

LCD Tech Team Meeting

6/9/2020 | 1pm-2pm

Attendees: Phil, Natalie, Ken, Sean, Danielle, Peggy, Aubin, Bray, Matt

Update on Leadership Team (Sean)

- We have [notes](#) if people want the details on how the meeting went
- Confirmed the project area
- Selecting features - we started by reviewing various kinds of management plans - now we're starting to add in documents that are social/cultural/economic focused
 - what will our world look like post covid?
 - What does equitable landscape mgmt mean?
- Working on creating a vision for the LCD
 - A vision creates cohesion - provides leadership team a chance dive into LCD further
- Secured additional funding for LCD into 2021
 - Money will help with staff support - data contracting and purchasing - offset expenses for subject matter experts - travel

Feature selection (Sean)

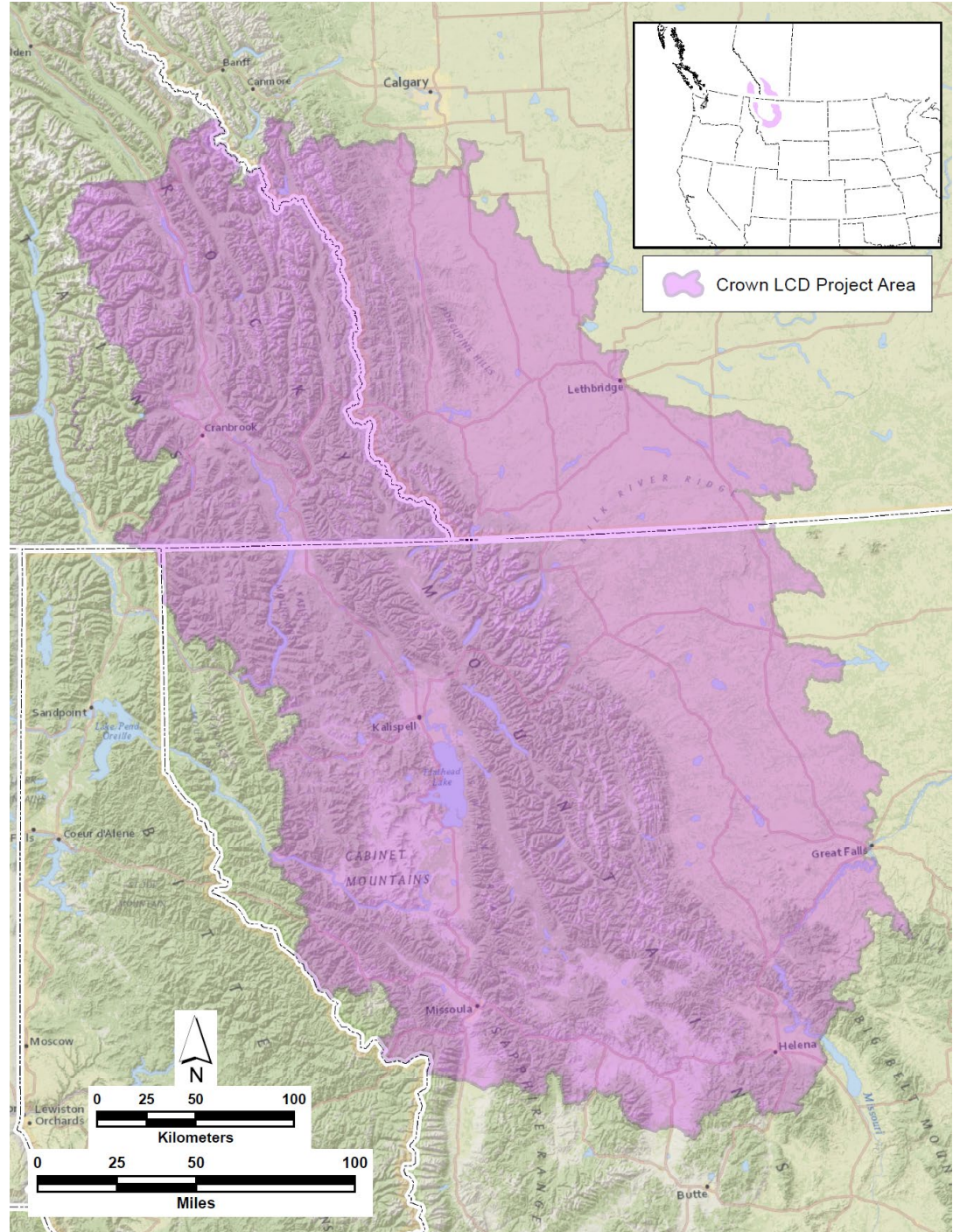
- Selection process:
 - Reviewed 59 plans - we need to go back and reevaluate, but this a good overview of what agencies are thinking about
 - Species:
 - All species listed in 10% or more of plans are "candidate species" - it is a Top 20 list of species
 - Habitat and ecosystem features
 - Riparian and wetlands
 - Grassland
 - Forested aquatic
 - These are the major systems identified in the plans - need to parse out more, but the general idea is there
 - Ultimately, we will land on a final list of 10-20 features
 - Combination of coarse features (ie. habitat types) and fine features (ie. species)
 - To get there, we are lumping species into life history guilds, lumping species into habitat guilds
 - Comparative evaluation of candidate features
- leadership team selected a feature that they had lots of confidence in to be a focal feature so we could begin work on the technical end

