a report on the efficacy of saturated backfill mitigation (Wyndam Environmental Ltd, 2020). That report found that the mitigation could prove effective but the reasons why some laboratory trails failed were not clear or fully understood. These failures could result in Selenium releases if mitigation effectiveness declines. Several factors and conditions could cause these failures, including:

- The presence of potential preferential migration pathways (e.g., fracture zones and old mine workings) and short-circuiting of treatment zones resulting from biofouling;
- The overall efficiency of selenium removal might not be high enough to prevent increasing selenium concentrations in nearby surface water bodies;

- If preferential pathways are not detected, or conditions are not maintained at optimal, off-site release of selenium or other potential contaminants of concern could result in impacts to the local watershed; and
- If maximum reduction capacity of the microbial population is reached, the efficiency of selenium removal might decline.
- An expert retained by the Livingstone Landowners Group for the Grassy Mountain hearing also suggested extreme precipitation events could affect the efficacy of selenium mitigation measures.

One of North America's top experts on pollution from coal mines, Dennis Lemly, concluded that the provincial AER regulator has failed to seriously assess and guard against environmental pollution from mines. Lemly (2019) defined the following risks and impacts in an environmental hazard assessment of the Grassy Mountain Mine:

- Leaching of selenium and resultant biological impacts are an undisputed fact of open-pit mountain top coal mining.
- Effective treatment of selenium leaching does not exist.
- Tailings ponds are notorious for breaching.
- To date, there has been no demonstration of effective treatment of leachate wastewater to render it safe to aquatic life in receiving waters at the scale and flows emanating from coal mines.
- The proposed methods and techniques to protect water quality carry no legitimate demonstration of prior success.
- Despite the scientific documentation of detrimental pollution impacts, there is little reporting by government regulators to address scientific and public concerns.
- Current policy and regulations in Alberta reveal an extremely poor understanding and recognition of the key aquatic pollutant emanating from coal mines.

While Teck has spent hundreds of millions of dollars over many years to control selenium release, they have not been successful. While the history of mining in the Elk Valley is different than in Alberta, it suggests that if a selenium problem develops, it would be expensive and potentially impossible to fully address. In addition, selenium is not the only contaminant of potential concern causing aquatic effects in the Elk Valley. Mine-related calcite deposits were found in 38% of the 288 km of mine-exposed sections of the Elk River downstream from mine operations and are also difficult to mitigate (Alberta Energy Regulator and Impact Assessment Agency of Canada, 2021). There are also known incidents of coal mining contamination within Alberta by tailings dam failures (Cooke et al., 2016), and previous selenium contamination of native fish populations in the Gregg and McLeod rivers from the Cheviot mine near Hinton, AB (Mackay, 2006; Redmond, 2016).

The federal Minister of Environment and Climate Change has indicated that any new coal mines that risk selenium release will be designated for a federal assessment and that new effluent regulations are coming. While these are both important steps; they do not replace proper land use policy that explicitly prohibits new coal mines in areas of high value for water. Such a land-use policy would create certainty for Albertans that their source waters will not be contaminated by mine mitigation failures. This policy will provide certainty for industry who will not invest millions

of dollars to investigate the feasibility of a project only to have it denied due to high environmental risk, as illustrated by the Grassy Mountain decision. While strong regulations are important for mines currently in operation, they do not prevent releases of contaminants and are not effective if monitoring programs and results are not enforced to remove contaminants from the environment.

The risks to water quality begin with resource exploration activities through the construction of roads. Resource roads are strongly linked to increased sediment loads that impact water quality (Welsh, 2008; Fiera Biological Consulting, 2014); these impacts are discussed more in the section about species at risk. Increased sedimentation affects aquatic species, water quality for downstream users, and increases water treatment costs. Exploration activities occur before project approval and before a comprehensive Environmental Impact Assessment has been conducted. Opportunities for public input are limited and approvals appear granted, yet the cumulative effects on the lands and waters are significant and long-lasting, particularly if roads are not quickly or adequately reclaimed. These impacts should be avoided by prohibiting exploration across this region.

SPECIES AT RISK

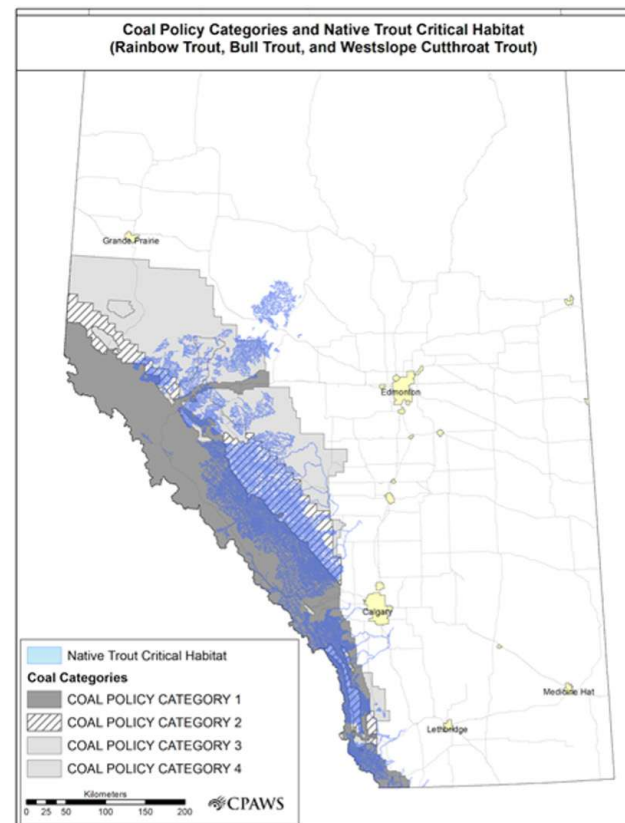
The Eastern Slopes, including much of the area under coal lease, provides habitat for numerous species at risk, including caribou, grizzly bear, wolverine, olive-sided flycatchers, and native trout as well as plant species such as limber and white bark pine. Given its scope and scale, coal exploration and development will have a negative impact on these and many other species in the region. Below we discuss the impacts to native trout, limber and whitebark pines, grizzly bear, and caribou. We also discuss impacts to bighorn sheep and mountain goat that rely on critical habitat in the region.

NATIVE TROUT

The Rocky Mountain headwaters provide critical habitat essential to the survival of the westslope cutthroat trout, bull trout and Athabasca rainbow trout populations, all of which are listed as threatened under the Alberta Wildlife Act. The Alberta populations of westslope cutthroat trout and bull trout are also listed federally as threatened under the Species at Risk Act (SARA). Athabasca rainbow trout are listed as Endangered under SARA.

The Joint Review Panel assessing the Grassy Mountain Coal Mine found that the project was likely to cause significant adverse environmental effects to Westslope Cutthroat trout, and that the project posed a risk to one of the few provincial populations with a reasonable chance of long-term survival (Alberta Energy Regulator and Impact Assessment Agency of Canada, 2021). While this assessment pertained to the Grassy Mountain Mine, this conclusion likely applies to much of the Eastern Slopes as most of the area contains federally designated critical habitat for the native trout species listed above (Figure 2).

FIGURE 2: NATIVE TROUT CRITICAL HABITAT IN ALBERTA AND 1976 COAL POLICY LAND CLASSIFICATIONS.



Selenium contamination from mining activities is a major concern for native trout and other aquatic life. Selenium that has entered the water is transmitted up the food chain by algae that grows on the surfaces of plants and sediments in stream beds to benthic invertebrates and finally to fish (Lemly, 2019). Bioaccumulation via the food chain is the primary process that could expose sensitive species such as westslope cutthroat trout to elevated selenium, as has been demonstrated at nearby coal mines in the Elk Valley (Lemly, 2014). Generally, egg-laying fish and birds are most susceptible to selenium toxicity, predominantly through maternal transfer to ovaries and eggs. At elevated concentrations in eggs, selenium may adversely affect the development and survival of fish larvae (Holm et al., 2005; Beatty and Russo, 2014; Lemly, 2014; Kuchapski and Rasmussen, 2015; Lemly 2019).

Research from the Elk Valley, where coal mining has been active for decades, has demonstrated that selenium concentrations in area waterways are up to four times British Columbia's maximum for drinking water, and monitoring stations near mines have reported levels 50 times higher than what is recommended for aquatic health (Weber, 2020). Selenium levels in fish ovaries exist at dangerous levels starting around 50ug/L in moving water near the mines. Downstream, in Lake Koochanusa, which spans the international boundary between BC and Montana, selenium levels have been found to be increasing from levels that are already bordering safe limits (0.8 ug/L) (Presser, T.S., and Naftz, D.L., 2020). Approximately only a quarter of the flow through the Koochanusa comes from the Elk River, which is 150 km downstream of the Teck coal mines. Teck's own research found that trout populations in the Elk and Fording Rivers found had almost collapsed (Weber, 2021).

In addition to potential selenium contamination, increases in linear disturbances associated with exploratory roads also present a risk to native trout. Roads and trails cross trout streams and increase runoff into streams, all of which increase stream sedimentation and reduce the extent of available spawning habitat. The altered magnitude of flow and water quality has likely already contributed to population declines in the area (Farr et al., 2017).

Since 2018, 235 km of new coal exploration roads and 724 test drill pits in southwest Alberta, and approximately 70 km of roads and 40 drill sites in central Alberta have been approved with exploration applications. It is unclear how many of these roads or drillpads have been built; however, many of these roads cross or come within the 30 m buffer on trout streams that is meant to limit development within proximity of critical habitat.

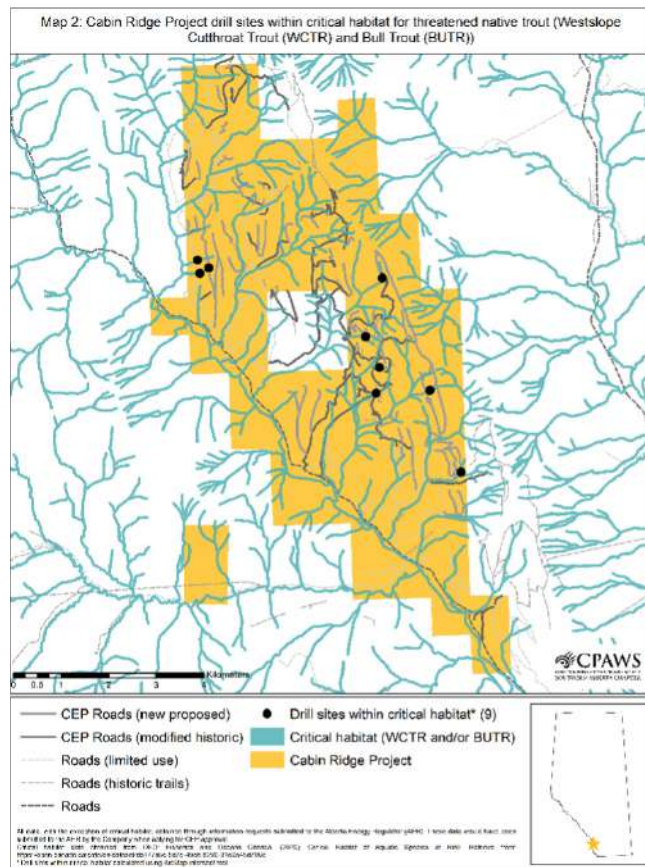
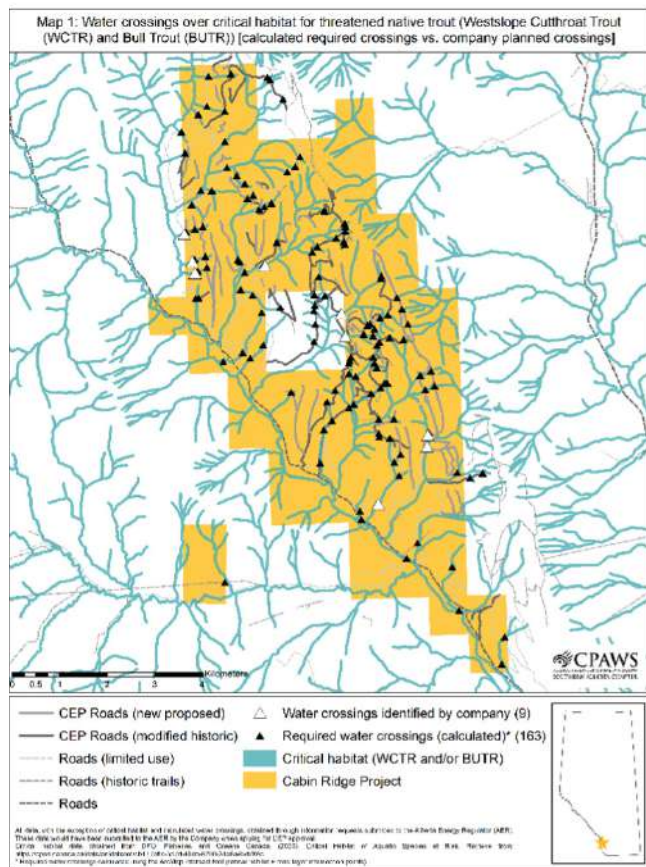
Exploration applications do not adequately address these risks to native trout. For example, Cabin Ridge's exploration application identified 9 water crossings, however when overlaid with Critical Habitat for westslope cutthroat trout and bull trout, 163 points were identified where roads crossed streams or were within the 30 m buffer (Figure 3a-b). Nine drill sites were also located within the 30 m Critical Habitat buffer. None of these were identified in the application.

Coal mine whose operations violate critical habitat quality as defined under SARA should not be approved and may potentially be in contravention of Federal Legislative requirements to protect critical habitat.

Due to advancements in wildlife monitoring, water quality monitoring, and a better more robust understanding of ecological indicators and thresholds, the Alberta government is armed with evidence with which to base robust land use decisions to address ecological and economic objectives. It is a disservice to the many Albertans who have worked decades to produce these bodies of work to not adequately consider their results in coal mining exploration and development proposals.

FIGURE 3A: WATER CROSSINGS (BLACK TRIANGLES) ASSOCIATED WITH THE CABIN RIDGE COAL DEVELOPMENT AND CRITICAL STREAM HABITAT FOR TROUT; 163 ROAD CROSSINGS HAVE BEEN IDENTIFIED.

FIGURE 3B: CABIN RIDGE DRILL SITES WITHIN 30 M OF CRITICAL STREAM HABITAT FOR TROUT; 9 DRILL SITES HAVE BEEN IDENTIFIED.



CPAWS and Y2Y have expressed concern to the Federal Minister of Environment and Climate Change Canada under section 9 of the Impact Assessment Act regarding the impacts of the Vista Mine Phase II Expansion Project (CPAWS submission; Y2Y submission). Data and monitoring results from other areas suggest this mine expansion will destroy critical habitat for the Endangered Athabasca Rainbow Trout, as well as introduce land use changes that contribute to cumulative impacts that are difficult to fully address with offsets alone. These concerns formed part of our organizations' input regarding the Grassy Mountain coal mine public hearing, and our request for designation of Montem's Tent Mountain project for federal impact assessment (CPAWS submission; Y2Y submission).

The unacceptable risks to native trout was among other defined risks that were recognized by, Minister Wilkinson in a [letter to Coalspur Mines \(Operations\) Ltd.](#) The Minister has expressed uncertainty as to whether mitigation and offsets for the project can adequately mitigate impacts without significantly jeopardizing fish species at risk; such risk are not in the public interest.



WESTSLOPE CUTTHROAT TROUT, PHOTO CREDIT: GRACIER NPS PUBLIC DOMAIN

WHITEBARK AND LIMBER PINES

Limber Pine and whitebark pine are listed as Endangered under both SARA and the Alberta Wildlife Act. Federal assessments of these species, however, there are no legislative requirements to provide broad protection for either individuals or habitat (Figure 4). Both species are threatened by mountain pine beetle, climate change, and changes to fire regimes and are particularly susceptible to these risks due to their life history traits such as delayed age at maturity, low dispersal rate, and reliance on dispersal agents (COSEWIC, 2014; Environment and Climate Change Canada, 2017). As the frequency, intensity, and duration of drought increased with climate change, wildfires are also projected to be more frequent and severe (COSEWIC, 2014; Environment and Climate Change Canada, 2017). Stressed trees are likely to be more susceptible to pathogens and insects. These natural stressors will be further compounded by the additional impacts of water consumption and clear-cutting associated with coal mining exploration and development.

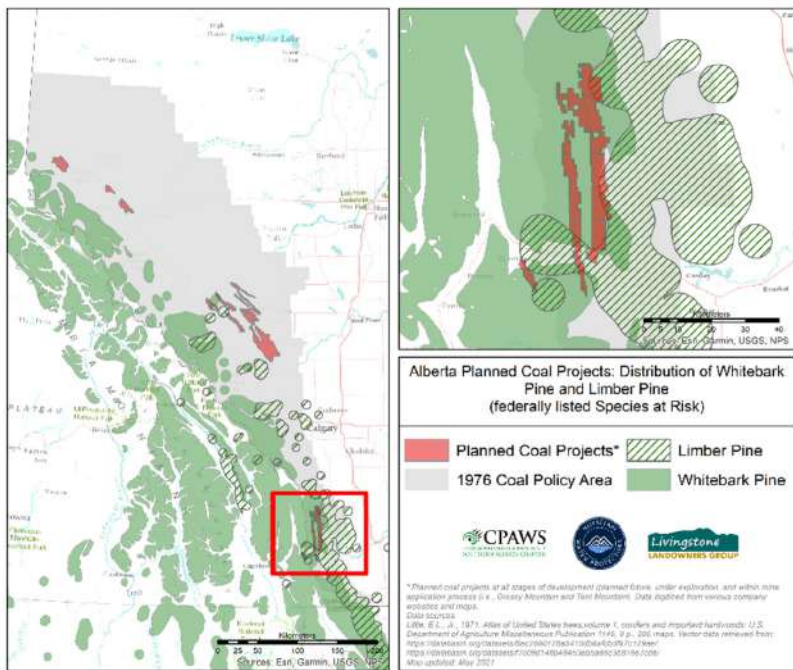


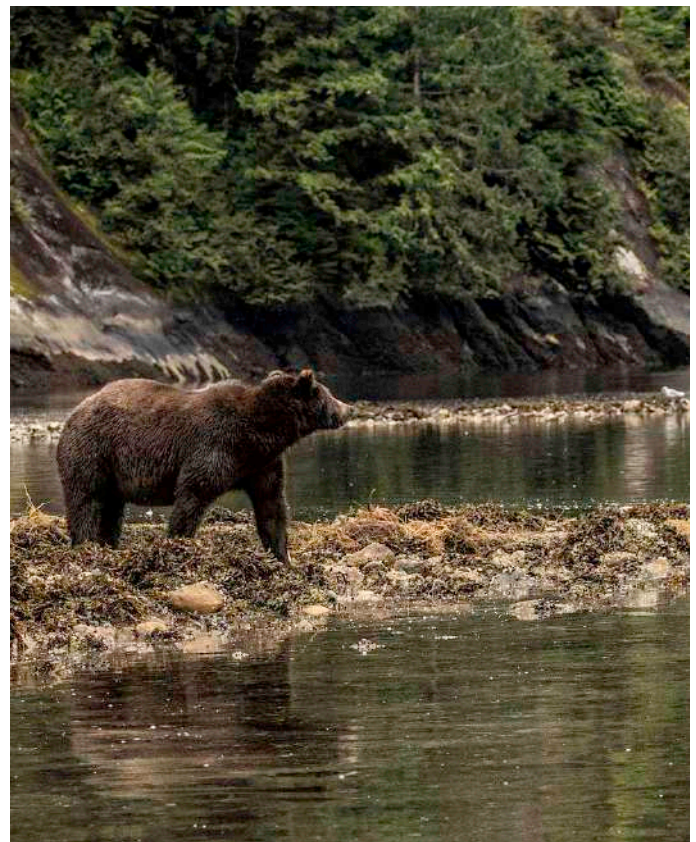
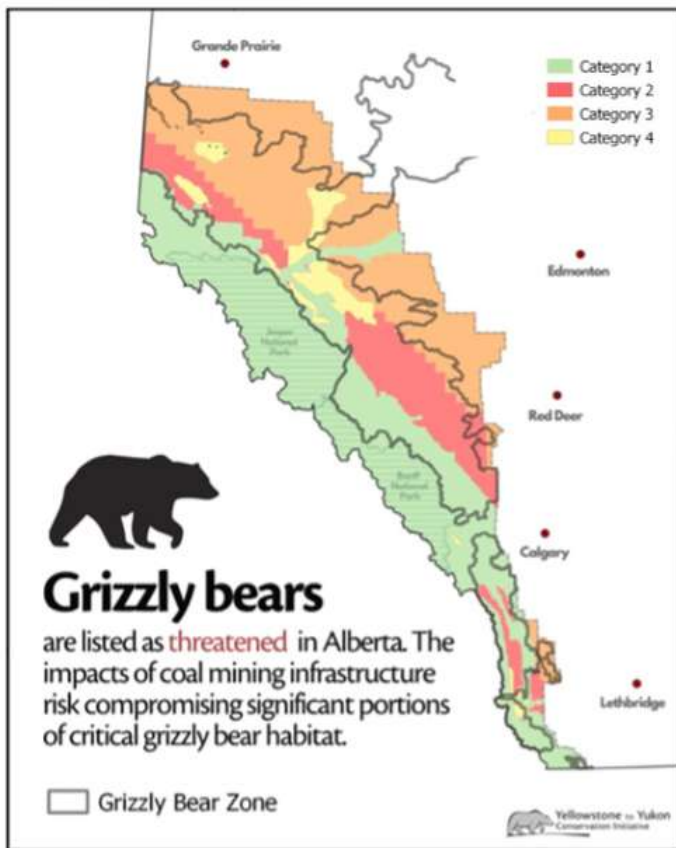
FIGURE 4: DISTRIBUTION OF WHITEBARK AND LIMBER PINE IN RELATION TO THE 1976 COAL POLICY AREA AND PLANNED COAL PROJECTS.

GRIZZLY BEAR

The grizzly bear population in western Canada is listed as a species of Special Concern in Schedule 1 of SARA. A national population estimate has not been determined and is uncertain, although it could be close to 10,000 individuals. Grizzly bears are listed as threatened under the Alberta Wildlife Act. The provincial grizzly bear recovery plan defines four zones in Alberta which overlap with areas impacted by coal exploration and development (Alberta Environment and Parks, 2020). Several coal mine exploration and development proposals and operations fall within the Recovery Zone, which encompasses the extent of Alberta where it is the intention of the Government of Alberta to recover grizzly bears (Figure 5).

FIGURE 5: GRIZZLY BEAR RECOVERY ZONE AND THE 1976 COAL POLICY LAND CLASSIFICATIONS.

GRIZZLY BEAR, PHOTO CREDIT: PROVINCE OF BRITISH COLUMBIA, CC BY-NC-ND 2.0



Due to their very large home ranges (sometimes over 400 km²), grizzly bears are considered an umbrella species. When we conserve and manage habitat for grizzly bears, we conserve and manage habitats for all other species that also use that habitat (i.e., fit under the grizzly's umbrella). Also due to their large home ranges and low density, grizzly bears require connected habitats to access food and mates safely (Alberta Environment and Parks, 2020). Connectivity is essential to maintain population genetic viability (Alberta Environment and Parks, 2020). A healthy grizzly bear population requires contiguous habitat with connections to other populations in British Columbia, Alberta, and the state of Montana. Connectivity and overall grizzly bear habitat quality are inversely tied to human use footprint in the Eastern Slopes from industry, recreation, and commercial development (Alberta Environment and Parks, 2020). As our human footprint associated with recreation, industrial development, and communities continues to expand along the

Eastern Slopes, grizzly bears are displaced from high-quality habitats. This can lead to direct mortality through vehicle collisions and increased human-bear conflict as bears continue to access habitats in the presence of people. Increased mortality and reduced survival rates are associated with higher densities of roads and linear disturbance. Road densities greater than 0.85 km/km² have been identified as an indicator of a population in decline; a maximum density of 0.6 km/km² is identified as a linear disturbance threshold to ensure grizzly bear population recovery in Alberta (Boulanger & Stenhouse, 2014).

The highest sources of grizzly bear mortality in Alberta are human-caused. From 2010 to 2015, the four highest sources of human-caused mortality were: poaching, accidental vehicle or train collisions, self-defense kills, and black bear hunters misidentifying a bear (Alberta Environment and Parks, 2020). All of these causes of mortality are exasperated by linear disturbance density that creates additional access points for people, and their vehicles, further into grizzly bear habitat. Mortality can be particularly high for young individuals who are still learning how to use their habitat without coming into conflict with people. Most grizzly bears over the age of two are eventually killed by people, and almost all those deaths are within 100 m of a road (Proctor et al., 2019). The current recovery plan identifies mitigating the effect of motorized access and reducing linear disturbance as a priority for grizzly bear recovery (Alberta Environment and Parks, 2020). These efforts are compromised and contradicted by the proliferation of exploratory roads required for coal mines.

CARIBOU

Woodland caribou are listed as a threatened species under Schedule 1 of SARA and in the Alberta Wildlife Act. The principal reason for their decline is the cumulative impacts of industrial development caused by a lack of comprehensive land use planning. The Government of Alberta is obligated by law to recover woodland caribou herds. However, all caribou herd populations have been declining in Alberta by 50% every 8 years (Hervieux et al. 2013). A driving factor of caribou decline in Alberta is habitat disturbance, yet the amount and rate of habitat disturbance has been accelerating in caribou ranges (Nagy-Reis et al., 2021). Research shows that unless cumulative impacts of land-uses are effectively addressed through planning and management actions that consider anthropogenic and natural disturbances, caribou will not be self-sustaining across much of North America (Nagy-Reis et al., 2021). Caribou are also considered an umbrella species due to their large home ranges that span multiple habitats (Bichet et al, 2016).

