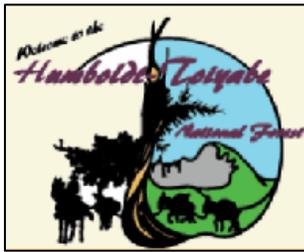


Spring Mountains NRA Analysis Workshop Workbook



Spring Mountains
National Recreation Area
Landscape Analysis



SPRING MOUNTAINS NRA ANALYSIS WORKSHOP

- WORKBOOK

Prepared for:

**USDA USFS
SPRING MOUNTAINS NATIONAL RECREATION AREA
HUMBOLDT-TOIYABE NATIONAL FOREST**
Contract No. AG-9360-C-06-0003

Prepared by:

ENTRIX, INC.
Las Vegas, NV
Project No. 3138801

January 31 – February 1, 2007

Table of Contents

	Page
Overview.....	3
Landscape Analysis Analytic Approach.....	3
Session 1- Available Data.....	6
Session 2- Land Use Activities.....	9
Session 3- Species and Habitat.....	12
Session 4- Potential Effects.....	14
Session 5- Conservation Measures.....	16
Session 6- Expected Outcomes.....	18
Session 7- Summary and Review.....	20
Appendix A - Glossary Of Terms.....	21
Appendix B - Recreation Activities, Definitions, And Buffer Zones.....	26

Overview

Entrix is preparing a landscape analysis for the Spring Mountains National Recreation Area (NRA). The purpose of the landscape analysis is to:

- Identify land (human) use activities and future use patterns
- Identify species and habitat distribution patterns
- Identify potential conflicts between special status species and land uses
- Evaluate the effects of conservation measures on land uses and species distribution patterns
- Identify data gaps and future survey needs

As a part of the landscape analysis, Entrix is conducting an interactive workshop to facilitate a better understanding of the analytic approach; key inputs, data limitations, analysis outputs, and the means by which output can guide management recommendations. This workbook is intended to complement the workshop. It is organized by major session. The sessions include:

- Overview
- Session 1, Available Data
- Session 2, Land Use Activities
- Session 3, Species and Habitat
- Session 4, Potential Effects
- Session 5, Conservation Measures
- Session 6, Expected Outcomes
- Session 7, Summary and Review

Each section of the workbook includes the presentations made in each section. Additionally, the workbook provides supporting materials, such as a Glossary of Terms, and the recreation activity definitions and buffer sizes.

Landscape Analysis Analytic Approach

Entrix has developed a specific analytic approach for assessing impacts to special status species habitat in the Spring Mountains NRA. This approach analyzes and identifies the threats to species and their habitats, including the location, risk pathway, and magnitude of effects of the various land uses that occur on the NRA such as forest health, developed campgrounds, and trails and other linear features.

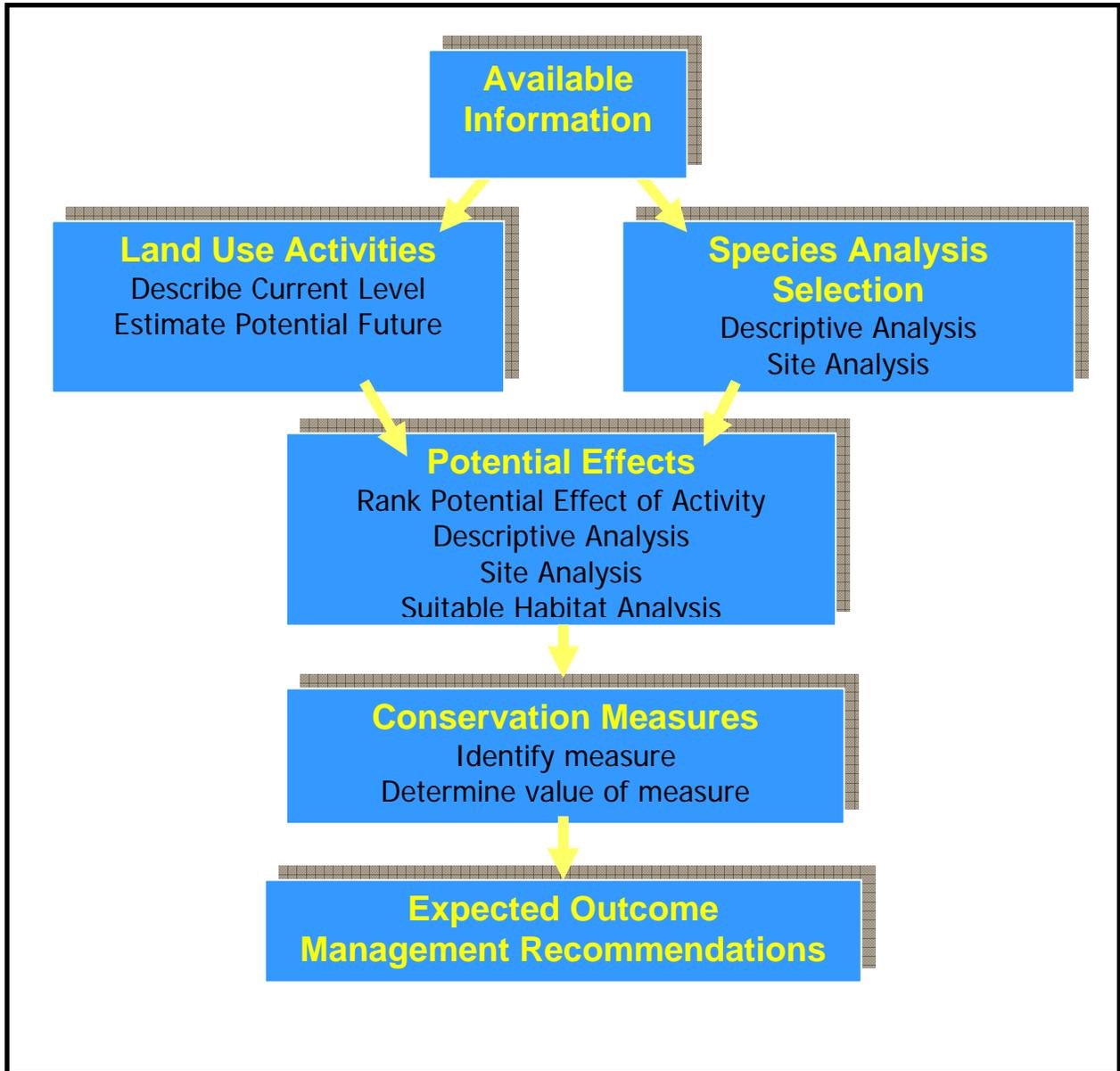
This approach includes the following 13 steps:

1. Compile/Analyze Existing Information
2. Describe/map land use activities – existing/future
3. Describe/map species and habitats
4. Select appropriate analytical approach for each species
5. Rank potential effect of each activity on species
6. Determine overlap – species/land use
7. Assess potential effect by activity and multiple activities
8. Describe the potential effect – quantify as appropriate
9. Identify range of species conservation actions
10. Rank the value of conservation measures
11. Quantify value of conservation measure – as appropriate
12. Describe expected outcome
13. Management recommendations

Figure 1 summarizes the approach in a flow diagram.

The approach uses spatial data to describe existing land uses and habitats of more than 80 special status species. It then employs literature on known impacts and best professional judgment to determine effects of the types of land uses that occur within the Spring Mountains NRA on habitat for special status species. The approach starts with compiling, analyzing and describing existing information (Steps 1-3). These steps will be discussed in detail during Sessions I-III. There may not be sufficient data on each species to permit a “full scale” analysis on activities across the landscape. Step 4 requires selecting the appropriate analytic approach, discussed in more detail in Session III—Species and Habitat. Steps 5 through 8 represent the major activities in the analytical approach; these steps are more fully described in Session IV. Since Steps 5 through 8 involve specific terms about habitat, effects, and activities, a Glossary of Terms is provided in Appendix A. Steps 9 through 11 involve applying conservation measures, which are rank-ordered measures as determined by professional judgment that indicate how effective a measure is in altering the effect of an activity on a species. These steps are more fully discussed in Session V. Finally, Steps 12 and 13 address expected outcomes and management recommendations. These items are discussed in Session VI.

Figure 1. Analytic Approach for the Spring Mountains NRA Landscape Analysis.



 Spring Mountains
National Recreation Area
Landscape Analysis 

Analytical Approach for the Landscape Analysis Spring Mountains NRA

Contract No. AG-9360-C-06-0003

Workshop
January 31- February 1

Spring Mountains NRA Analytical Approach Workshop

Welcome and Introductions



Spring Mountains NRA Analytical Approach Workshop

Objectives

- Illustrate Analytical Structure and Output
 - Key components 
-  • Overview of use of the output
 - Land use and species interaction
- Interactive Session
 - Key habitat and recreation inputs for synthesis and interpretation of information 

Spring Mountains NRA Analytical Approach Workshop

Ground Rules

-  • Proactive / open / interactive
-  • Keep disturbances to a minimum
-  • Scheduled Breaks and Lunches
-  • Ask questions as we go

Spring Mountains NRA Analytical Approach Workshop

Objectives



- Overview
- Session I
 - Available Data
- Session II
 - Land Use Activities
- Session III
 - Species and Habitat
- Session IV
 - Potential Effects
- Session V
 - Conservation Measures
- Session VI
 - Expected Outcomes
- Session VII
 - Summary and Review

Landscape Analysis Expectations

- Identify human activities and future use patterns
- Identify species and habitat distribution patterns
- Identify potential conflicts between species and human activities
- Evaluate effects of conservation measures on human use and species distribution patterns
- Identify data gaps and future survey needs

Analytical Approach Critical Steps

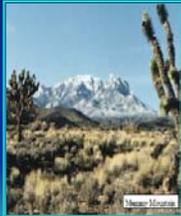


1. Compile/Analyze Existing Information
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12. Describe expected outcome
13. Management recommendations

Spring Mountains NRA Analytical Approach Workshop

Use as a Planning Tool

- Conceptual not Empirical
 - Overlays activities with species
 - Quantifies an estimate
 - Relative measure
- Analysis is Transparent
 - Best professional judgment
- Allows for Multiple Iterations
 - Evaluate/refine the application
- Multiple Management Scenarios
 - Compare/Evaluate Actions



Spring Mountains NRA Analytical Approach Workshop

Workshop Outline



- Overview
- Session I
 - Available Data
- Session II
 - Activities and Human Use
- Session III
 - Species
- Session IV
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- Session VII
 - Summary and Review

Session 1- Available Data

The goal of this session is to gain an understanding of the data inputs used in the analytical approach, their key features, and their limitations. The purpose of this analysis is to estimate the amount of habitat affected by land use activities on Spring Mountains NRA lands for species considered endangered, threatened, sensitive, of concern, or rare within the framework of the Clark County MSHCP and the Spring Mountains Conservation Agreement. Site-specific occurrence records for these species has been provided by the Nevada Natural Heritage Program. Other species-specific data for the NRA has been included when available.

