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
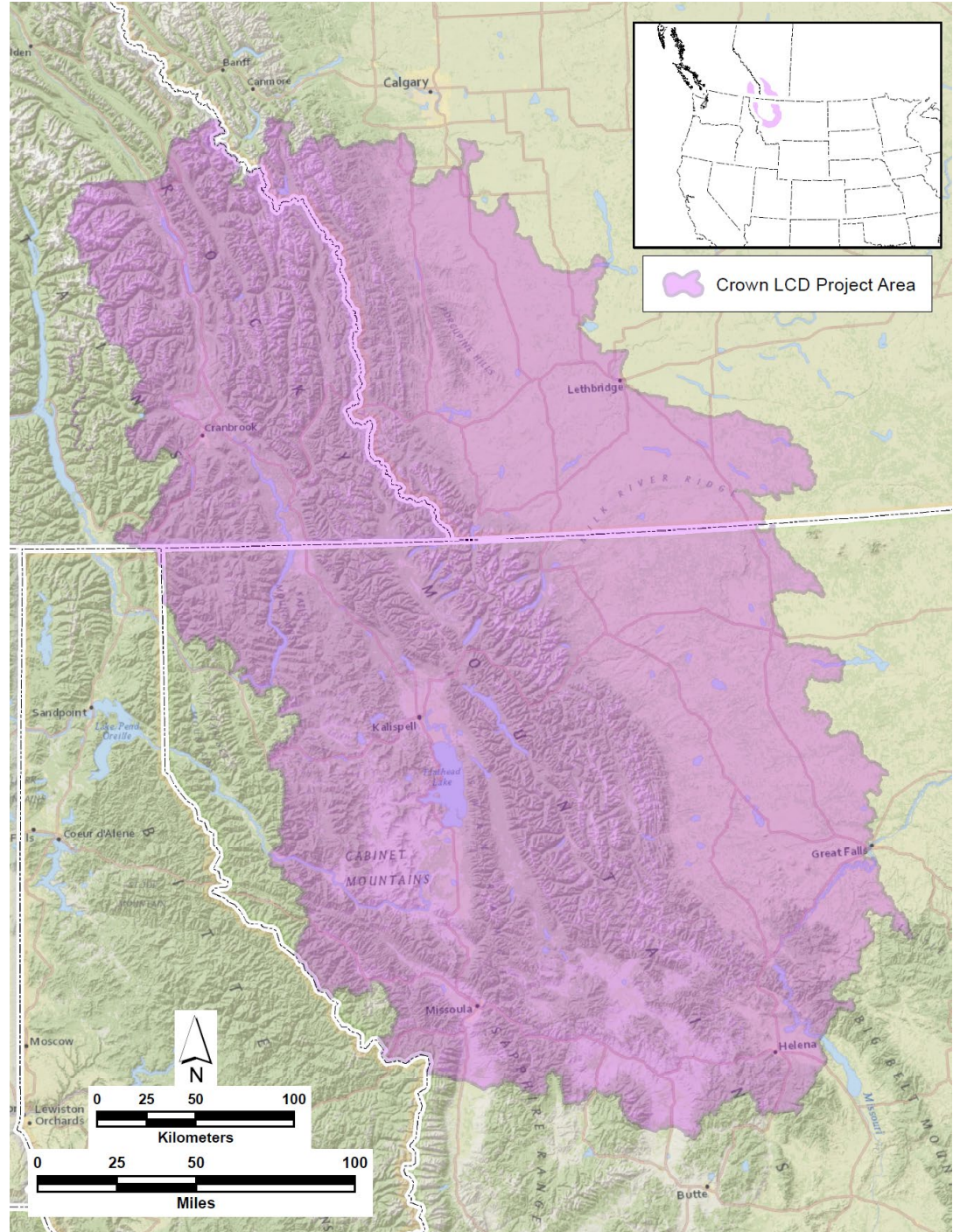
Feature selection (Sean)

