Crown LCD Leadership Meeting Notes
August 25, 2020

Action Items (August):

What?	Who?	When?
Post the vision Statement to the website	Mary	Before Sept. 22
Initiate data evaluations for selected coarse features	Analysis Team and Technical Team	Through Sept.
Evaluate guild approach for fine features	Sean	Report to LT on or before Sept. 22 call
Initiate conceptual models for selected features; bridge to Key Ecological Attributes	Natalie and Sean	Through September
Identify Subject Matter Experts for select features	Everyone	Through September
Share additional plans you're aware of	Everyone	Ongoing, but great contributions from Kelly and Constanza!

Action Items (Prior):

What?	Who?	When?
Continue generating maps describing focal landscape features; post on website	Phil, Aubin, Sean	Ongoing; revisit monthly
Continue analytical work on cold water salmonids (and climate refugia) as a likely focal landscape feature	Analysis Team	Report to LT in Sept
Think about how we can recruit social, cultural and economic experts	Leadership Team	Ongoing; we will revisit in September
Follow up on leads provided by LT on June call	Sean	As soon as possible
Finalize the Vision Statement	Natalie and Vision Subcommittee	DONE
Share list of management plans reviewed	Sean	DONE – email sent 6/23/2020
Make progress on Feature Selection process	Sean and Analysis Team	Report out at June 23 LT call
Revisit objectives of the spatial design and how it informs, not determines, strategy design (see Chat box	Sean	Report out at June 23 LT call

comments on feature selection)		

Meeting Notes and Materials:

Recording: https://meet39041854.adobeconnect.com/p2aakdehrun9/

Presentation Slides: Attached (Leadership Team call_8-25-2020.pdf)

Next Call: July 28, 2020 at 11 am

Attendees

- Amy McLeod
- Aubin Douglas, Cartography & GIS intern, US Fish & Wildlife Service
- Brooke Kapeller, CPAWS SAB
- Bryan Wilson, Director-Individual Placement Programs; Montana Conservation Corps
- Clifford Kipp
- Constanza von der Pahlen
- Craig Harding, Nature Conservancy Canada, Alberta
- Dale Becker, CSKT Tribal Wildlife Program Manager
- Kelly Cooley - phone only
- Kim Pearson, Parks Canada, Waterton Lakes National Park
- Kim Trotter, Yellowstone to Yukong Conservation Inititative
- Kris Tempel - FWP Habitat Conservation Biologist
- Linh Hoang, USFS; Inventory, Monitoring, Assessment, and Climate Change Coord.
- Mary McClelland - phone only
- Mary McFadzen, Science Outreach, Montana State University
- Mike Durglo, CSKT Tribal Historic Preservation Department Head
- Natalie Poremba, Conservation Priorities Coordinator, Crown Managers Partnership
- Phil Matson, Flathead Lake Biological Station, University of Montana
- Rich Janssen, Salish and Kootenai Tribes
- Richard Klafki, Nature Conservancy Canada, BC
- Sean Finn, Science Coordinator, US Fish and Wildlife Service
- Tara Carolin, CCRLC, Glacier NP
- Tom Olliff, National Park Service, Landscape Conservation

Agenda

1) Hellos
2) Vision Statement complete!
3) Ecological Feature Selection Process
    a) Brief Review of 'Why' we're selecting features
    b) How we got here
    c) What we intend to do with selected features
    d) Results of Survey
    e) Deliberate and select
    f) Additional question we want the Analysis Team to answer
4) Next Steps
    a) Work with Technical Team to deep dive evaluate our knowledge base and data availability
    b) Analysis Team builds out conceptual models, starting with available information
5) Other Topics?

Vision Statement

Natalie reports on the Vision Statement Subcommittee completing our statement. Committee included: Mary McFadzen, Mary McClelland, Kris Temple, Anne Carlson, Chad Willms, Erin Sexton. A draft was shared with the LT in June. The Subcommittee considered many comments (see June notes) and submit the following:

Crown of the Continent LCD: Conservation without borders

Ensuring a resilient, connected landscape that supports healthy ecosystems and human communities

Our Goals:

•To rely upon cutting-edge science, Indigenous knowledge, and modeling to collectively increase the resilience of waters, forests, and grasslands
•To sustain healthy ecosystems, communities, and economies through working lands partnerships
•To recognize the leadership, history, culture, and traditional territories of Indigenous peoples as we plan for the future

Chat box Comments:
Aubin Douglas: Looks great Natalie!
Phil Matson 2: Nice Natalie!
Natalie Poremba: Thanks, all - it was a group effort with Mary McFadzen, Mary McClelland, Kris Temple, Anne Carlson, Chad Willms, Erin Sexton!
Aubin Douglas: Well done Vision Team!
Kim Trotter - Y2Y: echo!!!

Feature Selection Process (slides 3-18)

Sean reviewed the process to narrow down the potential list of focal conservation features to a set of 39 candidates that LT were asked to select from using a Survey Monkey poll. We had 22 poll responses and the results were promising (see slides 11-13). After initial discussion the LT agreed the following course features are appropriate:

Connectivity
Riparian
Forest
Wetlands
Grasslands
Aquatic (Lakes and large rivers)
Shrubland

Human Development, Invasive Species and Wildfire would be prioritized as 'cost' layers in the spatial design.

Lengthy discussion ensued around fine features (aka species) and how to treat individually or grouped into guild. See comments below. We agree the analysis team would conduct some additional summaries on the following guilds (species), work with the technical team and deliver suggestions on the September LT call. Also see Action items at top of document.

Cold Water Salmonids (Bull trout, Westslope cutthroat trout)
Meso Carnivores (Wolverine, Canada lynx)
Ungulates (Rocky Mountain elk, Mule deer – maybe Bighorn sheep, Mountain goat, and Moose too?)