- Their initial selection is: Cold water salmonids with a focus on climate change/climate refugia
- We will be bringing in ad hoc groups of subject matter experts
 - We are currently reaching out to cold water fisheries experts (ie Clint Muhfeld), but are open to suggestions - **Action: All send contact info of any cold water salmonid experts via email to sean and natalie**
- How we are assessing features:
 - Identified as priority species - how often they appear in mgmt plans
 - Relative protected status - distribution of species in terms of protected areas
 - Are species living in protected areas?
 - Published conservation status
 - Data availability - is there ample data available?
 - Monitoring - ongoing and ease?
- Ultimately, we are trying to understand features in current conditions and determine how to get to desired future condition
 - Starts with conceptual models -> key attributes -> measurable objectives -> spatial models

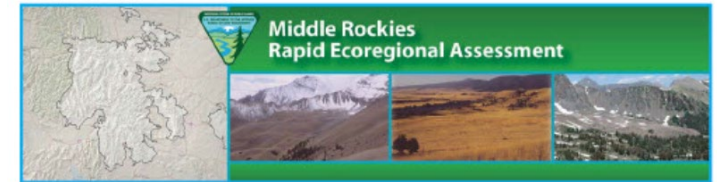
Available Data evaluation (Natalie)

- Reviewed [this data sheet](#)
 - Bray could see but not edit - **Action: Sean, update Bray's permissions**
 - Section headers need to be added back in
- Additions to the list:
 - Canadian Climate data
 - <https://climate-change.canada.ca/climate-data/#/downscaled-data>
 - <https://climate-viewer.canada.ca/#/?t=annual&v=precip&d=dc&r=rcp85&cp=-113.20674333813633,50.28420029614&z=7&ts=1>
 - <https://climatedata.ca/download/>
 - Additional climate data from Bray
 - Crown Jurisdictional data
 - Currently on sciencebase the data is from 2012, but the jurisdictional boundaries layer was updated in 2015
 - **Action: Phil will update Sciencebase jurisdictional data with newest layer**
 - Ecoregional climate refugia layer - Danielle
 - Jo (?) Model - Peggy
 - Integrates threats to native trout - indicators aren't field based, but correlative - another angle to take
- What types of data sets to add:
 - Add any data that is already available and easily accessible!
 - The data does not necessarily have to cover the entire LCD geography
 - For example, Danielle has datasets that are specific to AB, but it would be great to still add those to the list

- we want as high resolution data as possible from ample sources - once we know what is available, we can work on combining the data into one cohesive dataset
 - If the data is not publicly available, put your name in as a placeholder (where the link to the data would go)
 - Add a description of the data to the sheet
 - Presence data of certain species
 - Can be used to determine habitat suitability
 - Caution: data is biased/not comprehensive
 - We're still thinking through how to work with transboundary datasets - presence data is a common currency that could be easier to assemble across borders - ie. Montana Natural Heritage Program has this data
- What are the priorities in adding data sets?
 - We will have individual features that will be input to Marxan - before we do that, we have to suss out the data for each one
 - Because the leadership team has selected coldwater salmonids and climate refugia as initial features, we will focus on those
 - However, the availability of data will, to some extent, influence the selection of focal features, so also add data sets related to the most popular/most likely selected focal features
 - We are hopeful to have a report on feature selection evaluation in the next couple of weeks, so that will help us determine where to focus our energies
- Where are the gaps in data? Any obstacles to consider?
 - It makes sense, where possible, to use existing CMP data, since this data was collected and manipulated in such a way as to maintain data consistency across all the different administrative areas, and quite a bit of work went into this. The problem we have now is that with our expanded boundary, there will be gaps around the margins that don't have data
 - Example: Phil is updating the land cover layer for the expanded boundary and the old data separates grassland and agriculture, but the new data does not
 - Many layers on sciencebase were created by Shannon Blackadder and Greg McDermot
 - Action: **Sean, Phil, and Natalie will work with Shannon and Greg to recover data before it was clipped to CMP Crown Boundary**



