




# **Identifying Potential Indicators for Monitoring**

Introduction to Indicator Themes

Patricia A Flebbe

22 January 2015



# Monitoring Questions and Associated Indicators for each of Eight Required Items

- For our discussion today, we will focus on Indicators.
- We will organize ourselves into small groups by indicator themes, that correspond roughly to the required items.



# Indicator

... Something that can be measured, observed, or described and, when observed over time, may show trends....

Paraphrased from FSM 1905




# Example

- Desired Condition: Forest visitors find opportunities for solitude, and primitive and unconfined recreation in wilderness.
- Monitoring Question: What level of satisfaction with solitude, condition of environment, and scenery do visitors to designated wilderness express?
- Associated Indicators:
  - Percentage of visitors to designated wilderness areas that rated crowds as 1-4 on a scale of 1-10 exceeds 50%.
  - Percentage of visitors to designated wilderness areas that rated Condition of Environment as “very satisfied” exceeds 70%.
  - Percentage of visitors to designated wilderness areas that rated Scenery as “very satisfied” exceeds 90%.



# Six Indicator Themes

1. Terrestrial Ecosystems.
2. Aquatic Ecosystems (including wet meadows) and Watershed Condition.
3. Focal Species.
4. Recreation.
5. Climate Change and Other Stressors.
6. Social, Cultural, and Economic.



# Aquatic Ecosystem & Watershed Condition Theme

... one or more monitoring questions and associated indicators addressing each of the following:

- (i) The status of select watershed conditions.
- (ii) The status of select ecological conditions including key characteristics of ... aquatic ecosystems.

# Ecological Conditions

The **biological and physical environment** that can affect the **diversity** of plant and animal communities, the **persistence of native species**, and the **productive capacity** of ecological systems. Ecological conditions include **habitat and other influences on species** and the environment. Examples of ecological conditions include the **abundance and distribution of aquatic and terrestrial habitats, connectivity, roads and other structural developments, human uses, and invasive species.**

§219.19



# Terrestrial Ecosystem Theme

... one or more monitoring questions and associated indicators addressing ... :

...

(ii) The status of select ecological conditions including key characteristics of terrestrial ... ecosystems.





# Focal Species Theme

... one or more monitoring questions and associated indicators addressing ... :

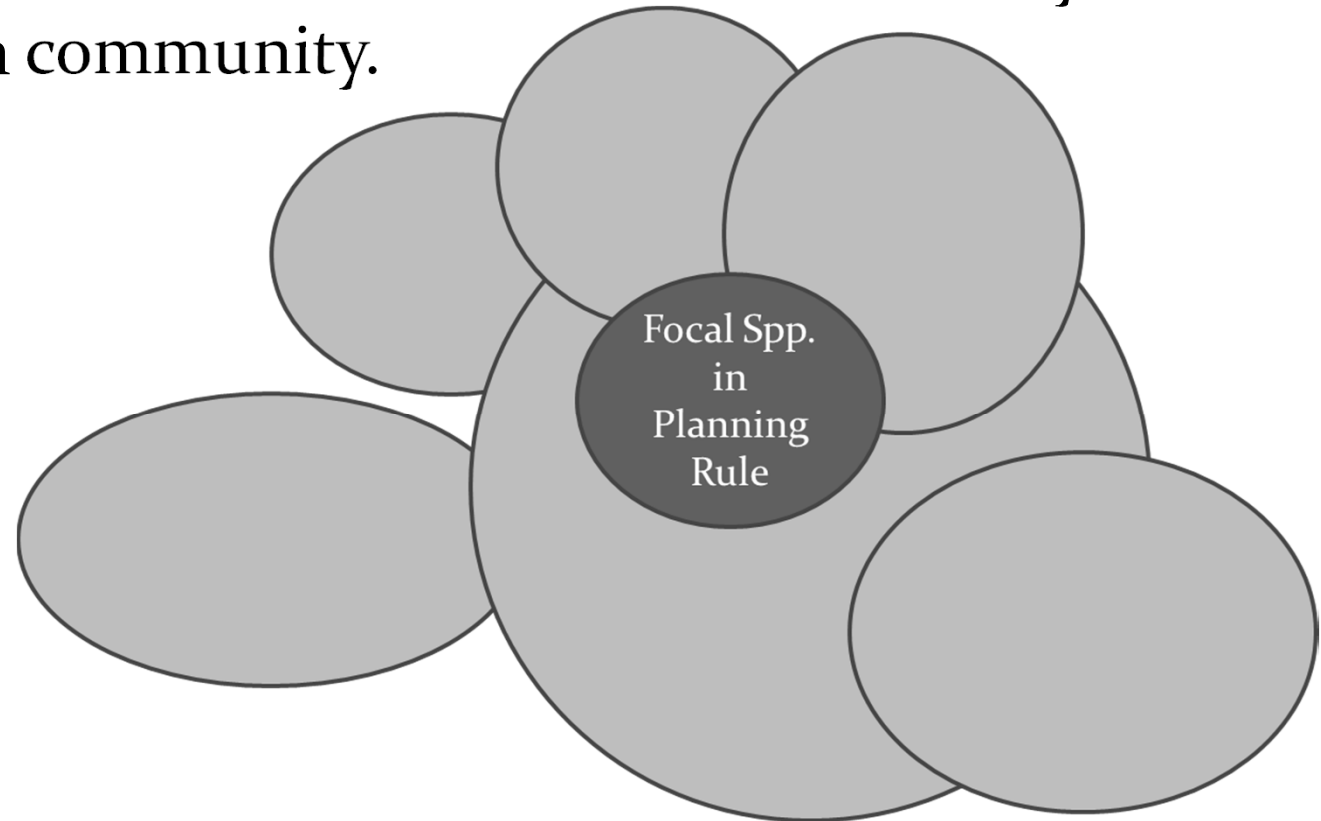
...

