

# Updated Goals and Deliverables for Discussion

## **Goals – modified from existing draft**

- Identify primary and secondary species for monitoring that meet CFLRP and FS needs
- Develop hypothesized species response ( $\approx$  population trends) for each 1° and 2° species
- Explicitly integrate spatial and temporal scales in species selection and sampling approach
- Establish range of monitoring options that encompass cost and rigor spectrums as needed
- Identify field sampling protocols for selected species
- Describe potential analytical methods
- Identify opportunities for collaborating entities to contribute to monitoring implementation

## **Deliverables – modified from existing draft**

A final report to build from existing plan and include:

- Overview of field protocols, sampling approaches, and potential analytical approaches
- Options: balancing rigorous monitoring of 1° species and casual monitoring of 2° species
- Wildlife Team's recommendations: based on funding, rigor, public interest

# Practical (?) Wildlife Monitoring Groups

## Ecologically Informative

- functional groups
- PIPO specialists
- Trophic representation

## Politically Prudent

- ESA listed & candidate spp.
- FS Sensitive Species
- State species of concern
- MIS

## Economically / Socially Important

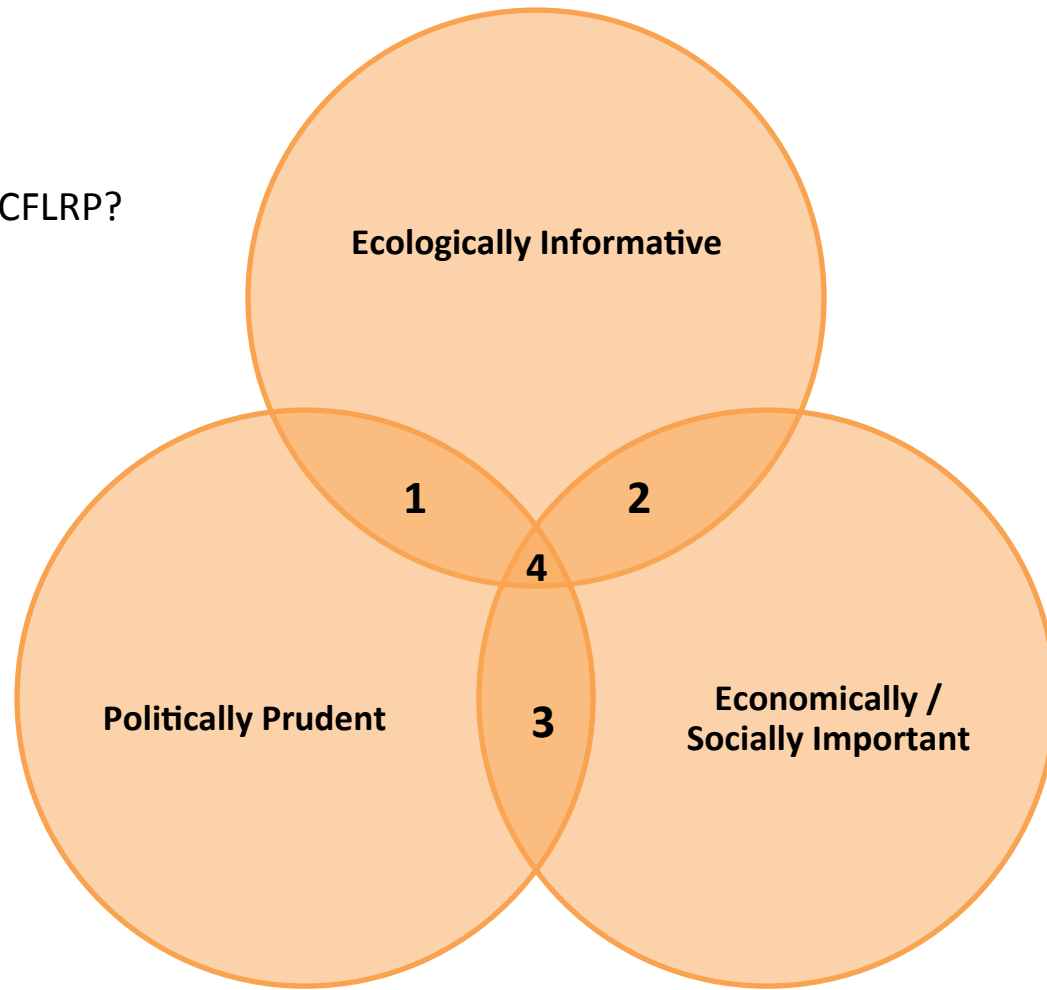
- Game species
- Watchable wildlife (enthusiasts)
- Iconic and culturally important spp.
- Other economically important spp.