Five Needle Pine (Whitebark pine, Limber pine)
(Grizzly bear … no guild)

Chat box Comments:
Natalie Poremba: link to survey: https://www.surveymonkey.com/r/G93FXX7
Tom Olliff: Sean I did not respond to the poll; I deferred Mary Riddle and GLAC park
Tara Carolin, CCRLC, Glacier NP: That makes a lot of sense to me, Linh.
Constanza von der Pahlen: Agree with disease, human dev, and IS being part of the cost layers analysis. Also think of refugia and connectivity as being important components of habitats, but not habitats in itself. Thanks for voicing it so well!
Constanza von der Pahlen: Want to restate that groundwater should be included in the aquatic system assessement.
Constanza von der Pahlen: Regarding connectivity: it will depend on species needs. e.g. some wetlands are considered core habitat for breeding while others are more significant for connecivity purposes.
Constanza von der Pahlen: I think we need to include a bird species in the fine list
Constanza von der Pahlen: good thinking Lynn- fine features by habitat.
Kris Tempel: Missing any wetland obligate species as well.
Linh Hoang (USFS): Kris was thinking the same thing - i agree
Brooke Kapeller: Agreed with the concern RE choosing a single spp & limiting the range. An alternative could be to summarize the guilds into a single group (i.e. combine WSCT & BUTR ranges into a single layer)?
Aubin Douglas: Also, everything is connected, e.g., bull trout eat westslope cutthroats, so maintaining a healthy population of cutthroats is important to the health of bull trout
Aubin Douglas: I agree with Brooke
Tom Olliff: Difficult to get data on invertebrates; might have landscape scale data on birds such as Christmas bird count, breeding bird surveys
Phil Matson 2: Yes Brooke I thought that too. We could certainly merge those similar ranges...
Tom Olliff: Also, birds might be a good indicator of change
Brooke Kapeller: also want to flag the importance of including SAR critical habitat (and equivalent in the states)... if any spp are listed they should absolutely be included
Richard Klafki: Maybe a grassland bird guild....would be good to add with a representative species?

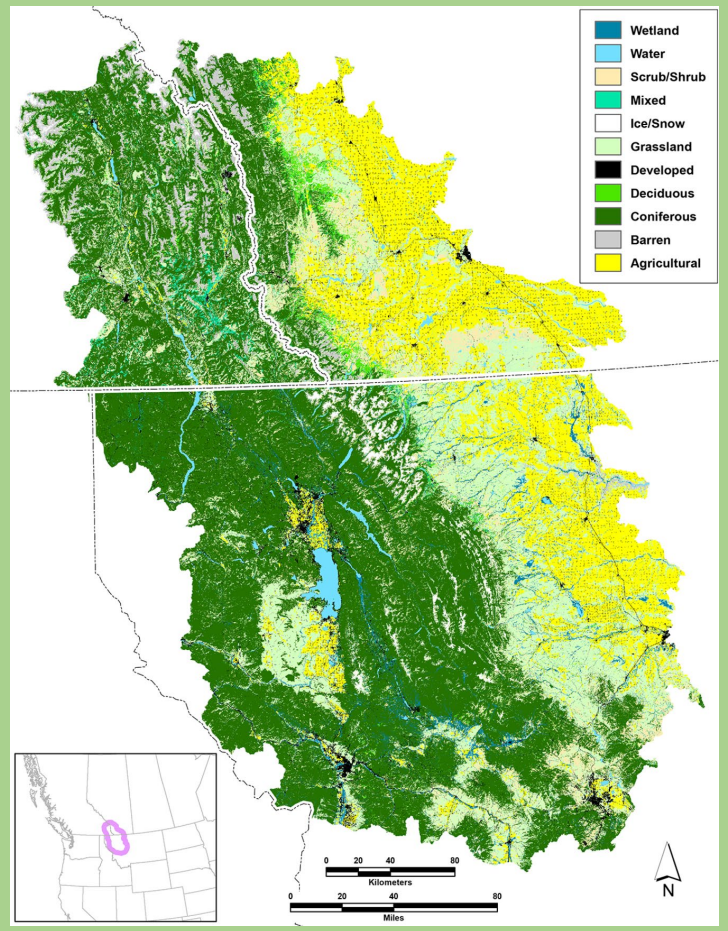
Next Steps:

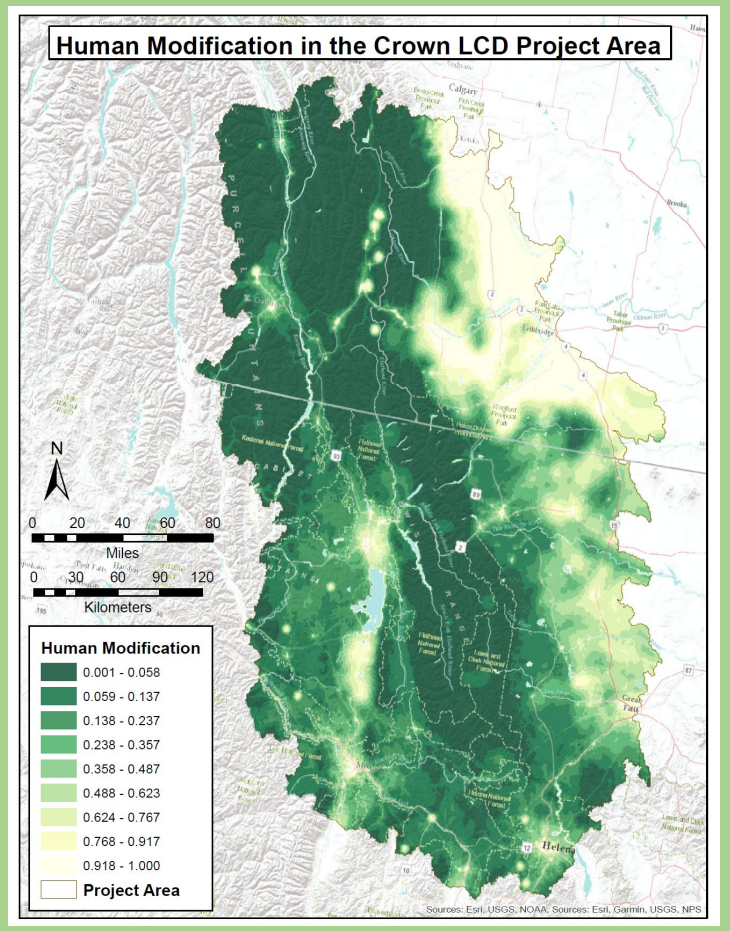
a) Work with Technical Team to deep dive evaluate our knowledge base and data availability
b) Analysis Team builds out conceptual models, starting with available information