The data used to develop the Potential Effects Analysis database were current as of 2006. However, the vegetation layer will be updated in 2007. GIS data of varying scales representing habitat types and species distribution information were used to construct the database. Some were based on 1:24,000 USGS quad maps, while others were based on the overall range of a species. Other data types, such as the documented species observations, were based on field observations. It is recommended that this tool should not be used to determine potential effects at scales of a resolution greater than 1:24,000. For questions regarding scale of the original data source for any species or habitat type, the user should refer to metadata documents provided by agencies responsible for production of the datasets.

Table 1. Major datasets and source agencies used in the Landscape Analysis.

Potential Suitable Habitat Mapping			
<i>GIS Layers used</i>	<i>Data Source</i>		<i>Web link</i>
Precipitation	Forest Service GIS (coverage: <i>annl_ppt</i>)	n/a	
Elevation Ranges	USGS Seamless 10 meter National Elevation Dataset (NED)	http://seamless.usgs.gov/	
Slope	USGS Seamless 10 meter National Elevation Dataset (NED)	http://seamless.usgs.gov/	
Soils	USDA - NRCS <i>Soil Data Mart (Clark Co. & Nye Co.)</i>	http://soildatamart.nrcs.usda.gov/	
Landforms	USGS National Gap Analysis Program	http://earth.gis.usu.edu/swgap/landform.html	
Vegetation (Land Cover)	USGS National Gap Analysis Program	http://earth.gis.usu.edu/swgap/landcover.html	
Recreation Suitability Mapping			
<i>GIS Layers used</i>	<i>Data Source</i>		<i>Web link</i>
Elevation	USGS Seamless 10 meter Digital Elevation Models (DEM)	http://seamless.usgs.gov/	
Slope	USGS Seamless 10 meter Digital Elevation Models (DEM)	http://seamless.usgs.gov/	
Roads & Trails	Forest Service GIS (coverage: <i>corprds_edit</i>)	n/a	
Trailheads	Forest Service GIS (coverage: <i>rec_pt_edit</i>)	n/a	
Motorized Trails	Forest Service GIS (coverage: <i>mototrl_decis</i>)	n/a	
Wilderness Areas	Forest Service GIS (coverage: <i>annl_ppt</i>)	n/a	
Ownership	Forest Service GIS (coverage: <i>owner_update</i>)	n/a	
Dispersed Concentrated Use Areas	Forest Service GIS (coverage: <i>disp_cua_inv</i>)	n/a	
Campgrounds	digitized from USGS digital topographic maps (DRG)	http://keck.library.unr.edu	
Snowplay Areas	digitized from map provided by Anise Ellis & Connie Moen	n/a	
Point of Interest (current & historic)	digitized from map provided by Anise Ellis & Connie Moen	n/a	
Other Land Use Activity Layers			
<i>GIS Layers used</i>	<i>Data Source</i>		<i>Web link</i>
Wildland Urban Interface (WUI)	Forest Service GIS (coverage: <i>wui_fuels</i>)	n/a	
Caves & Tunnels	Forest Service GIS (coverage: <i>mine_pt</i>)	n/a	
Fire History	Forest Service GIS (coverage: <i>firehis_edit</i>)	n/a	
Horses & Burros (Wild Horse Territories)	Forest Service GIS (coverage: <i>wht</i>)	n/a	
Picnic Areas	Forest Service GIS (coverage: <i>rec_pt_edit</i>)	n/a	
Private Land	Forest Service GIS (coverage: <i>owner_update</i>)	n/a	
Buildings/Structures/Facilities	Forest Service GIS (coverage: <i>facilities</i>)	n/a	
Firewood Gathering Areas	Forest Service GIS (coverage: <i>firewood_cut</i>)	n/a	
Forest Health (Aerial Detection Survey)	Forest Service GIS (coverage: (<i>r4ads2003dmg</i> & <i>r4ads2004dmg</i>))	n/a	
Climbing Areas	Great Basin Institute - UNR (shapefiles: <i>Trail</i> , <i>Climbin2</i> , <i>Point</i>)	n/a	
Ski Area	digitized from USGS digital ortho quad (DOQ)	http://keck.library.unr.edu	
Non-System Trails	Forest Service GIS (coverage: <i>trails_snrpc</i> , <i>other_trails</i> , <i>kerwin_gpstrl</i> , <i>blm_cottontrl</i> , <i>bluetree_trl</i> , <i>addtrails_bob</i>)	n/a	

Spring Mountains NRA Analytical Approach Workshop

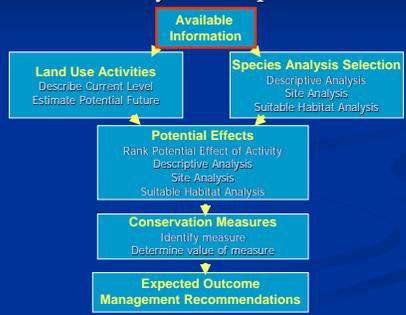
Workshop Outline



- Overview
- Session I
 - Available Data
- Session II
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Spring Mountains NRA Analytical Approach Workshop

Analysis Components



```

graph TD
    A[Available Information] --> B[Land Use Activities  
Describe Current Level  
Estimate Potential Future]
    A --> C[Species Analysis Selection  
Descriptive Analysis  
Site Analysis  
Suitable Habitat Analysis]
    B --> D[Potential Effects  
Rank Potential Effect of Activity  
Descriptive Analysis  
Site Analysis  
Suitable Habitat Analysis]
    C --> D
    D --> E[Conservation Measures  
Identify measure  
Determine value of measure]
    E --> F[Expected Outcome  
Management Recommendations]
  
```

Data / Information Requirements



- Organize Data
 - Species Database
 - Habitat Database
 - Activities Database
- Overlap Species & Activities
 - Distribution species/habitat
 - Distribution activities
 - Area of Influence
- Effects Determination
 - Assign effects index
 - Aggregate effects
- Conservation Measures
 - Assign CM index
 - Adjust effects index

Session 2- Land Use Activities

Land Use Activities represent a key input to the analytic approach. The goal of this session is to develop an understanding of the types of land use activities used in estimating potential effects to special status species habitat. The NRA maintains a GIS database that depicts the location and distribution of these various land use activities. Activities can be overlaid with each other to determine the extent to which multiple activities affect a particular species' habitat. Many of these activities individually account for very low acreage within the NRA. For example, all developed picnic areas in the NRA comprise only about 100 acres. To facilitate a more concise and meaningful analysis, land use activities have been categorized below in rank order. However, it should be noted these activities can be regrouped in a manner that facilitates meaningful analysis in a management context.

Land Use Activity Groupings

1. Horse and Burro areas

- within 0.25 miles of springs
- 0.25 to 1 mile of springs
- greater than 1 mile from springs

2. Fires since 1954

3. Forest Health Activities

4. Private land and buildings

5. Linear recreation features

- Closed Motorized Trails
- Open Motorized Trails
- Unpaved Roads
- Non-system Non-motorized Trails
- Low-Use, High-Mile System Trails
- High Use, Low-Mile System Trails

6. Vegetation management

- Noxious weeds
- Wildland Urban interface areas

7. Firewood gathering

8. Concentrated Use areas

9. Paved Roads

10. Winter Recreation

- Ski Area
- Snowplay areas

11. Developed Forest Service areas:

- Picnic areas
- Developed Canyon Trailheads
- Trailheads out of Develop Canyons
- Forest Service Structures
- Campgrounds

Land use activities refer to both current and future activities. In the case of recreation related activities, it is likely that undeveloped areas in the NRA will support additional activities. This is reflected in documents such as the Westside plan. The **Future Recreation Suitability Model** can be used to identify potential locations to support additional recreation activities. This model is a quantitative, GIS based-method used to determine the locations (acres) that may be suitable for various types of recreation activities. Suitability is a relative measure.

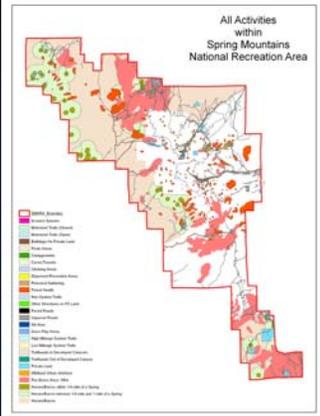
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Current Activities

All Activities within Spring Mountains National Recreation Area

Recreation Facilities Criteria



Landscape criteria that determine how suitable a location is for a recreational facility (from a recreational perspective).

Examples

- Slope
- Elevation
- Proximity to Roads
- Proximity to Other Recreation Facilities
- Proximity to Urban Areas

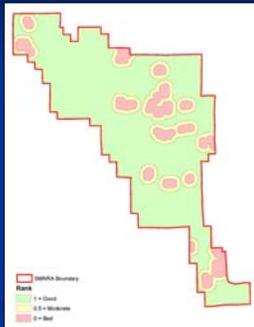
Criteria Importance Index for Summer Campgrounds

Criteria	Criteria Importance Index
Slope for developed sites	1
Elevation (Temperature for Summer)	0.75
Shadetrees	0.75
Proximity to Roads	1
Proximity to Cities	0.75
Proximity Trailheads (Beginning of a trail)	0.5
Proximity to Wilderness Areas	0.25
Proximity Other Attractions	0.5
Proximity Private Land	1
Overlap CUA Inventory Areas	0.5

Landscape Thresholds

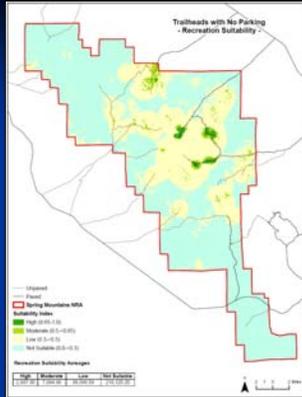
Landscape Thresholds are developed for each criterion to create a "landscape ranking" that indicates how well a particular location in the Spring Mountains NRA fulfills the criterion.