Selecting Features Collaboratively



**FINAL MEMORANDUM II-3-C
MIDDLE ROCKIES
RAPID ECOREGIONAL ASSESSMENT**

USDA
United States Department of Agriculture

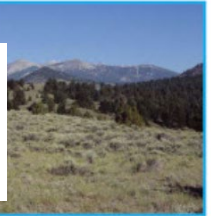
Flathead National Forest Land Management Plan
Flathead, Lake, Lewis and Clark, Lincoln, Missoula, and Powell Counties, Montana



**Climate Change
Strategic Plan**

September 2013
Flathead Reservation

**Forest Legacy Project
Lost Trail Conservation Project**
Marion, Flathead County, Montana



Parks Canada



Waterton Lakes
National Park of Canada

2010

U.S. Fish & Wildlife Service

**Draft Comprehensive Conservation
Plan and Environmental Impact
Statement**

National Bison Refuge

Ministry of
Forests, Lands, Natural
Resource Operations
and Rural Development

**2019/20 - 2021/22
SERVICE PLAN**

February 2019

**South Saskatchewan
Regional Plan**

2014 - 2024

Amended May 2018

General Management Plan

GLACIER NATIONAL PARK

A Portion of Waterton-Glacier International Peace Park
Flathead and Glacier Counties, Montana