- 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 - <mark>Action: **All** send contact info of any cold water salmonid experts via email to sean and natalie</mark>
- 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
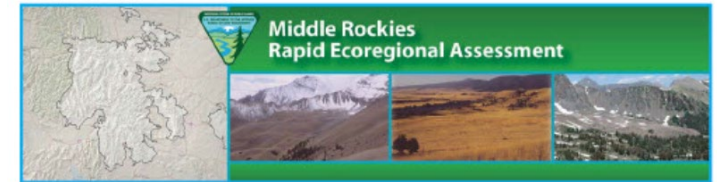   - ○ Starts with conceptual models -> key attributes -> measurable objectives -> spatial models

Available Data evaluation (Natalie)

- Reviewed this data sheet
    - ○ Bray could see but not edit - <mark>Action: **Sean**, update Bray's permissions</mark>
    - ○ 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=dcs&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
        - ■ <mark>Action: **Phil** will update Sciencebase jurisdictional data with newest layer</mark>
    - ○ 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

Crown LCD Project Area

Selecting Features Collaboratively

Management Plan Review

59 Plans Reviewed

Species Features identified in plans

Species	Count
Grizzly Bear	32
Bull Trout	28
West Slope Cutthroat Trout	23
Canada Lynx	18
Elk	17
Mule Deer	12
Wolverine	12
Bighorn Sheep	9
Grey Wolf	8
Mountain Goat	8
Whitebark Pine	8
Bald Eagle	7
Harlequin Duck	7
Moose	7
Other ungulates	7
Peregrine Falcon	6
Black Bear	6
Lewis' Woodpecker	6
Trumpeter Swan	6
Western Toad/Boreal Toad	6
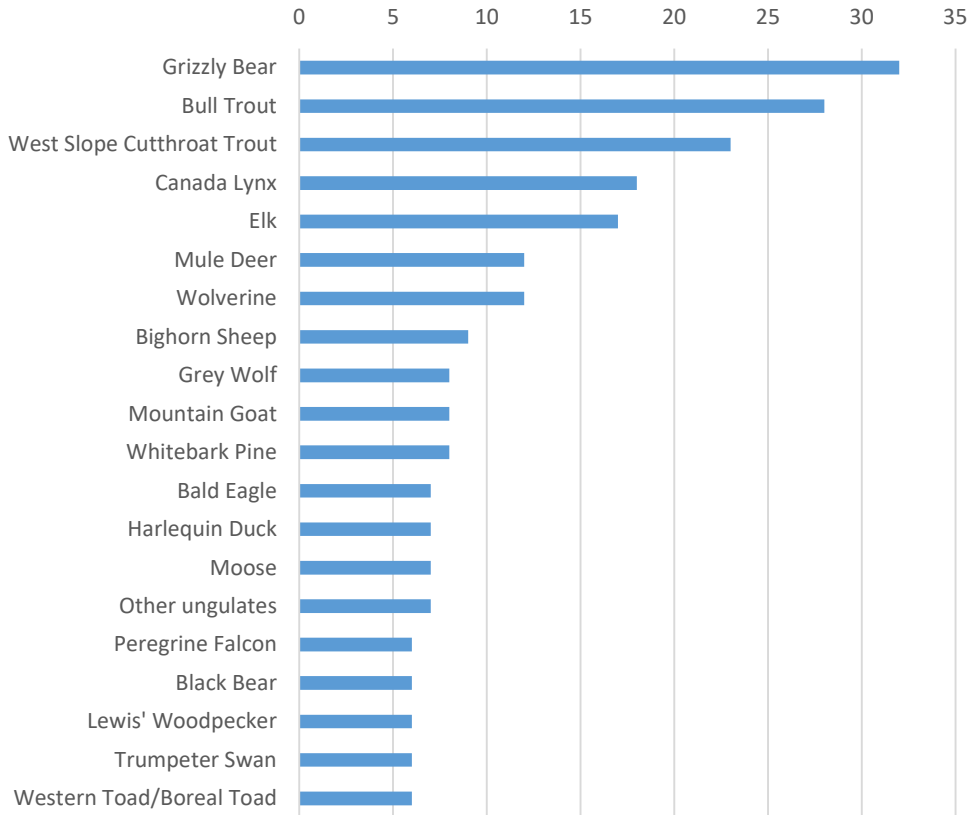
Habitat/Ecosystem Features identified in plans