Threshold	Suitability	Rank
Greater than 1/3 of a mile from private land	Highly Suitable	1.0
Between 1/3 and 1/4 mile from private land	Fairly Suitable	0.5
Less than 1/4 mile from private land	Not Suitable	0



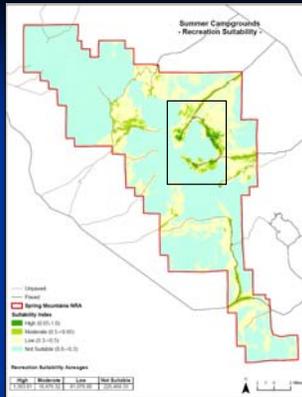
Landscape Suitability for Trailheads with No Parking

Suitable Area Examples



Landscape Suitability for Summer Campgrounds

Suitable Area Examples

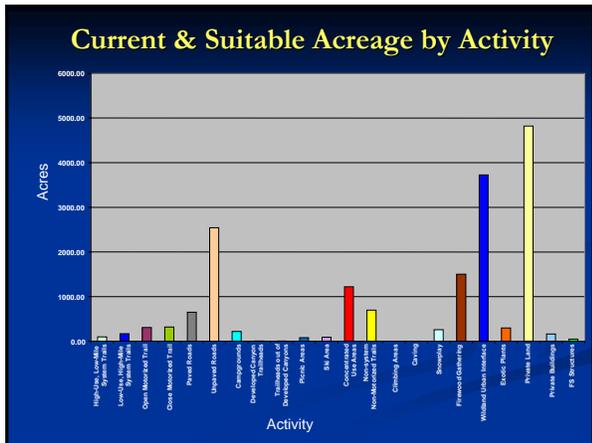


Current & Potential Summer Campgrounds

Current Campgrounds
168 acres

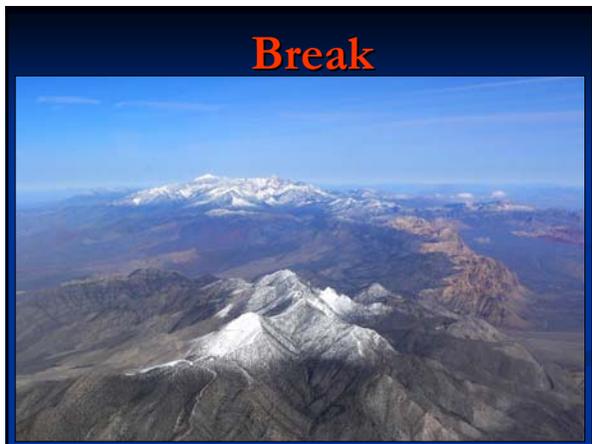
Current & Potential Campgrounds
217 acres





Interactive Session

- Separate computer and projector



Session 3- Species and Habitat

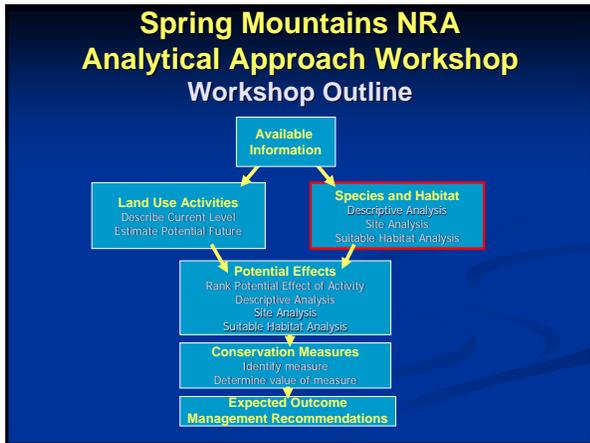
The goal of this session is to understand the amount and quality of information available for the 85 special status species on the NRA. The level of analysis for a species is linked to the quality of available data. Those species with limited or no occurrence data on the NRA can be evaluated using a descriptive analysis. For other species, a site-based analysis can be conducted based on known occurrence localities on the NRA. **Occurrence localities** refer to a mapped location of where a particular species was observed. These locations could be represented by a point or a polygon, depending on the completeness of the recorded data, including the precision of the mapping (i.e., degree of confidence that the mapped site accurately reflects its actual geographic location) as well as the thoroughness of species-specific surveys at that location.

For species where the sum of the mapped location data accurately reflects its potential distribution on the NRA a quantitative potential suitable habitat analysis can be conducted. **Potential suitable habitat** maps are created for a given species using a combination of GIS-based habitat attributes (e.g, landform, elevation, slope, soil type, precipitation, and vegetation community) derived from the collection of site occurrences for that species on the NRA. These maps are used to estimate the potential distribution and size of areas where a species might occur based on their association with the attributes.

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Activities and Human Use
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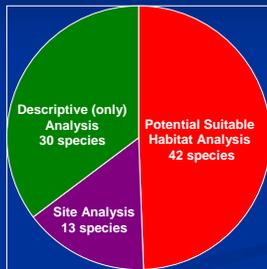
Available Species and Habitat Information

- **Insufficient occurrence records**
 - Occurrence locality records non-existent or incomplete
- **Limited occurrence records**
 - Occurrence locality records are reliable
 - Not based on rigorous presence/absence surveys
 - Insufficient information to reliably estimate potential suitable habitat
- **Sufficient occurrence/habitat information**
 - Quality of species survey and/or available information is suitable for predicting the quantity of potential suitable habitat throughout the NRA

NRA Species/Habitat Assessment

- **Descriptive Analysis**
 - Use literature to describe potential presence in the NRA
- **Site Analysis**
 - Use occurrence locality records to describe known distribution within the NRA
- **Potential Suitable Habitat Analysis**
 - Use locality records and GIS framework to estimate potential suitable habitat

Spring Mountains NRA Species/Habitat Assessment



Spring Mountains NRA Species/Habitat Assessment

- **Descriptive Analysis**
 - Literature and regional distribution information
 - General habitat descriptions
 - (emphasis on association with vegetation communities)
 - Identify key habitat features and presence on the NRA
 - Assess potential for species' occurrence on the NRA

Descriptive Analysis - Species List

Mammals

- Yuma myotis (*Myotis yumanensis*)
- Silver-haired bat (*Lasionycteris noctivagans*)
- Spotted bat (*Euderma maculatum*)

Birds

- Peregrine falcon (*Falco peregrinus*)
- Burrowing owl (*Athene cucularia*)
- Southwestern willow flycatcher (*Empidonax traillii extimus*)
- Phainopepla (*Phainopepla nitens*)
- Blue grosbeak (*Guiraca caerulea*)
- Summer tanager (*Piranga rubra*)

Descriptive Analysis - Species List

Reptiles

- Desert tortoise (*Gopherus agassizi*)
- Banded Gila monster (*Heloderma suspectum cinctum*)
- Chuckwalla (*Sauromalus obesus*)
- Banded gecko (*Coleonyx variegates*)
- Large spotted leopard lizard (*Gambelia wislizenii wislizenii*)
- Great Basin collared lizard (*Crotaphytus insularis bicinctores*)
- Western red-tailed skink (*Eumeces gilberti rubricaudatus*)
- California king snake (*Lampropeltis getulus californiae*)
- Mojave glossy snake (*Arizona elegans candida*)
- Sonoran lyre snake (*Trimorphodon biscutatus lambda*)

Descriptive Analysis - Species List

Reptiles (continued)

- Western leaf-nosed snake (*Phyllorhynchus decurtatus*)
- Mojave green rattlesnake (*Crotalus scutulatus scutulatus*)
- Speckled rattlesnake (*Crotalus mitchelli*)

Fish

- Lahontan cutthroat trout (*Oncorhynchus clarki henshawi*)

Invertebrates

- Charleston ant (*Lasius nevadensis*)



Descriptive Analysis - Species List

Plants

- White bear desert-poppy (*Arctomecon aequalis*)
- Spring Mountains milkvetch (*Astragalus remotus*)
- Mohave cryptantha (*Cryptantha tumulosa*)
- Barrel cactus (*Ferocactus cylindraceus*)
- Rosy two-colored beardtongue (*Penstemon bicolor* spp. *roseus*)
- Moss (*Dicranoweisia crispula*)

Spring Mountains NRA Species/Habitat Assessment

• Site Analysis

- Identify the distribution of known occurrences
- Distinguish between site occurrences and polygons (sites plus acres)
- Identify the relationship of each occurrence to the species distribution and abundance within the NRA
- Identify key habitat features associated with the occurrence locality
- Identify potential management conflicts at sites

Site Analysis - Species List

Mammals

- Allen's lappet-browed bat (*Idionycteris phyllotis*)
- Townsend's big-eared bat (*Corynorhinus townsendii*)
- Western small-footed myotis (*Myotis ciliolabrum*)
- Long-eared myotis (*Myotis evotis*)
- Fringed myotis (*Myotis thysanodes*)
- Long-legged myotis (*Myotis volans*)



Site Analysis - Species List

Invertebrates

Southeast Nevada springsnail (*Pyrgulopsis turbatrix*)

Spring Mountains springsnail (*Pyrgulopsis deaconi*)

Plants

Smooth pungent greasbush (*Glossopetalon pungens* var. *pungens*)

Smooth dwarf greasbush (*Glossopetalon pungens* var. *glabra*)

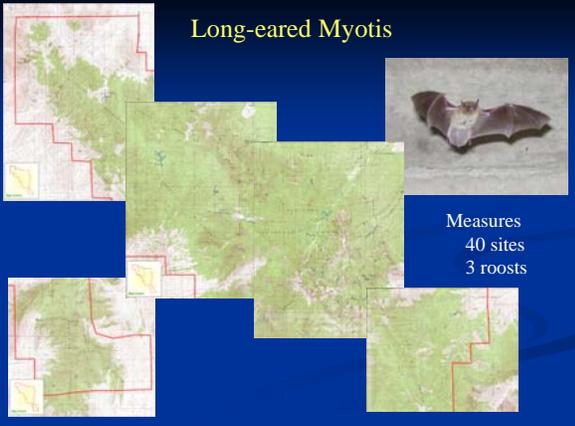
Upswept Moonwort (*Botrychium ascendens*)

Dainty Moonwort (*Botrychium crenulatum*)

Slender Moonwort (*Botrychium lineare*)



Long-eared Myotis



Spring Mountains NRA Species/Habitat Assessment

• Potential Suitable Habitat Analysis

- Map suitable habitat to define the species' total potential distribution on the NRA
- Establish a related suite of GIS-derived physical habitat attributes based on known occurrence records from the NRA
- GIS mapping of predicted potential suitable habitat as the basis for the landscape analysis

GIS-derived Physical Habitat Attributes

- **Landform**
 - 10 defined types
- **Elevation**
 - 250-foot increments
- **Slope**
 - 3 categories (0-20, 21-45, 46-90 degrees)
- **Soils**
 - 49 series
- **Precipitation**
 - 2 inch increments from 6-20 inches; 20-24 inches
- **Vegetation**
 - SWReGAP 19 units

Potential Habitat Analysis - Species List

Mammals

Palmer's Chipmunk (*Neotamias palmeri*)

Birds

Northern goshawk (*Accipiter gentilis*)

