Species Selection Criteria, Front Range CFLRP Wildlife Working Team

Draft, February 27, 2013

General notes to team:

- This attempts to capture in a bit more detail the process we have used to date, and what we may consider to increase consistency as we revisit the species list.
- I have made a couple slight changes to the matrix based on the information here
- a few examples are included to hopefully help the ideas gel and increase consistency

Process Update and Criteria Clarification

Step 1 – build the species list: The group developed an exhaustive list of vertebrate wildlife species and a comprehensive list of invertebrate Families / Genera / Species as practical. Casey provided an initial list that he compiled from other 'watch' lists (e.g., FS Sensitive Species, Colorado Species of Greatest Conservation Concern) Individual team members contributed information for specific taxonomic groups using readily available information (e.g., field guides, literature, online information). During the January meeting this information was compiled into a complete master list.

Step 2 – identify species whose distribution includes the core of the CFLRP footprint. During the January meeting and subsequent individual work, each species on the list was subject to the 'distribution filter'. The process involved assessing each species' distribution relative to the CFLRP footprint based as follows:

- Core- the species known or suspected distribution includes the majority of the CFLRP footprint, elevations from ~6000 – 10000' (~1800 – 3050 m). Species were assessed strictly on distribution, regardless of habitat associations.
- Marginal – the species known or suspected distribution is on the margin of the CFLRP; the species occurs in part of the CFLRP footprint but not enough to be considered 'Core'.
- No – species is not known to occur in the CFLRP footprint. Species who formerly occurred but are not currently known to occur (e.g., *Canis lupus*) are considered in this category for the purposes of CFLRP wildlife monitoring
- Need info – species for whom the team did not have adequate information to assess distribution status. Team members researched distribution following the January meeting to compile this information.
- Confused – this category was created to address the complex genetic relationships among native cutthroat trout populations. This category will be carried forward for now.

Examples for assigning distribution condition

1. Abert's squirrel: assigned to 'Core' because the species distribution includes the majority the Front Range lower montane.

2. Bighorn sheep: assigned to 'Core' based on general distribution; although the species is associated largely with habitats unlikely to be the focus of CFLRP management (though with some potential exceptions), the species is known to occur in the elevation range of interest. *The species will likely be filtered at a later stage of the selection process, but remains on the list based on distribution.*
3. American marten: assigned to 'Marginal' because the species distribution includes a relatively small portion of the upper limit of the lower-montane elevation range.
4. Brown-capped Rosy Finch: assigned to 'Marginal' because the species is generally a high-elevation species, though it may occur at lower elevations during winter periods
5. Eastern cottontail: assigned to 'No' because the species distribution does not include the CFLRP footprint. The initial list of mammals for consideration was exhaustive for the state and many species whose distribution does not include the CFLRP were included; these will be filtered at the initial stage.
6. Grizzly bear: assigned to 'No' because it no longer occurs in the Front Range

Note to team (NTT):

- If the team agrees with the clarifications / detail above, it may be necessary to revisit some of the species labeled as 'marginal' in the initial review. There appear to be several species whose distribution includes the core of the CFLR, but which are presumably rare within the area based on available habitat etc. For example- mallard is considered marginal although it presumably occurs throughout the elevation range at certain times of year and in certain habitats. Such species will likely be filtered at a later date based on habitat associations, likelihood that CFLRP treatments will impact populations, etc. **It is difficult to completely separate the distribution filter from the habitat filter and others that, in concept, will happen later in the selection process. I suggest we not over-analyze this and get too stuck on this step; revisit taxonomic groups as needed knowing we can always 'recall' a species later if needed.**

FILTER 1: Eliminate all 'marginal' and 'no' species from further consideration

Based on first attempt, this step reduced initial pool of species from 302 to 151 with a handful of species still needing info. These numbers will be updated after 'final' work on initial filters.

Step 3 – for remaining species, rank each species for the 3 monitoring groups identified. During the January meeting the team discussed general considerations for ranking species in the 3 monitoring groups (ecologically informative, politically prudent, socio-economically important) on a scale of 0 – 3 where 0 indicates no value, and 1 – 3 are rankings from low to high. The team worked through a few examples and focused on the 'ecologically important' criteria. The team acknowledged the process was not as rigorous as it could be, but there was agreement to move forward and provide initial ranks for each species. As we winnow the species list to a 'final' set of species for monitoring, we should provide

thorough rationale for each species based on ecological systems models for the lower montane, food webs, key ecological functions, etc. During our February meeting we agreed that we needed additional detail / criteria for determining ranks in each category, and the team members agreed to re-rank some of the taxonomic groups using refined criteria. Criteria are proposed here to help increase consistency in evaluations for mammals and birds in particular, with the opportunity to revisit reptiles, amphibians, fish, and invertebrates as needed.