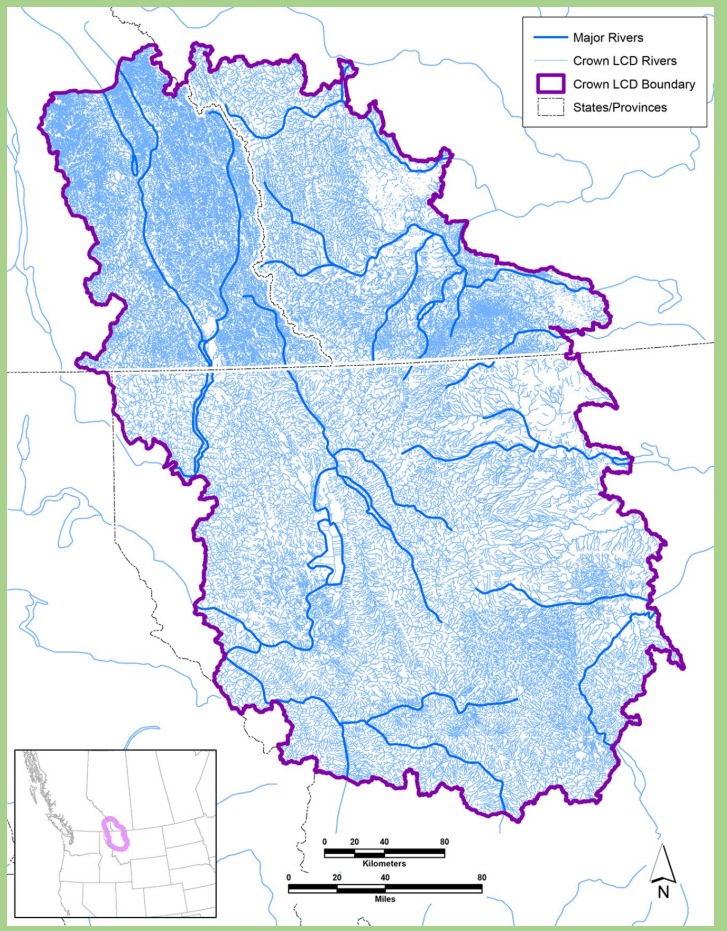
Chat box Comments:
Aubin Douglas: sounds good
Clifford Kipp: sounds great. Thanks!
Constanza von der Pahlen: thanks!
Linh Hoang (USFS): good conversation!
Kris Tempel: Sounds good. Thank you.
Aubin Douglas: Thanks Sean!
Craig Harding: Thanks Sean.
Brooke Kapeller: Thanks!
Richard Klafki: Thanks

Crown of the Continent Landscape Conservation Design

Leadership Team call -- 25 August 2020







Agenda

1. Hellos
2. Ecological Feature Selection Process
    1. Brief Review of ‘Why’ we’re selecting features
    2. How we got here
    3. What we intend to do with selected features
    4. Results of Survey
    5. Deliberate and select
        1. Additional question we want the Analysis Team to answer
3. Next Steps
    1. Work with Technical Team to deep dive evaluate our knowledge base and data availability
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4. Other Topics?

Identify Landscape Features

What to Focus On?

Select Landscape Features:

- **Ecology**
  - Species
  - Habitat Types
  - Processes (i.e., connectivity)
- **Social**
  - Economies
  - Recreation
- **Cultural**
  - Traditional Uses
  - Historic Value

Criteria to Consider:

- **Representative**
- **Comprehensive**
- **Extent / Range**
- **Impact, Importance**
- **Context** (do we know enough?)
- **Contentiousness** (low)
- **Data Available**

Feature Selection Setup

1. Reviewed over 60 management plans and identified over 170 fine (species) and coarse (habitats, ecological processes) potential features

2. Narrowed that list to features that were mentioned in at least 10% of plans

3. Created a survey for the Leadership Team to vote on the remaining features

4. Discuss the survey results with the Leadership Team and selected our features

Feature Selection Setup

1. Reviewed over 60 management plans and identified over 170 fine (species) and coarse (habitats, ecological processes) potential features

Bureau of Land Management	Middle Rockies Rapid Ecoregional Assessment	2012
Canadian Parks and Wilderness Society – Southern Alberta Chapter	Southern Eastern Slopes Conservation Strategy project	2018
Castle Provincial Park and Castle Wildland Provincial Park	Castle Management Plan	2018
Confederated Salish and Kootenai Tribes	Comprehensive Resources Plan (Vol. I)	2015
Confederated Salish and Kootenai Tribes	Climate Change Strategic Plan	2013
Crown Managers Partnership	Strategic Conservation Fram	
Flathead Lakers	Critical Lands Status Report Flathead River Corridor	
Glacier National Park	Interagency US2 Connectivi	

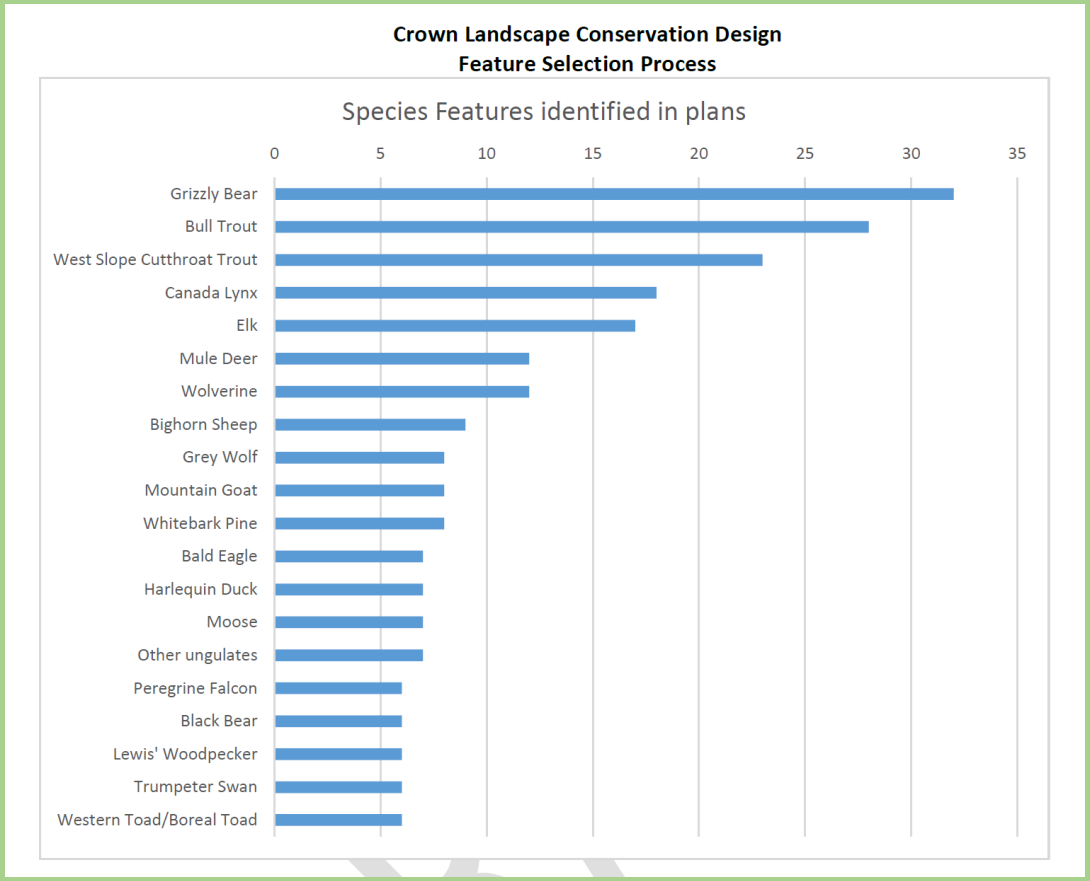
From:
Crown Landscape Conservation Design Feature Selection Process *(in process)*

