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|  <p><b>Front Range Roundtable</b><br/>Fuels Treatment Partnership</p> | <p><b>Monthly Meeting</b></p> | <p><b>Wildlife Working Team</b></p> |
| <p>Created by: Summer Grimes</p>   | <p><i>Meeting Minutes</i></p> | <p>Tuesday, August 20, 2013</p>     |

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| <b>Meeting Name</b> | Monthly Meeting – August 2013  |
| <b>Meeting Date</b> | Tuesday, August 20, 2013   |
| <b>Meeting Time</b> | 9:00 AM – 4:00 PM MDT  |
| <b>Venue</b>        | 740 Simms Street, Golden, CO, 80401  |
| <b>Attendees</b>    | Gali Beh (Beh Consulting), Terra Lenihan (Beh Consulting), Rick Truex (US Forest Service), Casey Cooley (Colorado Division of Parks and Wildlife), Lynne Deibel (US Forest Service, ARP), Felix Quesada (US Forest Service, PSICC), Jenny Briggs (US Geological Survey), Steve Germaine (US Geological Survey), Summer Grimes (CSU MS Student) |

**Meeting Notes**

**1) Introductions and Ice Breaker**

**2) Updates and Meeting Agenda**

- a) Field trip observations and recommendations
  - Presenting comments at Q3 meeting on September 13<sup>th</sup>
    - Lynne and Rick will consolidate the group’s comments and send to the team for approval by August 30<sup>th</sup>
    - The team should submit feedback to Rick by September 6<sup>th</sup>
    - Lynne to send final form and comments to Terra on September 11<sup>th</sup>
  
- b) Writing group update
  - Sections 1-3: Check-in on September 17<sup>th</sup> re: current status and an October 11<sup>th</sup> targeted completion date
    - Lynne – Introduction and framework for developing monitoring recommendations
    - Rick – taking section 3: species selection and filtering process
    - Target: final version by February 2014
  - Rick provided a brief description of the first three sections:
    - Section 1 – Introduction
      - Context for CFLR and brief discussion regarding the history of the roundtable and wildlife team
      - Background info re: the wildlife situation on the Front Range
    - Section 2 – Framework for developing monitoring recommendations

- Section 3 – Species filtering process designed and followed by the wildlife team
  - Rationale for why species were kept or dropped
  - Thorough rationale about the final list of chosen species
  - Brief discussion about the need for secondary species

### 3) Group Updates before breakout meetings

#### a) Group 2 update: The “Design Group”

- Focusing on project monitoring and experimental design.
- Rick discussed basic terminology and concepts via powerpoint to make sure the group is on the same page
  - Effectively monitoring wildlife involves:
    - Identify the sampling universe and the sampling frame: the areas that you are interested in making an inference about.
    - Thoughtfully articulating the population parameter to be monitored: what do you need to measure to draw population inference to the sampling universe?
    - Selecting appropriate sampling methods to achieve the level of rigor needed for appropriate inference (statistical power +/-)
  - Sampling universe and frame:
    - What is the spatial extent to which we want to make inference?
      - Entire Front Range?
      - CFLR management areas within the Front Range?
      - Your backyard?
    - What are the discrete spatial units within the sampling universe?
      - Points
      - Grid cells
      - Home ranges
      - Watersheds, etc.
      - Spatial units define the sampling frame; other sampling considerations inform the selection of sample units within the frame.
  - Population parameters:
    - Direct measures of:
      - Pop size: census or estimate
      - Annual survival ( $\lambda$ )
      - Fecundity
      - Average clutch size
      - Adult female survival
      - Density, etc.

- Indices of population size/status:
  - The verified or assumed relationship between population size and index of abundance
  - Occupancy analysis – measuring the proportions of sites / area occupied by a population. A spatial sampling approach. Tells about more than just the overall status; tells about the overall dynamics of the population.
    - Overall occupancy
    - Extinction and colonization rates
    - Several examples of occupancy approaches to wildlife monitoring include: IMBCR, ARMI, Sierra Nevada carnivores, etc.
  