Ecologically Informative criteria: degree to which species are 'ecologically informative' is based on the idea of Key Ecological Functions in Wildlife (*sensu* Marcot and Vender Heyden 2001), degree of habitat specialization, and reliance on lower montane forests to meet life history requirements. There is no 'formula' to determine degree to which a species is ecologically informative, rather a gestalt based on the suite of considerations.

a) Key ecological functions with emphasis on:
   - trophic position / role in food web: is the species a primary consumer, secondary consumer, tertiary consumer, detritivore?
   - organismal relationships: does the species rely on / control other vertebrate populations? Is the species a pollination vector or seed disperser? Does the species create habitat features for other species (e.g., burrowing mammals, primary cavity excavators)? Is the species reliant on habitat features created by other species (e.g., secondary cavity user)? Is the species a nest parasite?
   - Relationship to vegetation composition and structure: does the species create snags? Is the species a browser or grazer that may impact vegetation composition or structure?

   Species who occupy higher trophic positions will generally be considered more ecologically informative than those in lower trophic positions.

   Species who play key roles in predator / prey dynamics will generally be considered more informative than those with minor roles.

   Species who rely on habitat elements created by other species or create habitat elements for other species will generally be more informative than those who do not.

   Species capable of exerting considerable browsing / grazing pressure and influence on vegetation composition and structure are more informative than those whose influences are minor.

b) Degree of habitat specialization: is the species a habitat generalist or specialist? Is the species strongly associated with habitat elements dependent on certain ecological processes or other species?

   Habitat generalists are less informative than specialists. A species that uses multiple 'habitat types' is less informative than one that uses a limited number of habitat types. Among specialists that rely on a similar type, those species that rely on specific habitat

elements related to certain successional or disturbance patterns are more important than those associated with numerous configurations of the habitat.

c) Degree to which the species relies on Front Range lower-montane to meet life cycle requirements: is the species a year-round resident? If not, does the species breed in the lower montane? Does the lower montane provide critical wintering habitat?

For the purposes of the CFLR wildlife monitoring, residents of the lower montane are more informative than seasonal inhabitants or transients.

A couple examples with rationale:

1. Abert's squirrel – 3: highly informative because the species is strongly associated with Ponderosa Pine forests, is a year-round resident, relies largely on cone crops for nutrition and energy, requires some degree of inter-connected tree crowns for secure movement, and is an important food source for secondary consumers particularly during winter when many other prey species migrate or hibernate and are unavailable to predators. Additionally, the species builds nests that may be used by other species, likely exerts some fitness impacts on cone-bearing PIPO, and plays a role in PIPO seed dispersal.
2. Black bear – 1: the species is a true generalist providing many ecological functions and using a wide range of habitats. In this case, the broad set ecological functions performed to some extent by black bear make the species less ecologically informative than species with fewer ecological functions. The species can potentially exert pressure on other species through predation or herbivory.
3. House wren– 0: the species is not a year-round resident of the lower montane, is small-bodied and therefore not likely of great importance in the food web, and is a habitat generalist.
4. Elk – 2: the species uses lower montane largely during wintering periods, can exert extreme browse pressure on certain plant species, and provides an important source of carrion at certain times of year.
5. Brown-headed cowbird– 2: although the species uses numerous habitat-types, its association with disturbed forests and its potential impacts on other bird populations through nest parasitism can be informative as an indicator of changes in landscape / habitat conditions and impacts on conspecifics. **NOTE: brown-headed cowbird is not on our list, but I included it here as an example.**

<u>Politically Prudent criteria</u>: use the following scoring system:

0- Species does not appear on any special status list
1- Species appears on one special status list (e.g., CO State Wildlife Action plan species of greatest conservation concern, PIF, BLM sensitive, FS species of local concern)

2- Species is a FS Sensitive Species or Management Indicator Species, appears on more than one special status list, or a candidate species under ESA
3- Species is listed as Threatened or Endangered under the ESA, or is proposed for listing

Socio-economically Important criteria: Several factors should be considered and judgment will be needed to assign final score:

a) Game species: species that are legally hunted or fished. Species that generate large revenues should be ranked higher than those that are legally hunted/fished, but are do not generate considerable revenues.
b) Watchable wildlife: 'destination species' for wildlife tourism- most birds, charismatic mammals, some butterflies.
c) Iconic species: species recognizable to the majority of the public. Examples: bald eagle, mountain bluebird,
d) Other species that evoke strong public perception for good or bad reasons (e.g., beavers as pests, mountain pine beetle)
e) Species of cultural importance

Some examples:

Elk- 3: charismatic (watchable wildlife), a Rocky Mountain icon, and an important game species

Abert's squirrel- 2: a game species (though minimal revenues) and a Front Range icon of sorts

Mountain bluebird: watchable wildlife and an icon

Pine siskin- 1: watchable wildlife

Least chipmunk- 0: not really watchable wildlife, not a game species, not an icon

FILTER 2: Select subset of species based on monitoring group rankings

Exact process TBD; hopefully completed during next meeting.