Southern mountain caribou rely on the ability to migrate from high elevation summer habitat to lower elevation winter habitat as summer alpine habitat becomes dangerous with deep snow and avalanche risk (Environment Canada, 2014). Due to increased habitat disturbance in the lower elevation foothills, Southern mountain caribou are stopping their migrations, and staying year-round in their summer alpine habitat range, exposing them to increased risk and poorer forage conditions (Williams et al, 2021). This maladaptive practice is contributing significantly to their decline.



CARIBOU, PHOTO CREDIT: ANNE ROBINSON

Coal mining and development, due to the nature and location of coal seams, disturb caribou habitat, disrupt survival strategies, and pose a serious threat to essential migration routes. Coal mine development, such as that previously proposed in areas like Caw Ridge, bisect caribou ranges and devastate herds that are already at significant risk of extirpation.

The federal caribou recovery plan identifies several strategies to stabilize and achieve a naturally self-sustaining population. One of these strategies is to 65% of caribou range is undisturbed (Environment Canada, 2011b). The Recovery Strategy for the woodland caribou, southern mountain population (Environment Canada, 2014), specified that the 65% undisturbed habitat was to be in the low elevation summer habitat and no disturbance was to be permitted in the high elevation winter habitat. Coal exploration and development proposals overall with caribou range and compromise recovery objectives (Figure 6).

No herds in Alberta have the necessary undisturbed habitat to meet these recovery requirements. Overlapping land uses have made it difficult to conserve and restore habitat for caribou, however, it is the responsibility of the government of Alberta to create range plans outlining how to recover caribou to meet the Recovery Strategy's habitat goals.

Due to the rapid rate of decline and inaction on habitat recovery, the federal government conducted an Imminent Threat Assessment in 2018 where the Minister of the Environment formed the opinion that southern mountain caribou were facing imminent threats to their recovery. As of February 2020, the population of southern mountain caribou in Canada was estimated at 3,100 animals, a decline of 53% over approximately 6 years (Government of Canada, 2021). Industrial, commercial and recreational land uses, specifically mining, were identified as a reason for high levels of habitat disturbances and the resulting population decline. As a result of the assessment, the Minister recommended making an emergency order to provide protection to southern mountain caribou. This order was not approved by cabinet due to existing provincial commitments to caribou recovery reflected in the ongoing sub-regional land use planning. However, a coal policy that allows for any mine exploration or development within or adjacent to caribou ranges could increase the likelihood to the Minister making a new recommendation for an emergency order.

Ministerial-appointed task forces were created in 2019 to provide multistakeholder recommendations for the creation of land use plans that would address cumulative impacts in caribou range; CPAWS Northern Alberta was invited to the Upper Smoky region task force. Changes to the coal policy and sales of leases have occurred while task forces are discussing overall land use planning, thus compromising those efforts. This is critical because the intent of the sub-regional planning process was to address all caribou ranges, with the next proposed plan to be developed just south of the Upper Smoky in the area around Hinton. To date, no land use plans have adequately addressed coal, or cumulative disturbance and due to the overwhelming amount of existing habitat disturbance new coal development is unacceptable on this landscape.

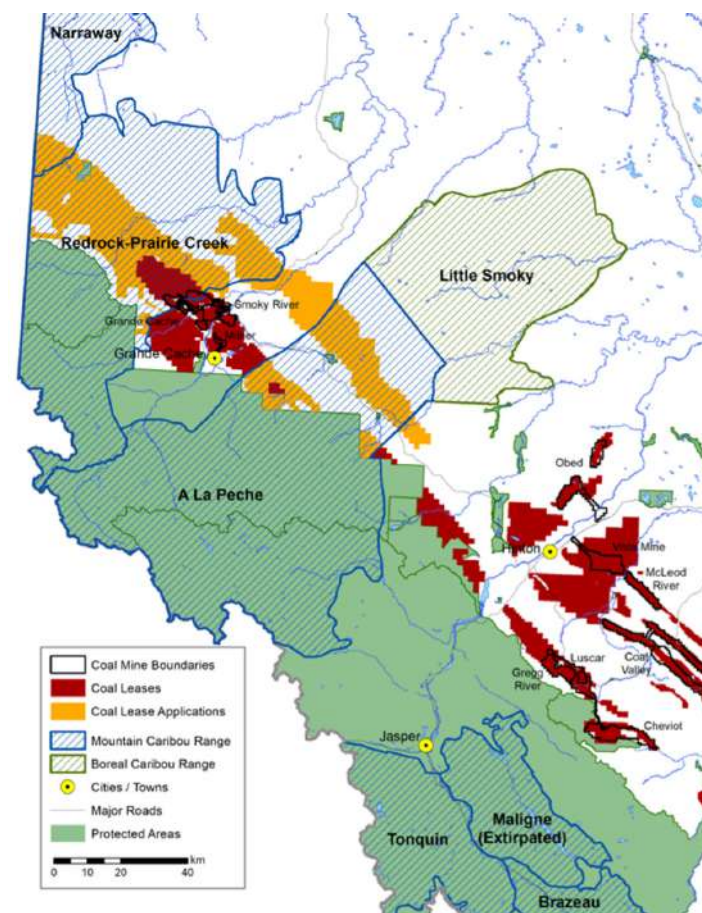


FIGURE 6. THREATENED SOUTHERN MOUNTAIN CARIBOU RANGES OVERLAP WITH EXISTING COAL MINES, COAL LEASES, APPLICATIONS.

MOUNTAIN GOAT AND BIGHORN SHEEP

Mountain goats and bighorn sheep are alpine ungulates that rely on rough, rocky, cliffs, ledges, and steep slopes to evade predators, restricting them to the southwestern border of the province. They are known to be sensitive to human disturbances and land use activities can have significant impacts on both species, for instance, dispersing farther from areas with road construction and traffic, forestry or mineral exploration adjacent to their ranges (Alberta Management plan for Mountain Goats, 2003).



BIGHORN SHEEP PHOTO CREDIT: MARTIN PRENTICE

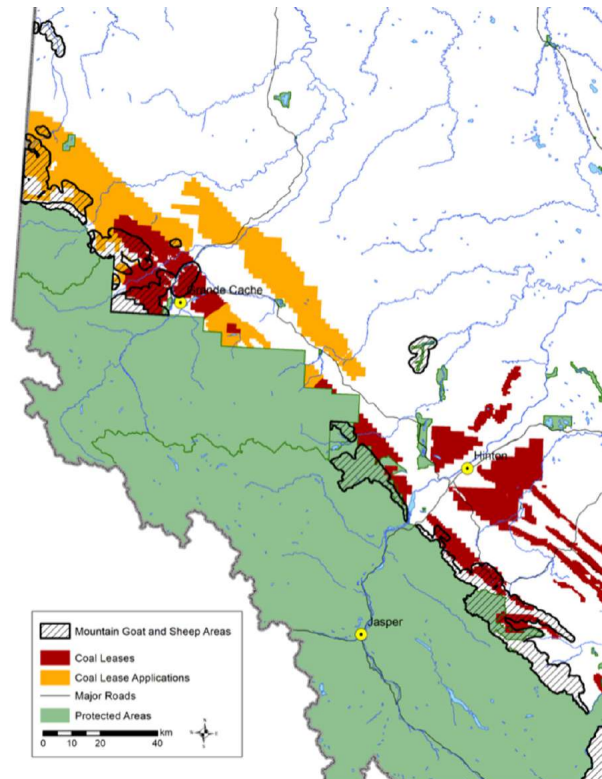


FIGURE 7. MOUNTAIN GOAT AND SHEEP HABITAT WITH COAL LEASES AND APPLICATION

The Government of Alberta has a commitment to identifying critical goat and sheep ranges, to avoid land use disturbances that may have a direct or indirect adverse effect on the behaviour of the animals and avoid permanent alteration of physical habitat conditions (Alberta Environment and Parks, 2010).

LANDSCAPE ECOLOGICAL INTEGRITY

ENVIRONMENTALLY SIGNIFICANT AREAS

Many of the areas in the Eastern Slopes proposed for future coal development are also classified as Environmentally Significant Areas (ESA). ESAs are defined by the Government of Alberta based on their importance for long-term conservation and biodiversity (Alberta Parks, 2016); ESAs make up approximately 72% of Category 1 land, 63% of Category 2 land, 37% of Category 3 land, and 43% of Category 4 land based on the 1976 Coal Policy Land Classifications. These

ESA designations are long-standing and based on comprehensive assessments of ecological resources. Any new land use policy in Alberta should reflect these designations and continue to protect their values. Many ESAs have been identified along the Eastern Slopes, particularly in the western portions, and many of these will be impacted by coal exploration and development (Figure 8).

LANDSCAPE CONNECTIVITY

Alberta's Eastern Slopes represent a core area of the entire Yellowstone-to-Yukon region, one of the last intact mountain ecosystems left on earth. In many ways, the Eastern Slopes are also the front lines of ecological integrity between heavily used and impacted grasslands and the protected mountain parks. The Eastern Slopes still have same complement of large ranging mammals, including grizzly bears, bison, elk, and wolves, that existed before European settlers arrived. The importance of this landscape for ecological integrity and connectivity cannot be overstated. The thin strip of rolling foothills between the grasslands and the mountains provides critical habitat and essential movement corridors. While we see different behavior from different species, including seasonal migrations or large home ranges to search for food and mates, decades of research on animal movement have given us a broader understanding of the need to protect wide tracts of land that support this movement (Y2Y, 2020). Coexistence between people and wildlife also, in part, relies on reducing barriers to movement as critical steps to effectively connect landscapes between those protected areas, thus allowing wildlife access to important habitats without having to navigate high human use areas.

Proposed coal mining development and exploration is likely to significantly increase the long-term, cumulative effects on the Eastern Slopes and introduce further barriers to wildlife movement. This impaired connectivity from Glacier-Waterton International Peace Park to the Rocky Mountain National Parks complex risks reducing population and genetic viability of wide-ranging species such as grizzly bears and wolverines (Southern Eastern Slopes Conservation Collaborative, 2018). Connectivity in the region is already compromised by historical industrial impacts, increasing recreation use, and heavy linear disturbance caused by extensive road and railway networks; coal mining further disrupts connectivity and habitat available for grizzly bears (Figure 9) and other wide-ranging mammals (Figure 10).

Habitat fragmentation creates barriers for wildlife movement across the landscape and often results in isolated 'habitat islands' for species (Hilty et al., 2019.) . As a population becomes isolated, unique genetic material is rarely introduced and the population begins to lose genetic diversity. Loss of genetic diversity reduces a species' ability to adapt to changing landscape and climatic conditions, which can contribute to population instability and subsequent decline (Hilty et al., 2019 and MacArthur et al., 2001).

Much of the western ranges of the Eastern Slopes are still fairly intact with a lower linear disturbance density than areas to the east. This includes larger swaths of protected lands like the

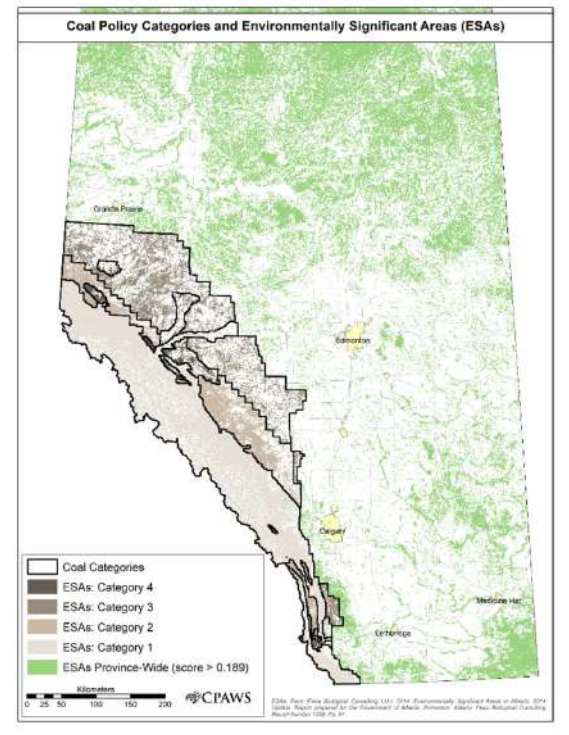


FIGURE 8. ENVIRONMENTALLY SIGNIFICANT AREAS (ESAS) AND COAL CATEGORY LAND CLASSIFICATIONS FROM THE 1976 COAL POLICY.

Castle Provincial Parks, Whitegoat and Don Getty Wildlands, Banff and Jasper National Parks, and the Willmore Wilderness Area. The north-south-oriented mountain ranges include warm, productive low-elevation valleys that operate as wildlife corridors for wide-ranging mammals.

There are four major east-west connections cut through the strong north-south orientation of the Rocky Mountain cordillera and are critical for wildlife movement: the Crowsnest Pass (Highway 3), the Bow Valley (Highway 1), the Athabasca Valley (Highway 16), and the Peace Valley (Highway 43 and 49). Each of these east-west connections are already highly fragmented and compromised in several locations at the local scale (e.g., the community of Canmore, across the Crowsnest Pass, and through Hinton). The Bow Valley, Crowsnest Pass, and Athabasca valley are divided by a railroad, a major highway, and large pockets of development. The Athabasca Valley also contains existing mines. Maintaining the remaining habitat connectivity these valleys provide is vitally important in preserving connectivity for wildlife populations across the Eastern Slopes.

Given the pace of industrial development in Alberta, it is important that areas of high conservation value are identified and prioritized for conservation. These areas should be representative of the diversity of Alberta's landscape and allow for connectivity of ecosystems across the province. Alberta's foothills are currently underrepresented in the existing protected areas system, yet areas of the foothills have been highlighted as high conservation priority (Ronson and Pendlebury, 2015).

FIGURE 9: GRIZZLY BEAR SECURE HABITAT AND MOVEMENT CORRIDORS WITH COAL MINE EXPLORATION SITES AND LEASES.

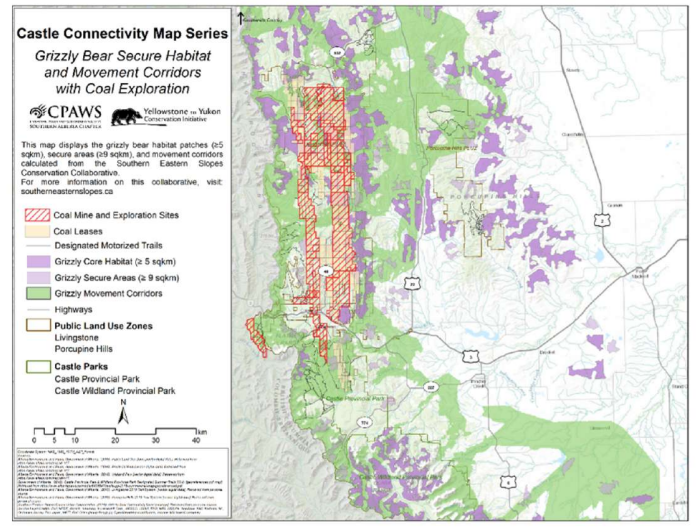
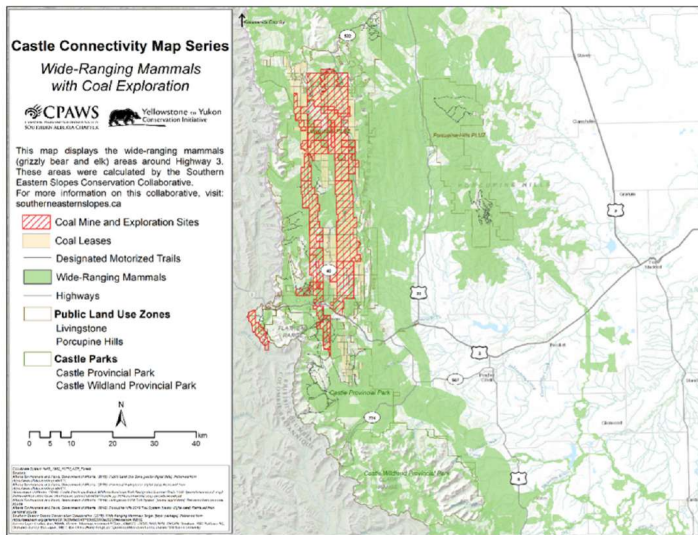


FIGURE 10: WIDE-RANGING MAMMAL HABITAT WITH COAL MINE EXPLORATION AND LEASES, AND LINEAR DISTURBANCES (I.E., ROADS AND TRAILS) ALONG THE SOUTHERN EAST SLOPES.



Maintaining the remaining habitat connectivity these valleys provide is vitally important in preserving connectivity for wildlife populations across the Eastern Slopes.

FESCUE GRASSLANDS

Grasslands are one of the most imperilled ecosystems on the planet (Samson and Knopf 1994); only about 25-30% of original Canadian grasslands remain (Gauthier and Wiken, 2003), and two thirds are under cultivation or development for mineral extraction and settlement (Riley et al. 2007). Grasslands along the foothills will also be significantly impacted by coal exploration and development (Figure 11). These lands provide many environmental, economic, and social benefits to Albertans. Grasslands provide essential habitat for a wide variety of species, but they also provide essential ecological goods and services. Among other things, grasslands provide water cycling and regulation, pollination, and climate regulation (Haddock et al., 2012).

Only 37% of native vegetation remains in the Grassland and Parkland Natural Regions of southern Alberta, 24% in the Central Parkland Natural Subregion, and 55% in the Dry Mixed Grass Natural Subregion. In the Foothills Fescue Natural Subregion, 35% of native vegetation remains and 52% remains in the Foothills Parkland Natural Subregion (ABMI 2015a). In Alberta, grasslands have been lost due to agriculture crop production, industrial development, and urban and rural infrastructure (Alberta Sustainable Resource Development, 2010). The remaining grasslands in the foothills are an important component of a diverse ecosystem. Due to their geographical location sandwiched between the plains and the mountains, wide-ranging topography, and elevation gradients they provide an array of rich habitats for plants and animals. Though the Grasslands Natural Region comprises only 14.6% of Alberta's total land surface, about 60% of the bird, fish and mammal species, 37% of the invertebrate species, and 52% of the vascular plants are found in this natural region (ABMI, 2013).

Grasslands are also very important agriculturally, supporting various food crops and livestock production. Native prairie, when used as rangeland for cattle, adds millions of dollars each year to the provincial economy; beef production provides valuable protein for human consumption, and keeps native grasslands open for other uses (Prairie Conservation Forum, 2016). Well-managed fescue grasslands are important for livestock in southwestern Alberta.

Even though grasslands are critical for many species and an essential component of the Alberta identity, threats to their integrity are intensifying. For example, invasive plant species introduced through disturbance such as coal exploration, roads and pipelines, compete with native species. This can change ecosystem dynamics and processes (Bart and Hartman, 2000), thus having profound effects on native species (Mack, 1989; Howe and Knopf, 1991; D'Antonio and Vitousek, 1992; Christian and Wilson, 1999). For example, once disturbed, native grasses are easily displaced by introduced species with shallow roots, such as bluegrass and wheatgrass (Bradley 2003b). Native grasses also have difficulty re-establishing when competing with non-native perennials (Clark, 1998).

As human activity increases in an area, this pervasive threat intensifies without proper management (Nature Conservancy of Canada, 2016). Control and eradication methods are time consuming, costly, and ineffective, usually only keeping plants at a tolerable level. Non-native seed mixes used in reclamation activities, often designed to reduce costs and to help stabilize soil as quickly as possible after industrial activities, also increase the likelihood of non-native species becoming established (Maynard and Hill, 1992). Often, after reclamation, soil organic moisture and microbial activity are lower than surrounding undisturbed sites (Viall et al., 2014). This is thought to be the reason why plant communities fail to re-establish to pre-disturbance levels (Viall et al., 2014).

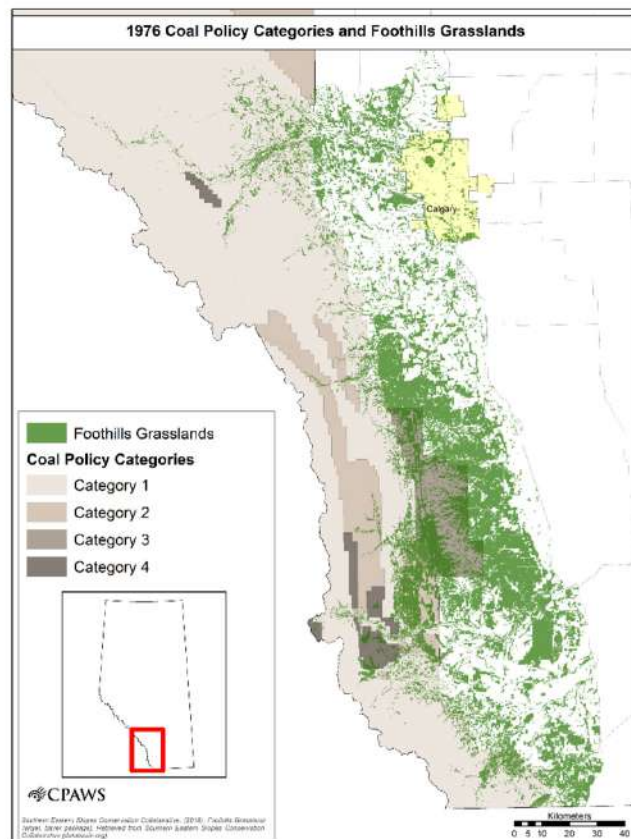
We currently lack the tools and knowledge to restore foothills fescue grasslands after they are disturbed by land use activities (e.g., road construction, oil and gas development, mineral exploration developments and cultivation; Alberta Sustainable Resource Development, 2010). Long-term restoration success has yet to be demonstrated and documented on industrial sites subject to the complete range of production and operational disturbance-related activities (Alberta Sustainable Resource Development 2010). These disturbances, combined with the sensitivity of fescue grassland, and the great length of time fescue takes to establish, has made restoration to the reference plant community virtually impossible (Holroyd, 2008).

FIGURE 11: EXTENT OF FOOTHILLS GRASSLANDS ECOSYSTEMS AND THE 1976 COAL POLICY LAND CATEGORIES. DATA OBTAINED FROM THE SOUTHERN EAST SLOPES MAPPING TOOL ON DATA BASIN.

BIODIVERSITY

The planet is facing a biodiversity crisis with relatively rapid rates of species loss (Levin and Levin, 2002). Scientists estimate that vertebrate species have declined by an average of 70% in the 50 years. Research suggests that unless action is taken to address climate change, another 15-37% of species may be committed to extinction (Thomas et al., 2004). The biodiversity crisis also refers to species distribution loss and population decreases, which can imperil other ecosystem functions and species interactions essential to ecological processes. The Living Planet Index (LPI) measures the health of over 16,000 populations of approximately 4,000 species and shows a global decline of 60% in populations between 1970 and 2014 (World Wildlife Fund, 2020).

The Eastern Slopes of Alberta contain many of Alberta's richest remaining pockets of biodiversity. For example, Castle Provincial Park and Castle Wildland Provincial Park protect valuable watersheds and habitat for more than 200 rare species, including those already mentioned (i.e., pines, bears, and trout), as well as Jones' Columbine, Dwarf Alpine Poppy, wolverine, and Harlequin duck.



OTHER LAND-USES AND CUMULATIVE EFFECTS

With the numerous industrial activities occurring across the Eastern Slopes, cumulative effects are already being recorded (Stelfox and Donahue, 2021). Potential development of hundreds of thousands of hectares of coal leases over several decades and ongoing exploratory activities will compound these effects. While industry environmental impact assessments require an assessment of cumulative effects, these sections of reports are often weak and inaccurate. Thus, regulators and decision makers are forced to assess each project based on its localized environmental impact, which is only a partial representation of project impacts. Proponents also often argue the effects of each project in isolation can be managed or mitigated with often unproven solutions like dilution of pollutants and deployment of new technologies. The Government of Alberta and the AER should be basing approvals based on

evidence of effective mitigation and reclamation practices, not hypothetical or untested approaches. Each project's effects on critical habitat of species at risk may be minimized, but the cumulative effects on the region from multiple projects are not adequately examined in individual impact assessments.

Cumulative effects of proposed metallurgical coal mining activities across the region should also be considered in a federal context. Canada has committed to preserving ecologically important areas and headwaters, several species at risk, and addressing cumulative effects. Coal mining in the Eastern Slopes of the Rocky Mountains in Alberta and in the Elk Valley in British Columbia should be influenced by these commitments. In response to the biodiversity crisis, 50 countries, including Canada, pledged to protect 30% of the planet by 2030. This requires bold action to preserve the incredible biodiversity of species native to the Eastern Slopes of the Rocky Mountains. It is unclear how federal commitments align with provincial priorities for coal development, which is why we have been two of several organizations recommending that coal development in Alberta be subject to Federal Environmental Impact Assessments. These assessments will ensure a more thorough consideration of cumulative effects and biodiversity impacts within the context of federal commitments.

As mentioned in the above section on Land Use Planning, creating a new Coal Policy is one part of the need for a comprehensive process to assess and regulate the cumulative impacts on the entire Eastern Slopes under the land use planning framework. In the absence of Regional and Subregional plans there has not been any comprehensive cumulative effects planning across the Eastern Slopes.