Flammulated owl (*Otus flammeolus*)

Invertebrates

Bret's blue (*Euphilotes bernardino inyomontana*)

Carole's silverspot butterfly (*Speyeria zerene carolae*)

Dark blue butterfly (*Euphilotes enoptes purpurea*)

Morand's checkerspot butterfly (*Euphydryas anicia morandi*)

Nevada admiral (*Limenitis weidemeyerii nevadae*)



Potential Habitat Analysis - Species List

Invertebrates (continued)

Spring Mountains blue butterfly (*Icaricia shasta charlestonensis*)

Spring Mountains checkerspot (*Chlosyne acastus robusta*)

Spring Mountains comma skipper (*Hesperia colorado mojaviensis*)

Spring Mountains icarioides blue (*Icaricia icarioides austinorum*)

Potential Habitat Analysis - Species List

Plants

- Rough angelica (*Angelica scabrida*)
- Charleston pussytoes (*Antennaria soliceps*)
- Rosy king sandwort (*Arenaria kingii* spp. *rosea*)
- Clokey milkvetch (*Astragalus aequalis*)
- Funeral milkvetch (*Astragalus funereus*)
- Half-ring pod milkvetch (*Astragalus mojavenis* var. *hemigyris*)
- Clokey eggvetch (*Astragalus oophorus* var. *clokeyanus*)
- Clokey paintbrush (*Castilleja martinii* var. *clokeyi*)
- Clokey thistle (*Cirsium eatonii* var. *clokeyi*)
- Jaeger draba (*Draba jaegeri*)

Potential Habitat Analysis - Species List

Plants (continued)

- Charleston draba (*Draba pauciflora*)
- Nevada Willowherb (*Epilobium nevadense*)
- Charleston goldenbush (*Ericameria compacta*)
- Inch high fleabane (*Erigeron uncialis* var. *conjugans*)
- Clokey buckwheat (*Eriogonum hernanii* var. *clokeyi*)
- Clokey greasewood (*Glossopetalon clokeyi*)
- Charleston ivesia (*Ivesia cryptocaulis*)
- Jaeger ivesia (*Ivesia jaegeri*)
- Charleston pinewood lousewort (*Pedicularis semibarbata* var. *charlestonensis*)
- Bicolored beardtongue (*Penstemon bicolor* spp. *bicolor*)

Potential Habitat Analysis - Species List

Plants (continued)

- Death Valley beardtongue (*Penstemon fruticosus* spp. *amargosae*)
- Charleston beardtongue (*Penstemon leiophyllus* var. *keckii*)
- Jaeger beardtongue (*Penstemon thompsoniae* spp. *jaegeri*)
- Hitchcock bladderpod (*Physaria hitchcockii* var. *hitchcockii*)
- Clokey mountain sage (*Salvia dornii* var. *clokeyi*)
- Clokey silene (*Silene clokeyi*)
- Charleston tansy (*Sphaeromeria compacta*)
- Charleston kittentails (*Synthyris ranunculina*)
- Charleston ground daisy (*Townsendia jonesii* var. *tumulosa*)
- Charleston violet (*Viola charlestonensis*)

Clokey Eggvetch Distribution in the Spring Mountains NRA

Clokey Eggvetch Occurrence Locality Data

Measures
23 sites*
24.9 acres

* not corrected for the 1 kilometer rule

Clokey Eggvetch Habitat Attributes

Landform	Acres	% of total
gently sloping ridges and hills	6.15	24.60
moderately dry slopes	5.62	22.51
moderately moist steep slopes	9.80	39.21
toe slopes, bottoms, and swales	0.10	0.39
very moist steep slopes	3.31	13.27

Elevation Range	Acres	% of total
6001-6250	0.10	0.39
6750-7000	0.50	2.00
7501-7750	0.32	1.27
7751-8000	0.20	0.81
8001-8250	1.27	5.10
8251-8500	6.17	24.72
8501-8750	10.45	41.84
8751-9000	5.76	23.06
9001-9250	0.20	0.80

Precipitation (inches per year)	Acres	% of total
14-16	1.12	4.47
18-20	0.30	1.20
20-24	23.56	94.32

Spring Mountains Checkerspot Distribution in the NRA

The slide features a map on the left showing the distribution of the Spring Mountains Checkerspot in the National Recreation Area (NRA). The distribution is indicated by green shaded areas within a red boundary. An inset map shows the location of the NRA within the state of Nevada. To the right of the map is a photograph of a Spring Mountains Checkerspot butterfly, which has orange wings with dark spots and markings.

Spring Mountains Checkerspot Occurrence Data

Measures
39 Sites

The slide displays a map of the Spring Mountains region with 39 purple dots representing occurrence sites. The map shows the geographical distribution of these sites across the mountain range.

Spring Mountains Checkerspot Habitat Attributes

Landform	Acres	% of total
cool aspect scarps, cliffs, canyons	0.10	2.56
gently sloping ridges and hills	0.74	19.14
moderately dry slopes	1.20	31.26
moderately moist steep slopes	0.76	19.70
toe slopes, bottoms, and swales	0.21	5.38
very dry steep slopes	0.10	2.56
very moist steep slopes	0.74	19.31

Slope (degree)	Acres	% of total
0-20	2.05	53.21
21-45	1.80	46.73

Vegetation (ReGAP)	Acres	% of total
Great Basin Pinyon-Juniper Woodland	1.66	43.07
Inter-Mountain Basins Subalpine Limber-Bristlecone Pine Woodland	0.20	5.13
Mojave Mid-Elevation Mixed Desert Scrub	0.31	8.08
North American Warm Desert Lower Montane Riparian Woodland and Shrubland	0.10	2.56
Recently Burned	0.20	5.12
Rocky Mountain Alpine-Montane Wet Meadow	0.09	2.46
Rocky Mountain Montane Dry-Mesic Mixed Conifer Forest and Woodland	0.50	13.07
Rocky Mountain Montane Mesic Mixed Conifer Forest and Woodland	0.13	3.41
Sonora-Mojave-Baja Semi-Desert Chaparral	0.66	17.04

Spring Mountains Checkerspot Habitat Attributes

Elevation Range	Acres	% of total
5251-5500	0.10	2.56
5501-5750	0.10	2.56
5751-6000	0.30	7.69
6001-6250	0.10	2.56
6251-6500	0.39	10.25
6501-6750	0.20	5.13
6750-7000	0.10	2.56
7001-7250	0.20	5.13
7251-7500	0.20	5.14
7501-7750	0.82	21.20
7751-8000	0.23	5.92
8001-8250	0.24	6.17
8251-8500	0.30	7.69
8501-8750	0.30	7.68
8751-9000	0.10	2.56
9501-9750	0.10	2.56
9751-10000	0.10	2.56

Spring Mountains Checkerspot Habitat Attributes

Soil Series	Acres	% of total
Buckspring-Fletcherpeak-Seralin association	0.39	10.25
Cruzspring-Rock outcrop complex, 15 to 50 percent slopes	0.10	2.56
Kylecanyon-Goodwater association	0.10	2.56
Ladyofsnow-Robbersfire-Maryjane association	0.20	5.13
Lastone association	0.30	7.68
Luckystrike gravelly loam, 8 to 30 percent slopes	0.39	10.25
Mackscanyon very gravelly silt loam, 15 to 50 percent slopes	0.16	4.23
Maryjane-Robbersfire-Kitgram complex, 30 to 75 percent slopes	0.48	12.41
Maryjane extremely gravelly loam, 8 to 30 percent slopes	0.32	8.38
Mountmummy-Thesisters-Maryjane association	0.57	14.68
Purob-Niavi association	0.10	2.56
Purob extremely gravelly loam, 8 to 30 percent slopes	0.30	7.69
Schader-Sed-Cruzspring association	0.20	5.13
Seralin-Traley-Rock outcrop association	0.20	5.13
Wheelerwell-Wheelerpass association	0.05	1.29

Precipitation (inches per year)	Acres	% of total
12-14	0.59	15.37
14-16	0.89	23.07
16-18	0.30	7.68
18-20	1.09	28.19
20-24	0.99	25.63

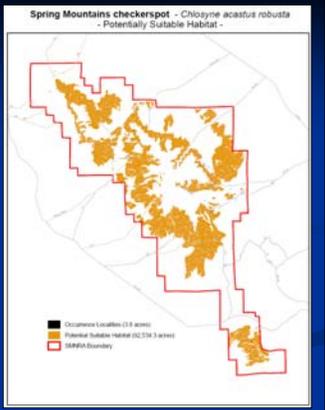
Spring Mountains Checkerspot Habitat Attribute Summary



- Landforms
4 types
- Elevation
6,251-8,750
- Slope
0-45 degrees
- Precipitation
12-24 inches
- Soil Series
7 types
- Vegetation
4 types

Spring Mountains Checkerspot Potential Habitat Map

92,534 Acres of Potentially Suitable Habitat



Rough Angelica Habitat Attribute Summary

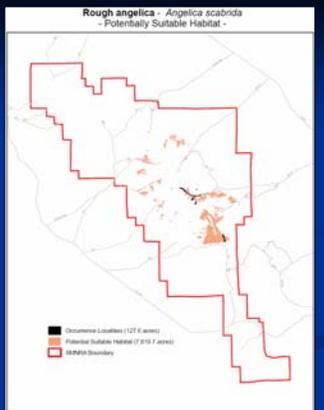
Measures
15 sites 128 acres



- Landforms
4 types
- Elevation
6,001-8,250
- Slope
0-45 degrees
- Precipitation
12-24 inches
- Soil Series
4 types
- Vegetation
3 types

Rough Angelica Potential Habitat Map

7,820 Acres of Potentially Suitable Habitat



Nevada Admiral Habitat Attribute Summary

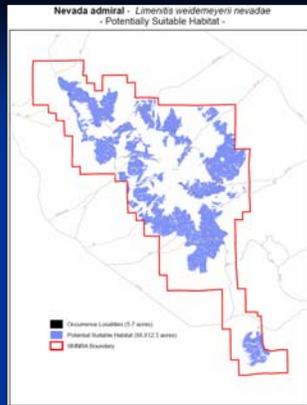
Measures
57 sites



- Landforms
4 types
- Elevation
5,751-8,500
- Slope
0-45 degrees
- Precipitation
12-24 inches
- Soil Series
8 types
- Vegetation
6 types

Nevada Admiral Potential Habitat Map

88,812 Acres of
Potentially Suitable Habitat



Clokey Thistle Habitat Attribute Summary

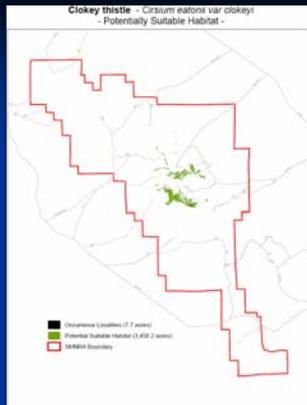
Measures
28 sites



- Landforms
3 types
- Elevation
9,751-11,000
- Slope
21-45 degrees
- Precipitation
12-24 inches
- Soil Series
2 types
- Vegetation
1 types