*Groups certainly not exhaustive, nor independent*

*Which meet the needs of the FS and CFLRP?*

# Meeting Multiple Objectives – Win, Win, Win?

1. CFLRP Priority?
2. Who belongs here?
3. Of key interest to FS / CFLRP?
4. Win, win, win



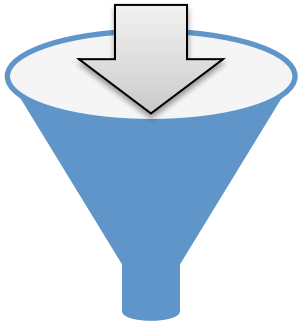
*Suggest species that not fall into an overlap area should not be a priority for rigorous monitoring. If they can be monitored using a multi-species approach, inclusion makes sense.*

# Proposed Framework for Selecting Species for CFLRP Monitoring

- Step 1: assign species to 'monitoring' groups
- Step 2: identify species that meet multiple objectives
- Step 3: for species that meet multiple objectives and select 'single purpose' species<sup>NTS</sup>:
  - identify appropriate temporal and spatial monitoring scales
  - Develop hypothesized population response to CFLRP mgmt<sup>NTS</sup>
- Step 4a: review sampling methods for species from step 3
- Step 4b: review existing data for species from step 3
- Step 5: identify potential stressors that may influence population trends

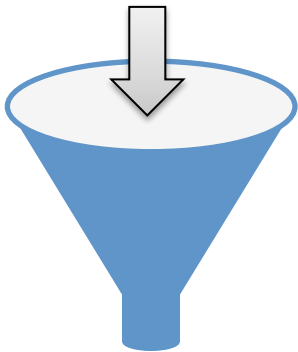
# Species Selection Framework – Filtering species from a whole bunch to a practical few

Begin – 300+ species



**Filter 1:** multiple objectives, select 'single purpose' species (Steps 1 – 3)

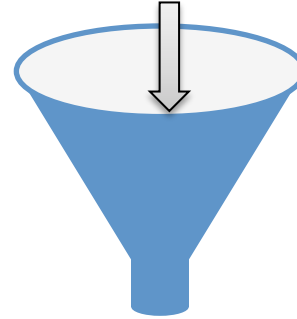
Reduced to ?? species



**Filter 2:** consider sampling approaches, available data, stressors

Reduced to ?? species

From filter 2: ?? species



**Final Filter:** Step 6: identify 1° species for monitoring consideration, as well as 2° that could be monitored coincident with 1° NTS

Reduced to 14 species

## **For Primary Species**

- Power analysis or similar
- Cost / benefits of different monitoring approaches
- Make recommendations that include range of options