CLIMATE RESILIENCE AND CHANGE

CLIMATE RESILIENCE

Coal development and use has significant implications for our climate. Unabated, coal development and consumption are key drivers in increased carbon emissions (Pandey et al., 2017; International Energy Agency, 2020). The land used for coal development and exploration, however, can also impact the resilience to climate change provided by natural areas and systems. Canada's forests, grasslands, wetlands and ocean are part of the climate change solution through their ability to absorb greenhouse gas (GHG) emissions (Canadian Parks and Wilderness Society, 2018).

Connectivity between habitats is essential for wildlife movement but is also a key strategy in proactively mitigating the impact of climate change on the region's flora and fauna. Connectivity ensures species can migrate and adapt to our changing climate, as well as provide essential habitat refugia. Climatic refugia are habitats that wildlife and plants can retreat to or persist in under changing environmental conditions (Keppel et al., 2012). Climate change refugia are defined as areas relatively buffered from contemporary climate change over time that enable persistence of valued physical, ecological, and socio-cultural resources. Climate refugia are characterized by the occurrence of relatively stable local climatic conditions that persist over time, despite change at the regional or global scales (e.g., deep lakes, wetlands, rock glaciers and talus slopes, valleys with inversions; Morelli et al., 2016). These areas are often predicted to change less, or slower in the face of climate change, and should be prioritized for protection to allow species more time to survive and adapt (Schneider, 2015). Importantly for boreal birds, and other species, Alberta's Eastern Slopes have been identified as priority areas of climate refugia (Stralberg et al., 2015;

The Northern Alberta Conservation Area Working Group, 2016).

As the climate changes, areas of potential climate refugia along the eastern slopes will become increasingly important to maintain biodiversity, particularly for cold-dependent species (e.g., native trout), and for provision various ecological goods and services such as water provision and filtration. The Eastern Slopes will not be an effective climate refuge if habitat is destroyed by coal mine exploration and development. Stralberg et al. (2020) demonstrated the importance of the eastern slopes as climate refugia based on backwards climate velocity, which is “the distance and rate at which organisms adapted to a location’s future climate will need to move to reach that location”. For example, backwards climate velocity would be lower in alpine areas where it is easier for a species to move upslope to newly climatically suitable habitat than it is for a species in an area without a steep topographic gradient (Figure 12).

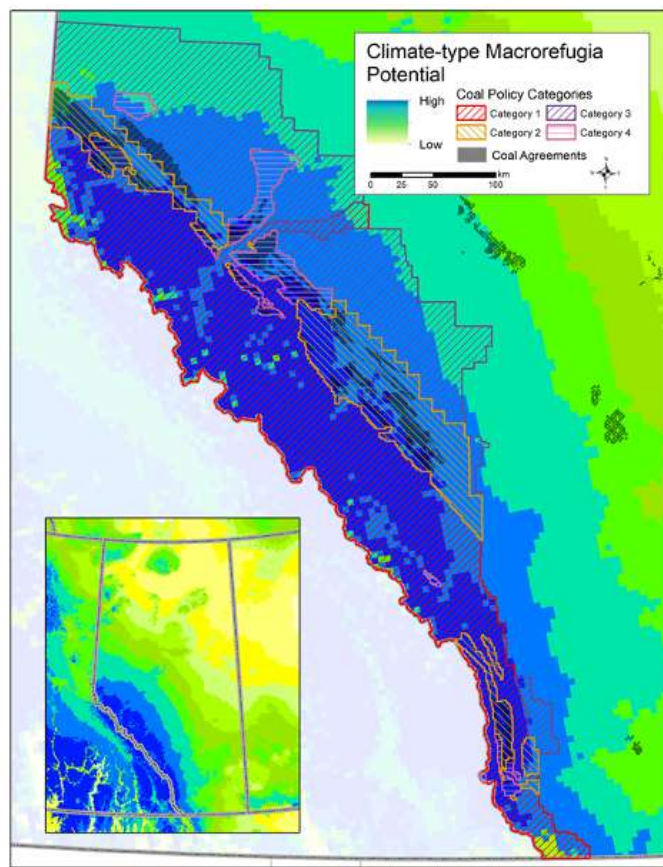
FIGURE 12: CLIMATE REFUGIA POTENTIAL IN SOUTHERN ALBERTA (FROM STRALBERG ET AL., 2020) WITH 1976 COAL POLICY LAND USE CATEGORIES. DARKER AREAS ON THE MAP INDICATE REGIONS THAT HAVE A HIGHER CLIMATE REFUGIUM POTENTIAL IN THE 2070-2100 PERIOD.

CLIMATE CHANGE

The energy sector is the source of approximately three-quarters of GHGs today, meaning that this sector holds the most potential to reduce GHGs and reduce the pace at which climate change occurs. Reducing global carbon dioxide (CO₂) emissions to net zero by 2050 is consistent with efforts to limit the long-term increase in average global temperatures to 1.5 °C (International Energy Agency, 2021). This requires a paradigm shift in how our society obtains and uses energy.

The Intergovernmental Panel on Climate Change (IPCC) estimates that a 1.5° C increase in the global average temperature will have negative ecosystem and biodiversity impacts, but that the impacts, such as species loss and extinction, will be less severe than at a 2°C increase. There will be less impacts to ecosystem services is warming is limited to 1.5°C (IPCC, 2018). Canada has already experienced a 1.7°C increase in temperature since 1948, which is twice the global average. We must significantly reduce our greenhouse gas emissions to prevent a further increase in temperature and avoid the environmental changes that will result.

Canadian governments at all levels have pledged to both reduce the GHG emissions causing climate change and increase effective measures to protect biodiversity. If the federal government meets its commitment under the Paris Agreement to reduce GHG emissions to 30% below 2005 levels by 2030,



Canada's ecosystems will experience greater stability and better support biodiversity. Nature-based solutions, including natural infrastructure, will be an important part of the process.

Mining is a significant contributing factor to the twin global crises of climate change and biodiversity loss. Each crisis exacerbates the other, with climate change causing populations and species to go extinct, and the loss of biodiversity making ecosystems more vulnerable to climate change.

IMPACTS TO ALBERTA ECONOMIES AND QUALITY OF LIFE

Coal development in the Eastern Slopes risks undermining economic pillars, such as ranching and agriculture, and outdoor recreation and tourism. Economic impacts to the many people who work directly in or support these industries far outweigh the suggested economic benefits of coal mining.



THE ALBERTA PRAIRIES, PHOTO CREDIT: MARTIN PRENTICE

The Joint Review Panel charged with reviewing the Grassy Mountain Coal Mine proposal concluded that the economic benefits from the mine would be low to moderate. The JRP found that the projected economic return in the form of jobs, revenue, and income were low at the provincial level and only moderate at the local level; they also found that the project could have negative economic impacts on other sectors, which was not addressed by the proponent. It is unlikely that other mines across the Eastern Slopes would have any higher economic benefit, yet they would also likely have equally high economic and environmental risks.

Four key issues related to the economic risks of new coal mines in the Rockies include:

1. The potential to undermine existing, more long-term sustainable, economies
2. The potential to exclude future emerging economies
3. The global future of fossil fuels
4. Unfunded environmental liabilities

THE POTENTIAL TO UNDERMINE EXISTING, MORE LONG-TERM SUSTAINABLE, ECONOMIES

While some relatively short-term economic benefits could be generated from new coal mines in Alberta, these lands already support a number of long-term, sustainable economic activities including ranching, agriculture, recreation, and tourism, as well as the provision of ecosystem services.

The region has long been an important area for sustainable ranching operations. Threats to water quality and quantity and habitat loss from coal mines may jeopardize grazing allotments and downstream ranch operations. This could permanently reduce or eliminate the area's ability to support cattle and wildlife in the foreseeable future. Native fescue provides excellent cattle forage and cannot effectively be reclaimed once it has been destroyed. Healthy, productive riparian areas also represent an opportunity for ranchers to sustain their operation and potentially earn more revenue, since abundant water, shelter and forage translate into better production (Fitch et al. 2003). Downstream agricultural producers also rely on clean water and natural flows to sustain operations; reductions in water quantity and quality could affect these producers and irrigators, as well as overall crop productivity, and marketability.

The natural beauty supported by Alberta's parks and wild public lands along the Eastern Slopes are being recognized internationally as a unique wilderness destination for tourists seeking a uniquely Albertan experience. In 2019, 34.7 million people visited Alberta and contributed \$6.5 billion to Alberta's GDP; the sector accounted for 68,000 full-time equivalent jobs (Government of Alberta, 2021). The forests, grasslands and streams of the Eastern Slopes offer many recreational opportunities for hunters, anglers, hikers, campers, bird and wildlife watchers, and other outdoor recreationists. With a growing urban population, farm or ranch vacations and rural prairie tourism are flourishing, bringing important revenue to rural residents and small communities (Southern Eastern Slopes Conservation Collaborative, 2018). Southwest Alberta was recently named in the Global Top 100 Sustainable Destinations in 2020 (Green Destinations, 2020). The region was also a top three finalist for the Best in Americas award for the 2020 Green Destinations Award, receiving accolades as a "place among global destinations that strive to be more sustainable for the benefit of travelers and local communities, and to preserve, enhance and celebrate our iconic character of place" (Green Destinations, 2020)

Other areas along the Eastern Slopes, including central Alberta, have great potential for similar development of recreation and amenity migration economies. Central Alberta possesses much of the same spectacular scenery and breathtaking views that draw people to popular mountain destinations in Alberta, yet it lacks the appropriate infrastructure to manage the associated im-

pacts. With a lower public profile, the Bighorn region in central Alberta is perhaps at greater risk than more well-known areas in the province for industrial development encroaching on important ecological landscapes and recreational opportunities. We recommend the current and future value of tourism, recreation, amenity migration and other sustainable economies across the Eastern Slopes be considered in coal mining related decisions to ensure that developments truly economically benefit Albertans over the long term. We are confident that if tourism and recreation are adequately considered, coal mining is not likely to prove economically profitable.

EMERGING ECONOMIES

Maintaining natural attractions increases amenity migration or the movement (seasonal or permanent) of people from urban centers to rural locations that offer a high quality of life. These migrants come in large part for the recreational opportunities and the small-town atmosphere. They are also economically active and often bring with them business and entrepreneurial skills which, if strategically managed, can result in long-term economic, environmental and social sustainability to local communities (Johnson, 2006). To support this trend, economic diversification and amenity migration plans and investments need to include conservation in planning.

In the United States, amenity migration in relation to protected areas has proven economic benefit for local communities. Non-metro counties with upward of 30% of their land base protected experienced a 345% increase in economic growth between 1970 and 2010; by comparison, counties that had less than 10% of their lands protected experienced just 90% growth during the same period (Headwaters Economics, 2012). Western non-metro counties had a per capita income \$436 higher for every 10,000 acres of protected lands within their boundaries. In 2010 western counties with 100,000 acres of federally protected lands had per capita incomes ~\$4,500 higher than similar counties with no protected lands (Headwaters Economics, 2012). Protected areas provide assurance to employers and entrepreneurs that the amenities that attract them and their employees to a region will be preserved for their future enjoyment. Recent calculations, by a multi-industry group of Canadian companies that promote responsible corporate behaviour and remove barriers to clean capitalism, found that for every \$20 invested in a green and just economy, \$307.85 would be contributed to Canada's GDP over the next 10 years (Corporate Knights, 2020).

One of the reasons for this positive relationship may be that in today's economy, a premium is placed on the ability of communities to attract talented workers. Economic growth in the western United States is being driven almost entirely by the service economy; by this it is meant high-paid business opportunities in communications, health care and related high-tech industries. The environmental and recreational amenities provided by parks and other special areas serve to attract and retain talented people who earn above average wages, and have above average wealth (Headwaters Economics, 2019, State Outdoor Business Alliance Network, 2021).

Communities on the Eastern Slopes of Alberta are ideally suited to take advantage of the sort of economic opportunities afforded it by its natural amenities. Protected areas and well managed public land enhance the region's ability to attract long term economic growth without sacrificing its natural beauty and watershed values. Coupled with sound planning at the municipal and provincial level, an emphasis on amenity migration could provide much needed social and economic benefits for places like the Crowsnest Pass, Pincher Creek, Nordegg and along the heralded Cowboy Trail.

We cannot create a stable future by focusing on another boom-and-bust non-renewable re-

source. Although natural resources will always have a place in the Alberta economy, it is imperative that resource extraction occurs in appropriate locations, is well regulated, and provides more benefits than risks that do not undermine sustainable growth. Alberta's natural amenities and small-town character are every bit as critical to our economic future as are our roads, hospitals, schools, and airports. As with all types of infrastructure, this Rocky Mountain setting requires care, attention, and investment. To fully capitalize on our exceptional lifestyle means maintaining and enhancing these invaluable assets, ensuring that our wildlands stay wild, our rivers flow clean, and our communities sustain their traditional roots even as we move into a new economy. Nature conservation, nature-based climate solutions and sustainable recreation and tourism should be part of the future sustainable and diversified economy.

MINING OPERATION, PHOTO CREDIT: GARTH LENZ



THE FUTURE OF FOSSIL FUELS

For decades, Alberta has relied heavily on non-renewable resources as a staple of our economy. While this has allowed for unprecedented prosperity and growth, it comes at the cost of environmental damages, uncertain boom and bust economies, and a legacy of environmental liabilities and clean-up costs. Even though short-term jobs are created, volatile prices, international market uncertainty, and the continued automation of this industry has reduced the long-term economic significance of these

industries. Fossil fuel extraction is no longer the reliable job producer it once was, particularly as the world moves away from carbon intensive fuel sources.

The International Energy Agency (2021) notes that there is no need to further invest in fossil fuels beyond projects already committed, rather to achieve net zero and focus on climate change, a sharp decline in fossil fuel demand has already begun. Given this current and projected decline in demand for fossil fuels, the International Energy Agency recommends retraining and regional revitalization programs to reduce the social impact of job losses at the local level and to enable workers and communities to find alternative livelihoods. This will be a key part of a diversified and green economy.

Likewise, in a May 21, 2021 Communiqué, the G7 Ministers outlined the concerns related to the interdependent crises of climate change and biodiversity loss, which pose an existential threat to nature, people, prosperity and security. The G7 Ministers committed to aligning official international financing with the global achievement of net zero GHG emissions (G7 Climate and Environment Ministers, 2021). They committed to phasing out new direct government support for carbon intensive international fossil fuel energy, except in limited circumstances at the discretion of each country, in a manner that is consistent with an ambitious, clearly defined pathway towards climate neutrality. This commitment was made to keep limiting global temperature increases to within 1.5°C, in line with the long-term objectives of the Paris Agreement.

FINANCIAL LIABILITIES

The economic benefits of coal mining are outweighed by the economic costs and liabilities left for Albertans. Another key economic risk of coal mines in Alberta's Rocky Mountains is the future unfunded liability of reclamation and clean up. It is not difficult to anticipate the massive public liability these projects represent, particularly given the cost of current liabilities from abandoned energy infrastructure already plaguing Alberta taxpayers across the province. The federal government has already allocated \$1.7 billion to help clean up orphaned and abandoned oil and gas wells in BC and Alberta and \$2.2 billion towards cleanup and reclamation of abandoned mine sites in the Yukon and Northwest Territories. Once markets drop and companies can no longer make a profit, Albertans could be left with even more financial liabilities to clean up more environmental damage, which has already occurred with coal mines here and elsewhere in the world.

Benga Mining Limited estimated the total cost of reclamation for their single mine would be approximately \$59.6 million dollars after 15 years of operations. Comparatively Teck has spent \$45 million dollars on one fluidized bed reactor water treatment facility, which needed to be taken offline due to conversion to toxic organic-selenium (Benga Mining Limited, 2019; Lemly, 2019). Maintenance of mitigations and on-site reclamation could require monitoring and financial inputs for decades, which is not accounted for in the standard Environmental Impact Assessment Process. This is a significant gap in the process that exemplifies the lack of true cost accounting reflected in mine proposals, a gap that eventually falls to Albertans to cover.

Alberta's Mine Financial Security Program (MFSP) is designed to off-set reclamation liabilities, but there is a significant risk that asset values calculated by the department are overstated within the program (Auditor General of Alberta, 2019). This includes a failure to fully account for future risk, underestimating the impact of future price declines, and treating proven and probable reserves as equally valuable. Currently the AER's calculations from June 2019 estimate the liabilities for clean-up to be around \$31 billion, but the MFSP currently holds less than \$2 billion (Shibley and Yewchuck, 2020). In addition, Alberta Environment and Parks has yet to implement the auditor's 2015 recommendations to improve the overall design of the MFSP system (Auditor General of Alberta, 2019).

The MFSP uses the asset-to-liability approach determine the size of the deposits the mining company must pay to the regulators, but this fails completely when the price of the resource drops suddenly. Coal, gas, and oil are all famously price volatile commodities in normal conditions, and the possibility of a major shift to renewable energy raises the possibility of a permanent collapse in prices. If the price of coal drops quickly and the mine becomes unprofitable and declares bankruptcy, the MFSP massively fails and the clean-up costs are left to the government (Shibley and Yewchuck, 2020).

The MFSP assumes that coal prices will stay high until the Alberta coal mines have already been closed and reclaimed within a 25-30 year period. Given international and Federal commitments to reduce emissions, approving coal mines under the current MFSP sends a message that Alberta is choosing not to act on climate change now. If Alberta later chooses to take action on climate change, the value of Albertan coal will decline and the MFSP will fail to collect sufficient security, leaving Albertans to pay for the clean-up.

The value of the coal itself is an important factor in understanding both the economic benefits, including royalties, and the likelihood that the companies will meet projected profits to meet mitigation and reclamation requirements, as well as pay into the MFSP. For the Grassy Mountain Project hearing CPAWS retained metallurgical coal quality specialist, Cornelis Koliijn, to assess the quality and economic value of the coal. Results of his analysis suggest Grassy Mountain would

produce a 2nd tier hard coking coal with poor coking properties, and the coal quality would drop over the life of the mine. This will likely force Benga to sell at an increasing discount as buyers would need to blend Grassy Mountain coal with increasingly expensive high-quality coal to produce a useable coking blend. The poor coal quality would make the company particularly vulnerable to price fluctuations, thus making it unrealistic to assume metallurgical coal prices would be stable for 23 years. This volatility could make it difficult for Benga to generate adequate cash flow to cover capital and operational costs as well as ongoing environmental mitigation and reclamation efforts. These realities were acknowledged by the Joint Review Panel assessing the Grassy Mountain Mine.

QUALITY OF LIFE

The value of intact natural landscapes is not limited to their direct economic contributions but also include the benefits of increased quality of life and health, scenic and aesthetic values, and the embodiment of the Albertan identity. The mountains and foothills of Alberta's Eastern Slopes comprise some of the best areas for recreation and enjoyment of nature, providing places for Albertans to hike, camp, bike, fish and hunt, and live in some of Alberta's most revered landscapes. These opportunities contribute to our high quality of life. The Eastern Slopes support quiet rural living, as well as traditional Indigenous land-uses and Treaty Rights. They tie us to our past and form the basis of our future. This quality of life attracts productive and creative people to Alberta to take advantage of a healthy lifestyle and abundant recreational opportunities. It encourages people to stay, work and set up businesses, and raise families. It is a part of our identity as Albertans and as Treaty people.

The landscapes of the Southern Eastern Slopes are recognized in the South Saskatchewan Region Plan as critical in the Crown of the Continent ecosystem that has been recognized by National Geographic as some of the World's most pristine and unspoiled treasures (Government of Alberta, 2018). While regional plans for the rest of the Eastern Slopes are not yet completed, these inherent values apply to the whole landscape. The regional plan for the North Saskatchewan Region is underway, however, and efforts to expand coal mining development could compromise that comprehensive land use planning exercise.

Research shows that active living and outdoor recreation contribute to people living longer and enjoying a better quality of life as they age; access to nature is essential for physical and emotional health. Throughout the COVID-19 pandemic, Albertans have flocked to public lands to recreate and re-connect with Alberta's nature. Kananaskis Country alone saw an increase in visitation from 3.2 million people in 2019 to over 5 million in 2020 (Rob Simieritsch, Alberta Environment and Parks, personal communication, February 2021). The need to preserve our outdoor landscapes also extends to the cultural history they represent; restoring and protecting elements of our culture and identity are paramount to the sustainability of Alberta's strong and vibrant cultural heritage (Government of Alberta, 2018). Maintenance of natural landscapes through parks and well managed public lands are inherent in the protection of these quality of life and cultural values.

Alberta contains many Provincial Recreation Areas (PRAs), which are managed under the Provincial Parks Act to support compatible outdoor recreation and tourism. PRAs are typically small parcels of land that provide access to lakes, rivers, reservoirs, and adjacent Crown Land for recreational purposes. Provincial Parks and Wildland Provincial Parks are also managed under the Provincial Parks Act, but have more conservation focused mandates to preserve and protect natural heritage and provide compatible recreation activities (Alberta Parks, 2018). These land

designations contribute to the maintenance of the aforementioned values. There are no coal mines planned within PRAs or Provincial Parks, however, the impacts of mining activity often extend beyond the mine footprint. Coal mine proposals do surround some PRAs and are directly adjacent to several Provincial and Wildland Parks (Figure 13). Massive disturbances like mines reduce management effectiveness of protected areas by negatively impacting wildlife movement, genetic distribution, and water flow, as well as recreational access and enjoyment. For example, the Upper Oldman North PRA, a popular summer destination for boating and camping borders the proposed Atrum mine. The Livingstone PRA is close to the proposed Cabin Ridge mine, and the much-loved recreational opportunities in Crescent Falls PRA near Nordegg would be directly

impacted if coal exploration and development proposals were to proceed.

Large areas of mining activity on public land are not publicly accessible, thus Albertans and visitors alike will lose valuable recreation and cultural connection opportunities on public lands. These lands provide key opportunities to support economic diversification as outdoor recreation destinations in areas such as the Crowsnest Pass, Livingstone, and Bighorn regions. Albertans highly value public land, and access to it, as is reflected in their outcry associated with the proposed delisting of parks and provincial recreation areas in 2020 and their concern regarding coal mining, which led to the creation of the Coal Consultation Committee and this current public consultation process.

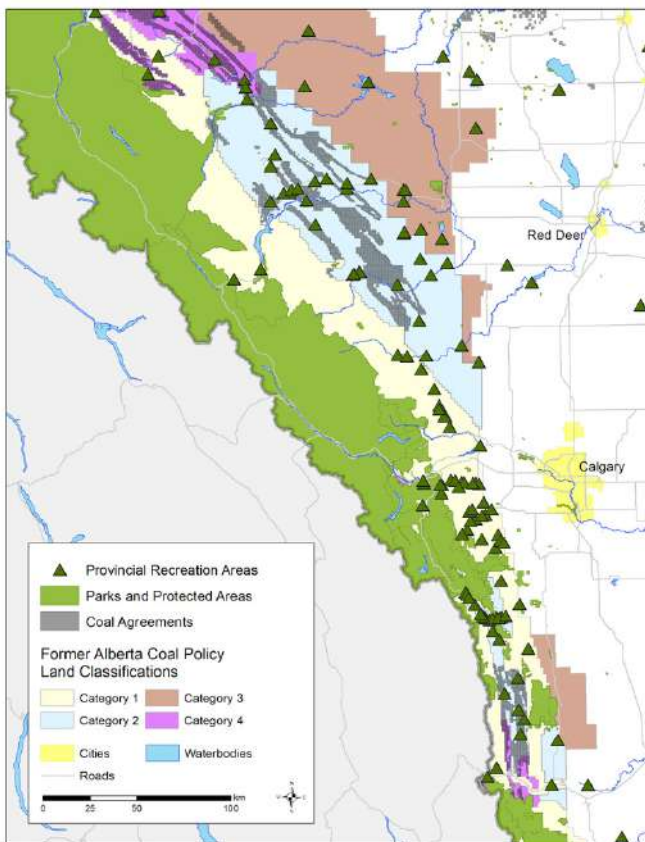


FIGURE 13: LOCATION OF PROVINCIAL RECREATION AREAS AND PARKS AND PROTECTED AREAS WITH CURRENT COAL AGREEMENTS AND THE 1976 COAL POLICY CLASSIFICATIONS. MAP CREATED BY CPAWS SOUTHERN ALBERTA.

ECOSYSTEM SERVICES: THE BENEFITS PEOPLE GET FROM NATURE

Our daily lives rely on nature and the ecosystems around us. Drinking water, crop pollination, fresh air, flood prevention, human mental and physical well-being are all benefits that people get from nature. Recent peer-reviewed research led by the University of British Columbia with researchers from Yellowstone to Yukon Conservation Initiative (Y2Y), Wildlife Conservation Society Canada, Carleton University and McGill University, models and maps the most important places for key benefits that people get from nature across Canada: the supply, demand, and provision of freshwater, outdoor recreation and carbon storage.

Crucially, this research shows that some of the most critical areas where people benefit from nature do not occur within currently protected areas and may be threatened by current and future natural resource extraction (Figure 14; Mitchell et al., 2021). Given Canada's commitment to protecting 30 per cent of the country by 2030, research like this is required to help all levels of government design and implement plans that ensure both people and nature thrive.

The Y2Y region in Alberta largely encompasses the eastern slopes, which was shown to be *nationally* significant for the combination of ecosystem services actually provided to people (e.g., direct benefits to people within the Eastern Slopes as well as living elsewhere). Mitchell et al. (2019) demonstrated that the Alberta Y2Y region stores 12.0% of the 19.6 gigatons of carbon in the province, including 11.3% of the belowground carbon and 20.4% of the above ground carbon (Figure 15a-b). In addition, the eastern slopes represent some of the best aboveground carbon storage hotspots in Alberta (Figure 16).