Clokey Thistle Potential Habitat Map

3,458 Acres of
Potentially Suitable Habitat



Charleston Violet Habitat Attribute Summary

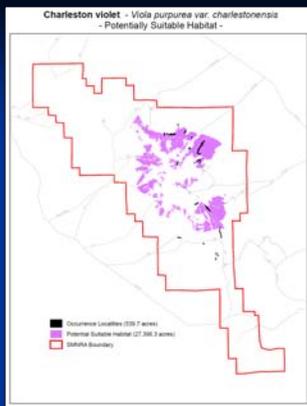
Measures
41 sites 540 acres



- Landforms
3 types
- Elevation
5,751-9,000
- Slope
0-45 degrees
- Precipitation
16-24 inches
- Soil Series
6 types
- Vegetation
4 types

Charleston Violet Potential Habitat Map

27,396 Acres of
Potentially Suitable Habitat



Break



Session 4- Potential Effects

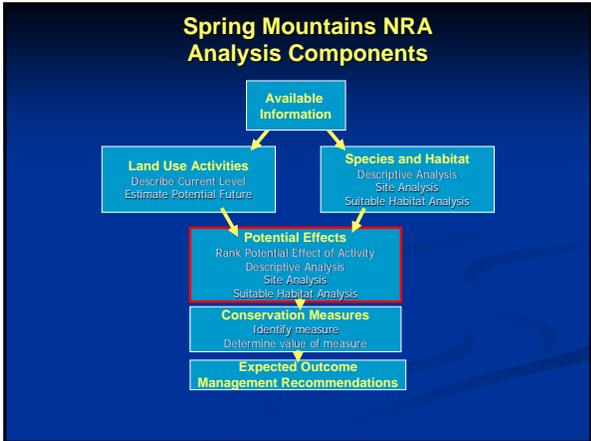
The goal of this session is to understand how impacts on special status species are estimated. Potential effects can occur where there is overlap between at least one land use activity and special status species habitat. Effects of an activity on a species' habitat are organized in an effects matrix. Rows represent different types of impact mechanisms such as trampling or soil compaction; columns represent land use activities. Best professional judgment based on a review of the scientific literature and documented impacts for each species is used to evaluate whether a particular activity affects a species. Once the degree (e.g., acreage) of overlap between a species' potential habitat and an identified activity is determined, a **potential effect index** of each activity is estimated on a species-specific basis. Estimates range from no detectable effect to complete removal of habitat. The **potential effect index** is defined as a rank-ordered measure of the effect of a particular activity on a particular species' habitat.

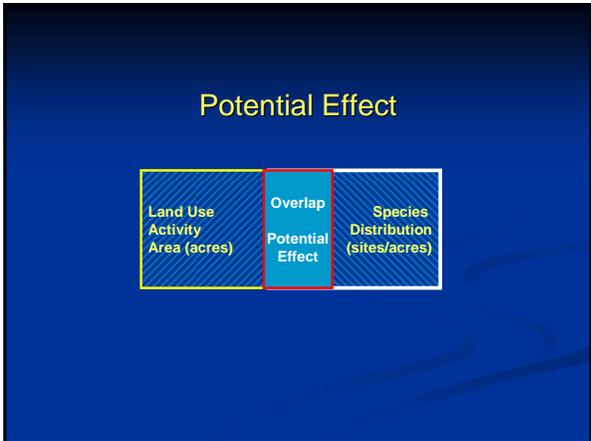
Effects can also occur from multiple activities overlapping with special status species' habitat. **Aggregate Effect Intensity** refers to the effect of overlapping activities on a species' habitat at a given location.

Spring Mountains NRA Analytical Approach Workshop Workshop Outline



- Overview
- Session I
 - Available Data
- Session II
 - Activities and Human Use
- Session III
 - Species and Habitat
- **Session IV**
 - **Potential Effects**
- Session V
 - Conservation Measures
- Session VI
 - Expected Outcomes
- Session VII
 - Summary and Review





Potential Effect

The potential of a given activity to alter the suitable habitat of a given species

- where possible - quantify the relative alteration or magnitude of effect

**Land Uses & Potential Effects
Clokey Eggvetch**

- Land Uses
 - High use low mileage trails
 - Low use high mileage trails
 - Open motorized trails
 - Campgrounds
 - Picnic areas
 - Ski area
 - Concentrated use areas
- Potential effects
 - Death
 - Injury (trampling, picking)
 - Temporary habitat loss
 - Soil compaction
 - Soil erosion

**Potential Effect Ranking
Specific Activity on a Given Species Habitat**

Magnitude of the Effect

- TTL = all habitat value removed
- H = high effect
- M = moderate effect
- L = low effect
- TR = trace effect
- N = no detectable effect

Potential Land Use Effects

Site Analysis

- Quantify the overlap between species and activities using number as sites as the basic metric
- Describe the potential effect of each overlapping land use activity on species
- Describe the potential effect of multiple land use activities on species
- Assess potential effects in a regional context

Site Analysis – LE Myotis

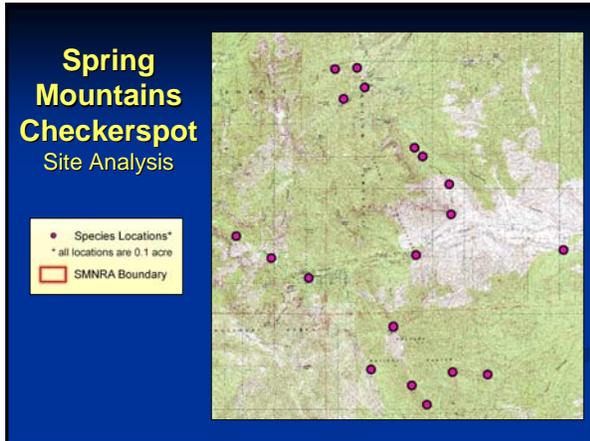
- Distribution
 - Total # of occurrence localities
 - Regional significance
- # sites per activity
- Potential effect of each activity – based on ME
- Potential effect of multiple activities

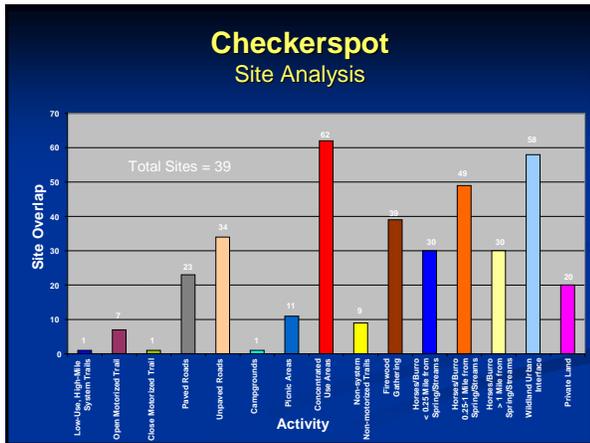


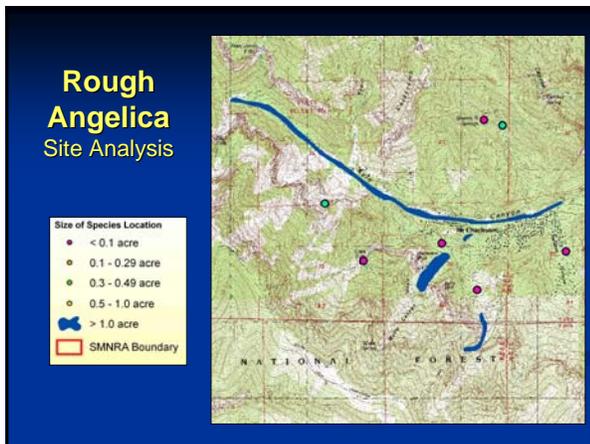
Long-eared Myotis Site Analysis

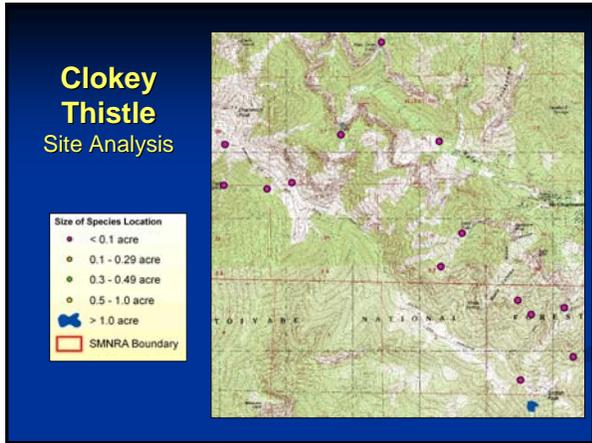
- Size of Species Location
- < 0.1 acre
 - 0.1 - 0.29 acre
 - 0.3 - 0.49 acre
 - 0.5 - 1.0 acre
 - > 1.0 acre
- SMNRA Boundary

