



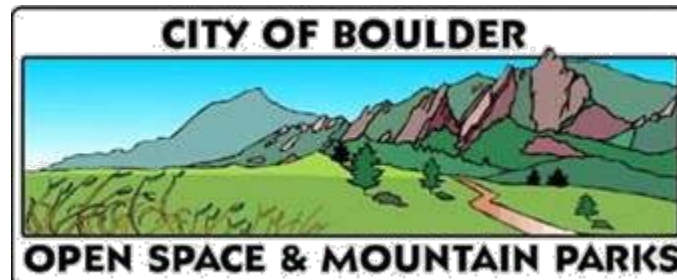
# **Evolution Relies on Adaptation**

## **Standards-Based Adaptive Management for Trail Conditions and Visitor Activities**

**11<sup>th</sup> Annual COSA Conference  
Tuesday September 14, 2010**

**Presenters:**

**Steve Armstead and Mark Gershman**

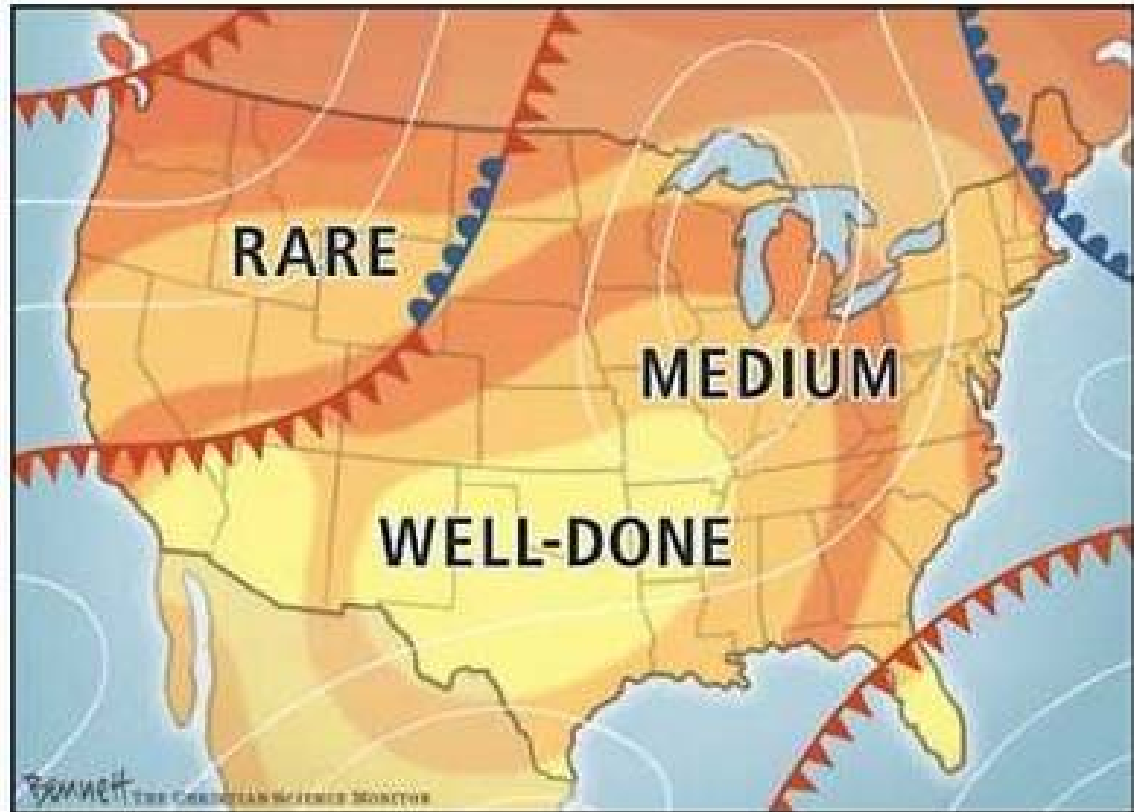




## **Session Outline**

- I. Introduction to standards-based management (20 min)**
- II. Case Study of Two New Trails in Open Space and Mountain Parks (25 min)**
- III. Break-out groups (30 min)**
- IV. Wrap up and Conclusions**

# Adaptive Management



Clay Bennett, Christian Science Monitor



# Adaptive Management

When you don't need it.

- When you know how your system works.
- When you know the best way to achieve your objectives.



"I can explain – I'm doing a school project on the breaking-point of glass. . ."