Appendix 1:

Species/Taxa	No. of Plans	Species/Taxa	No. of Plans
Grizzly Bear	32	Blue-gray Gnatcatcher	1
Bull Trout	28	Bluebunch Wheatgrass	1
West Slope Cutthroat Trout	23	Boreal Chorus Frog	1
Canada Lynx	18	Breeding Bird Community	1
Elk	17	Brook Trout	1
Mule Deer	12	Burrowing Owl	1
Wolverine	12	Caspian Tern	1
Bighorn Sheep	9	Chinook Salmon	1

Feature Selection Setup

2. Narrowed that list to features that were mentioned in at least 10% of plans



Feature Selection Setup

3. Created a survey for the Leadership Team to vote on the remaining features

	Must Include	Should Include	Maybe	Should Not	Do Not Include	I don't know
Riparian	○	○	○	○	○	○
Wetland	○	○	○	○	○	○
Grassland	○	○	○	○	○	○
Forest	○	○	○	○	○	○
Aquatic (lake)	○	○	○	○	○	○
Shrubland/Rangeland/Sagebrush-steppe	○	○	○	○	○	○
Alpine Tundra	○	○	○	○	○	○
Connectivity/Corridor	○	○	○	○	○	○
Wildfire	○	○	○	○	○	○
Climate Refugia	○	○	○	○	○	○
Invasive Species	○	○	○	○	○	○
Diseases	○	○	○	○	○	○
Human Development/Habitat Loss	○	○	○	○	○	○

Candidate Feature	Relative Concern (Plans)	Relative Protected Status (%)	Estimated Conservation Status	Available Data Evaluation	Ongoing Monitoring	Ease of Monitoring	Obligate Species (#)	Fine Feature useful as Indicator (#)	Source of Information
OARSE FEATURE									
abitat/ Ecosystem									
iparian	28	8.5*	More Vulnerable	POOR	LOW	LOW	20	5	MT MSDI (MT only)
/etland	26	2.5	More Vulnerable	POOR	GOOD	MODERATE	20	2	
rassland	23	7.1	More Vulnerable	POOR	MODERATE	MODERATE	17	1	
orest	21	14.3		GOOD	MODERATE	MODERATE	13	2	CEC Landcover – North America (30 m)
quatic (lake)	16	7.9		POOR	MODERATE	MODERATE	9	2	
hrubland/Rangeland/ agebrush-steppe	6	12.1		GOOD	MODERATE	MODERATE	11	1	
lpine Tundra	2	22.8	More Vulnerable	POOR	LOW	MODERATE	6	2	
cological Process									
onnectivity/Corridor	15			FAIR	LOW	MODERATE	18	5	
/ildfire	10			GOOD	LOW	MODERATE	13	2	
limate Refugia	7			POOR	LOW	LOW	18	6	
ivasive Plants	6			FAIR	LOW	LOW	11	0	
iseases	5			POOR	LOW	LOW	16	7	
uman Development / abitat Loss	5			GOOD	LOW	MODERATE	28	9	
IFORMATION OURCE	Mgt Plan Review (This document)	World Database on Protected Areas; CEC	Based on quick assessment of IUCN Red List of Ecosystems	Based on LCD data catalog			Crown LCD Feature Analysis	Crown LCD Feature Analysis	

Feature Selection Setup

4. Discuss the survey results with the Leadership Team and selected our features

	Must Include	Should Include	Maybe	Should Not	Do Not Include	I don't know
Riparian	○	○	○	○	○	○
Wetland	○	○	○	○	○	○
Grassland	○	○	○	○	○	○
Forest	○	○	○	○	○	○
Aquatic (lake)	○	○	○	○	○	○
Shrubland/Rangeland/Sagebrush-steppe	○	○	○	○	○	○
Alpine Tundra	○	○	○	○	○	○
Connectivity/Corridor	○	○	○	○	○	○
Wildfire	○	○	○	○	○	○
Climate Refugia	○	○	○	○	○	○
Invasive Species	○	○	○	○	○	○
Diseases	○	○	○	○	○	○
Human Development/Habitat Loss	○	○	○	○	○	○

Survey Open July 31-Aug 19

Responses = 21

6 Choices for each Candidate Feature (score)

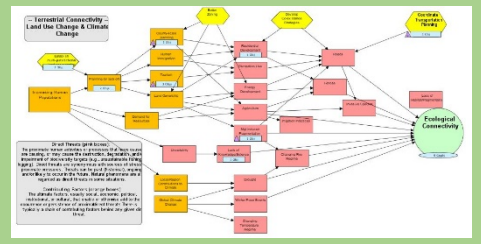
- Must Include (+10)
- Should Include (+6)
- Maybe (+1)
- Should Not Include (-5)
- Do Not Include (-50)
- I Don’t Know (0)

Objective is to agree on 10-15 focal features

How do we treat Landscape Features?