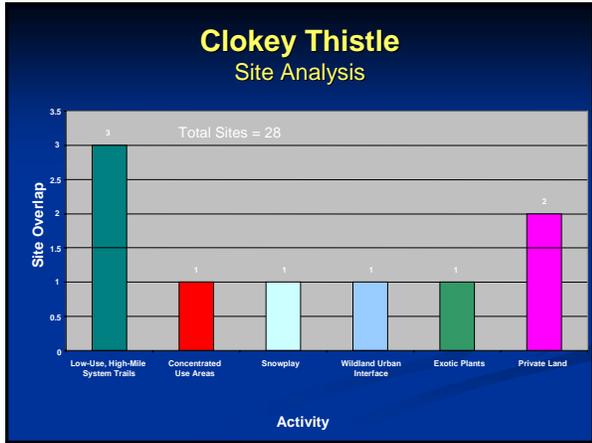


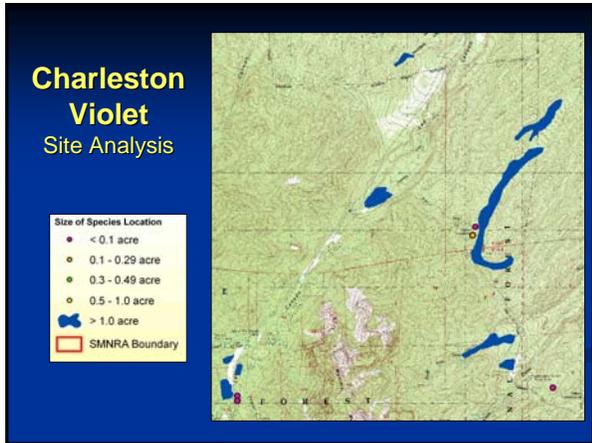


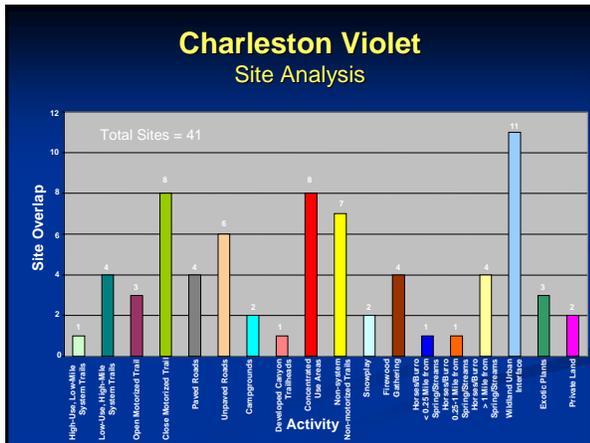








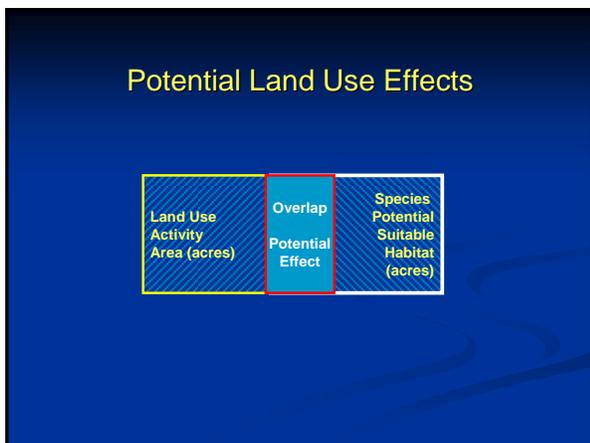




Potential Land Use Effects

Potential Suitable Habitat Analysis

- Quantify the amount of habitat (acres) that is affected by a given land use activity and (as appropriate) multiple land use activities



Potential Effects Example Campgrounds

Current Campgrounds
168 acres

Current & Potential Campgrounds
217 acres



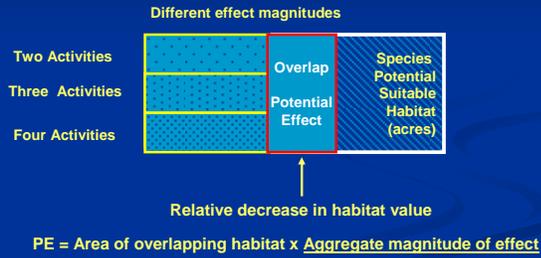
Current Campgrounds Potential Suitable Habitat Analysis

Species	Impact Area	Acres of Overlap (A)	Potential Effects Index (B)	Potential Effect Acres (A * B)
Charleston Violet	Footprint	16.63	0.75	12.47
	Area of Influence	9.30	0.25	2.33
Clokey Eggvetch	Footprint	47.69	0.75	35.77
	Area of Influence	14.69	0.25	3.67
Clokey Thistle	Footprint	0.00	0.75	0.00
	Area of Influence	0.00	0.25	0.00
Nevada Admiral	Footprint	49.60	0.75	37.20
	Area of Influence	31.23	0.25	7.81
Rough Angelica	Footprint	13.20	0.75	9.90
	Area of Influence	13.89	0.25	3.47
Spring Mountains Checkerspot	Footprint	17.20	0.75	12.90
	Area of Influence	10.00	0.25	2.50

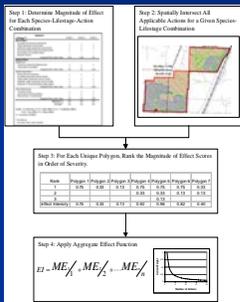
Current + Future Campgrounds Potential Suitable Habitat Analysis

Species	Impact Area	Acres of Overlap (A)	Potential Effects Index (B)	Potential Effect Acres (A * B)
Charleston Violet	Footprint	34.29	0.75	25.72
	Area of Influence	14.04	0.25	3.51
Clokey Eggvetch	Footprint	65.50	0.75	49.12
	Area of Influence	20.29	0.25	5.07
Clokey Thistle	Footprint	0.00	0.75	0.00
	Area of Influence	0.00	0.25	0.00
Nevada Admiral	Footprint	67.51	0.75	50.63
	Area of Influence	37.15	0.25	9.29
Rough Angelica	Footprint	13.20	0.75	9.90
	Area of Influence	13.89	0.25	3.47
Spring Mountains Checkerspot	Footprint	34.87	0.75	26.15
	Area of Influence	15.70	0.25	3.92

Potential Land Use Effect Multiple Activities



Aggregate Effect Value Multiple Activities on a Given Species

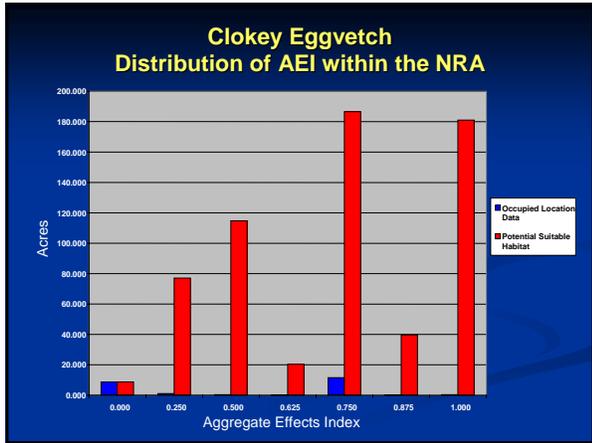


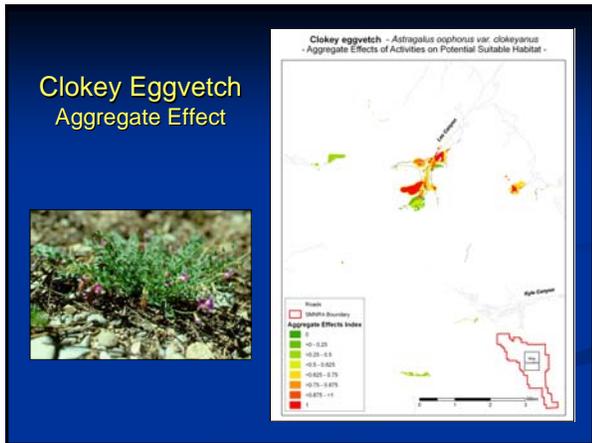
- Determine magnitude of effect for each species
- Spatially intersect all applicable activities for a given species
- Rank the ME scores for each unique polygon in order of severity
- Apply aggregate effect function
 - $AEI = ME_1/1 + ME_2/2 + ME_n/n$

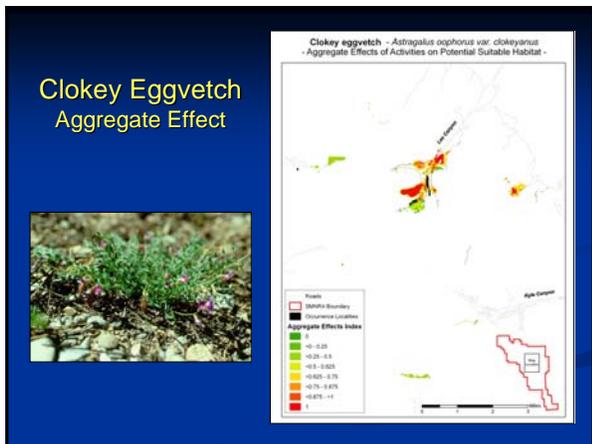
Aggregate Magnitude of Effect Ranking and Calculation

Activity Rank	Polygon 1	Polygon 2	Polygon 3	Polygon 4	Polygon 5
1	0.75	0.75	0.75	0.75	0.5
2		0.25	0.25	0.75	0.5
3			0.05		0.5
AEI	0.75	0.87	0.90	1.00	0.87

$$AEI = ME_1/1 + ME_2/2 + ME_n/n$$







Clokey Eggvetch

Potential Suitable Habitat Analysis

Wildland Urban Interface Effect	Campgrounds Effect	Aggregate Effect	Area of Overlap (acres)	Potential Effect (acres)
0.75	--	--	347.75	260.81
--	0.25	--	85.79	21.45
0.75	0.25	0.87	65.36	57.19

Break



Session 5- Conservation Measures

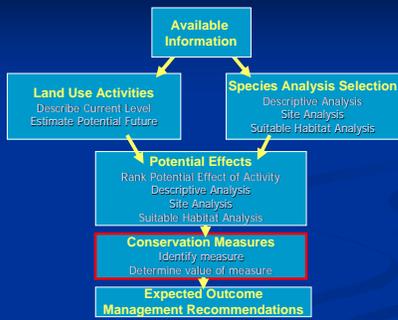
The goal of this session is to understand what types of **conservation measures** are available, and how effective they might be in reducing impacts. A **conservation measure** is an action designed to reduce the effect intensity of an activity or activities. A conservation measure could be specific or apply broadly to a variety of activities. Conservation measures can be used to reduce the effects of current land use activities, as well as future activities.

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Spring Mountains NRA Analysis Components



Conservation Measures

- An action designed to reduce effects intensity of an activity or activities. A conservation measure could be specific or apply broadly to a variety of activities.

Land Uses & Potential Effects

Clokey Eggvetch

- Land Uses
 - High use low mileage trails
 - Low use high mileage trails
 - Open motorized trails
 - Campgrounds
 - Picnic areas
 - Ski area
 - CUAs
- Potential effects
 - Death
 - Injury (trampling, picking)
 - Temporary habitat loss
 - Soil compaction
 - Soil erosion

Conservation Measure Index

- A rank-ordered measure determined by professional judgment that indicates how effective the measure is in altering the effect of an activity. Indices can range from “no alteration of an effect” to “effect has been removed completely.”