Sally Artz



# Open Space Management

A Handbook of Standard  
Management Prescriptions

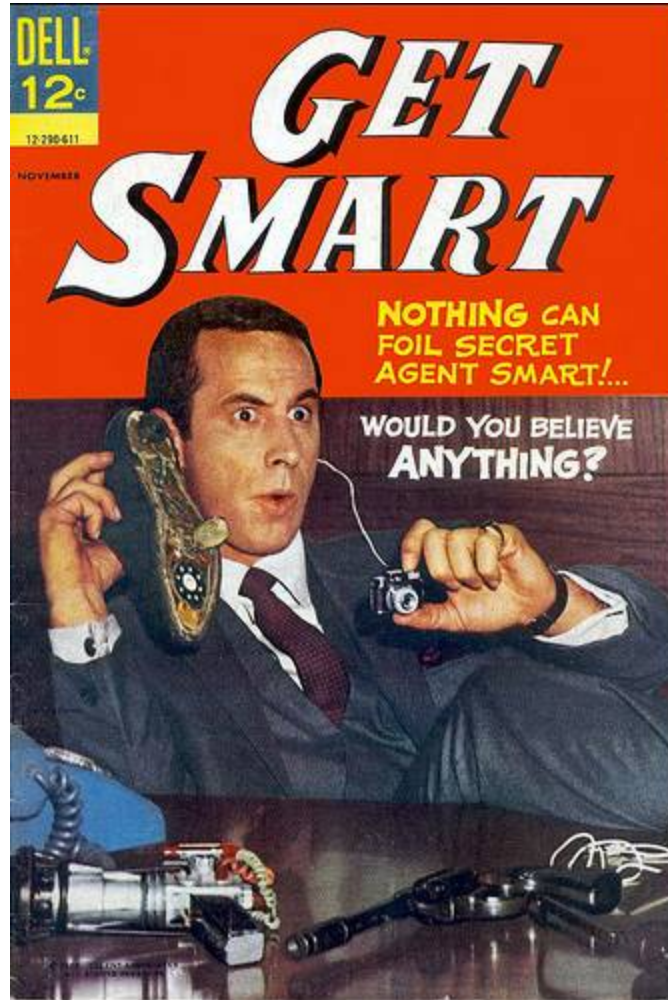


# Adaptive Management



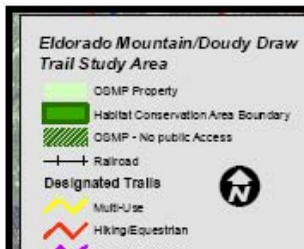
- Management Objectives
- What are you managing for ?
- Indicator
- What are the aspects of that element
- Range, Limit, Threshold (LAC)  
that must be in place?
- Measurement/Assessment
- Response (AMR)