- Sampling Approach:
  - The variance in the parameter or interest typically drives sampling approaches
  - Key considerations:
    - Spatial intensity of sampling: how much sampling is needed? (power and strength of inference)
    - Frequency of sampling: what is a biologically appropriate sampling frequency? Multiple times per year, annually, once per “generation”?
  - Many designs are possible and all aim to be accurate, precise and minimize variance. Design must be random and representative.
  
- Sampling Approach (collecting):
  - Covariates are needed to understand and/or explain population responses
  - Consideration and integration of covariates (in Rick’s opinion) occurs in the design and the field sampling phases
  
- Measuring species diversity and/or richness:
  - There are many metrics and it is very hard to do well.
  - Does it matter for this project?
  - The group seems to be more concerned with individual species responses rather than group responses
  
- Steve – Over what period of time is the group expected to create monitoring objectives, outlines and details considering their varied backgrounds?
  - Rick – recognizes the challenge in developing wildlife monitoring. Large groups usually convene for several years to create a successful net-product. Considering the size of this group and limited amount of available time, for the sake of practicality, Rick feels that the best move is to take advantage of individual skills. The first priority must be to pin

down and reign in population metrics of interest that are likely to show a response and will meet the needs of the Landscape Restoration team.

- Steve – Is there a point where it would be wise to have ecological “biometricians” review the draft or final product before submission? Rick says yes, but makes the point that most of the information that the group is/has been relying on to draw conclusions and create recommendations is information that has already been created or vetted by the same, or equally qualified, individuals.

b) Group 1 update – The “Implementation Group”. (Each member shared their own protocols)

- Lynne listed all current primary species
  - 1) Abert’s Squirrel
  - 2) Porcupine
  - 3) Northern Goshawk
  - 4) Flammulated Owl
  - 5) Carabid Beetle
  - 6) Williamson’s Sapsucker
  - 7) Hairy Woodpecker
  - 8) Mountain Bluebird
  - 9) Golden-crowned Kinglet
  - 10) Olive-sided Flycatcher
  - 11) Pygmy Nuthatch
  - 12) Bats – possibly moving to secondary (pending discussion)
- Lynne:
  - The group was tasked with reviewing protocols for their species and highlighting main points (Methods, time of day, recommendations for personnel, etc.)
- Casey:
  - Ungulates
    - Dropped as primaries, so no discussion at this time.
  - Northern Goshawk
    - A general technical Forest Service report exists explaining the recommended sampling method
  - Flammulated Owl
    - A protocol exists
      - Casey is unsure of the scale and will do more research
      - Measures occupancy

- Occupancy call-back protocols exist and he believes them to be smaller in scale than Goshawk's. Widely accepted and widely used to measure an index of abundance.
  - The group discussed avian sampling generalities and monitoring burdens, using in-house personnel vs. outsourcing for sampling, etc.
    - All other birds are lumped together and can be sampled using integrated monitoring techniques. Ex. occupancy and density estimates are based on a 1km grid that is subsampled at 16 different points. Distance estimates of detections, etc. are used to calculate densities. This method already occurs in CO via agency funding, but not at the scale that is necessary for this project. Some birds don't get high levels of detection, so it would be wise to look at sampling intensity.
    - Lynne – RNBO sampling should be supplemented.
    - Casey – RNBO identifies birds that are harder to detect and have higher variance – he will find this list and distribute to Group 2 members.
  - Janelle sent information to Lynne re: Carabid Beetles. If there is time, the group will review the information during this meeting or before the next. Lynne briefly mentioned that pitfall traps are used to estimate density.
  - Felix:
    - Bats
      - There is a lot of information about how problematic it is to survey and differentiate between species.
      - Problems exist with knowledge about natural history
      - Is there a value to monitoring groups of bats in vegetation areas?
        - Rick thinks monitoring via acoustics is worth pursuing because the data reveals activity but also informs occupancy
      - Fringe, Silver Haired, Townsends, Hoary – The group agrees to keep these species as one primary “bats” group for now.
- c) Rick initiated a population metrics discussion to prepare for group breakouts
- Options
    - Census
    - Population estimate
    - Adult female survival
    - Occupancy
    - Presence of genetic material
    - Etc.
  - Lynne – believes that these metrics are useful and often drive the protocol.
  - Steve – need to take special care that species are not dropped from the list that may represent an aspect of treatments that no other species may represent.