(iii) The status of focal species to assess the ecological conditions required under §219.9.

§219.9(a) Ecosystem plan components. (1) Ecosystem integrity.... (2) Ecosystem diversity.

# Focal Species and the 2012 Planning Rule

“Focal species” has a specific meaning in the 2012 planning rule, which differs from some definitions in the conservation science literature and those used by the conservation community.





# Focal Species Definition

A small subset of species whose status permits inference to the integrity of the larger ecological system to which it belongs and provides meaningful information regarding the effectiveness of the plan in maintaining or restoring the ecological conditions to maintain the diversity of plant and animal communities in the plan area. Focal species would be commonly selected on the basis of their functional role in ecosystems.

§219.19



# Ecological Integrity

The quality or condition of an ecosystem when:

- dominant ecological characteristics occur within the natural range of variation.
  - composition
  - structure
  - function
  - connectivity
- can withstand and recover from most perturbations.

*Paraphrased from §219.19*



# Recreation Theme

... one or more monitoring questions and associated indicators addressing ... :

...

(v) The status of visitor use, visitor satisfaction, and progress toward meeting recreation objectives.




# Climate Change and Other Stressors Theme

... one or more monitoring questions and associated indicators addressing ... :

...

(vi) Measurable changes on the plan area related to climate change and other stressors that may be affecting the plan area.




# Social, Cultural, and Economic Theme

... one or more monitoring questions and associated indicators addressing ... :

...

(vii) Progress toward meeting the desired conditions and objectives in the plan, including for providing multiple use opportunities.



## Other Required Items we will not be discussing today:

(iv) The status of a select set of the ecological conditions required under § 219.9 to contribute to the recovery of federally listed threatened and endangered species, conserve proposed and candidate species, and maintain a viable population of each species of conservation concern.

(viii) The effects of each [timber] management system to determine that they do not substantially and permanently impair the productivity of the land.





# Brainstorming Exercise

- Purpose is to identify potential monitoring indicators that we might use to meet the eight requirements.
  - Describe why indicator is important.
  - Identify needed resources and expertise.
  - Identify opportunities for partners and citizens.
- Participants will self-select Indicator Theme.
- Process will be described by facilitators.
- Forest Service subject expert at each table can address technical questions and help guide discussion.



Questions?