MONTANA'S

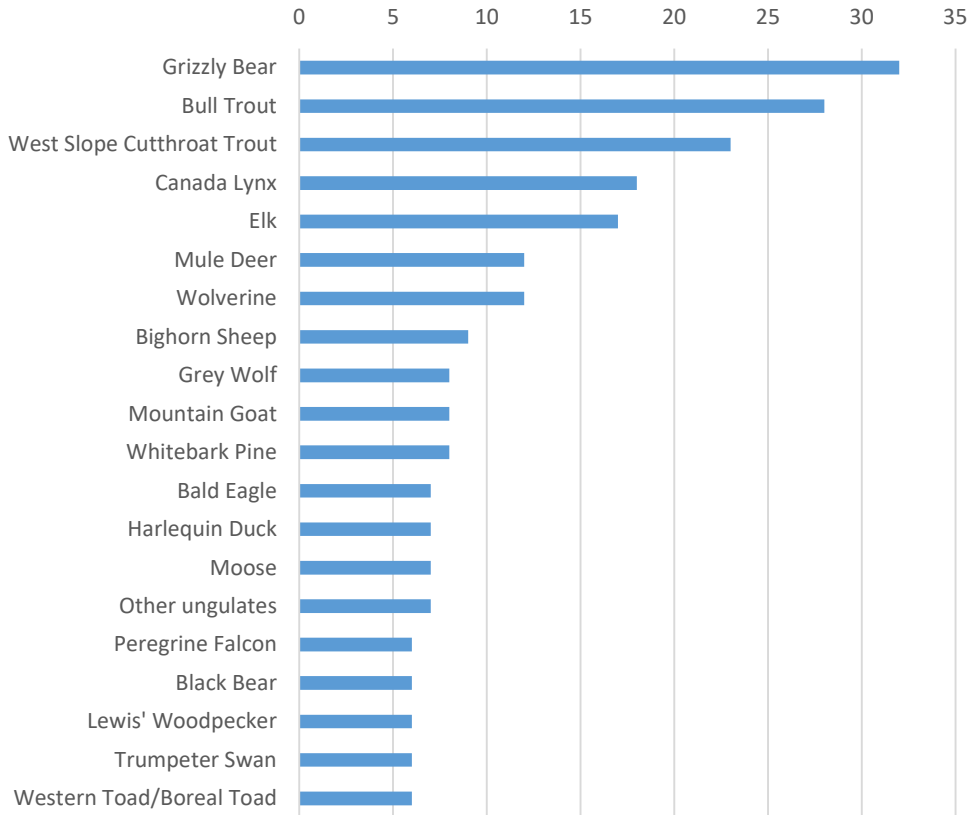
STATE WILDLIFE ACTION PLAN

MONTANA FISH, WILDLIFE & PARKS
2015

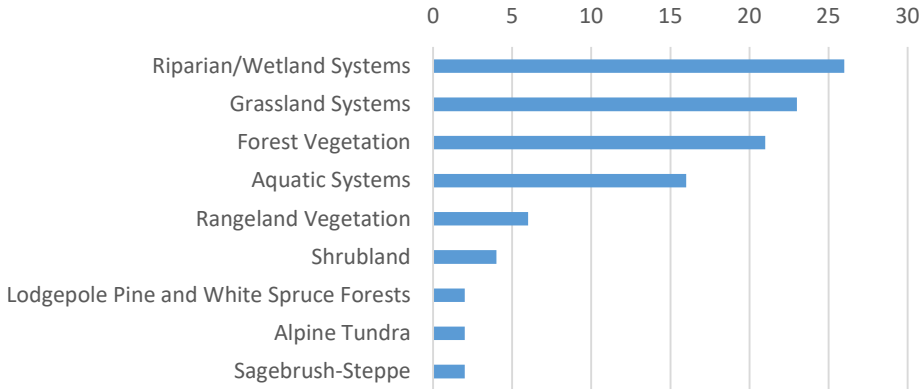
Management Plan Review

59 Plans Reviewed

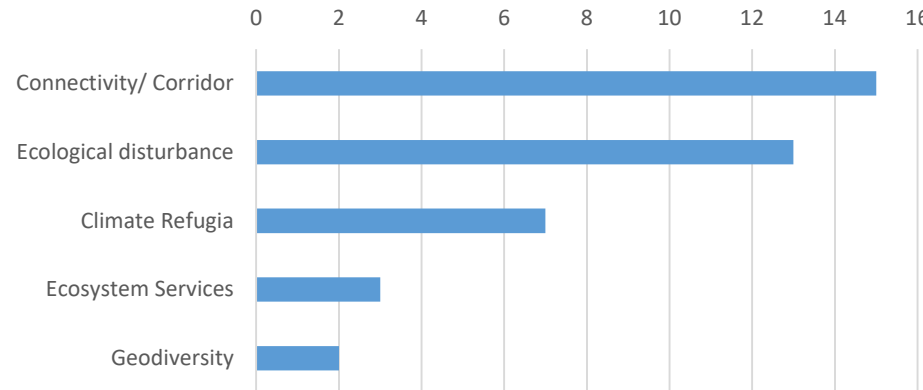
Species Features identified in plans



Habitat/Ecosystem Features identified in plans



Ecological Process Features identified in plans



Feature Selection Approach

Coarse feature: An aggregate or collection of fine features (for example, a habitat type) that serves to both encompass multiple fine features and compensate for our incomplete knowledge of all biodiversity.

Fine feature: A discrete representation of biodiversity (for example, a species) which may not be well represented by a coarse feature and for which we have good knowledge of key attributes related to ecosystem health and function.

Start with Species List:

- “Top 20” species List
- Lump species into Habitat Guilds --- link with habitat ecosystem
- Lump into Life History Guilds --- link with ecological processes
- **Comparative evaluation of candidate Features**
- Report back to Leadership Team in June

Assemble ad hoc teams, Steering Committee, colleagues and subject matter experts



Potential Feature	Relative Concern (Plans)	Relative Protected Status	Published Conservation Status				Available Data Evaluation	Ongoing Monitoring	Ease of Monitoring	Inclusive of Finer Targets?	Finer Target useful as Indicator?	Source of Information
			IUCN	MT	AB	BC						
COARSE FILTER												
FINE FILTER			IUCN	MT	AB	BC						
Grizzly Bear	32		G4,	S2S3	SS							
Bull Trout	28		G5,	S2	HC							
West Slope Cutthroat Trout	23		G5T4,	S2	HC							
Canada Lynx	18		G5,	S3								
Rocky Mountain Elk	17		G5,	S5								
Mule Deer	12		G5,	S5								
Wolverine	12		G4,	S3	IA							
Bighorn Sheep	9		G4,	S4								
Grey Wolf	8		G5,	S4								
Mountain Goat	8		G5,	S4								
Whitebark Pine	8		G3?,	S3	HC							
Bald Eagle	7		G5,	S4								
Harlequin Duck	7		G4,	S2B	SS							
Moose	7		G5,	S4								
Other Ungulates	7											
Peregrine Falcon	6		G4,	S3	IA							
Black Bear	6		G5,	S5								
Lewis' Woodpecker	6		G4,	S2B	SS							
Trumpeter Swan	6		G4,	S3	SS							
Western/Boreal Toad	6		G4,	S2	SS							



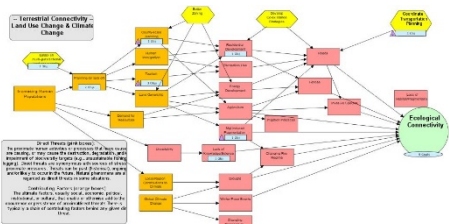
How do we treat Landscape Features?