This research also quantified the importance of the Eastern Slopes for water provision; nearly three-quarters of the freshwater hotspots in Alberta are in the Eastern Slopes area. This provision coincides with the area of highest demand for freshwater, the North and South Saskatchewan watersheds (Figure 17a-b). This research quantifies what many people in Southern Alberta have come to know: the headwaters of the Eastern Slopes are critical supplies of freshwater for to people and agriculture downstream and across the prairies.

Another ecosystem service provided by the Eastern Slopes is abundant and diverse recreational opportunities. Recreation has been the subject of multiple planning efforts, demonstrating an awareness in the Alberta Government of its importance to Albertans and its potential impact on the landscape. Nearly two-thirds of the recreation provision hotspots in Alberta are along the Eastern Slopes (Mitchell et al., 2019). Overall, the Eastern Slopes contain a high concentration of ecosystem service hotspots in Alberta, and therefore represent a critical area for conservation in the province.



Recreation has been the subject of multiple planning efforts, demonstrating an awareness in the Alberta Government of its importance to Albertans and its potential impact on the landscape. Nearly two-thirds of the recreation provision hotspots in Alberta are along the Eastern Slopes.

(Mitchell et al., 2019)

This research clearly shows that the Eastern Slopes of the Rockies is one of the most important places across the whole country for their combination of freshwater, carbon storage and recreation. The researchers mapped three key benefits that people get from nature by combining both nature's capacity to supply these benefits and human access and demand for them:

- Climate regulation (e.g, carbon storage);
- Freshwater (e.g., for drinking, irrigation, hydroelectricity); and,
- Nature-based outdoor recreation.

Just 0.6% of the country (or 56,000 square kilometers) are hotspots for delivering all three benefits to people; the Eastern Slopes, and the headwaters they house, are part of that 0.6% (Figure 14f). Canada’s current protected areas tend to cover places with the capacity to provide benefits rather than those areas that actually deliver these benefits to people. What’s more, one-half to two-thirds of the identified hotspots overlap with current or planned resource extraction such as logging, mining, or oil and gas; in fact.

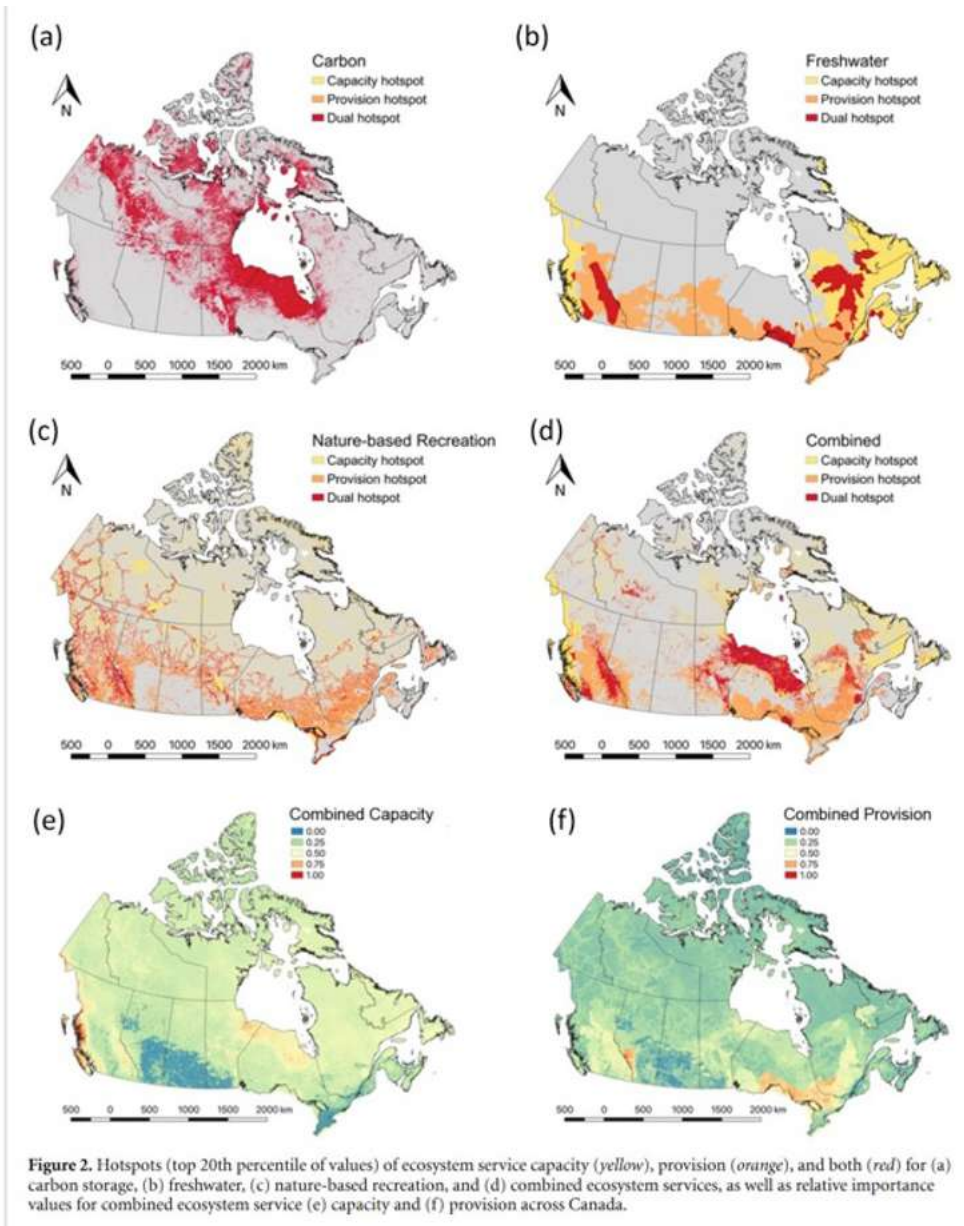


FIGURE 14: HOTSPOTS (I.E., THE TOP 20TH PERCENTILE OF VALUES) FOR THREE KEY ECOSYSTEM SERVICES MODELLED AND MAPPED ACROSS CANADA. NOTE THE DIFFERENCE BETWEEN (E) COMBINED CAPACITY (I.E., WHERE NATURE SUPPLIES THE SERVICES) AND (F) COMBINED PROVISION (I.E., WHERE PEOPLE ACTUALLY BENEFIT FROM THE SERVICES, AS A RESULT OF HUMAN ACCESS AND DEMAND). ALBERTA’S EASTERN SLOPES STAND OUT AS A NATIONALLY-SIGNIFICANT HOTSPOT WHERE PEOPLE LOCALLY AND FARTHER AWAY RECEIVE MULTIPLE BENEFITS FROM NATURE. SOURCE: MITCHELL ET AL., 2021.

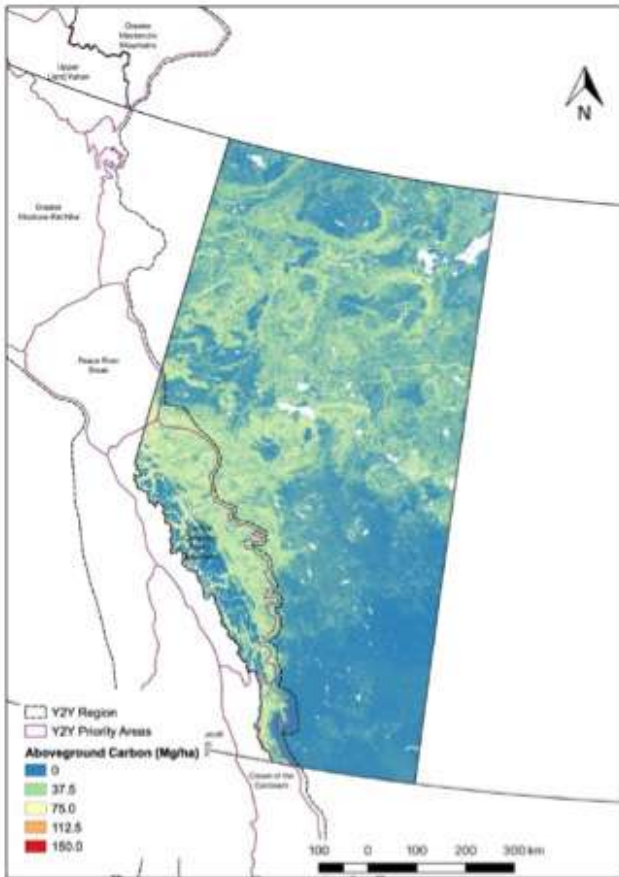


FIGURE 15A: ABOVEGROUND CARBON STORAGE IN ALBERTA. RED IS THE HIGHEST AMOUNT ABOVEGROUND CARBON STORAGE (DIFFICULT TO SEE AT THE PROVINCIAL SCALE; RED AND ORANGE AREAS ARE IN POCKETS OF THE EASTERN SLOPES) AND BLUE IS THE LOWEST AMOUNT OF ABOVEGROUND CARBON STORAGE. SOURCE MITCHELL, 2019.

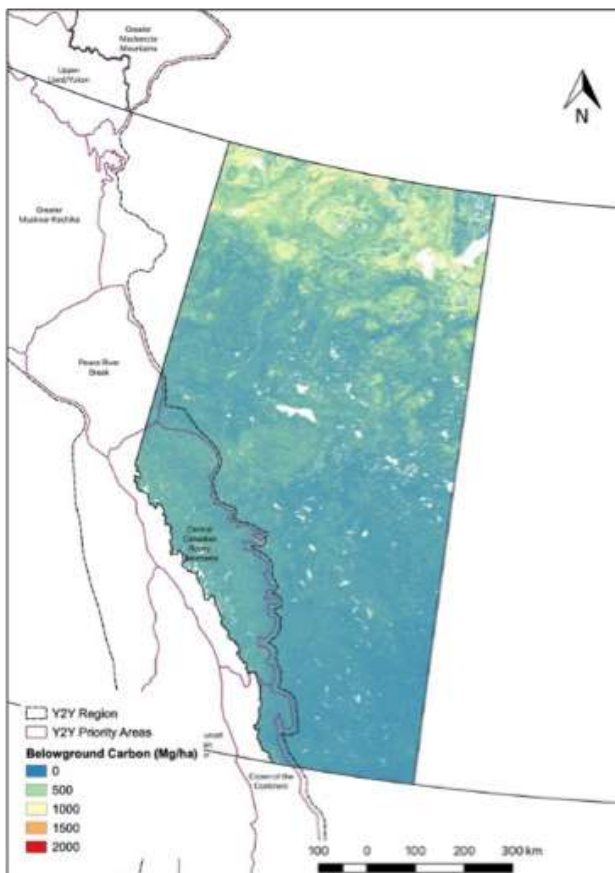


FIGURE 15B: BELOWGROUND CARBON STORAGE IN MG/HA IN ALBERTA. HERE, RED IS THE HIGHEST AMOUNT OF BELOWGROUND CARBON AND BLUE IS THE LOWEST AMOUNT OF BELOWGROUND CARBON. SOURCE: MITCHELL ET AL., 2019.

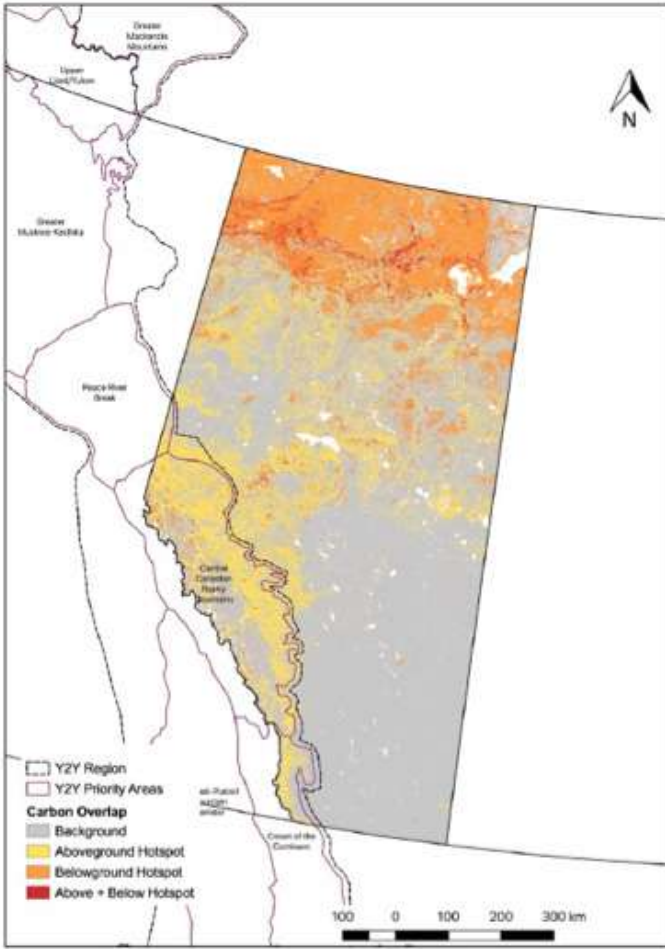


FIGURE 16: ABOVEGROUND (YELLOW), BELOWGROUND (ORANGE), AND TOTAL (RED) CARBON STORAGE HOTSPOTS IN ALBERTA, WHERE A 'HOTSPOT' IS DEFINED AS THE TOP 20TH PERCENTILE OF VALUES. SOURCE: MITCHELL 2019.

ABRAHAM LAKE, PHOTO CREDIT: MARTIN PRENTICE



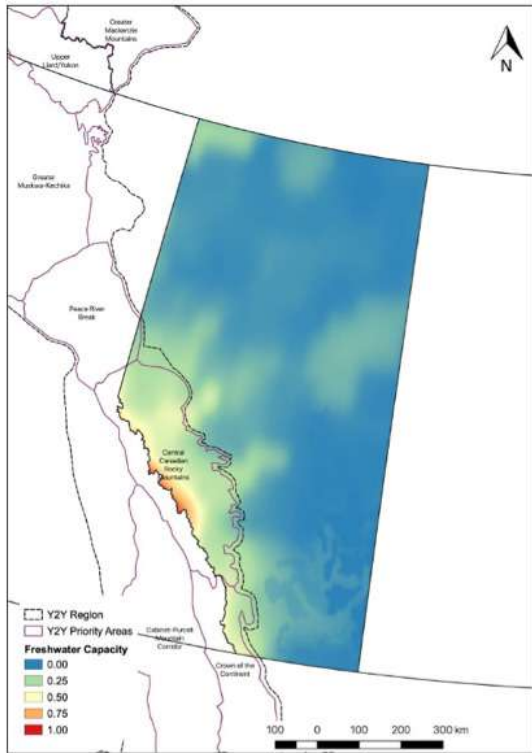


FIGURE 17A: FRESHWATER CAPACITY IMPORTANCE IN ALBERTA. THIS SHOWS THE 'CAPACITY' (I.E., XYZ) OF THESE PLACES TO SUPPLY WATER (RED IS THE HIGHEST DEMAND AND BLUE IS THE LOWEST CAPACITY). SOURCE: MITCHELL 2019.

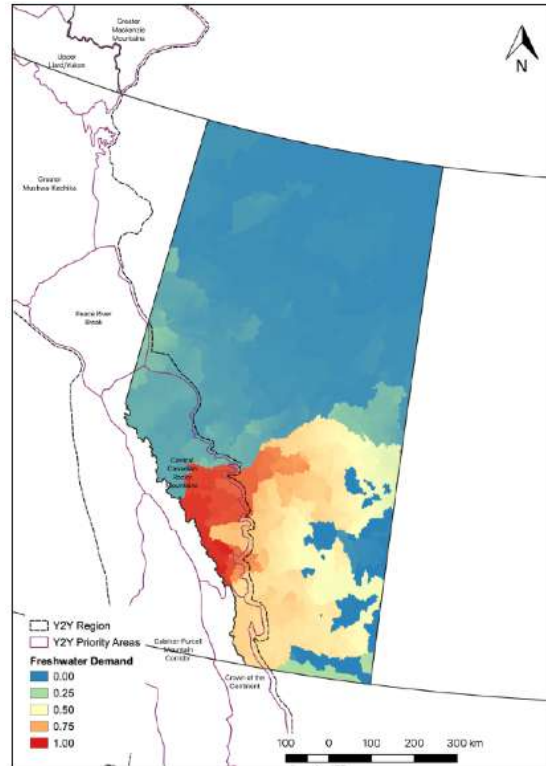


FIGURE 17B: FRESHWATER DEMAND IMPORTANCE IN ALBERTA. THIS SHOWS THE COMBINATION OF DOWNSTREAM HUMAN DEMANDS ON WATER THAT COMES FROM UPSTREAM (RED IS THE HIGHEST DEMAND AND BLUE IS THE LOWEST DEMAND). SOURCE: MITCHELL 2019.

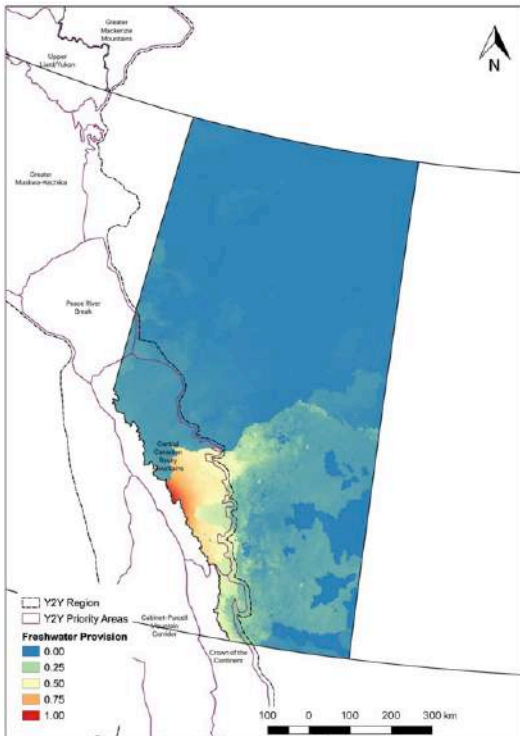


FIGURE 17C: FRESHWATER PROVISION IMPORTANCE IN ALBERTA. SOURCE: MITCHELL 2019.

TREATY RIGHTS AND INDIGENOUS PEOPLES

The lands and waters of the Eastern Slopes are critical to Indigenous Peoples' relationship with the land from time immemorial to seven generations into the future from now. These lands are critical for Indigenous Peoples' to exercise Treaty and Indigenous rights. Ongoing coal mining exploratory activity across the region, as well as the extent of active coal leases and lease applications, affects much of this landscape, including areas of cultural significance.

On June 29, 2020, the Kainai/Blood Tribe and Siksika Nations wrote to the Government of Alberta expressing concerns with the decision to rescind the 1976 Coal Policy and the failure of the Government of Alberta to consult with the Nations regarding this decision. The Nations also requested that they be engaged in consultation after the fact and proposed certain measures that could be taken to address their concerns and the failure to consult the Nations about the decision. On August 25, 2020, the Kainai/Blood Tribe and Siksika Nations sent a follow-up memorandum to the Government of Alberta detailing their concerns with the rescission of the 1976 Coal Policy and providing suggestions for potential accommodation measures. We are unclear if and how the Provincial Government responded to these concerns. Similarly, First Nations were also not consulted on or included in the decision to "reinstate" (with exceptions) the 1976 Coal Policy.

The cumulative impact of various activities including agricultural development, the development and expansion of municipalities, the transfer of lands to private landholders, the creation and expansion of conservation areas, tourism and recreation infrastructure, and mining and other industrial activities has resulted in much of Indigenous territories becoming occupied by activities that are inconsistent with constitutionally protected Aboriginal and Treaty rights and culture. The Rocky Mountains and Eastern Slopes in Alberta comprise a region that is one of the few remaining areas that can still support this practice.

Governments must have an informed overall assessment of the cumulative effects impacts of past, present and future project activities in a region to ensure that the occupation of Indigenous traditional territories is not violating constitutionally protected Treaty and Aboriginal rights. This is one of the reasons that thorough constitutionally adequate consultation with Indigenous Peoples' is required.

A Regional Assessment or similar vehicle would be a critical tool as part of the development of a coal policy. Any policy enactment regarding future coal mining should ensure the Crown (both provincial and federal) fulfills its duty to consult First Nations and Indigenous peoples and accommodates their constitutionally protected interests.

THERE IS NO PLACE FOR COAL ON ALBERTA'S EASTERN SLOPES

The previous sections outline the incredible importance of the Eastern Slopes that need to be considered in a new coal policy. These values are not wholly addressed in any other planning, policy or regulation in the region.

In the absence of a new Eastern Slopes Policy, a new Coal Policy is bound to the commitment in the 1984 Policy for Resource Management of the Eastern Slopes that stated the highest priority for these lands is watershed management (Government of Alberta, 1984). This policy supersedes other policies, including the 1976 Coal Policy, requiring that all policies conform with the Eastern Slopes Policy. The Eastern Slopes are areas of high ecological and social value for assets such as water, biodiversity, and recreational use, as well as various economic activities. The Coal Policy, or similarly binding policy to regulate coal development and other land-uses, must address the risk of coal to these ecological and social values and exclude any new coal development in areas important for water, species at risk, recreation, and sustainable economic activities.

When writing a new Coal Policy, we need to consider the entire landscape with all its uses and values, not just the previous coal categories. This understanding of the landscape extends beyond human drawn boundaries on a map. The fish, the elk, and grizzly bear do not see the lines on the map; water flows across these boundaries and is not limited by the labels of a certain category. Indigenous peoples require more fulsome consultation on whether coal categories or any of these developments are appropriate. If we take an interdisciplinary, holistic approach to the Eastern Slopes that weaves Western Science with Indigenous Knowledge, we can create policies with longevity that benefit all Albertans who live today as well as those Albertans seven-generations into the future.

A new Coal Policy must prohibit new coal development throughout the Eastern Slopes and address not just coal leases but also freehold rights. The May 2020 announcement on the rescission of the Coal Policy stated, "Former Category 1 lands will continue to be protected from coal leasing, exploration and development on public lands but will not infringe on private lands or freehold mineral rights." Freehold coal rights are owned by private individuals or corporations and not by the Crown. Approximately 191,000 ha of freehold mineral rights occur within the Eastern Slopes including, 83,760 ha of freehold rights in Category 1 lands that will need to be addressed and extinguished through the new Coal Policy. Multiple Ministries must be involved to do this:

THE MINISTRY OF ENVIRONMENT AND PARKS (AEP):

- Must develop or revise existing policy to address Albertans' serious concerns related to water quality/ quantity; water allocation/ apportionment; critical habitat for species at risk; connectivity for wide-ranging species; land-use planning and implementation; and cumulative effects assessment and appropriate management.
- Must utilize effective land use planning. When the Coal Policy was rescinded in May 2020, the government stated that modern regulatory processes, including the development of land-use plans, would address environmental concerns. As of May 2020, the only completed regional plan for the Eastern Slopes was for the South Saskatchewan Region. The other three remain outstanding, and the current SSRP does not address coal development. Sub-regional planning within the South Saskatchewan Region, designed to address cumulative effects in a region of prime importance for water and wildlife also remains outstanding.

THE MINISTRY OF JOBS, ECONOMY & INNOVATION:

- Along with AEP, must consider the loss of recreation and tourism opportunities that would result from coal development, and address recreation and tourism management within the direction of the Land Use Framework under the Alberta Land Stewardship Act.

THE MINISTRY OF MUNICIPAL AFFAIRS:

- Must consider and manage risk associated with increased access on Municipal District roads, impacts on water, and potential water and air contamination from coal development on MD lands.

THE MINISTRY OF INDIGENOUS RELATIONS:

- Must ensure Indigenous Peoples interested in engaging have been engaged to their satisfaction.

While the Alberta Energy Regulator (AER) does provide some regulatory oversight, it is not able to provide the oversight needed to address cumulative environmental impacts. The AER does not have the mandate to do landscape level planning of where coal developments are environmentally or socially responsible at a high level, but rather is set up to minimize impacts for projects in areas already deemed lower risk for environmental impacts or socially acceptable trade-offs can be made. The AER processes also do not address the need for public input on landscape level planning, nor public input on individual applications. Under the AER, the public cannot provide landscape level recommendations on coal development but rather must give input on each individual project at each stage of application or approval.

As we move into public consultation on a new policy to address coal, we need to be clear that we need a new vision and new plan for the Eastern Slopes of the Rockies, which reflects what Albertans want for the region for today and into the future. We do not need a new Coal Policy that continues to force Albertans to participate in the current regulatory process for each individual project activity. This is not consultation, and it is not environmental assessment.



ABRAHAM LAKE, PHOTO CREDIT: MARTIN PRENTICE

CONCLUSION

Given the extremely high social, environmental, and economic value of the Eastern Slopes, as well as commitments to honour Treaty rights and advance reconciliation efforts with Indigenous nations, CPAWS and Y2Y believe that a precautionary approach must be taken in the creation of a new Coal Policy. Particularly, given that comprehensive cumulative effects assessments and detailed land-use planning have not been completed for the region, and the government has not included land-use planning in the scope of the current consultation, it is inappropriate to designate any area for new coal mines.