Current Condition → **Desired Future Condition**

Conceptual Models



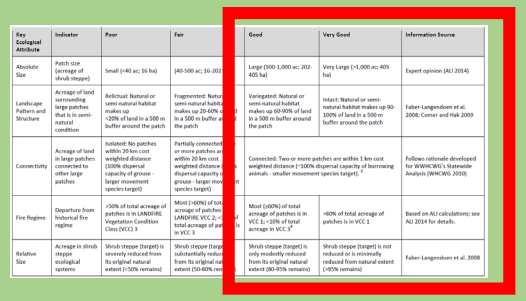
Key Attributes & Indicators

Viability and Integrity Summary

Focal System or Species	Landscape Context	Condition	Size	Viability/Integrity
Shrub Steppe and Dry Grasslands	Fair	Fair	Poor	Fair
Riverine Systems	Unknown	Unknown	Unknown	Unknown
Depressional Wetlands	Fair	Fair	Fair	Fair
Dunes	Poor	Fair	Poor	Poor
Transitional Woodlands	Fair	Fair	Poor	Fair
Cliffs, Talus and Caves	Good	Unknown	Good	Good [1]
Grouse	Poor	Poor [2]	Poor	Poor
Burrowing Animals	Poor	Poor	Fair	Poor
Overall Viability/Integrity				Fair [3]

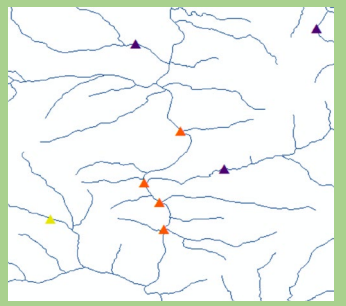
[1] This overall rank assumes that the condition of the vegetation in and around cliffs, talus and cave systems is no worse than other focal systems' condition – i.e. fair.
[2] Population growth rates for Sharp-tailed Grouse are high, due in part to translocation of birds from other states. However, mature growth rates for Sage-grouse are low, particularly in the Joint Base Lewis-McChord Yakima Training Center population.
[3] The overall viability/integrity of the system would be considered "fair" under all possible scenarios of integrity of the riverine systems (i.e. if the riverine systems' integrity were found to be poor, fair, good or even very good).

Measureable Objectives

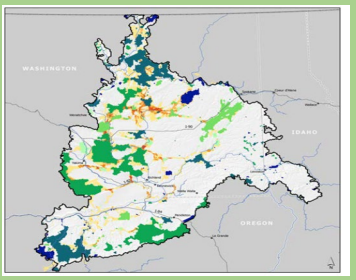


Key Ecological Attribute	Indicator	Poor	Fair	Good	Very Good	Information Source
Absolute Size	Patch size (acreage of shrub-steppe)	Small (<40 ac; 16 ha)	(40-500 ac; 16-202	Large (500-1,000 ac; 202-405 ha)	Very Large (>1,000 ac; 405 ha)	Expert opinion (ALI 2014)
Landscape Pattern and Structure	Acreage of land surrounding large patches that is in semi-natural condition	Relictual: 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 20-60% of land in a 500 m buffer around the patch	Variegated: Natural or semi-natural habitat makes up 60-90% of land in a 500 m buffer around the patch	Intact: Natural or semi-natural habitat makes up 90-100% of land in a 500 m buffer around the patch	Faber-Langendoen et al. 2008; Comer and Hak 2009
Connectivity	Acreage of land in large patches connected to other large patches	Isolated: No patches within 20 km cost weighted distance (100% dispersal capacity of grouse - larger movement species target)	Partially connected: 1 or more patches are within 20 km cost weighted distance (>100% dispersal capacity of grouse - larger movement species target)	Connected: Two or more patches are within 1 km cost weighted distance (~100% dispersal capacity of burrowing animals - smaller movement species target). [1]		Follows rationale developed for WWHCWG's Statewide Analysis (WHCWG 2010)
Fire Regime	Departure from historical fire regime	>50% of total acreage of patches is in LANDFIRE Vegetation Condition Class (VCC) 3	Most (>60%) of total acreage of patches is in LANDFIRE VCC 2; <[illegible] total acreage of patches in VCC 3	Most (≥60%) of total acreage of patches is in VCC 1; <10% of total acreage in VCC 3[4]	>80% of total acreage of patches is in VCC 1	Based on ALI calculations; see ALI 2014 for details.
Relative Size	Acreage in shrub steppe ecological systems	Shrub steppe (target) is severely reduced from its original natural extent (<50% remains)	Shrub steppe (target) is substantially reduced from its original natural extent (50-80% remains)	Shrub steppe (target) is only modestly reduced from its original natural extent (80-95% remains)	Shrub steppe (target) is not reduced or is minimally reduced from natural extent (>95% remains)	Faber-Langendoen et al. 2008

Barriers to Objectives (aka 'Costs')