Jenny entered the meeting and the group switched to her species protocol discussion

- Jenny:
  - Porcupine
    - Feeding-sign surveys or in-depth live trapping and radio collar tracking
      - Did not find information integrating the two together (as used with Abert's Squirrel)
    - No consensus about minimum number of known individuals needed to estimate population size
  - Abert's Squirrel
    - Steve
      - Suggested the possible use of replicate trap grids to come up with capture/recapture estimates and comparative estimates to cone count
    - Lynne – can make a variety of suggestions with different prices, intensity, etc.
    - Rick suggests an occupancy estimate
      - Makes sense from a cost-efficiency perspective
      - Will give an estimate of density
    - Casey
      - How do you tell the difference between cones from a Pine Squirrel or an Abert's Squirrel? How do you differentiate?
      - Jenny
        - There is a subtle difference in the way that the squirrels chew the cones and the debris that they leave. It is a challenge to train crews to know the difference, because it is a gray area, but it is doable.
        - Jenny believes that there are emerging protocols for squirrels
          - a. Would like to spend more time on relevant papers

#### 4) Group Breakouts

- a) The groups split and each group spent time discussing their topics. General group goals are outlined below and the final decisions will be discussed during the next meeting following finalization.
- b) Group 1 – Casey, Felix, Lynne. "Implementation Group"
  - Create a table with headings for each species, recommended protocols, references/studies/papers re: protocols, parameters, etc.
  - Cost is broken down by data collection cost vs. data analysis cost, spatial scale, recommended implementation scale (years 1,3,5, or 2,4,6 etc)
  - Must include a variety of costs. Casey will look into the cost of a variety of equipment.
  - Next meeting, Casey and Felix may be gone.

- Rick – “excellent start.” Advises the group to be very clear about “what” the cost is and that the knowledge is applicable to each site/scenario. Don’t factor in the cost of getting to the site.....estimate the cost as if already there.
  - During the September meeting: both groups will fill in the table as much as possible. Group 1 will bring the table.
- c) Group 2 – Rick, Jenny, Steve. “Design Group”
- Janelle will provide GIS support
  - The group will roll-out an overarching proposal on how to frame this from a design prospective.
  - Coming up with a framework that builds from RNBO. The focus should remain on monitoring, NOT research. Build a case for why certain controls are needed. Write the framing in a page or two by the September meeting.
  - During the September meeting: roll-out to implementation team to apply wisdom re: protocols. Group 2 will bring their written pages.

## 5) Conclusion

- a) The next meeting is September 17, 2013 at 740 Simms Street, Golden, CO
- b) Bats were retained on the list and the Pine Squirrel was added
- c) Homework
- Jenny – 1 more round of literature search
  - Lynne – work on costs (on-site, no travel) and table, work on writing assignment, look at survey windows and protocols, feedback on CFLR, prepare info for 9-13 meeting
  - Casey – look into equipment cost, work on table, estimated densities and occupancies for birds at specific spatial obligations: BCR16, CO, four forests
  - Felix – provide Lynne with bat info, documents to Jeni re: Abert’s Squirrel, coordinate with Casey and Lynne to finish the table and work on cost estimates
  - Rick – will begin to work on the writing assignment, send outline to the group, work on CFLR comments, coordinate with Lynne on writing (1-2 page summary document)
  - Steve – review document if Rick completes it before the next meeting, review panel designs, open to assuming any other tasks if anyone needs help
  - Janelle – group suggests that she begin or organize spatial info – keep her thinking BIG. Not just San Isabel but Pike and Arapaho as well