WE RECOMMEND INCLUSION OF FIVE KEY PRINCIPLES IN A NEW COAL POLICY:

1. No further coal exploration or development will be permitted on the Eastern Slopes of Alberta, including expansions of existing operations. The new coal policy should cover the entire area previously covered by the 1976 Coal Development Policy and prohibit new exploration and development in this entire area.
2. Existing thermal and metallurgical coal mining operations in this region will be permitted to reach the end of their lives but must meet all provincial and federal guidelines and regulations, including water quality guidelines, for the duration of operations, post-closure and post-reclamation.
3. Reclamation of lands disturbed by coal exploration activities with coal exploration permits must be reclaimed by the company no later than December 31, 2025. Reclamation costs should be covered in full by the companies and not fall to the taxpayer.
4. Closure and reclamation of mines no longer in operation should occur as soon as possible. Re-opening of mines in Care and Maintenance should be considered as 'new mine operation' and not be permitted.
5. Comprehensive land-use planning, including cumulative effects assessment and threshold planning, should be conducted across the Eastern Slopes to address the impacts of all other land-uses and activities in the region as soon as possible. The Land Use Framework contains the tools for Regional Plans and/or subregional plans that take this comprehensive approach.

OUR RATIONALE FOR THESE FIVE PRINCIPLES IS AS FOLLOWS:

1. The inherent value of the Eastern Slopes only exists if the landscape is restored and remains intact.
2. The headwaters and landscapes of the Eastern Slopes are critical to the future of our province. Our communities, agricultural production, food production, tourism, and recreation all rely on these landscapes existing in as intact a state as possible and their watersheds providing clean water. Water is an increasingly at-risk limited resource critical to present and future generations.
3. The negative impacts on the environment, human health, animal health and existing and emerging economies far outweigh the new jobs, taxes, royalties or economics that may be generated as a result of coal development in this area.

Finally, any policy decisions relating to land-use on the Eastern Slopes, including that of coal, must consider social, environmental, and economic factors in depth and must also adhere to the principles of UNDRIP, honour Treaty rights, and advance reconciliation efforts with Indigenous nations. Any future Coal Policy has significant implications for other Ministries and must include the potential cumulative impacts and trade-offs for all rightsholders and stakeholders that stand to be impacted by mining, as well as the impacts of other human activities, in the Eastern Slopes.

**The inherent value of the Eastern Slopes only exists
if the landscape is restored and remains intact.**



DAVID THOMPSON HIGHWAY COUNTRY ALBERTA, PHOTO CREDIT: KEVIN M KLERKS

REFERENCES

- Alberta Energy Regulator and Impact Assessment Agency of Canada. 2021. Review of the Joint Review Panel: Benga Mining Limited Grassy Mountain Coal Project. Crowsnest Pass, AB. <https://iaac-aeic.gc.ca/050/documents/p80101/139408E.pdf>
- Alberta Environment and Parks. 2018. Livingstone-Porcupine Hills Land Footprint Management Plan. Government of Alberta. ISBN No. 978-1-4601-3965-3. <https://open.alberta.ca/dataset/18b70847-7d1e-462b-bc12-6aaaab2fb1ac/resource/61d7fda1-3034-414d-9c40-b7e939366316/download/livingstone-landfootprintmgtplan-2018.pdf>.
- Alberta Environment and Parks. 2020. Alberta Grizzly Bear Recovery Plan. Alberta Species at Risk Recovery Plan No. 37. Edmonton, AB. <https://open.alberta.ca/dataset/5bc2f11a-7360-48fe-a768-73127d24f039/resource/0f4abf49-9bdd-42a8-892f-a74f1a143770/download/aep-alberta-grizzly-bear-recovery-2020.pdf>
- Alberta Environment. 2006. Approved Water Management Plan for the South Saskatchewan River Basin (Alberta). Edmonton, AB. <https://open.alberta.ca/dataset/7541cb1e-b511-4a98-8b76-af33d7418fa1/resource/483eb9b0-29fd-41d4-9f81-264d53682b9a/download/2006-ssrb-approvedwatermanagementplan-2006.pdf>
- Alberta Parks. 2018. Parks System. Retrieved August 8, 2021. <https://albertaparks.ca/albertaparksca/management-land-use/parks-system/>
- Alberta Parks. July 26, 2016. Environmentally Significant areas. Alberta Parks. <https://www.albertaparks.ca/albertaparksca/library/environmentally-significant-areas-report/>
- Alberta Environment and Parks. 2020a. Draft Alberta Bull Trout Recovery Plan. Alberta Environment and Parks, Alberta Species at Risk Recovery Plan No. 46. Edmonton, AB. 107 pp.
- Alberta Environment and Parks. 2020b. Oldman River Basin Water Allocation Order: Information Briefing.
- Auditor General of Alberta. 2019. Alberta Energy Regulator: Systems to ensure sufficient financial security for land disturbances from mining followup. Edmonton, AB. https://www.oag.ab.ca/wp-content/uploads/2020/05/AER_Land_Disturbances_from_Mining_Nov2019_3TU2sqU.pdf
- Basin Advisory Committees for the Bow River, Oldman River, Red Deer River and South Saskatchewan (sub-basin) River. 2018. Review of the Implementation of the Approved Water Management Plan for the South Saskatchewan River Basin: A Report to the Government of Alberta. Calgary, AB. <https://landusehub.ca/review-of-the-ssrb-water-management-plan/>
- Beatty J.M. and G.A. Russo. 2014. Ambient Water Quality Guidelines for Selenium Technical Report Update 2014 Water Protection and Sustainability Branch Environmental Sustainability and Strategic Policy Division British Columbia Ministry of Environment ISBN 978-0-7726-6740-3 https://www2.gov.bc.ca/assets/gov/environment/air-land-water/water/waterquality/water-qualityguidelines/approved-wqgs/bc_moe_se_wqg.pdf
- Bichet, O., Dupuch, A., Hébert, C., Le Le Borgne, H., and Fortin, D. 2016. Maintaining Animal Assemblages through Single-Species Management: The Case of Threatened Caribou in Boreal Forest. *Ecological Applications* 26, 612–23.
- Bonsal, B.R., Aider, R., Gachon, P. et al. 2013. An assessment of Canadian prairie drought: past, present, and future. *Climate Dynamics* 41: 501–516
- Boulanger, J., and Stenhouse, G. 2014. The Impact of Roads on the Demography of Grizzly Bears in Alberta. *PLoS ONE*. 9. 10.1371/journal.pone.0115535.

- Canadian Parks and Wilderness Society, 2018. Finding Common Ground: Six Steps for Tackling Climate Change and Biodiversity Loss in Canada. https://cpaws.org/wp-content/uploads/2018/02/4.1-CPAWS_FindingCommonGrd_report_v10.pdf
- Casey, R. and P. Siwik. 2000. Overview of Selenium in surface waters, sediment and biota in river basins of west-central Alberta. Proceedings of the 24th Annual British Columbia Mine Reclamation Symposium in Williams Lake, BC, 2000. The Technical and Research Committee on Reclamation.
- Cobb, I. 2020, Mar 10. District bringing new drinking water well online. e-know. <https://www.e-know.ca/regions/elk-valley/sparwood/district-bringing-new-drinking-water-well-online/>
- Corporate Knights. September 21, 2020. How a \$20 bill could be worth close to \$308. Corporate Knights: The Voice for Clean Capitalism. <https://www.corporateknights.com/reports/green-recovery/how-a-20-green-new-bill-could-be-worth-close-to-308-16007064/>
- COSEWIC. 2014. COSEWIC assessment and status report on the Limber Pine *Pinus flexilis* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 49 pp. (www.registrelep.sararegis.gc.ca/default_e.cfm).
- District of Sparwood. 2014, Mar 19. District of Sparwood Temporarily Shutting Down Well #3, Available at: <https://sparwood.civicweb.net/document/57011>
- Environment and Climate Change Canada. 2017. Recovery Strategy for the Whitebark Pine (*Pinus albicaulis*) in Canada [Proposed]. Species at Risk Act Recovery Strategy Series. Environment and Climate Change Canada, Ottawa. viii + 54 pp.
- Environment Canada. 2011. Recovery Strategy for the Woodland Caribou, Boreal population (*Rangifer tarandus caribou*) in Canada [Proposed]. Species at Risk Act Recovery Strategy Series. Environment Canada, Ottawa. vi + 55 pp.
- Environment Canada. 2011b. Scientific Assessment to Support the Identification of Critical Habitat for Woodland Caribou (*Rangifer tarandus caribou*), Boreal Population, in Canada. Ottawa, ON. 117pp. plus Appendices.
- Environment Canada. 2014. Recovery Strategy for the Woodland Caribou, Southern Mountain population (*Rangifer tarandus caribou*) in Canada. Species at Risk Act Recovery Strategy Series. Environment Canada, Ottawa. viii + 103 pp.
- Farr, D., Braid, A., Janz, A., Sarchuk, B., Slater, S., Sztaba, A., Barrett, D., Stenhouse, G., Morehouse, A., Wheatley, M. 2017. Ecological response to human activities in southwestern Alberta: Scientific assessment and synthesis. Alberta Environment and Parks, Government of Alberta. ISBN No. 978-1-4601-3540-2. <https://open.alberta.ca/publications/9781460135402>
- Farr, D., Braid, A., Slater, S. 2018. Linear disturbances in the Livingstone-Porcupine Hills of Alberta: Review of potential ecological responses. Government of Alberta, Environment and Parks. ISBN No. ISBN 978-1-4601-4033-8. Available at: open.alberta.ca/publications/9781460140338.
- Fiera Biological Consulting Ltd (Fiera). 2014. Oldman Watershed Headwaters Indicator Project – Final Report (Version 2014.1). Edmonton, Alberta. Fiera Biological Consulting Report #1346.
- G7 Climate and Environment Ministers. May 21, 2021. G7 Climate and Environment Ministers' Communiqué: Joint commitments. <https://www.g7uk.org/g7-climate-and-environment-ministers-communique/>
- Gauthier, D.A., and Wiken, E. B. 2003. Monitoring the Conservation of Grassland Habitats, Prairie Ecozone, Canada. Environmental Monitoring and Assessment. 88, 343-364.
- Government of Alberta, 2003, Management plan for mountain goats in Alberta. Fish and Wildlife Division. Alberta Sustainable Resource Development. Edmonton, Alberta.

- Government of Alberta. 1976. A Coal Development Policy for Alberta. Department of Energy and Natural Resources. <https://open.alberta.ca/dataset/cc40f8f5-a3f7-42ce-ad53-7521ef360b99/resource/802d6feb-04ae-4bcc-aac3-3b3be31a0476/download/1114651976coal-development-policy-for-alberta1976-06.pdf>
- Government of Alberta. 1984. A policy for resource management of the eastern slopes: revised 1984. Queens Printer. Edmonton, AB. <https://open.alberta.ca/dataset/63df0041-7619-4fc9-948b-738cf108e47c/resource/6938bfdd-1316-4f84-adf7-5ed1744b3d84/download/1984-policyresourcemanagementeasternslopes.pdf>
- Government of Alberta. 2017. South Saskatchewan Regional Plan 2014-2019. Edmonton, AB. <https://open.alberta.ca/dataset/460ac866-4416-4d77-a25a-a02fab85a6ec/resource/8261ce03-aa0f-4621-8e2d-c610a72ac37c/download/south-saskatchewan-regional-plan-2014-2024-february-2017.pdf>
- Government of Alberta. 2021. Alberta Visitor Profiles: Tourism in Alberta 2019. Retrieved August 8, 2021. <https://www.alberta.ca/alberta-visitor-profiles.aspx>
- Government of Alberta. 2021. Bighorn Sheep Management. Retrieved August 8, 2021. <https://www.alberta.ca/bighorn-sheep-management.aspx>
- Government of Alberta. 2010. Recommended land use guidelines for mountain goat and bighorn sheep ranges in Alberta. Fish and Wildlife Division, Alberta Environment and Parks. <https://open.alberta.ca/publications/recommended-land-use-guidelines-for-mountain-goat-and-bighorn-sheep-ranges>
- Government of Alberta. 2017. Draft Provincial Woodland Caribou Range Plan. Alberta Environment and Parks. <https://open.alberta.ca/dataset/932d6c22-a32a-4b4e-a3f5-cb2703c53280/resource/3fc3f63a-0924-44d0-b178-82da34db1f37/download/draft-caribourangeplanandappendices-dec2017.pdf>
- Government of Canada. 2021. Statement: Government of Canada's approach to addressing the imminent threats to the recovery of Southern Mountain Caribou. Retrieved July 20, 2021. <https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry/related-information/approach-addressing-imminent-threats-recovery-southern-mountain-caribou.html>
- Green Destinations. 2020. Top 100 Sustainable Destinations Awards @ ITB 2020. <https://greendestinations.org/events/2020-top-100-awards-itb-berlin/>
- Haddock, R., Lee, T., and Sanderson, K. 2018. Foothills Grasslands Conservation Target Assessment Report. Southern Eastern Slopes Conservation Collaborative. Calgary, AB. http://www.southerneasternslopes.ca/wp-content/uploads/2018/07/Appendix_Foothills-Grasslands-Conservation-Target-Assessment-Report_19July18.pdf
- Headwaters Economics. (2019). Recreation Counties Attract New Residents and Higher Incomes. Bozeman, Montana: Headwaters Economics. Retrieved from <https://headwaterseconomics.org/wpcontent/uploads/recreation-counties-attract-report.pdf>
- Health Professionals Advisory Board. 2020. A Review of the Human Health Impacts of Selenium in Aquatic Systems. A report submitted to the International Joint Commission by the Health Professionals Advisory Board. Available at: https://ijc.org/sites/default/files/2020-09/HPAB_SeleniumHealthReview_2020.pdf
- Hervieux, D., Hebblewhite, M., DeCesare, N.J., Russell M., Smith, K., Robertson, S., and Boutin, S. 2013. Wide spread Declines in Woodland Caribou (*Rangifer Tarandus Caribou*) Continue in Alberta. *Canadian Journal of Zoology* 91, 872–82.
- Hilty, J., Keeley, A., Lidicker Jr., W., and Merenlender, A. 2019. Corridor Ecology, Second Edition: Linking landscapes for Biodiversity Conservation and Climate Adaption.

- Holm, J., V. Palace, P. Siwik, G. Sterling, R. Evans, C. Baron, J. Werner and K. Wautier. 2005. Developmental effects of bioaccumulated selenium in eggs and larvae of two salmonid species. *Environmental Toxicology and Chemistry* 24(9): 2373–2381, 2005
- International Energy Agency. 2020. CO2 Emissions from Fuel Combustion 2020 edition, <https://www.iea.org/data-and-statistics/data-browser/?country=WORLD&fuel=CO2%20emissions&indicator=CO2BySource>. All rights reserved.
- International Energy Agency. 2021. Net Zero by 2050: A roadmap for the global energy sector. International Energy Agency. https://iea.blob.core.windows.net/assets/beceb956-0dcf-4d73-89fe-1310e3046d68/NetZeroBy2050-ARoadmapfortheGlobalEnergySector_CORR.pdf
- IPCC, 2018: Summary for Policymakers. In: Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty [Masson-Delmotte, V., P. Zhai, H.-O. Pörtner, D. Roberts, J. Skea, P.R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J.B.R. Matthews, Y. Chen, X. Zhou, M.I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, and T. Waterfield (eds.)]. World Meteorological Organization, Geneva, Switzerland, 32 pp.
- Johnson, Jim. 2006. What Attracts Wealth to Rural and Small Communities? Explaining “Amenity Migration”. The Value of Parks to Community Forum, Pincher Creek, AB.
- Kuchapski, K.A. and J.B. Rasmussen. 2015. Food chain transfer and exposure effects of selenium in salmonid fish communities in two watersheds in the Canadian Rocky Mountains. *Canadian Journal of Fisheries and Aquatic Sciences* 72: 955–967
- Lamb, C.T., Mowat, G., Reid, A., Smit, L., Proctor, M., McLellan, B.N., Nielsen, S.E., Boutin, S. 2018. Effects of habitat quality and access management on the density of a recovering grizzly bear population. *Journal of Applied Ecology* 55: 1406-1417.
- Lemly, A.D. 2014. Review of Environment Canada’s Teck Coal Environmental Assessment and Evaluation of Selenium Toxicology Tests on Westslope Cutthroat Trout in the Elk and Fording Rivers in Southeast British Columbia. Available at: https://www.teck.com/media/2014-Water-review_environment_canada-T3.2.3.2.1.pdf
- Lemly, D. A. 2019. Environmental hazard assessment of Benga Mining’s Proposed Grassy Mountain Coal Project. *Environmental Science and Policy*, 96, 105-113.
- Levin, P. S., and Levin D. A. 2002. Macroscopic: The Real Biodiversity Crisis. *American Scientist*. 90(1): 6-8.
- MacArthur RH, Wilson EO. 2001. *The Theory of Island Biogeography*. Princeton, N.J., Princeton University Press. ISBN 978-0-691-08836-5. OCLC 45202069.
- Michael F. Proctor, Bruce N. McLellan, Gordon B. Stenhouse, Garth Mowat, Clayton T. Lamb, Mark S. Boyce. 2019. Effects of roads and motorized human access on grizzly bear populations in British Columbia and Alberta, Canada,” *Ursus*, 30, 16-39.
- Mitchell, M. 2019. Ecosystem Service Provision in the Canadian Yellowstone-to-Yukon Region. Prepared for Yellowstone to Yukon Conservation Initiative. 94pp.
- Mitchell, M. G. E., Schuster, R., Jacob A. L., Hanna D. E. L., Ouellet-Dallaire, C., Raudsepp-Hearne, C., Bennett, E. M., Lehner, B. and Chan, K. M. A.. 2021. *Environmental Research Letters*, 16, 014038.
- Morelli, T.L., Daly, C., Dobrowski, S.Z., Dulen, D.M., Ebersole, J.L., Jackson, S.T., et al. 2016. Managing Climate Change Refugia for Climate Adaptation. *PLoS One*. <https://doi.org/10.1371/journal.pone.0159909>

- Nagy-Reis, M., Dickie, M., Calvert, A. M., Hebblewhite, M., Hervieux, D., Seip D. R., Gilbert, S. L., Venter, O., De Mars, C., Boutin, S. and Serrouya, R. 2021. Habitat Loss Accelerates for the Endangered Woodland Caribou in Western Canada. *Conservation Science and Practice*. 2021, <https://doi.org/10.1111/csp2.437>
- Obad, J., & Droitsch, D. 2009. Source of Opportunity: A Blueprint for Securing Source Water in Southern Alberta (technical report). Water Matters Society of Alberta, Canmore, AB. <https://prism.ucalgary.ca/bitstream/handle/1880/111948/source-of-opportunity.pdf?sequence=1>
- Oberg, P. R. 2001. Responses of Mountain Caribou to Linear Features In a West-Central Alberta Landscape. Master's thesis, University of Alberta. <https://doi.org/10.7939/R32B8VQ0Q>
- Pandey, Bhanu & Gautam, Meenu & Agrawal, Madhoolika. (2017). Greenhouse Gas Emissions From Coal Mining Activities and Their Possible Mitigation Strategies. 10.1016/B978-0-12-812849-7.00010-6.
- Presser, T.S., and Naftz, D.L., 2020, Understanding and documenting the scientific basis of selenium ecological protection in support of site-specific guidelines development for Lake Koocanusa, Montana, U.S.A., and British Columbia, Canada: U.S. Geological Survey Open-File Report 2020-1098, 40 p., <https://doi.org/10.3133/ofr20201098>.
- Redmond, L. E. 2021. Water quality in the McLeod River as an indicator for mining impacts and reclamation success (2005 to 2016). Government of Alberta, Ministry of Environment and Parks. ISBN 978-1-4601-4982-9.
- Ripley, T., M.S. Boyce and G. Scrimgeour. 2005. Bull trout (*Salvelinus confluentus*) occurrence and abundance influenced by cumulative industrial developments in a Canadian boreal forest watershed. *Canadian Journal of Fisheries and Aquatic Sciences* 62: 2431-2442
- Riversdale Resources. 2015. Grassy Mountain Coal Project, Project Description. Prepared by Millennium EMS Solutions Ltd. for Canadian Environmental Assessment Agency. March 2015. File #14000201001
- Ronson, Alison; Pendlebury, 2015. Conservation Blueprint of Northern Alberta: Prioritizing areas for protected areas planning. Canadian Parks and Wilderness Society, Northern Alberta. ISBN: 978-0-9949229-1-5. https://cpawsnab.org/wp-content/uploads/2018/01/CPAWS_Conservation_Blueprint_2016.pdf
- Sauchyn, D.S and W.R. Skinner. 2001. A Proxy Record of Drought Severity for the Southwestern Canadian Plains, *Canadian Water Resources Journal* 26(2): 253-272
- Schindler, D.W. and W.F. Donahue. 2006. An Impending Water Crisis in Canada's Western Prairie. *Proceedings of the National Academy of Science of the United States of America*. 103,19, 7210-7216.
- Shibley, Sarah, and Drew Yewchuck. 2020. The Face of New Coal Mines. Albertans for Coal Free Rockies. Retrieved August 8, 2021. <https://ab4coalfreerockies.ca/blog/the-farce-of-new-coal-mines>
- Southern Eastern Slopes Conservation Collaborative. 2018. Southern Eastern Slopes Conservation Strategy. Southern Eastern Slopes Conservation Collaborative. Calgary, AB. https://cpaws-southernalberta.org/wp-content/uploads/2019/04/SESCC_Report_SinglePages.pdf
- State Outdoor Business Alliance Network, Summer 2021. Inspiring the Future Outdoor Recreation Economy. Retrieved from: https://headwaterseconomics.org/wp-content/uploads/2021HE-SOBAN-Report-FINAL-DOWNLOAD_2.pdf
- Stelfox, J.B, and W.F. Donahue. 2021. Assessing watershed scale consequences of coal surface mines in the headwaters of the Oldman River Watershed (ORW). Report prepared for the Livingstone Landowners Group. 176Pp.
- Stralberg, D., Carroll, C., and Nielsen, S. E. 2020. Toward a climate-informed North American protected areas network: Incorporating climate change refugia and corridors in conservation planning. *Conservation Letters*, 13,4, e12712.

- Tam BY, Szeto K, Bonsal B, Flato G, Cannon AJ, Rong R. (2018): CMIP5 drought projections in Canada based on the Standardized Precipitation Evapotranspiration Index. *Canadian Water Resources Journal* 44: 90-107
- The Alberta Westslope Cutthroat Trout Recovery Team. 2013. Alberta Westslope Cutthroat Trout Recovery Plan: 2012-2017. Alberta Sustainable Resource Development, Alberta Species at Risk Recovery Plan No. 28. Edmonton, AB. 77 pp.
- Thomas, C., Cameron, A., Green, R. et al. 2004. Extinction risk from climate change. *Nature* 427, 145–148.
- Truth and Reconciliation Commission of Canada. 2015. Calls to Action. http://trc.ca/assets/pdf/Calls_to_Action_English2.pdf
- United Nations. 2007. United Nations Declaration on the Rights of Indigenous Peoples. Resolution adopted by the General Assembly on 13 September 2007. https://www.un.org/development/desa/indigenouspeoples/wp-content/uploads/sites/19/2018/11/UNDRIP_E_web.pdf
- Valdal, E.J. and M.S. Quinn. 2011. Spatial Analysis of Forestry Related Disturbance on Westslope Cutthroat Trout (*Oncorhynchus clarkii lewisi*): Implications for Policy and Management. *Applied Spatial Analysis and Policy* 4: 95–111
- Weber, Bob. May 11, 2020. U.S. demands explanation from province over river pollution from B.C. mines. CBC News. <https://www.cbc.ca/news/canada/british-columbia/us-epa-pollution-rivers-teckmines-bc-1.5564269>.
- Weber, Bob. March 26, 2021. Teck Coal Given Record-Breaking \$60M Fine for Contaminating BC Rivers. Global News. <https://globalnews.ca/news/7721674/coal-teck-fined-contaminating-bc-rivers/>
- Welsh, M.J. 2008. Sediment production and delivery from forest roads and off-highway vehicle trails in the upper South Platte River watershed, Colorado. M.S. Thesis, Colorado State University, Fort Collins, CO. Available from: https://www2.nrel.colostate.edu/assets/nrel_files/labs/macdonald-lab/thesis_abstracts/Welsh-thesis_final.pdf
- World Wildlife Fund for Nature and Zoological Society of London. 2020. Living Planet Report 2020: Bending the Curve of Biodiversity Loss, Summary, 7. London, UK.
- Wyndam Environmental Ltd. 2020. Evaluation of the Suitability and Likely Efficacy of Proposed Selenium Mitigation Measures – Proposed Grassy Mountain Coal Mine. Prepared for Canadian Parks and Wilderness Society Southern Alberta Chapter. Available at: <https://iaac-aeic.gc.ca/050/documents/p80101/136096E.pdf> (page 522)
- Yellowstone to Yukon Conservation Initiative. October 21, 2020. Mammals on the move show why protected and connected habitats matter (Blog post). Retrieved from <https://y2y.net/blog/mammals-on-the-move-show-why-protected-and-connected-habitats-matter/>

APPENDIX 1: ALL FIGURES

FIGURE 1: SOURCE WATERS WITHIN ALBERTA AND 1976 COAL POLICY LAND CLASSIFICATIONS.