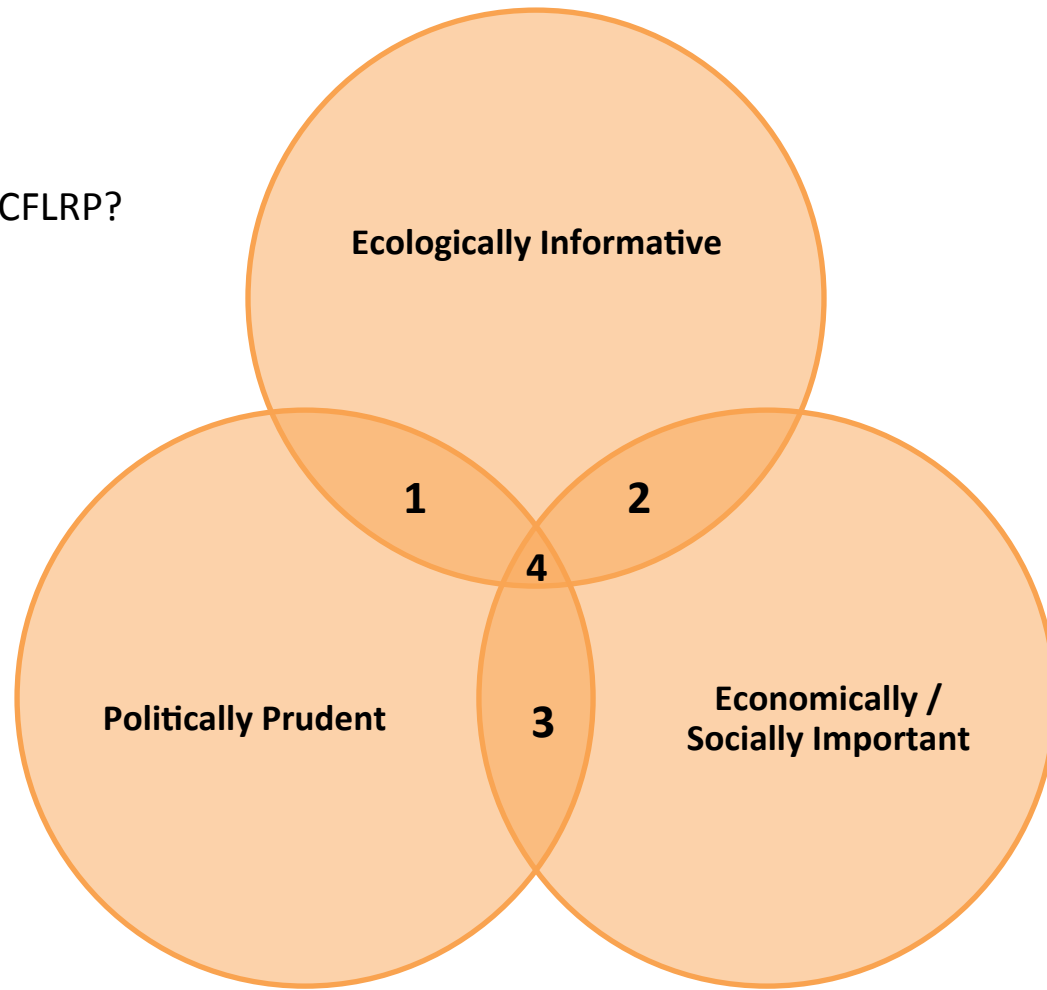
# Filter 1 Process Step 1

- First: build species list
- Next: limit species to those whose range includes the 'core' of the CFLRP footprint
  - the species' known or suspected distribution includes the majority of the CFLRP footprint, elevations from ~6000 – 10000'
  - Eliminate 'marginal' species and species not known to occur in or extirpated from the CFLRP footprint
- Examples:
  - Core: Abert's squirrel, bighorn sheep (even though will likely be filtered later)
  - Marginal: American marten
  - Outside / extirpated: eastern cottontail, grizzly bear
- **Result → ~145 species**

***Next – assign monitoring group 'scores' for each species***

# Meeting Multiple Objectives – Win, Win, Win?

1. CFLRP Priority?
2. Who belongs here?
3. Of key interest to FS / CFLRP?
4. Win, win, win



*Suggest species that not fall into an overlap area should not be a priority for rigorous monitoring. If they can be monitored using a multi-species approach, inclusion makes sense.*

# Filter 1, Process Step 2

## Assign scores in monitoring groups

### Ecologically Informative

- functional groups
- PIPO specialists
- Trophic representation

### Ecologically Informative criteria:

The degree to which species are 'ecologically informative' based on three main factors:

- a) their key ecological functions
- b) degree of habitat specialization
- c) reliance on lower montane forests to meet life history requirements.

There is no 'formula', rather the team relies on a gestalt (general assessment) for each species

*Example A- species in higher trophic positions will generally be considered more ecologically informative than those in lower positions.*

*Example B- Among specialists that rely on a similar type, those species that rely on specific habitat elements related to certain stages of succession or disturbance regimes are more informative than those associated with numerous configurations of the habitat.*

*Example C – Year-round residents of the lower montane are more informative than seasonal inhabitants or transients.*



### Ecologically Informative

- functional groups
- PIPO specialists
- Trophic representation

## Filter 1, Process Step 2

### Assign scores in monitoring groups

#### House wren– Score = 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. And so on.

#### Abert's squirrel – Score = 3

Rationale: The species is strongly associated with ponderosa pine (PIPO) 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 (key ecological function; KEF) particularly during winter when many other prey species migrate or hibernate and are unavailable to predators. And so on.