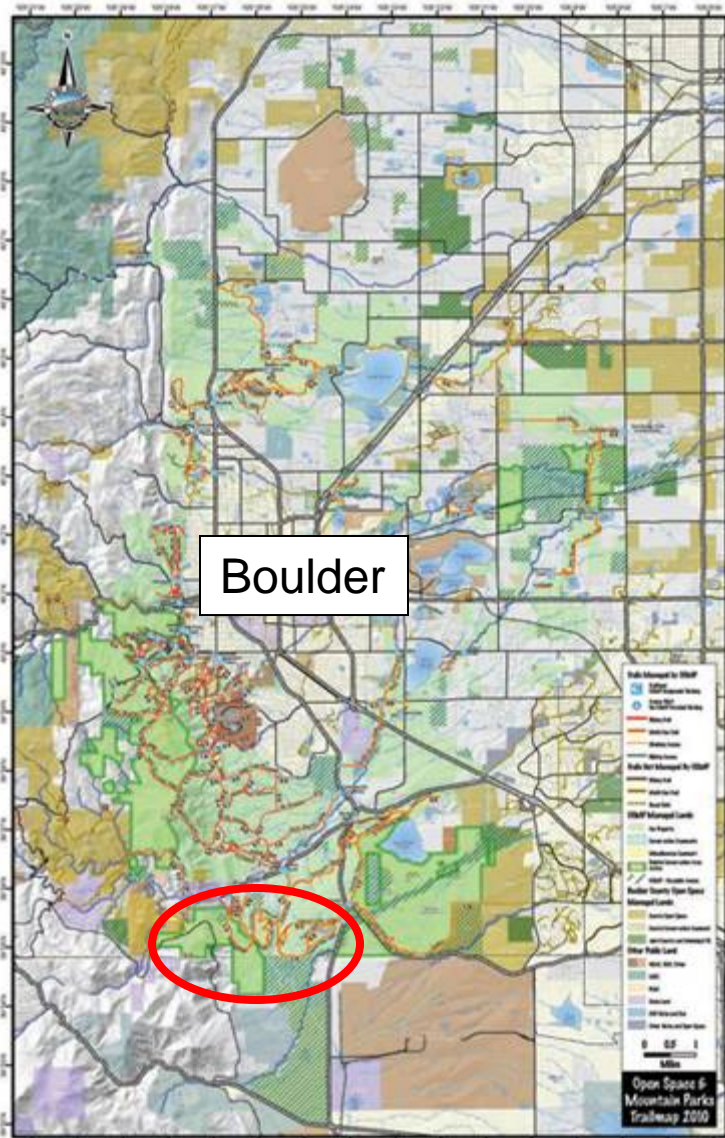


- **S**pecific
- **M**easurable
- **A**ction-Oriented
- **R**ealistic
- **T**ime-bound
- **E**valuate
- **R**e-evaluate

# Case Study of Two New Trails in Open Space and Mountain Parks



Spring Brook



Boulder



idge

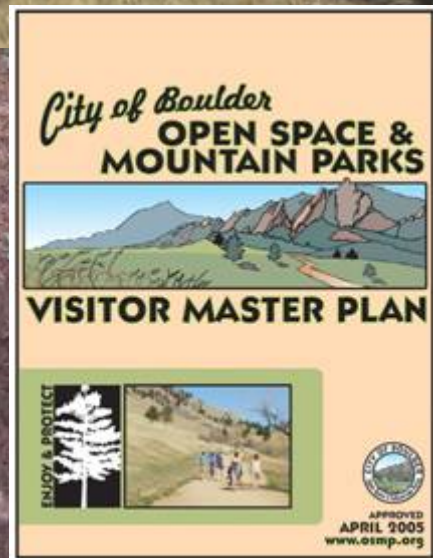
# Why Monitor Here?



- Sensitive Landscape
  - Diversity of wildlife and intact habitats
  - Construction of new trails, higher visitation



- New Activities for the Area
  - Mountain Biking
  - Dog-walking



- Commitment to Adaptive Management
  - To inform how strategies are working and refine the nature, location, or extent of implementation
  - To check in on assumptions and models of cause and effect

# Monitoring Projects

- Visitor compliance with new regulations
- Visitor experience (recreational conflict)
- Undesignated trail (social trail) development
- Trail condition
- Wildlife Populations





# Standards-Based Monitoring

- Provides specific measures for what is to be monitored (indicators)
- Establishes specific standards (levels of acceptability) for determining if strategies are working
- Provides a structure to engage community and appointed/elected officials
  - ❖ Absent “standard practices” or clear limits of acceptability

# Monitoring Indicators and Standards

## Compliance

### On-Trail Travel and Dog Regulation

#### Indicators:

Percent of visitor parties staying on-trail

Percent of visitors keeping dogs on leash

**Standards:** 95% on-trail  
90% dogs on leash



# Monitoring Indicators and Standards

## Recreation Conflict

### Indicators:

Reported experiences of recreation conflict:

- the day of the survey
- within the last six months

**Standards:**  $\leq 5\%$  day of survey  
 $\leq 20\%$  past six months





# Monitoring Indicators and Standards

## Trail Condition

**Indicators:** Trail width  
Tread incision

**Standards:** Trail width  
 $\leq 45$  inches  
 $\leq 25\%$  of sample points over 30 inches



Tread Incision  
 $\leq 25\%$  of incision points deeper than two inches  
No section of the trail is incised 2 inches or more for more than 10 feet