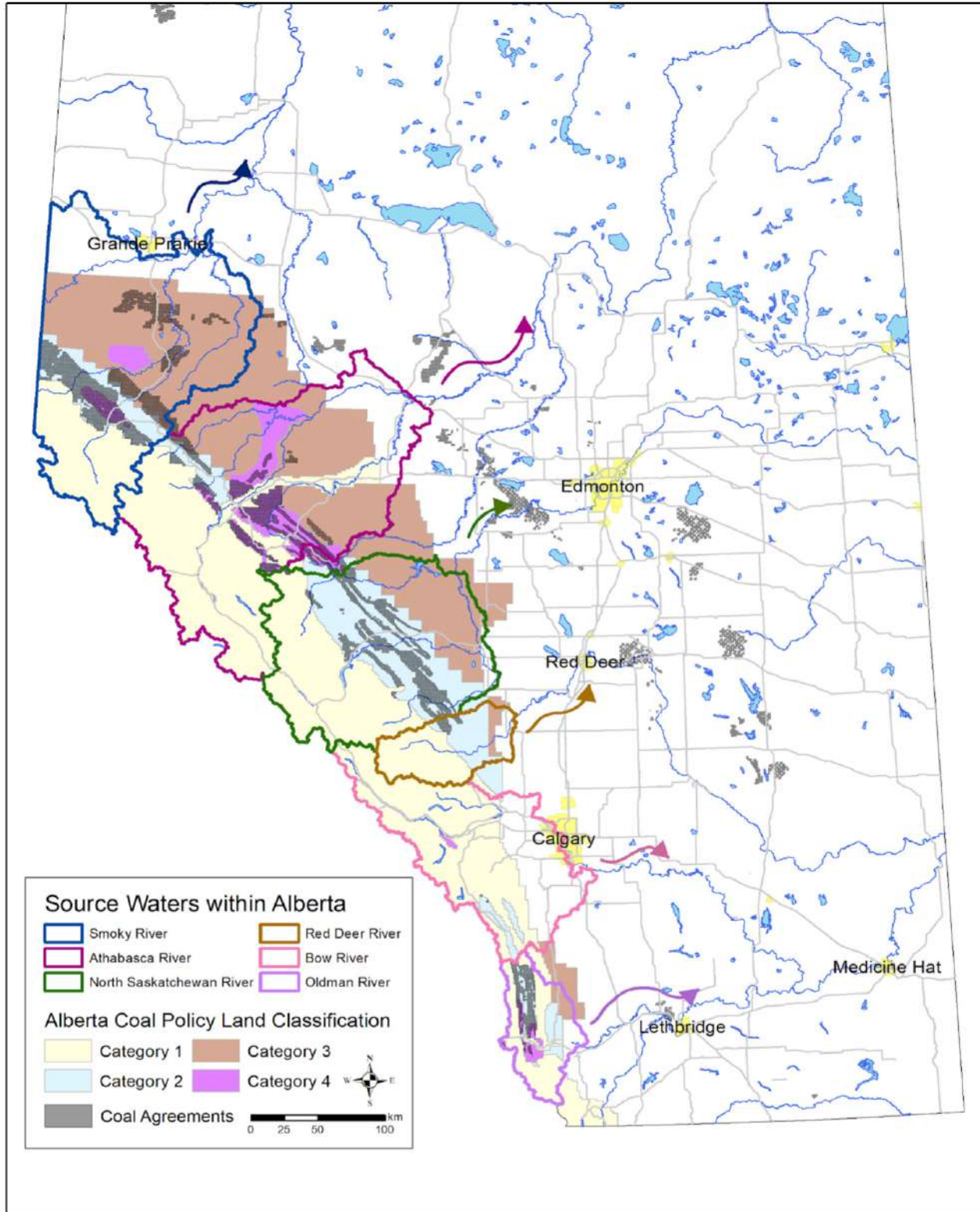


FIGURE 2: NATIVE TROUT CRITICAL HABITAT IN ALBERTA AND 1976 COAL POLICY LAND CLASSIFICATIONS.

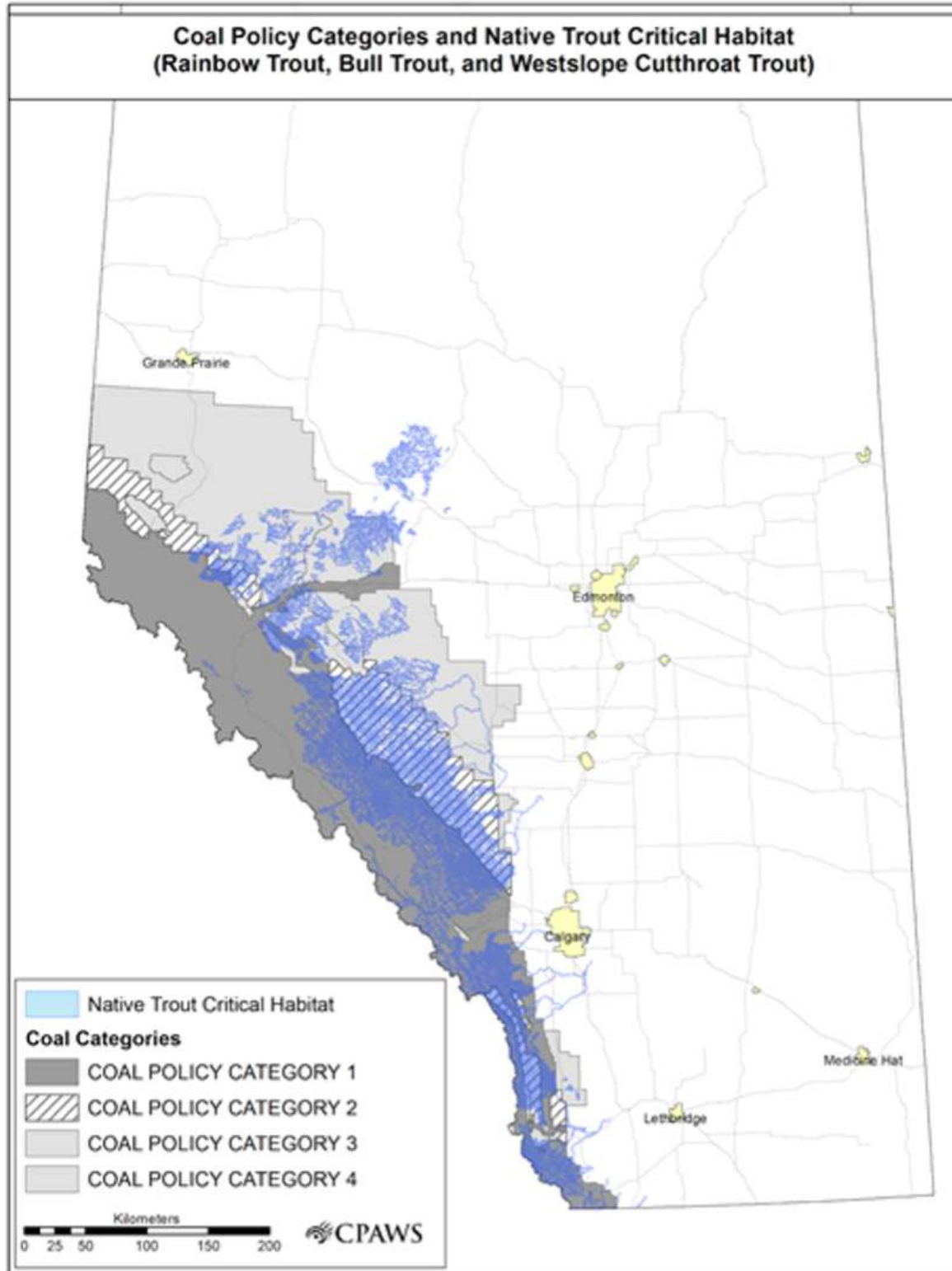


FIGURE 3A: WATER CROSSINGS (BLACK TRIANGLES) ASSOCIATED WITH THE CABIN RIDGE COAL DEVELOPMENT AND CRITICAL STREAM HABITAT FOR TROUT; 163 ROAD CROSSINGS HAVE BEEN IDENTIFIED.

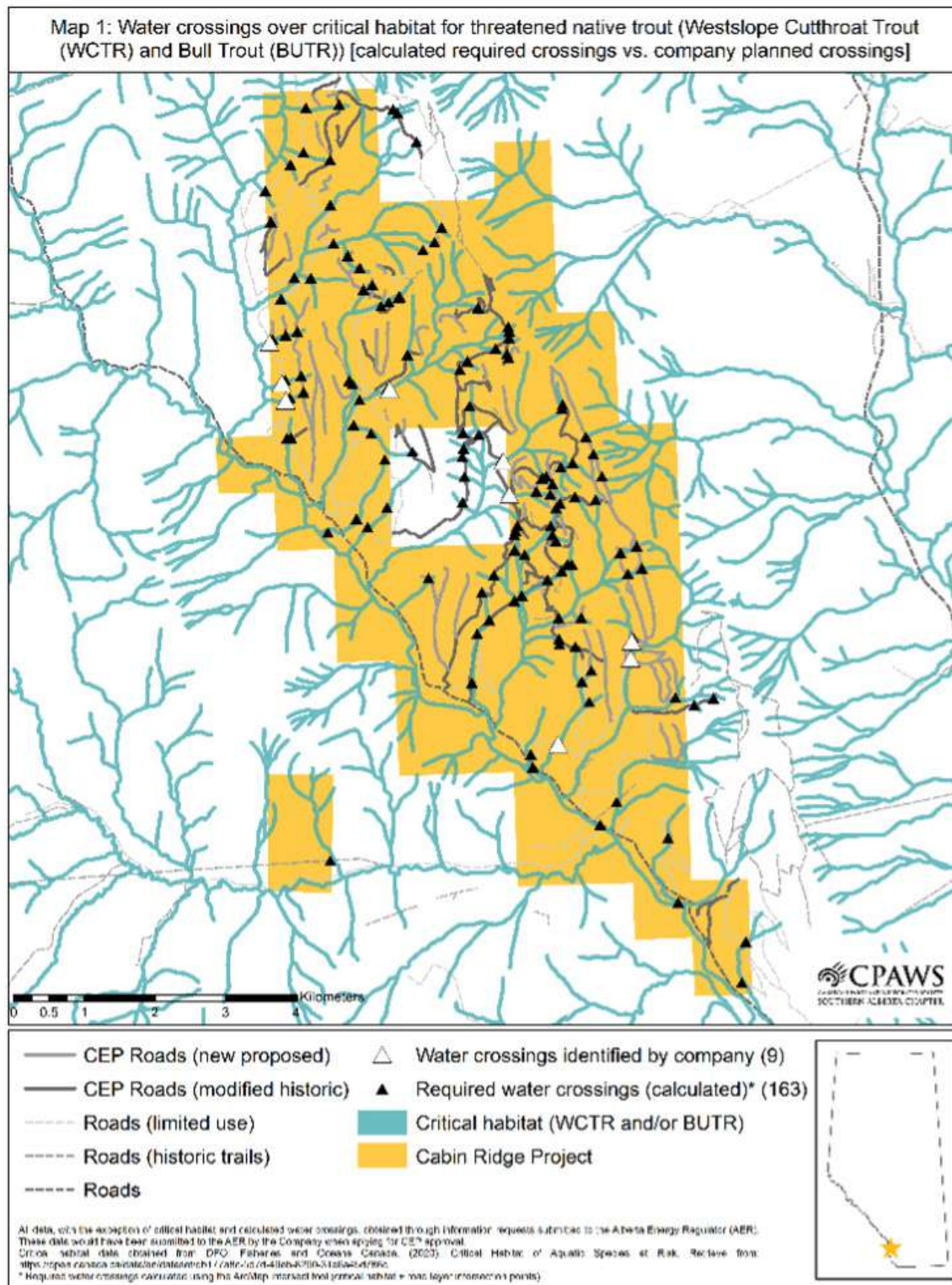


FIGURE 3B: CABIN RIDGE DRILL SITES WITHIN 30 M OF CRITICAL STREAM HABITAT FOR TROUT; 9 DRILL SITES HAVE BEEN IDENTIFIED.

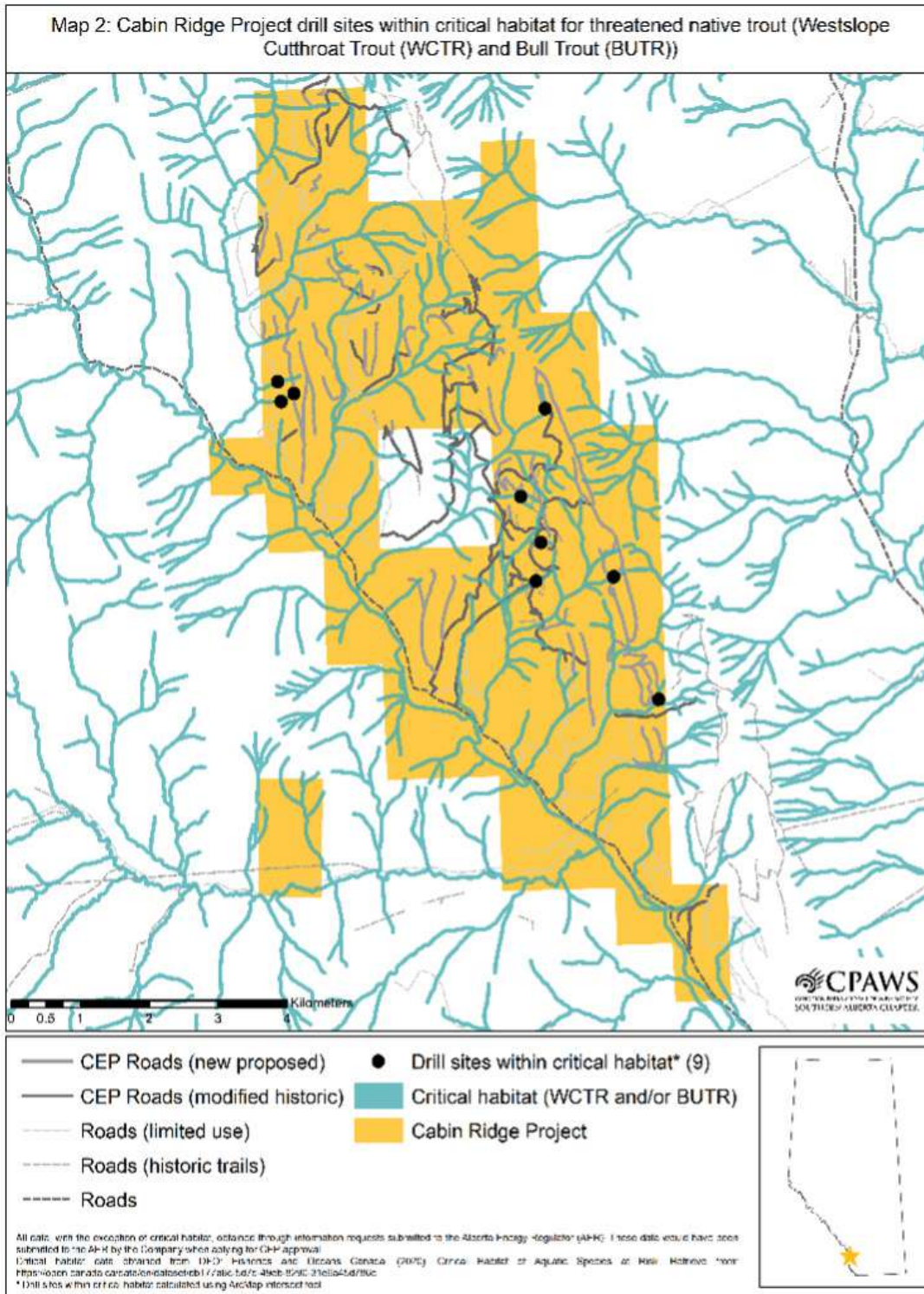


FIGURE 4: DISTRIBUTION OF WHITEBARK AND LIMBER PINE IN RELATION TO THE 1976 COAL POLICY AREA AND PLANNED COAL PROJECTS.

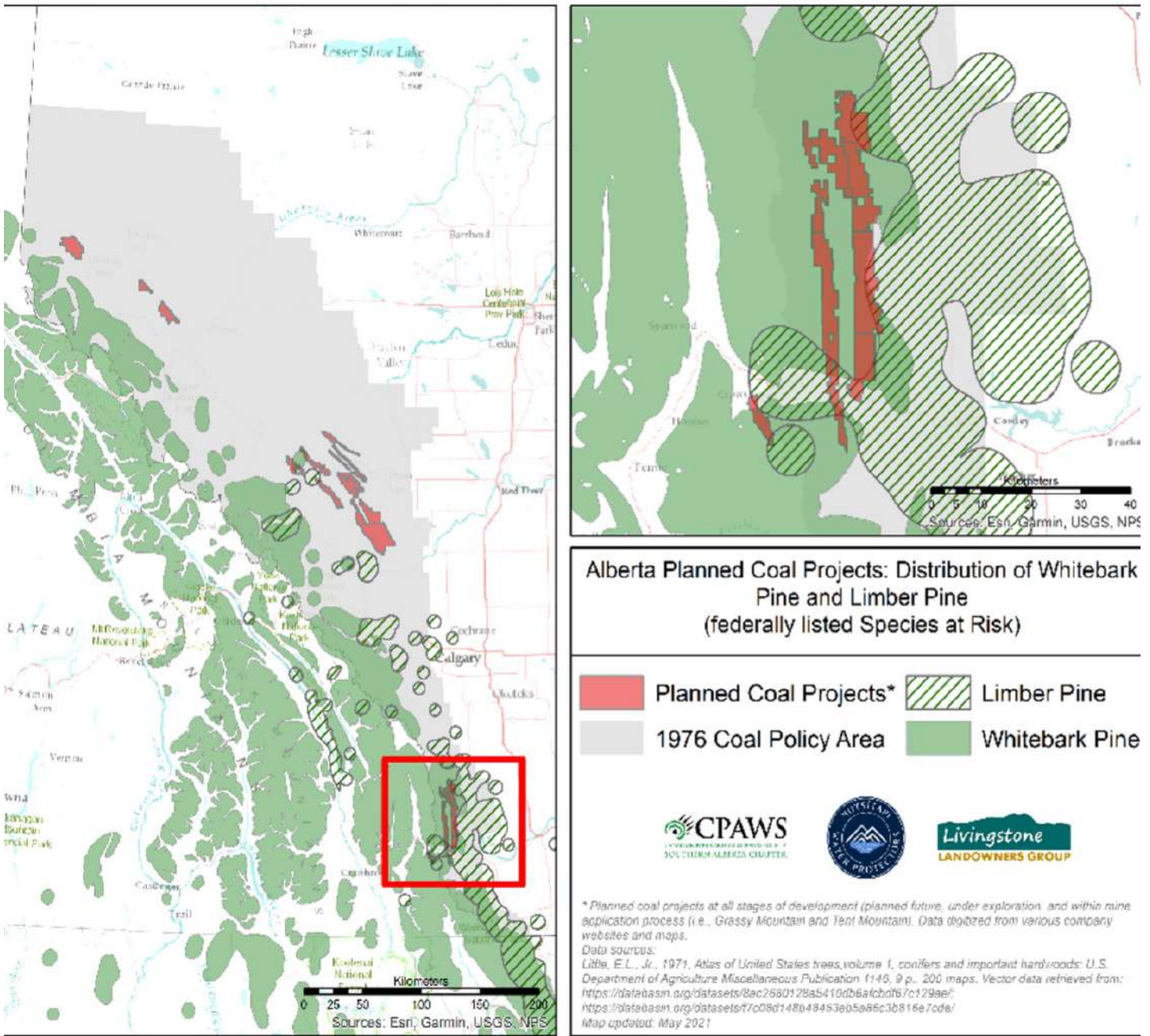


FIGURE 5: GRIZZLY BEAR RECOVERY ZONE AND THE 1976 COAL POLICY LAND CLASSIFICATIONS.

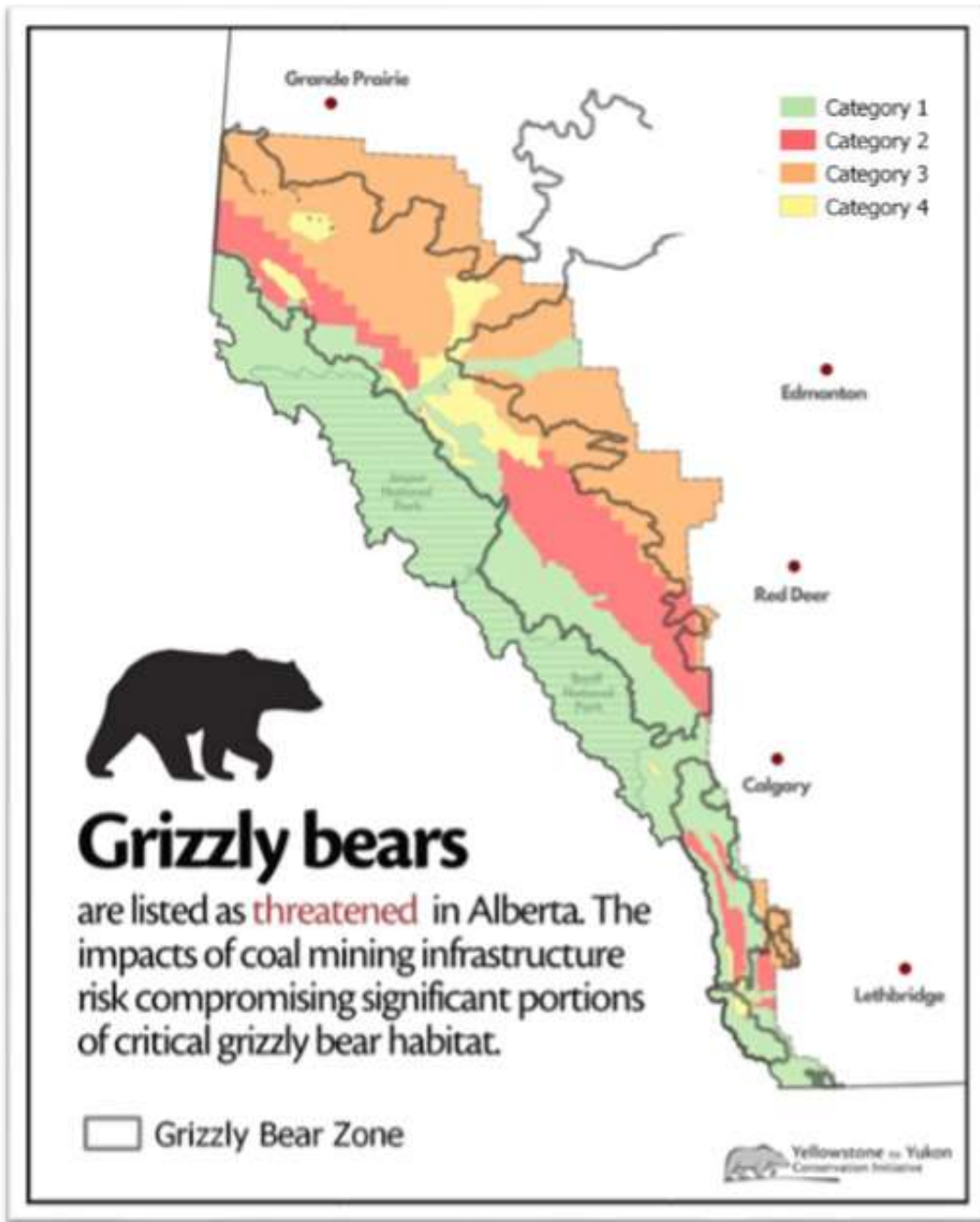


FIGURE 6. THREATENED SOUTHERN MOUNTAIN CARIBOU RANGES OVERLAP WITH EXISTING COAL MINES, COAL LEASES, APPLICATIONS.