Conservation Measures Ranking Specific Activity on a Given Species Habitat

Conservation Measures Index

(used as multiplier with PEI)

- TTL = effect of activity removed = 0.0
- TR = trace reduction to potential effect = 0.05
- L = small reduction to activity effect = 0.25
- M = moderate reduction to potential effect = 0.50
- H = large reduction to potential effect = 0.75
- N = no detectable change = 1.0

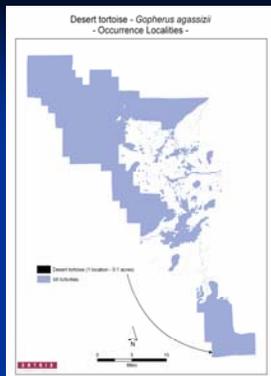
Developed Campground Overlap with Clokey Eggvetch PSH

Campground	Acres
Dolomite	18.5
McWilliams	29.2
Dolomite/McWilliams Area of influence	14.7
Total	62.4

Conservation Measure Value

Descriptive Analysis

- Describe the potential value of conservation measures
- Describe the potential effects of implementing conservation measures



Descriptive Analysis - DT

- Limited distribution
- Conditions not suitable
- Few activities over lap
- Reference potential effect of over lapping activity from literature

Conservation Measure Value

Site Analysis

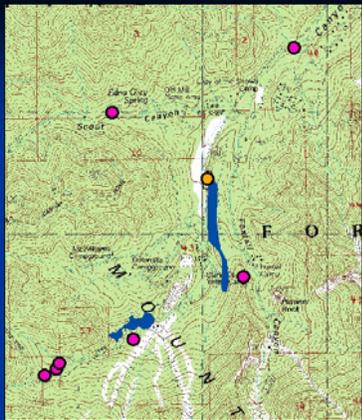
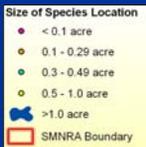
- Quantify how a conservation measure may alter the overlap between species and land use activities using number as sites as the basic metric
- Describe the potential benefit of each conservation measure
- Describe the potential conservation measures on species overlapping multiple land use activities
- Assess potential benefits within a regional context

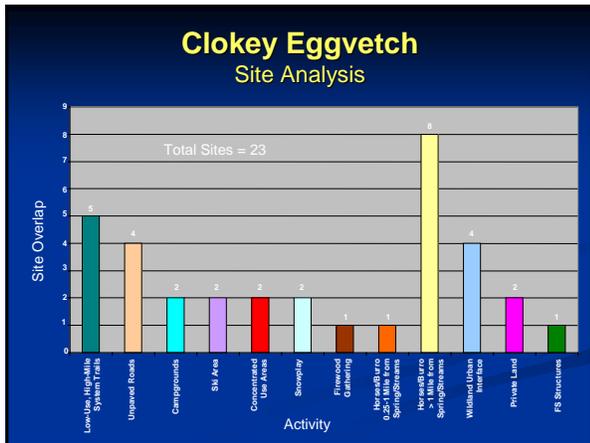
Site Analysis – LE Myotis

- Distribution
 - Total # of sites
 - Regional significance
- # sites per activity
- Potential effect of each activity – based on ME
- Potential effect of multiple activities



Clokey Eggvetch Occurrence Data





Conservation Measure Value

Potential Suitable Habitat Analysis

- Quantify the amount of habitat (acres) that is affected by a given land use activity and (as appropriate) multiple land use activities

Potential Conservation Measures to Reduce Trampling in Campgrounds

Conservation Measure	Effectiveness
No restrictions on recreation use	Does not alter effect
Information campaign	Removes effect to low degree
Flag sensitive areas	Removes effect to moderate degree
Prohibit firewood gathering	Removes effect to moderate degree
Seasonal closure	Removes effect to high degree

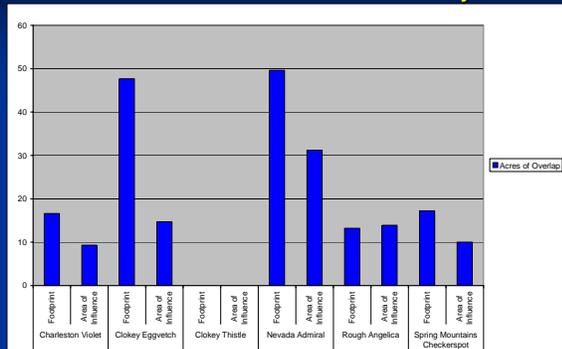
Current Campgrounds Site Analysis

Species	Impact Area	Total Number of Sites	Sites of Overlap	Potential Effects Index	Value of CMI
Charleston Violet	Footprint	41	2	.75	Completely Removes Effect
Clokey Eggvetch	Footprint	23	2	.75	Completely Removes Effect
Clokey Thistle	Footprint	28	0	.75	No Value
Nevada Admiral	Footprint	58	1	.75	Completely Removes Effect
Rough Angelica	Footprint	15	0	.75	No Value
Spring Mountains Checkerspot	Footprint	39	1	.75	Completely Removes Effect

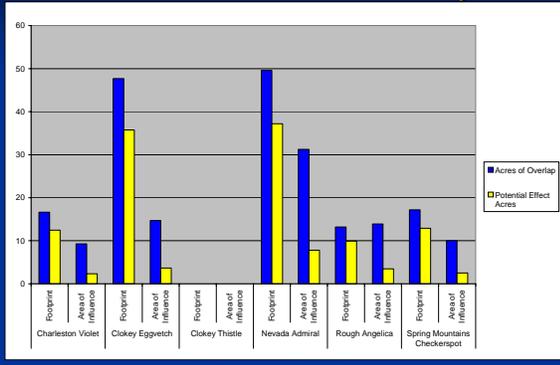
Current Campgrounds Potential Suitable Habitat Analysis

Species	Impact Area	Acres of Overlap (A)	Potential Effects Index (B)	Potential Effect Acres (A * B)	Value of CMI (A * B * C)
Charleston Violet	Footprint	16.63	0.75	12.47	6.23
	Area of Influence	9.30	0.25	2.33	1.16
Clokey Eggvetch	Footprint	47.69	0.75	35.77	17.8
	Area of Influence	14.69	0.25	3.67	1.83
Clokey Thistle	Footprint	0.00	0.75	0.00	0.00
	Area of Influence	0.00	0.25	0.00	0.00
Nevada Admiral	Footprint	49.60	0.75	37.20	18.60
	Area of Influence	31.23	0.25	7.81	3.90
Rough Angelica	Footprint	13.20	0.75	9.90	4.95
	Area of Influence	13.89	0.25	3.47	1.73
Spring Mountains Checkerspot	Footprint	17.20	0.75	12.90	6.45
	Area of Influence	10.00	0.25	2.50	1.25

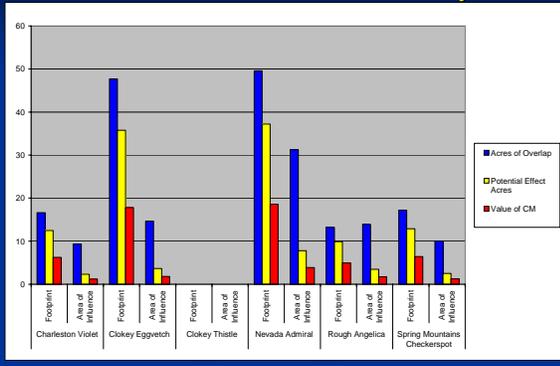
Current Campgrounds Potential Suitable Habitat Analysis



Current Campgrounds Potential Suitable Habitat Analysis



Current Campgrounds Potential Suitable Habitat Analysis



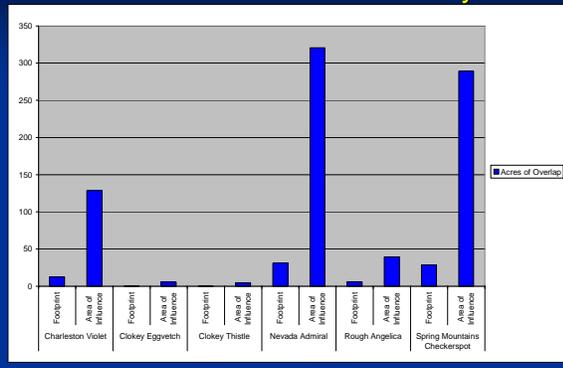
Potential Measures to Reduce Soil Compaction and Damage to Host Plants in CUAs

Conservation Measure	Effectiveness
No restrictions on recreation use	Does not alter effect
Install vehicle barriers	Removes effect to low degree
Designate campsites/ eliminate social trails	Removes effect to moderate degree
Seasonal closure	Removes effect to high degree
Permanent closure	Completely removes effect

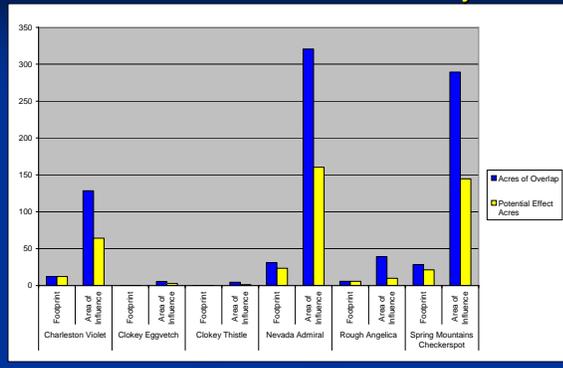
Concentrated Use Areas Potential Suitable Habitat Analysis

Species	Impact Area	Acres of Overlap (A)	Potential Effects Index (B)	Potential Effect Acres (A * B)	Value of CMI (A * B * C)
Charleston Violet	Footprint	12.37	1.00	12.37	6.23
	Area of Influence	128.53	0.50	64.26	1.15
Clokey Eggvetch	Footprint	0.23	1.00	0.23	17.8
	Area of Influence	5.55	0.50	2.78	1.83
Clokey Thistle	Footprint	0.10	1.00	0.10	0.00
	Area of Influence	4.54	0.25	1.14	0.00
Nevada Admiral	Footprint	31.09	0.75	23.32	18.60
	Area of Influence	320.64	0.50	160.32	3.90
Rough Angelica	Footprint	5.71	1.00	5.71	4.95
	Area of Influence	39.30	0.25	9.82	1.73
Spring Mountains Checkerspot	Footprint	28.44	0.75	21.33	6.45
	Area of Influence	289.27	0.50	144.63	1.25

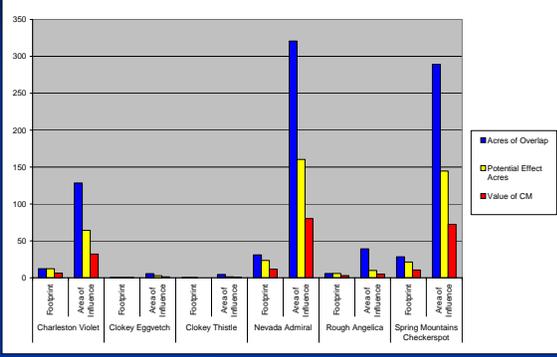
Concentrated Use Areas Potential Suitable Habitat Analysis



Concentrated Use Areas Potential Suitable Habitat Analysis



Concentrated Use Areas Potential Suitable Habitat Analysis



Break



Session 6- Expected Outcomes

The goal of this session is to understand the extent to which conservation measures reduce the effects of activities. A related goal is to understand the extent to which restrictive recreation management measures may be necessary to achieve a high level of effectiveness in reducing effects of activities on special status species habitat.