#### Black bear – Score = 1:

The species is a true generalist, providing and performing many ecological functions and using a wide range of habitats which include but are not limited to the lower montane.

The broad set of ecological functions performed by black bear make the species less ecologically informative than species with fewer ecological functions. Black bears may exert pressure on other species through predation or herbivory. Many KEFs are performed by other species.

# Filter 1, Process Step 2

## Assign scores in monitoring groups

### Scoring Criteria as Follows

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 is a candidate species under ESA

3 = Species is listed as Threatened or Endangered under the ESA, or is proposed for listing

### **Politically Prudent**

- ESA listed & candidate spp.
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### Examples

Pygmy Nuthatch = 1

Townsend's big-eared bat = 2

Pawnee Montane Skipper = 3

# Filter 1, Process Step 2

## Assign scores in monitoring groups

### Several criteria – again, no formula

**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 do not generate considerable revenues.

**Watchable wildlife**: ‘destination species’ for wildlife tourism- most birds, charismatic mammals, some butterflies.

**Iconic species**: species recognizable to the majority of the public as part of the forested or aquatic ecosystems in the Front Range or beyond. Examples: mountain bluebird

**Other species that evoke strong public awareness**, either positive or negative, and/or may have **economically important impacts** on natural resources in the lower montane (e.g., beavers as pests, mountain pine beetle, rattlesnake)

**Species of cultural importance**

### **Economically / Socially Important**

- Game species
- Watchable wildlife (enthusiasts)
- Iconic and culturally important spp.
- Other economically important spp.