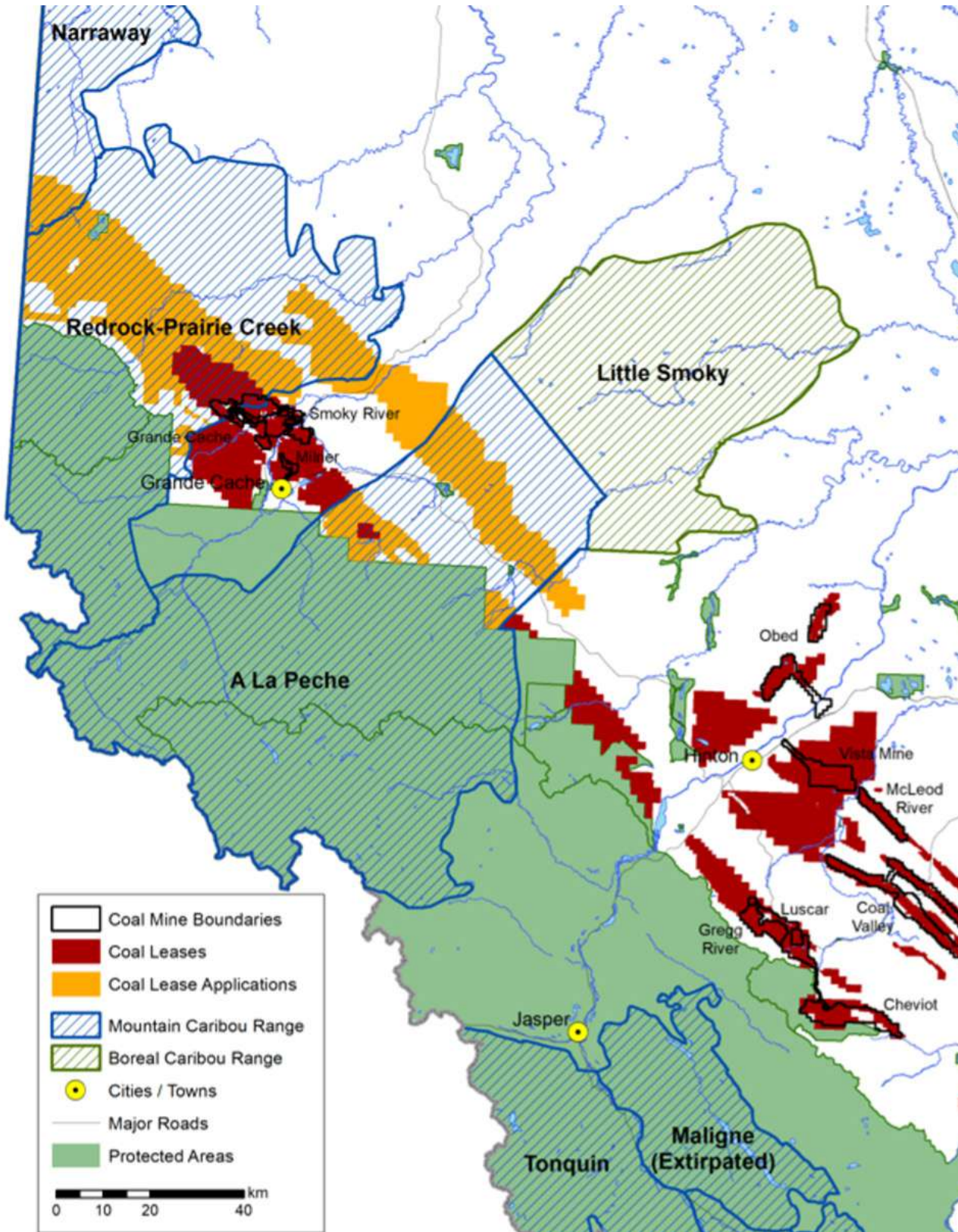


FIGURE 7. MOUNTAIN GOAT AND SHEEP HABITAT WITH COAL LEASES AND APPLICATION

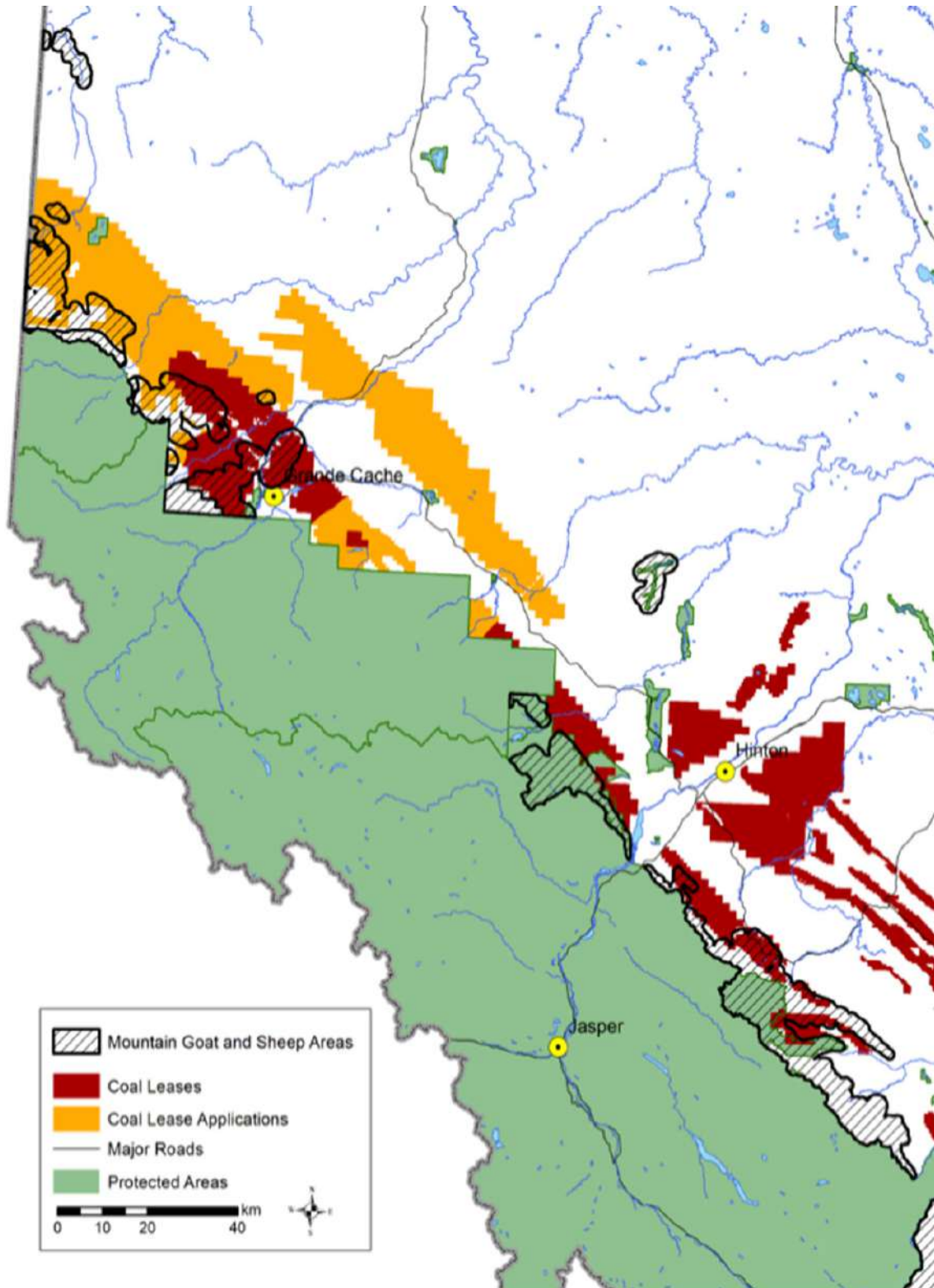


FIGURE 8. ENVIRONMENTALLY SIGNIFICANT AREAS (ESAs) AND COAL CATEGORY LAND CLASSIFICATIONS FROM THE 1976 COAL POLICY.

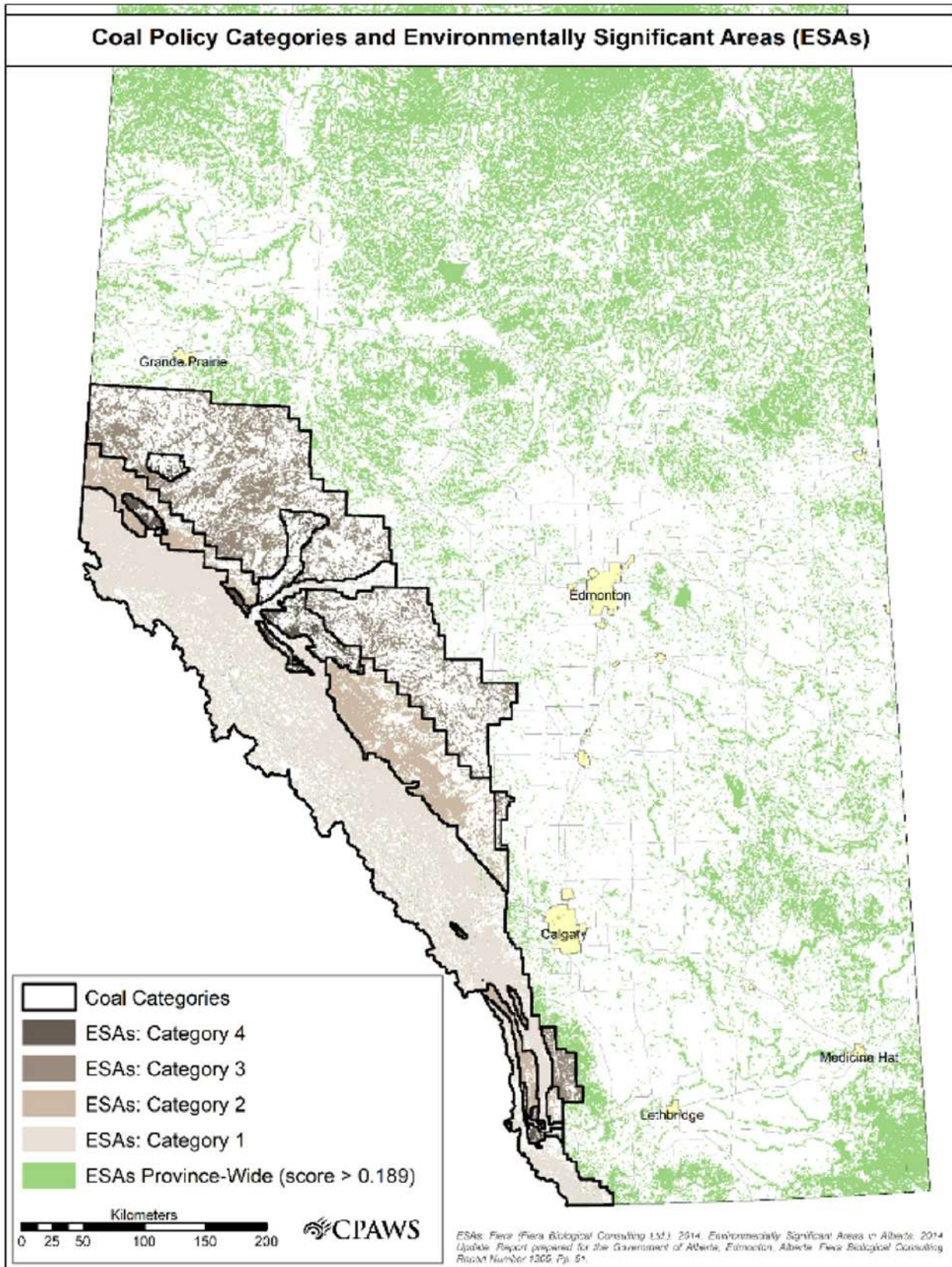


FIGURE 9: GRIZZLY BEAR SECURE HABITAT AND MOVEMENT CORRIDORS WITH COAL MINE EXPLORATION SITES AND LEASES.

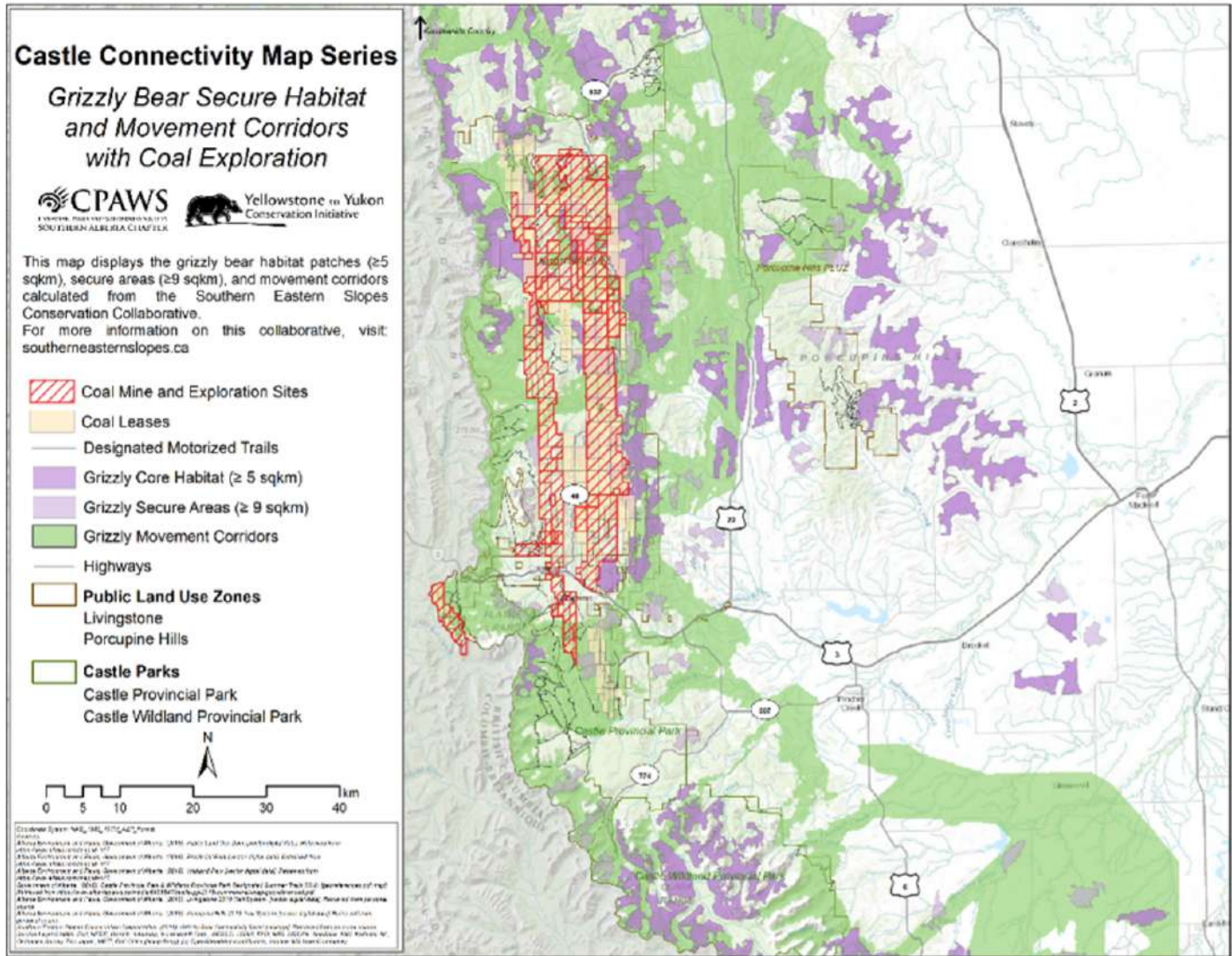


FIGURE 11: EXTENT OF FOOTHILLS GRASSLANDS ECOSYSTEMS AND THE 1976 COAL POLICY LAND CATEGORIES. DATA OBTAINED FROM THE SOUTHERN EAST SLOPES MAPPING TOOL ON DATA BASIN.

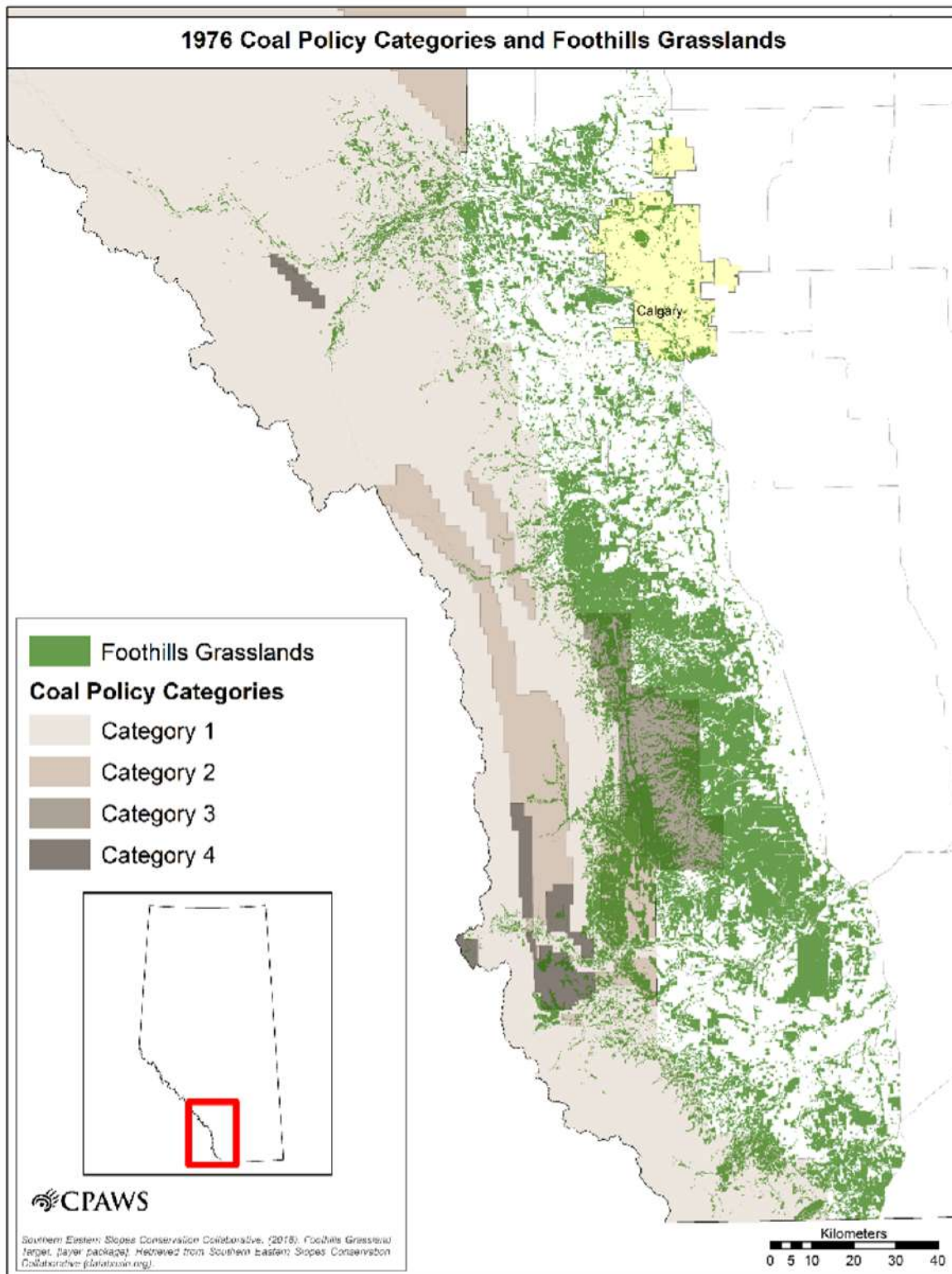


FIGURE 12: CLIMATE REFUGIA POTENTIAL IN SOUTHERN ALBERTA (FROM STRALBERG ET AL., 2020) WITH 1976 COAL POLICY LAND USE CATEGORIES. DARKER AREAS ON THE MAP INDICATE REGIONS THAT HAVE A HIGHER CLIMATE REFUGIUM POTENTIAL IN THE 2070-2100 PERIOD.

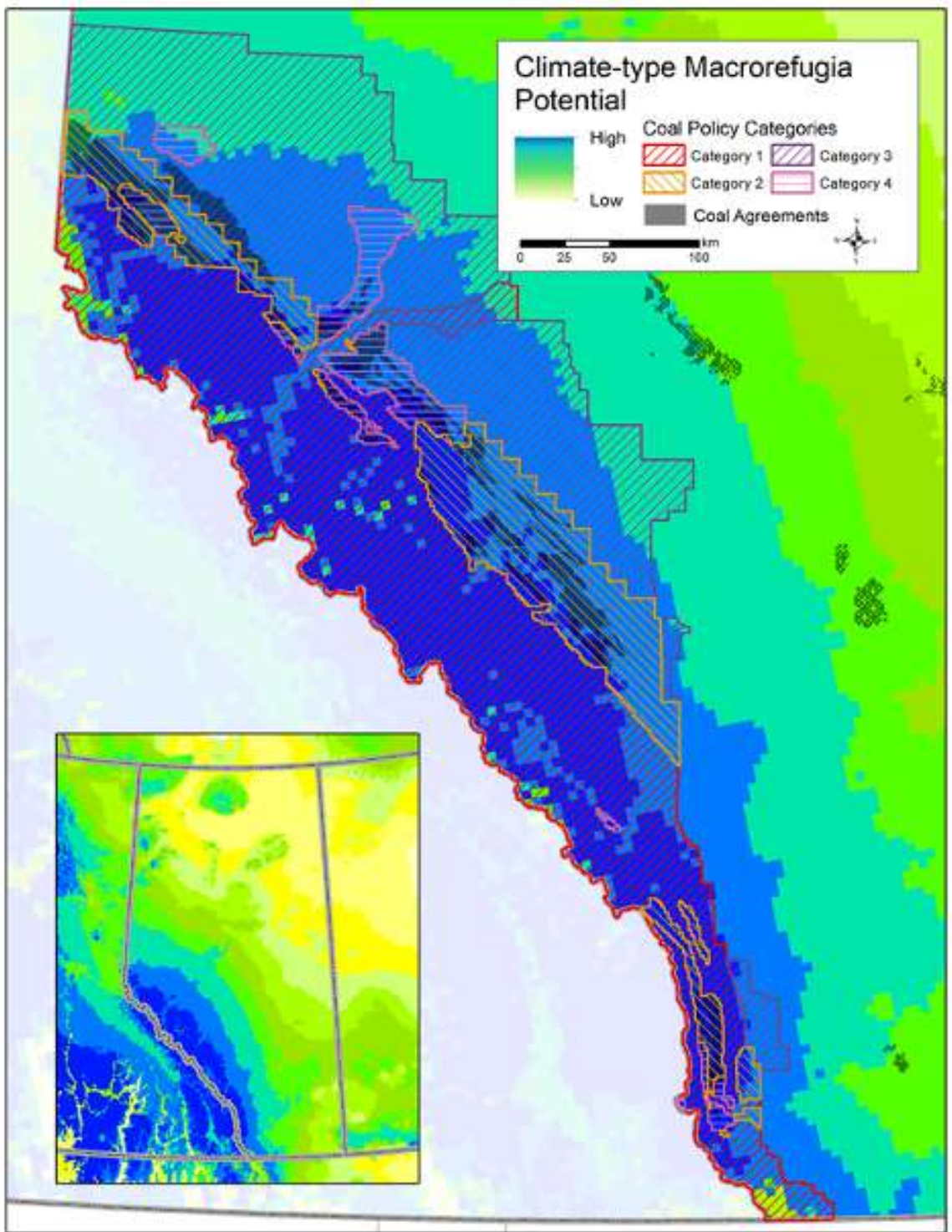


FIGURE 13: LOCATION OF PROVINCIAL RECREATION AREAS AND PARKS AND PROTECTED AREAS WITH CURRENT COAL AGREEMENTS AND THE 1976 COAL POLICY CLASSIFICATIONS. MAP CREATED BY CPAWS SOUTHERN ALBERTA.

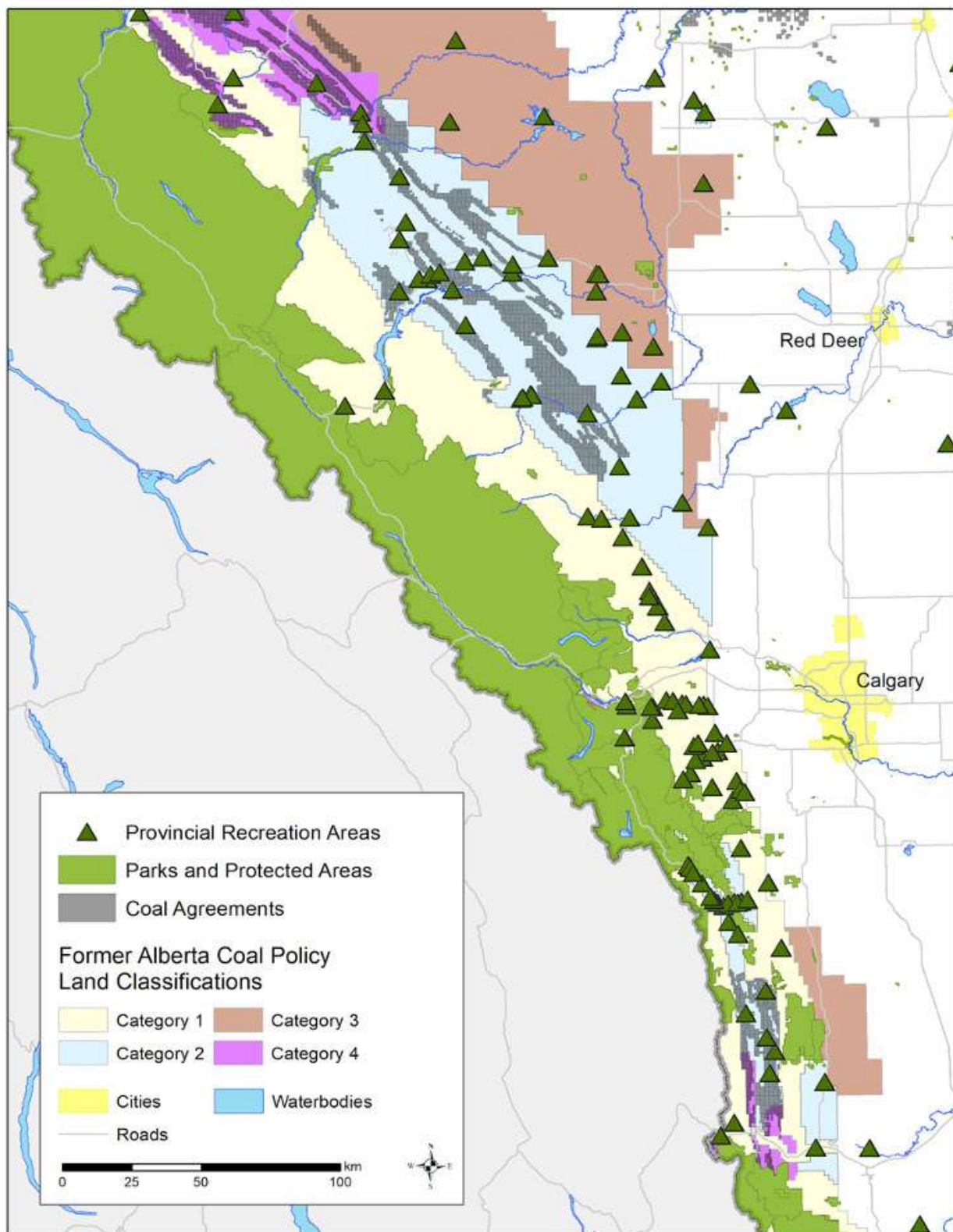


FIGURE 14: HOTSPOTS (I.E., THE TOP 20TH PERCENTILE OF VALUES) FOR THREE KEY ECOSYSTEM SERVICES MODELED AND MAPPED ACROSS CANADA. NOTE THE DIFFERENCE BETWEEN (E) COMBINED CAPACITY (I.E., WHERE NATURE SUPPLIES THE SERVICES) AND (F) COMBINED PROVISION (I.E., WHERE PEOPLE ACTUALLY BENEFIT FROM THE SERVICES, AS A RESULT OF HUMAN ACCESS AND DEMAND). ALBERTA'S EASTERN SLOPES STAND OUT AS A NATIONALLY-SIGNIFICANT HOTSPOT WHERE PEOPLE LOCALLY AND FARTHER AWAY RECEIVE MULTIPLE BENEFITS FROM NATURE. SOURCE: MITCHELL ET AL., 2021.