Spatial Models



Leadership Team

Technical Team

Subject Matter Experts

Analysis Team

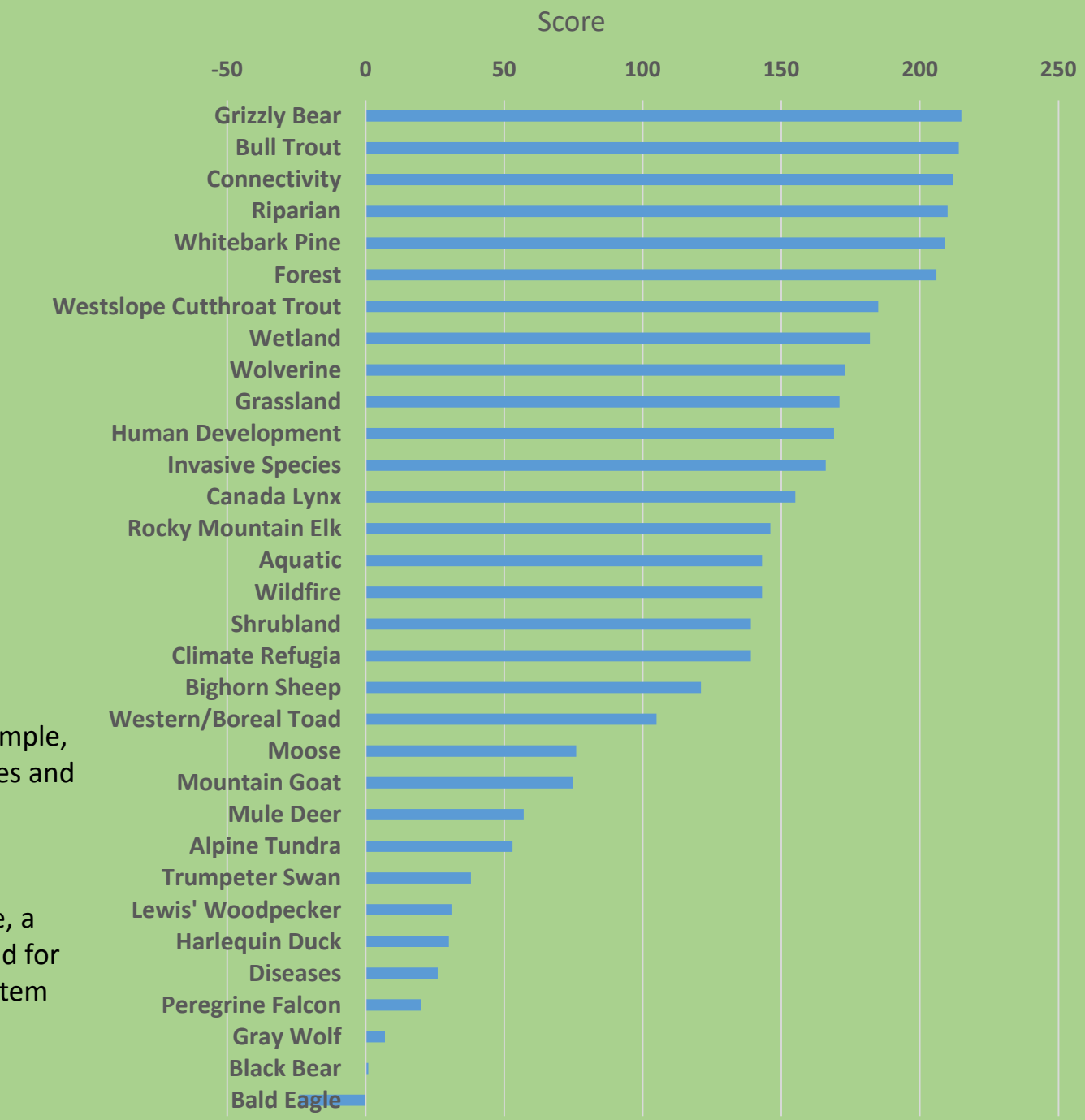
Today's Objective

- Select ~10-15 ecological features to be included* in the LCD Spatial Design
  - Combination of coarse features and fine features that are – to the extent possible
    - Representative of the Crown ecological system
      - Comprehensive in terms of biodiversity and ecological function
      - Cover the full spatial extent of the Project Area
      - Important components of the system (keystone, indicator, umbrella, priority, etc)

- * We still need to complete a thorough evaluation of information and data availability

Feature Selection Survey Results:

All candidate features



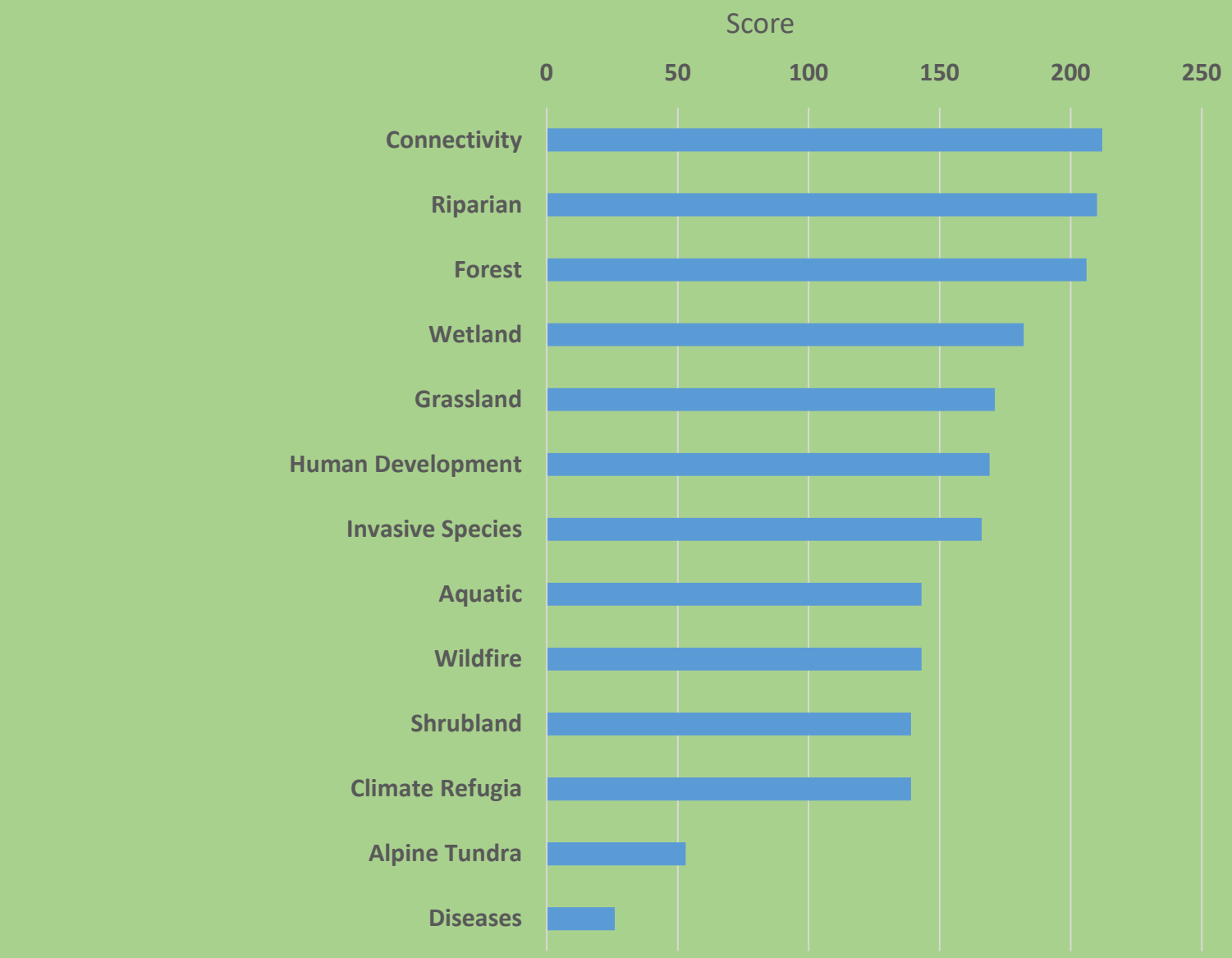
Coarse feature: An aggregate or collection of fine features (for example, a habitat type) that serves to both encompass multiple fine features and compensate for our incomplete knowledge of all biodiversity.

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 (after Groves and Game 2016).