# Monitoring Indicators and Standards

## Undesignated Trails

**Indicators:** Extent (length and width)

Development of new undesignated trails

Condition of undesignated trails

**Standards:** Decrease in total length

Decrease in mean width

No new trails



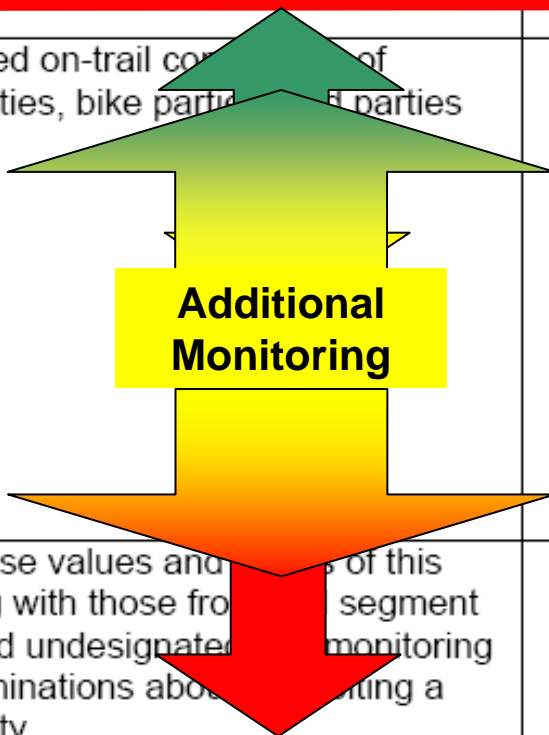
# Management Responses

Threshold  
Range of  
Acceptability

Initial  
Response  
Adaptive  
Management

Potential  
Future  
Response

Threshold	Response
<p>95% observed on-trail compliance of equestrian parties, bike parties, and parties with dogs</p>	<p><b>Thank Visitors Continue</b></p> <ol style="list-style-type: none"> <li>Maintain or consider reducing levels of outreach, education and patrol</li> <li>Acknowledge/Thank visitors</li> </ol>
<p>&lt; 95% observed on-trail compliance of equestrian parties, bike parties and parties with dogs</p>	<p><b>“Least Restrictive Approach”</b></p> <ol style="list-style-type: none"> <li>Close and restore undesignated trails</li> <li>Changes in education, outreach, signs, or enforcement</li> <li>Address maintenance concern(s) on designated trails that are prohibited in off-trail travel</li> <li>Create physical barriers to keep people on trail</li> <li>Meet with stakeholders and implement strategies aimed at improving compliance</li> <li>Seasonal or temporary access restrictions</li> </ol>
<p>OSMP would use values and standards of this indicator, along with those from segment monitoring and undesignated trail monitoring determinations about trail use and activity</p> <p>OSMP would consider regulations prohibiting specific activities would be considered after less restrictive strategies were demonstrated to be ineffective at achieving targeted compliance rates</p>	<p><b>More Restrictive Approach</b></p> <ol style="list-style-type: none"> <li>Prohibit off-trail travel by pedestrians</li> <li>Disallow one or more activity groups on Spring Brook Loop Trail</li> </ol>



# Monitoring Results

## Staying On-Trail

- 99.7% of cycling parties on-trail
- 75.0% of equestrians on-trail
- 75.5% of dog parties with dogs on-trail

## Dog Regulations

- 59.2% parties with dogs on-leash
- 75.5% with dogs on-trail



# Monitoring Results

## Experiences of Recreation Conflict

- 6% day of survey
- 10% last six month

### Distribution of respondents

- 68% bicyclists
- 18% hikers
- 13% runners

### Reported conflict by activity

- 12.3% pedestrians
- 5.5 % cyclists



# Monitoring Results

## Trail Condition

### Trail Width

- Width exceeded 45 inch standard in a few locations
- 3 out of 5 monitoring periods exceeded 25% of sampling locations with width greater than 30 inches

### Tread Incision

- Incision generally did not exceed standards



# Monitoring Results

## Undesignated Trails

- Decrease in mean tread width
- Small decrease in length
- A few short new trails developed, not clearly human developed
- Condition



# Lessons Learned



## Advantages

- Provided clear direction on where and how to deploy monitoring resources
- Reduced staff and community debate—provided a call to action
- Demonstrated accountability to plan commitments
- Fostered a consistent way to report results and outcomes
- Established credibility in monitoring projects



# Lessons Learned



## Disadvantages


- Identifying reasonable or meaningful standards can be difficult. Is indicator really measurable?
- Didn't abate all debate
- Created expectations for ongoing monitoring and management responses
- Get locked into taking action, lose some management flexibility
- Staff and resource intensive



# Lessons Learned



## Take-Away Points

- Know you can do the monitoring before public commitments are made 
- Focus efforts on broader based monitoring projects, not on specific sites
- Set upfront expectations on tenure of adaptive response and frequency of monitoring
- Get community and political buy-in on both standards and management responses; rationale for standards



# Lessons Learned



## More Take-Away Points

- Make sure staffing and funding is available and sufficient
- Document and then document some more





# **Break Out Discussion**

**Has your organization used standards-based monitoring? If so, what was it for and how did it work?**

**What ideas do you have for applying standards-based monitoring for trails and visitor management? Advantages and disadvantages?**

# Questions?