Current Condition



Desired Future Condition

Conceptual Models



Key Attributes & Indicators

Viability and Integrity Summary

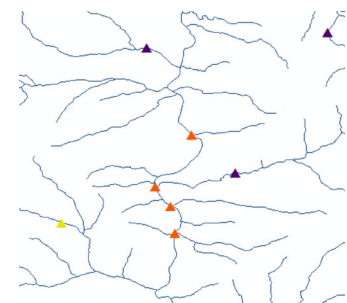
Focal System or Species	Landscape Context	Condition	Size	Viability/Integrity
Shrub Steppes and Dry Grasslands	Fair	Fair	Poor	Fair
Riverine Systems	Unknown	Unknown	Unknown	Unknown
Depressional Wetlands	Fair	Fair	Fair	Fair
Dunes	Poor	Poor	Poor	Poor
Transitional Woodlands	Fair	Fair	Poor	Fair
Cliffs, Tails and Cores	Good	Unknown	Good	Good ¹
Grassland	Poor	Poor ²	Poor	Poor
Borrowing Animals	Poor	Poor	Fair	Poor
Overall Viability/Integrity				Fair ³

¹This overall rank assumes that the condition of the vegetation is not around 50%, trees and shrub systems is in worse than 'Other forest' condition. i.e. Not Population growth rates for Sharp-shinned Hawks are high, due in part to translocation of birds from other states. However, where growth rates for Sharp-shinned are low, particularly in the Salt Flats and McCloud National Forest, lower population.
²The overall Viability/Integrity of the system cannot be considered 'Fair' under all possible scenarios of integrity of the riverine system. i.e. if the riverine system's integrity were found to be poor, 'Fair' would be even worse.

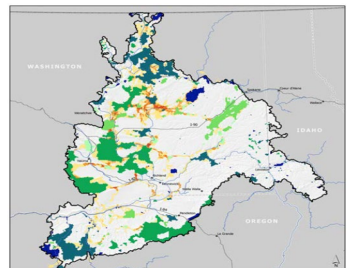
Measureable Objectives

Key Ecological Attribute	Indicator	Poor	Fair	Good	Very Good	Information Source
Absolute Size	Push-out (average of shrub covered)	Small (<40 ac; 16 ha)	40-500 ac; 16-202 ha	Large (500-1,000 ac; 202-405 ha)	Very Large (>1,000 ac; 405 ha)	Expert opinion (AU 2014)
Landscape Pattern and Structure	Average of land remaining large patches that is in semi-natural condition	Subtotal Natural or semi-natural habitat makes up <20% of land in a 500 m buffer around the patch	Fragmented Natural or semi-natural habitat makes up 20-50% of land in a 500 m buffer around the patch	Unfragmented Natural or semi-natural habitat makes up 50-80% of land in a 500 m buffer around the patch	Intact: Natural or semi-natural habitat makes up 80-100% of land in a 500 m buffer around the patch	Fisher-Langston et al. 2008; Conner and Huk 2009
Connectivity	Average of land in large patches connected to other large patches	Isolated: No patches within 20 km cost weighted distance (50% dispersal capacity of grassland species; larger movement species target)	Partially connected: within 20 km cost weighted distance (50% dispersal capacity of grassland species; larger movement species target)	Connected: Two or more patches are within 1 km cost weighted distance (50% dispersal capacity of grassland species; larger movement species target)	Intact: Natural or semi-natural habitat makes up 80-100% of land in a 500 m buffer around the patch	Fisher-Langston et al. 2008; Conner and Huk 2009
Fire Regime	Departure from historical fire regime	>20% of total average of patches is in LANDFAC Vegetation Condition Class (VCC) 3	Most (>60% of total average of patches is in LANDFAC VCC 2, 2-4 total average of patches is in VCC 3	Most (20% of total average of patches is in VCC 1; 10% of total average in VCC 2)	100% of total average of patches is in VCC 1	Based on AIC calculations; see AU 2014 for details.
Relative Size	Average in shrub steppe target is being reduced from ecological systems	Shrub steppe target is being reduced from its original natural extent (>50% remaining)	Shrub steppe target is being reduced from its original natural extent (30-50% remaining)	Shrub steppe target is being reduced from its original natural extent (10-30% remaining)	Shrub steppe target is not reduced or is increasing from its original natural extent (>50% remaining)	Fisher-Langston et al. 2008

Barriers to Objectives (aka 'Costs')



Spatial Models



Leadership Team

Technical Team

Subject Matter Experts

Analysis Team