# What does it all mean?

## Examples

Northern Goshawk: 3, 2, 1 = 6

mountain lion: 2, 0, 3 = 5

Pygmy nuthatch: 2, 1, 1 = 4

Western chorus frog: 0, 0, 0 = 0

## Filter Criteria:

Sum of score  $\geq 3$  AND Ecologically informative score  $\geq 1$

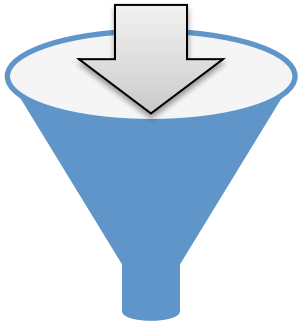
OR

Ecologically informative score  $\geq 2$

**Results – 73 species ish (Excel / Operator error...)**

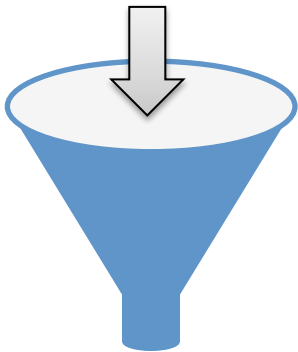
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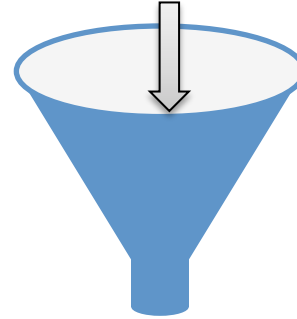
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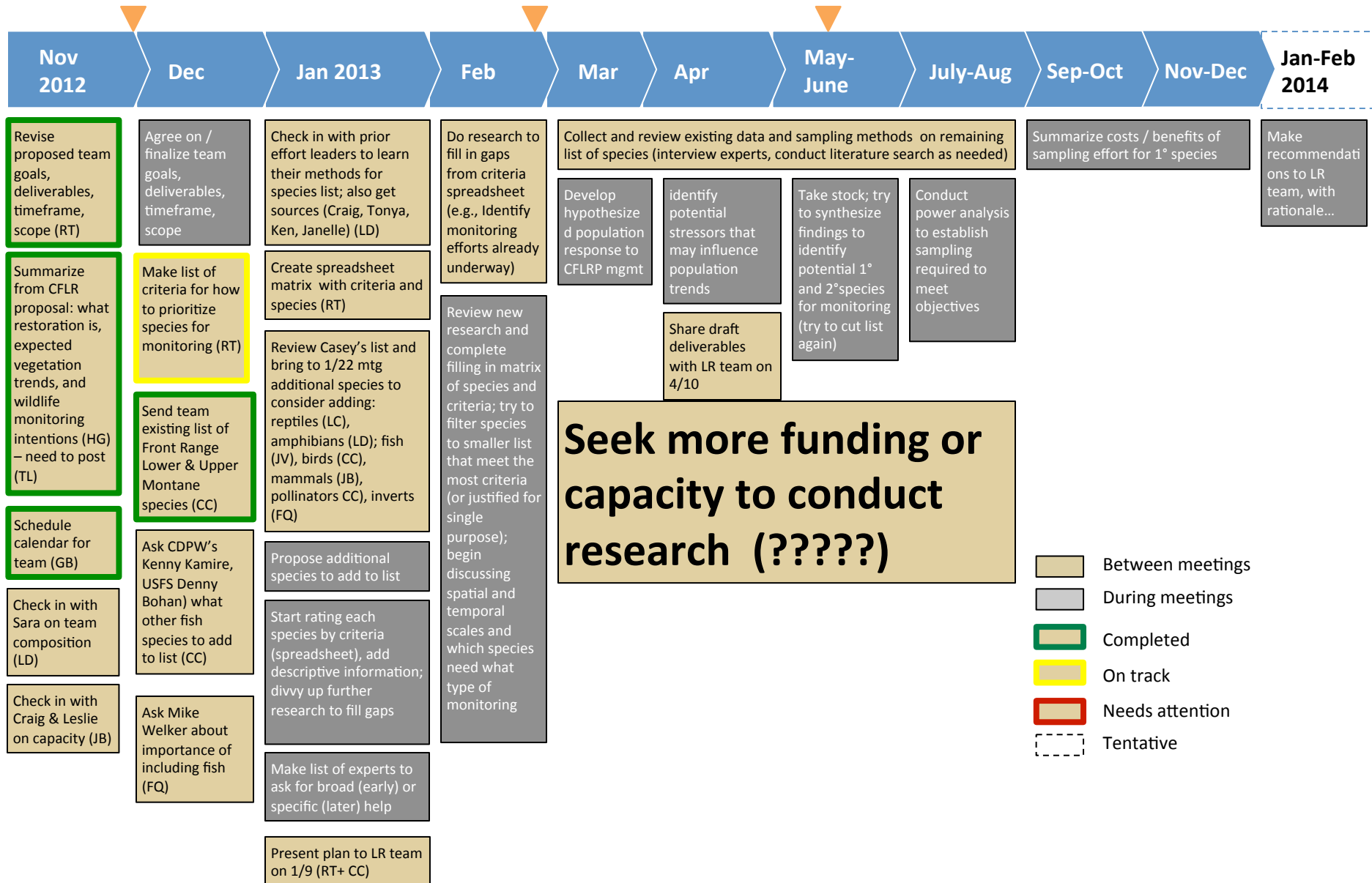
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## Species Selection Framework, cont

- Step 6: synthesize all of the above to identify potential 1° and 2° species for monitoring:
  - 1° species should (?) be resident species whose population trends will be less influenced by off-site stressors, likely (?) to respond to CFLR treatments and / or overall landscape condition, and able to be monitored using cost-effective techniques.
  - Ideally, 1° species will meet multiple objectives though single-purpose species may be appropriate to meet agency / CFLRP needs.
  - 2° species will be (?) species that can be monitored using techniques for 1° species or other methods that are inexpensive; less rigor for 2° species may acceptable
- Step 7: for 1° species, conduct power analysis to establish sampling required to meet objectives
- Step 8: summarize costs / benefits of sampling effort for 1° species
- Step 9: make recommendations to LR team, with rationale...

# Roundtable Wildlife Team—DRAFT High Level Work Plan



- Between meetings
- During meetings
- Completed
- On track
- Needs attention
- Tentative