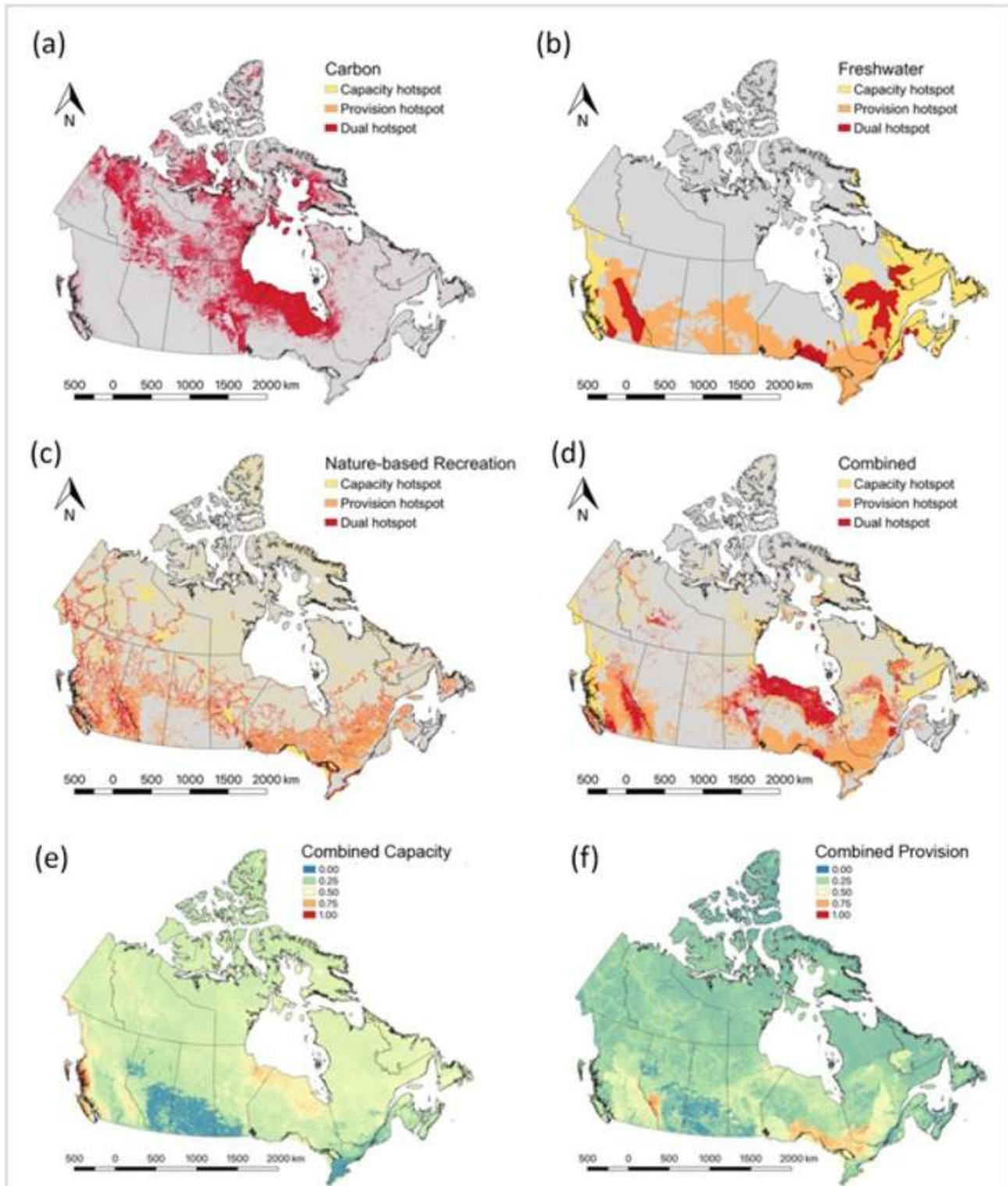


Figure 2. Hotspots (top 20th percentile of values) of ecosystem service capacity (yellow), provision (orange), and both (red) for (a) carbon storage, (b) freshwater, (c) nature-based recreation, and (d) combined ecosystem services, as well as relative importance values for combined ecosystem service (e) capacity and (f) provision across Canada.

FIGURE 15A: ABOVEGROUND CARBON STORAGE IN ALBERTA. RED IS THE HIGHEST AMOUNT ABOVEGROUND CARBON STORAGE (DIFFICULT TO SEE AT THE PROVINCIAL SCALE; RED AND ORANGE ARE IN POCKETS OF THE EASTERN SLOPES) AND BLUE IS THE LOWEST AMOUNT OF ABOVEGROUND CARBON STORAGE. SOURCE MITCHELL, 2019.

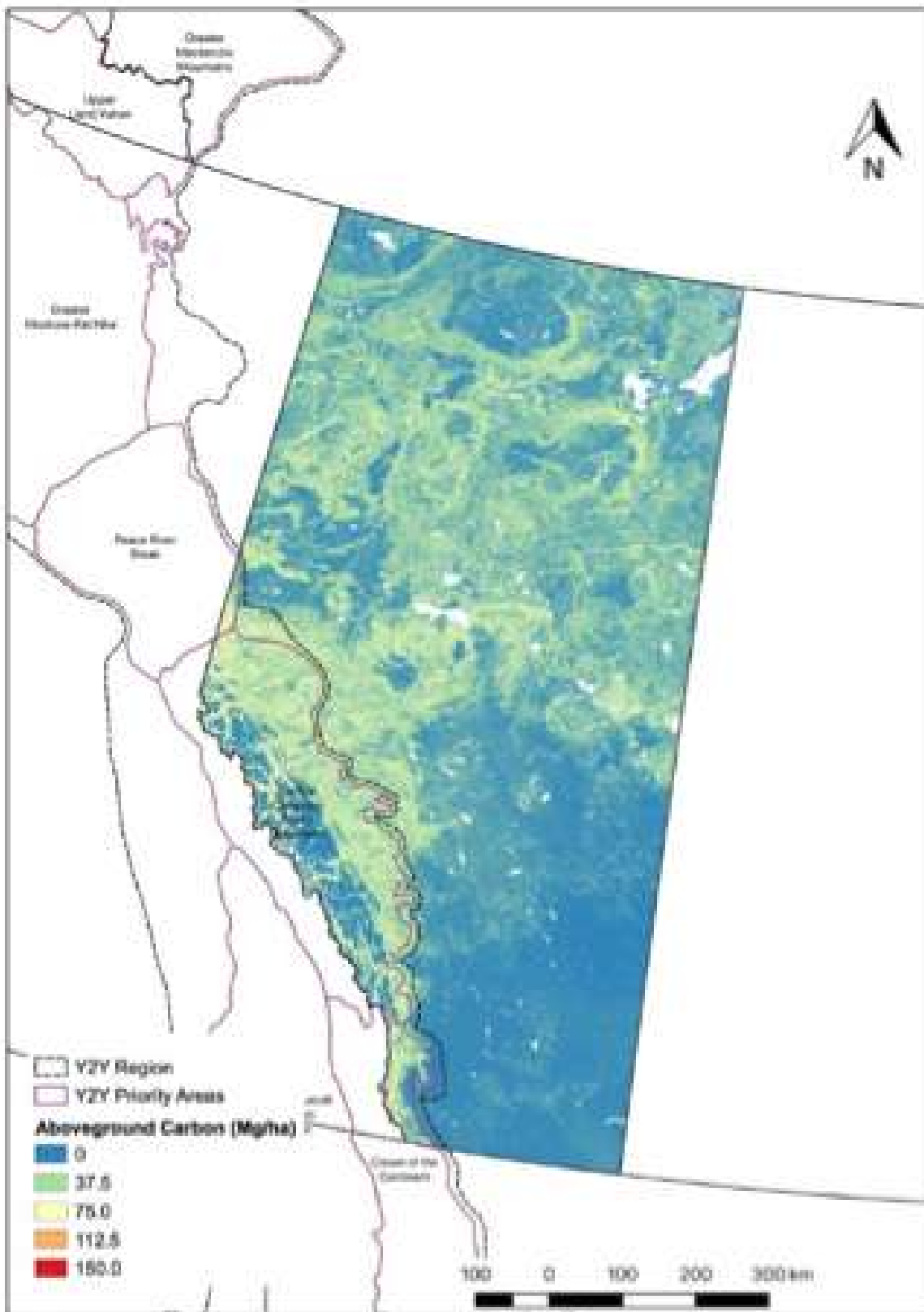


FIGURE 15B: BELOWGROUND CARBON STORAGE IN MG/HA IN ALBERTA. HERE, RED IS THE HIGHEST AMOUNT OF BELOWGROUND CARBON AND BLUE IS THE LOWEST AMOUNT OF BELOWGROUND CARBON. SOURCE: MITCHELL ET AL., 2019.

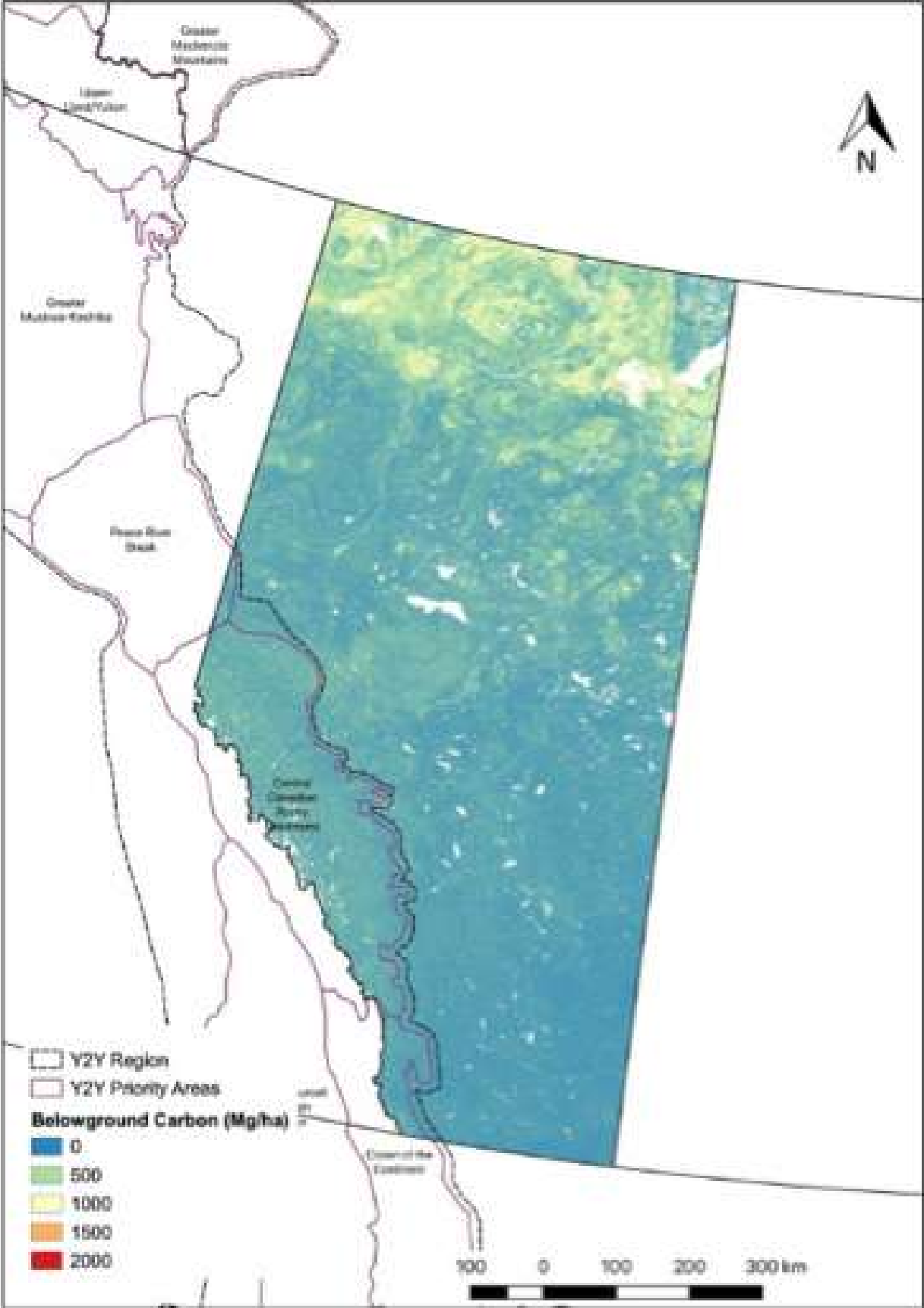


FIGURE 16: ABOVEGROUND (YELLOW), BELOWGROUND (ORANGE), AND TOTAL (RED) CARBON STORAGE HOTSPOTS IN ALBERTA, WHERE A 'HOTSPOT' IS DEFINED AS THE TOP 20TH PERCENTILE OF VALUES. SOURCE: MITCHELL 2019.

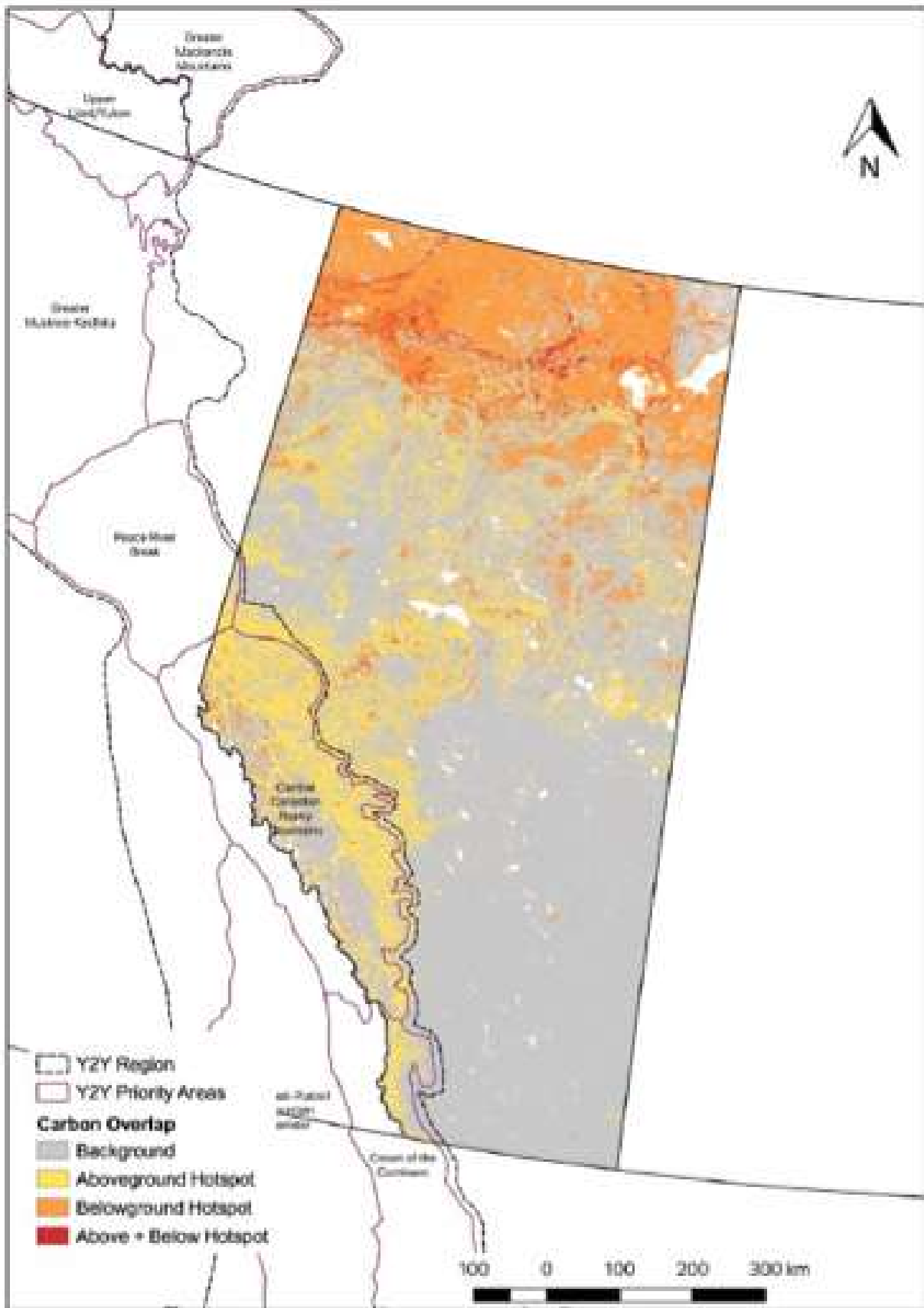


FIGURE 17A: FRESHWATER CAPACITY IMPORTANCE IN ALBERTA. THIS SHOWS THE 'CAPACITY' (I.E., XYZ) OF THESE PLACES TO SUPPLY WATER (RED IS THE HIGHEST DEMAND AND BLUE IS THE LOWEST CAPACITY). SOURCE: MITCHELL 2019.

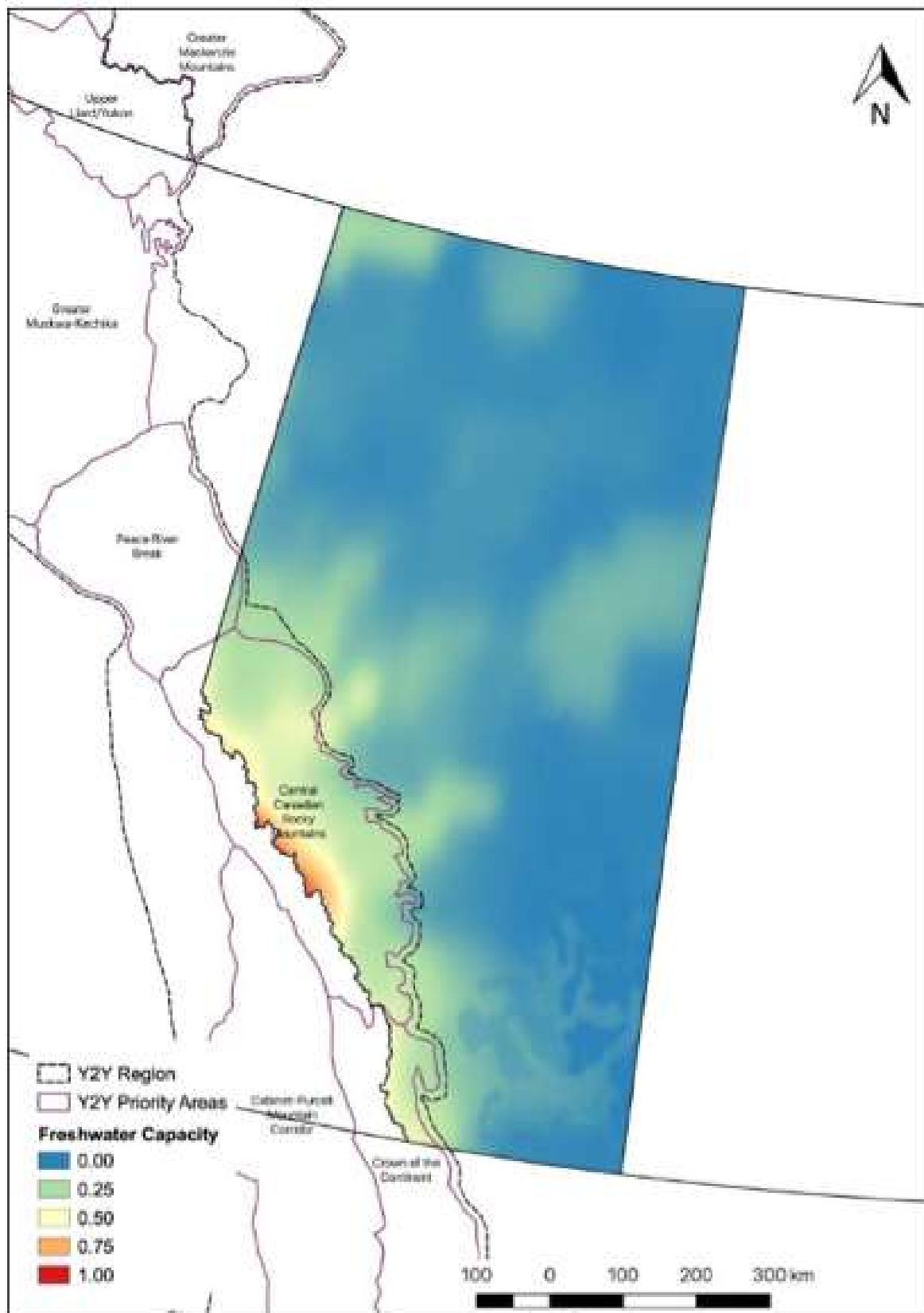


FIGURE 17B: FRESHWATER DEMAND IMPORTANCE IN ALBERTA. THIS SHOWS THE COMBINATION OF DOWNSTREAM HUMAN DEMANDS ON WATER THAT COMES FROM UPSTREAM (RED IS THE HIGHEST DEMAND AND BLUE IS THE LOWEST DEMAND). SOURCE: MITCHELL 2019.

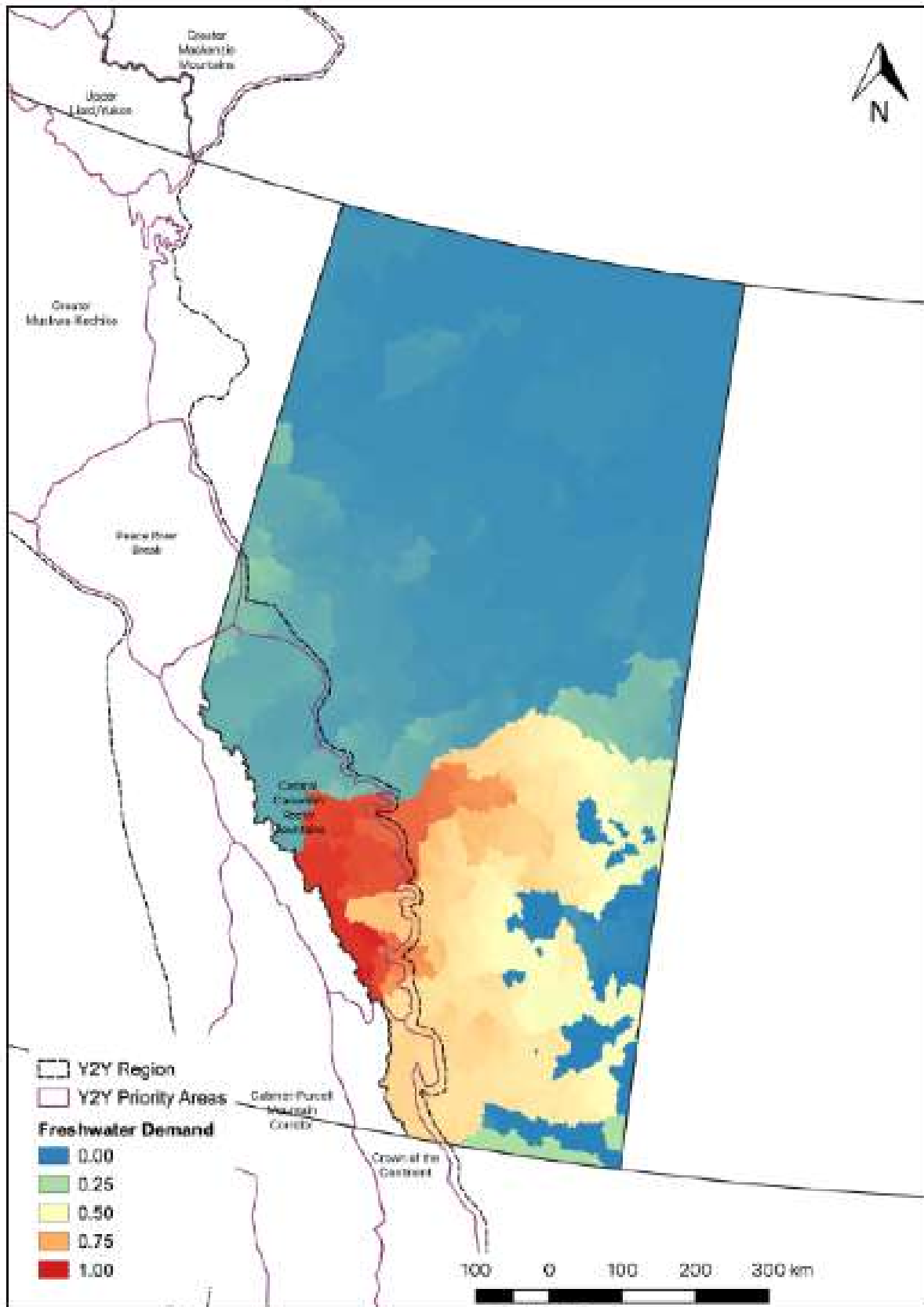


FIGURE 17C: FRESHWATER PROVISION IMPORTANCE IN ALBERTA. SOURCE: MITCHELL 2019.