Feature	Count
Riparian/Wetland Systems	26
Grassland Systems	23
Forest Vegetation	21
Aquatic Systems	16
Rangeland Vegetation	7
Shrubland	5
Lodgepole Pine and White Spruce Forests	5
Alpine Tundra	5
Sagebrush-Steppe	5
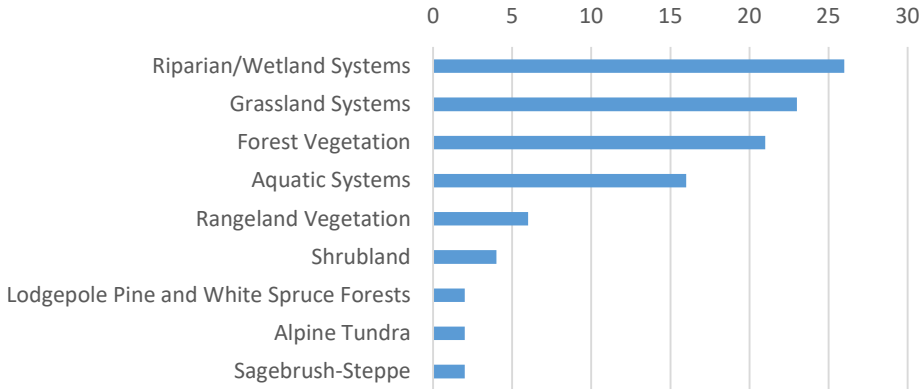
Ecological Process Features identified in plans

Feature	Count
Connectivity/ Corridor	15
Ecological disturbance	13
Climate Refugia	7
Ecosystem Services	3
Geodiversity	2
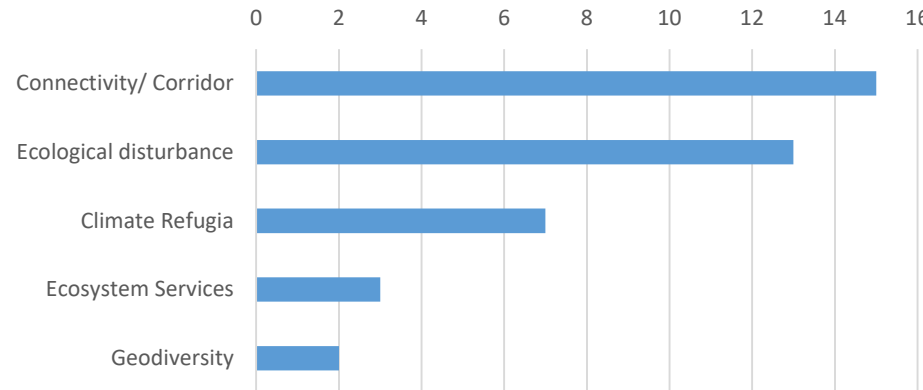
Feature Selection Approach

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
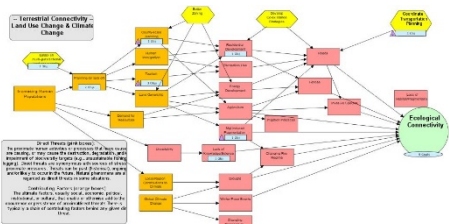
Key Attributes & Indicators

Measureable Objectives

Barriers to Objectives (aka 'Costs')
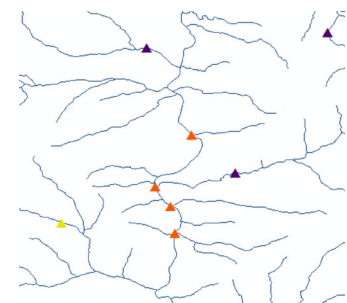
Spatial Models
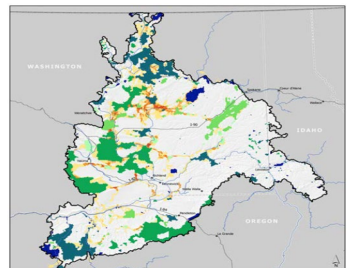
Leadership Team

Technical Team

Subject Matter Experts

Analysis Team