Feature Selection Survey Results:

Coarse features

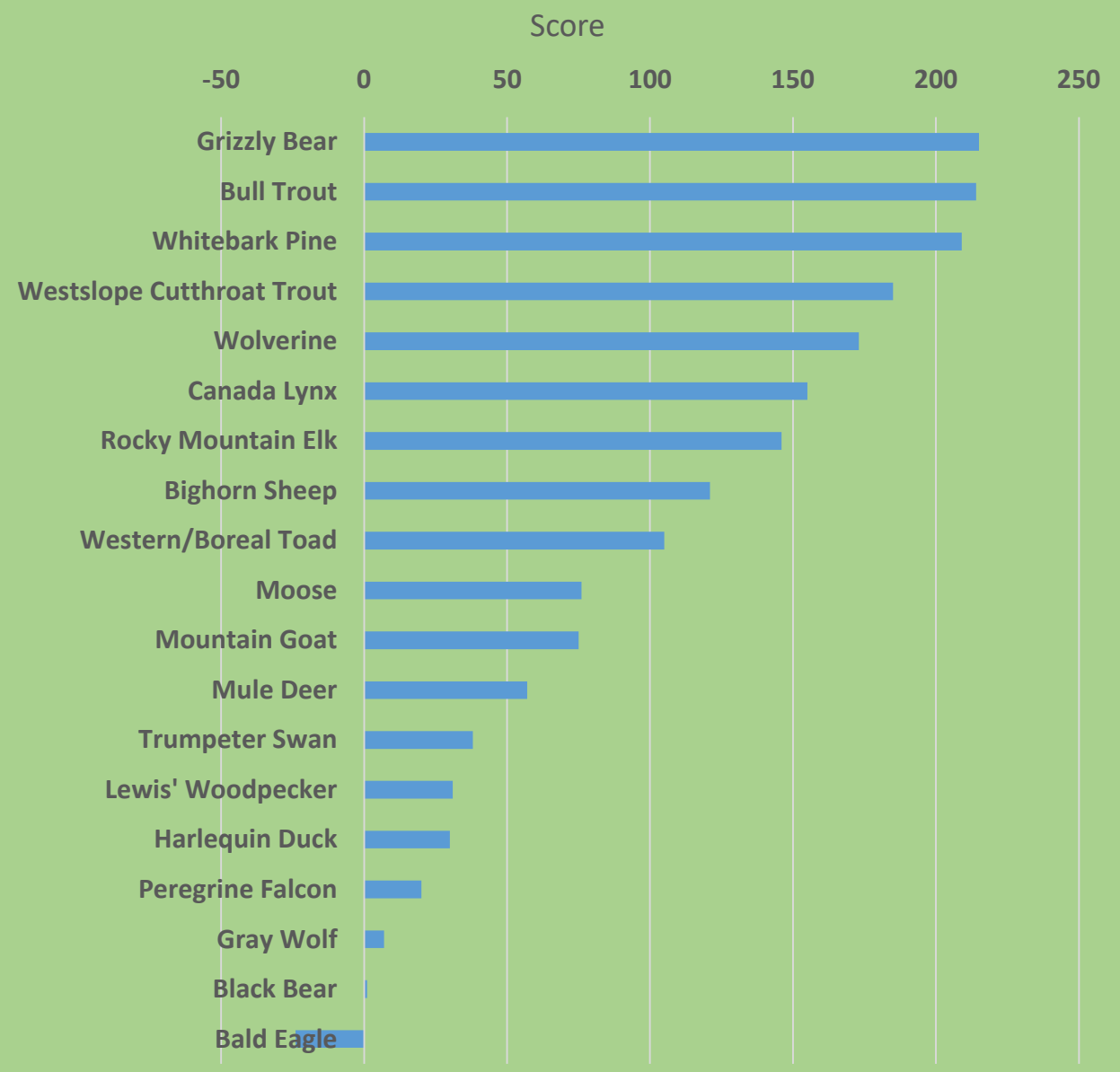
Ecosystems
Habitats
Ecological Processes
Ecosystem Services



Feature Selection Survey Results:

Fine features

Species



Feature Selection Survey Results:

Some Additional Comments: Suggested additions & adjustments

- **Lotic aquatic features** should be included in the riparian feature, if not already.
- **Riverine**, unless represented by riparian **groundwater**, confined and unconfined, shallow vs deep **aquifers**, farm soils, incl. prime **agricultural soils**
- **Streams.** Your Aquatic feature just seems to be Lakes. **Water quality for all water types.**
- **Native pollinators**: At least one species of bat and one species each of other native pollinators
- Consider **plains bison**, due to their ecological and cultural significance.
- Consider **five-needled pines** (whitebark and limber) as a group
- **Golden Eagle**, **Common Loon**, **Bats** (Townsend's Big Eared?), **Bison** Maybe: **Pronghorn**, **Caribou**
- **Osprey.** Since they eat fish, they integrate environmental pollutants from the watershed.
- If invasive species are included, this should **include both aquatic and terrestrial invasive species**.

Feature Selection Survey Results:

Some Additional Comments: Handling Ecological Processes

- All the **ecological processes** should be included not as a feature but **as considerations for how we evaluate the features**
- The **processes are ways to measure the condition of a feature** like species or ecosystem and some are a threat (stress) such as invasive species

Feature Selection Survey Results:

- One option is to combine these fine filter options into guilds to decrease the number of features

Some Additional Comments:

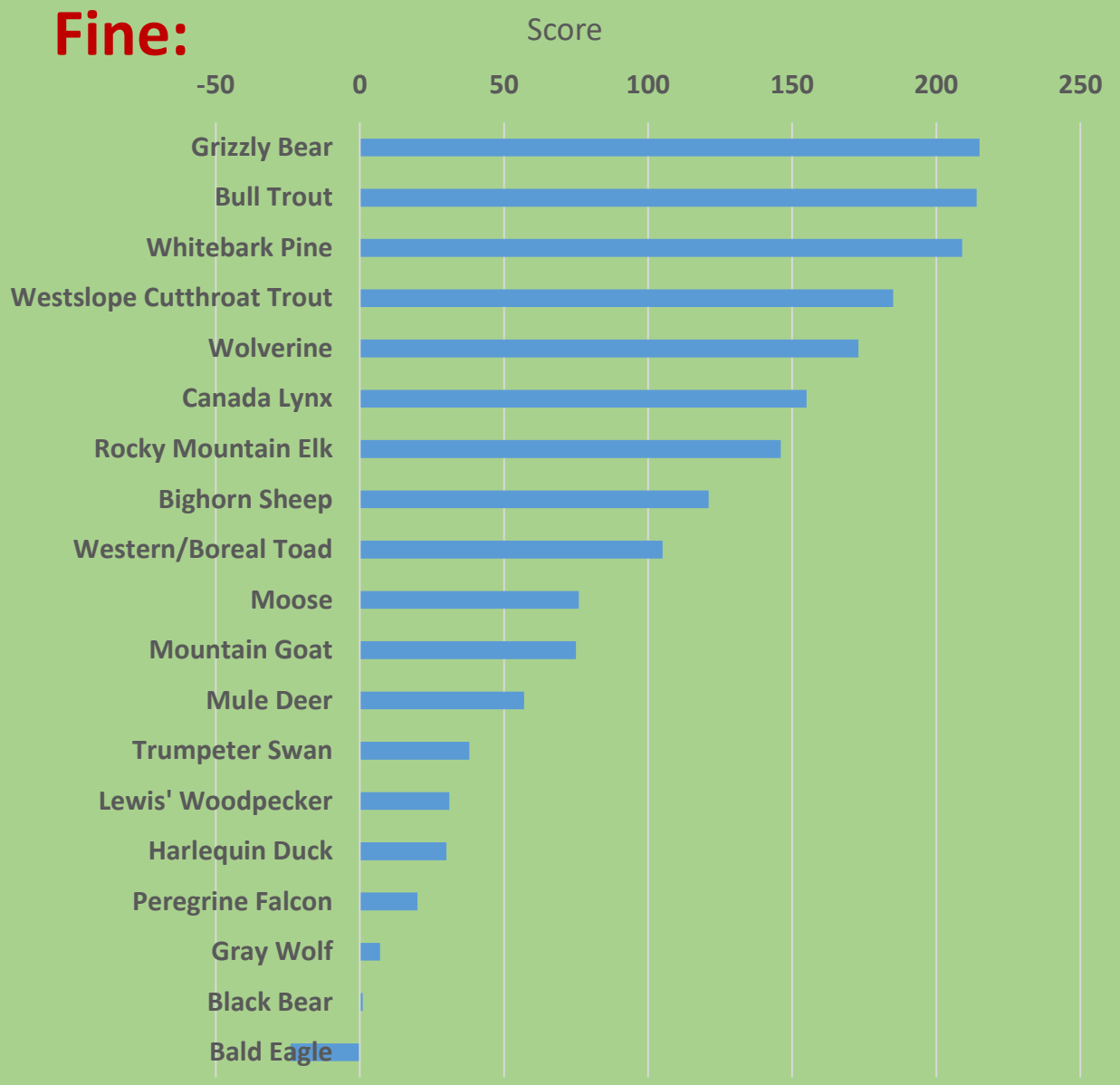
Responses from:

- Anonymous (one)
- Canadian Parks and Wilderness Society
- Community Representatives
  - West Glacier
  - Pincher Creek
- Crown Managers Partnership
- Flathead Lake Bio Station
- Flathead Lakers
- Glacier National Park
- Heart of the Rockies Initiative
- Montana Conservation Corps
- Montana Department of Natural Resources and Conservation
- Montana Fish Wildlife and Parks
- Natural Resource Conservation Service
- Nature Conservancy Canada
- Miistakis Institute
- Montana Department of Natural Resources and Conservation
- Parks Canada
- US Fish and Wildlife Service
  - Refuges Program
  - Science Applications Program
- US Forest Service
- Wilderness Society
- Yellowstone to Yukon Initiative
  - Alberta rep
  - British Columbia rep
  - US rep

Discussion

Coarse:

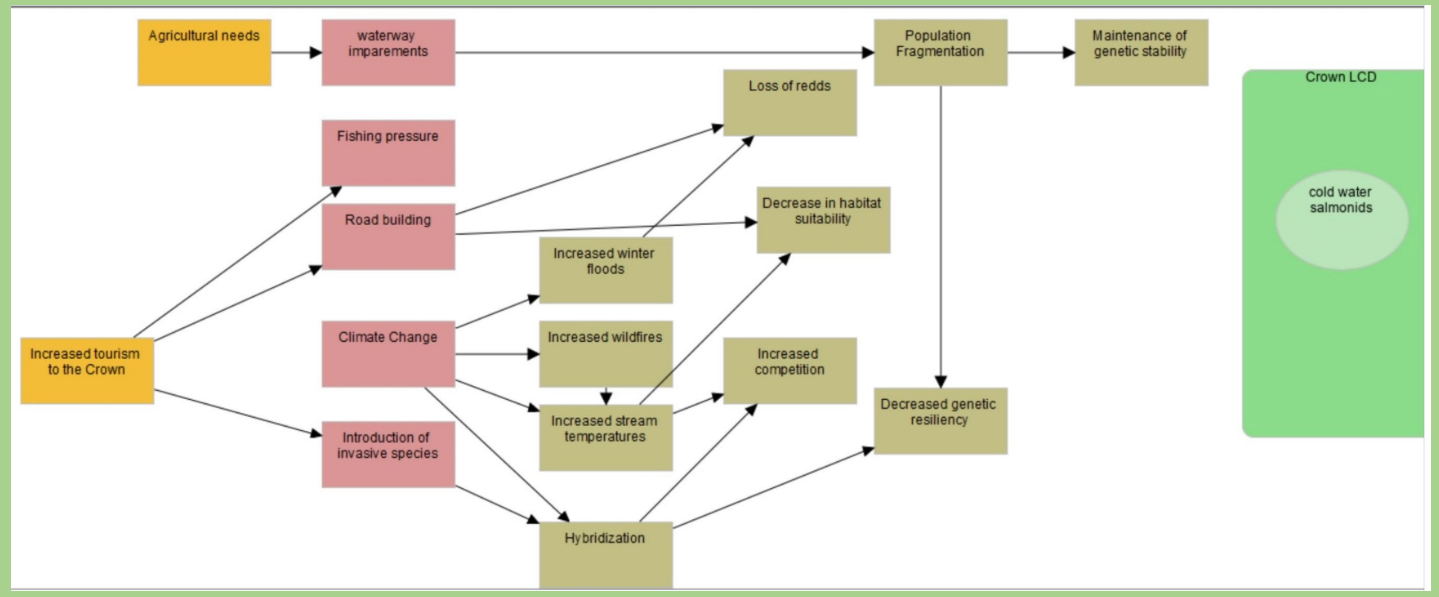
Fine:



Discussion, Comments, Questions …

Next Steps

1. Work with Technical Team to deep dive evaluate our knowledge base and data availability
2. Analysis Team builds out conceptual models, starting with available information



3. Identify Subject Matter Expert Teams to guide model development