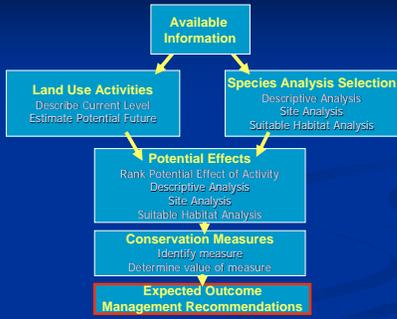
Spring Mountains NRA Analytical Approach Workshop

Workshop Outline



- Overview
- Session I
 - Available Data
- Session II
 - Land Use Activities
- Session III
 - Species and Habitat
- Session IV
 - Potential Effects
- Session V
 - Conservation Measures
- Session VI
 - Expected Outcomes
- Session VII
 - Summary and Review

Spring Mountains NRA Analysis Components



Analysis Approach

- Descriptive Analysis
 - Literature and regional distribution information
 - General habitat descriptions (emphasis on vegetation communities)
 - Identify key habitat features and presence on the NRA
 - Assess potential for species' on the NRA
 - Identify data gaps and/or management issues

Analysis Approach

• Site Analysis

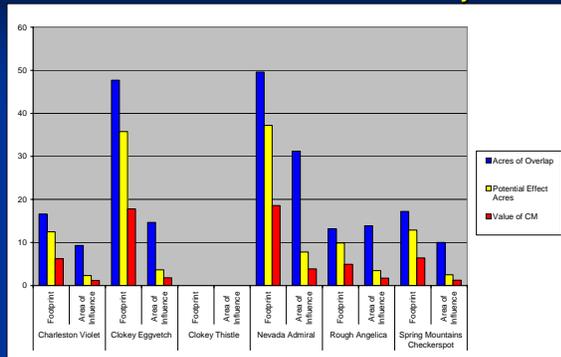
- Identify the distribution of occurrences in the NRA
- Assess the contribution of each occurrence to the species' status
- Identify key habitat features
- Assess current habitat condition and long-term trends
- Review human activities at each occurrence
- Evaluate impacts for each site and collectively
- Identify data gaps and priority conservation needs for the species
- Describe conservation on the NRA in a regional context

Analysis Approach

• Potential Suitable Habitat Analysis

- Based on known occurrence records from the NRA to establish a related suite of habitat attributes
- Model-based, quantified analysis of effects due to human activities

Current Campgrounds Potential Suitable Habitat Analysis



Landscape Perspective

- Combined species and activities analysis
- Overall ecological function and processes (landscape ecology)
- Sustainability of biodiversity
- Protection priorities

Session 7- Summary and Review

The goal of this session is to ensure you understand how the Entrix analysis approach works. You should understand how data inputs are derived and used, as well as their limitations. You should also understand how impacts and the effectiveness of conservation measures are estimated.

Appendix A
GLOSSARY OF TERMS

Glossary of Terms

Activity Effects Index on Species	Sum of activity effect intensity multiplied by the number of affected acres, for all acres included in the analysis (refer to definitions of “occurrence localities” and “suitable habitat”).
Aggregate Effect Index	Effect of more than one overlapping activity on a species’ habitat for a given location.
Conservation Measure	An action designed to reduce effects intensity of an activity or activities. A conservation measure could be specific or apply broadly to a variety of activities.
Conservation Measure Index	<p>A rank-ordered measure determined by professional judgment that indicates how effective the measure is in altering the effect of an activity. Indices can range from “no alteration of an effect” to “effect has been removed completely.”</p> <p>1 = does not remove effect 0.75 = removes effect to low degree 0.50 = removes effect to moderate degree 0.25 = removes effect to high degree 0 = removes the entire effect</p>
Future Recreation Suitability Model	Quantitative, GIS based-method used to determine the locations (acres) that may be suitable for various types of recreation activities. Suitability is a relative measure.

Future Recreation Suitability Criteria	Basic parameter of the recreation suitability model. Criteria specify what attributes make a location suitable for a recreational facility from a recreational perspective.	
Future Recreation Suitability Criteria Importance Index	Basic parameter of the recreation suitability model that assigns an importance index to each suitability criterion, based on professional judgment.	1= highly important 0.75 = important 0.50 = moderately important 0.25 = slightly important 0 = not important
Landscape Ranking	GIS-based ranking of how well a particular location fulfill a given recreation suitability criterion (distance from paved roads).	1 = completely fulfills 0.5 =partially fulfills 0 = does not fulfill
Landscape Suitability Index	Result of the Future Recreation Suitability Model that indicates how well a specific location fulfills all recreation suitability criteria for a given recreational facility.	0.66-1 = highly suitable 0.51-.65 = moderately suitable 0.30-0.50 = low suitability 0-0.29 = not suitable
Landscape Thresholds	Landscape-based definitions of suitability used to create a landscape ranking for each suitability criterion.	

<p>Occurrence Locality</p>	<p>Mapped location of where a particular species was observed. Could be represented by a point or a polygon, depending on the accuracy of the observation.</p>
<p>Potentially Affected Acres</p>	<p>A common unit to measure the total effect of activities on a species' habitat. Incorporates habitat degradation and destruction. It is the sum of aggregate effect intensity multiplied by the associated number of overlap acres.</p>
<p>Potential Effects</p>	<p>The potential of a given activity to alter the suitable habitat of a given species – where possible quantifies the relative alteration.</p>
<p>Potential Effects Index</p>	<p>A rank-ordered measure of the effect of a particular activity on a particular species' habitat. It is determined by professional judgment. The effects index can range from "no detectable effect" "complete loss of habitat."</p> <p>TTL = 1 = complete loss of habitat (100% loss for affected acres) H = 0.75 = high effect (75% loss for affected acres) M = 0.50 = moderate effect (50% loss for affected acres) L = 0.25 = low effect (25% loss for affected acres) TR = 0.05 = trace effect (5% loss for affected acres) N = 0 = no detectable effect (no loss of acres)</p>
<p>Potential Effects Matrix</p>	<p>A method of organizing activities, and their effects and then overlaying them on geographic areas that represent species habitat. For each activity in the matrix, an effect intensity rank is assigned.</p>

Suitable Habitat

For a given species, a combination of GIS-based attributes that are used to estimate the potential distribution and size of areas where species might occur based on their association with the attributes (e.g. slope, soil type, vegetation community).

Appendix B

RECREATION ACTIVITIES, DEFINITIONS, AND BUFFER ZONES

Recreation Activities, Definitions, and Buffer Zones					
Type of Facility	Usage Type	Usage Level	Activity Adjacent to Footprint	Footprint	Area of Influence
Developed Facilities					
Campgrounds		According to the NVUM survey, 46,800 visitors were estimated to camp at developed campgrounds in 2005. Developed camping is concentrated in the summer months, particularly on weekends. Although one developed campground is open during the winter, all other	People usually stay within 100 feet of campground; 35% of people venture out.	Distance buffer of about 150 feet around campground area outer road to incorporate sites off of road	100 feet in each direction
Picnic Areas		In 2005, the NVUM survey estimated that approximately 63,000 people picnicked in the developed picnic areas in the Spring Mountains NRA. There is high use in the winter when there is snow and during the summer.	People usually stay within 10-15 yards (on foot); perhaps 15% of people venture out of the picnic area.	Distance buffer of about 150 feet around picnic area outer road to incorporate sites off of road (using aerial photos)	50 feet in each direction
Trailheads					
Developed Canyon Trailheads		There are 75-100 users daily during summer weekends, 6-10 people per day during summer weekdays and insignificant use during winter.	There is a lot of activity in the areas around developed Canyon trailheads. People don't typically venture farther than 20 yards from the trailhead. An estimated 20% of people leave the trailhead/trail area. Some trails do not have parking areas associate	Approximately 5000 square feet, but varies considerably (circular area with a radius of approximately 40 feet)	20 feet in each direction
Trailheads Outside of Developed Canyons		Moderate summer weekend usage (30-60 hikers per weekend day, 6-10 per weekday day, light summer equestrian usage (6 per weekend day, 1-2 per weekday day).	Very little, usually limited to within 15-30 feet.	Typically about 5,000 square feet, but varies considerably (circular area with a radius of approximately 40 feet)	20 feet in each direction
Ski Area		There are winter skiers numbering approximately 85,000 annually on 11 runs.[1] The ski area also maintains 3 chairlifts and other equipment during the summer months.			
Recreation Activities, Definitions, and Buffer Zones, ctd.					
Type of Facility	Usage Type	Usage Level	Activity Adjacent to Footprint	Footprint	Area of Influence
Roads					
Paved Roads		High traffic levels in all seasons; Average daily traffic counts vary from approximately 500 vehicles on Lee Canyon Road to 1,500 to 3,000 vehicles on Kyle Canyon Road.	Motorized activity (parking) limited to within 10 feet, Foot traffic (picnicking, hiking, exploration) off the road in the developed canyons above the Deer Creek Highway and along the Deer Creek Highway can spread to within 1/10 mile (foot traffic - picni	Width of 50 feet (outside shoulder edge to outside shoulder edge)	20 feet in each direction
Unpaved Roads		Low to high use. Most use occurs April through October on weekends with less use on weekdays. Relatively low use November through March.	Typically limited to within 20 feet of the road, where people frequently park during times of peak use. Negligible outside of areas captured in concentrated use area inventory, which are discussed under the "Concentrated Use Areas" section.	Width of 25 feet (outside shoulder edge to outside shoulder edge)	20 feet in each direction
Trails					
Forest Service System Trails (non-motorized, high use, low mileage trails)	Hikers are often accompanied by dogs (by county ordinance, dogs should be on-leash). There are very few mountain bikers or equestrians. There is also low usage during non summer months.	High summer weekend hiker usage (75 - 100 people per weekend day), moderate summer weekday usage (6-10 hikers per day)	Off-trail exploration / activities usually limited to within 20 yards of trail with only approximately 15% of users leaving the trail once or twice	2 foot wide average trail width	60 feet in each direction
Forest Service System Trails (non-motorized, low to moderate use, high mileage)	Hikers are often accompanied by dogs (by county ordinance, dogs should be on-leash). There are a small number of backpackers who camp off of these trails. With exception of Bristlecone, very light mountain bike usage. There is light winter usage for snow	Moderate summer weekend usage (30-60 hikers per weekend day, 6-10 per weekday day, light summer equestrian usage (6 per weekend day, 1-2 per weekday day).	Off trail exploration / activities usually limited to within 10 yards to a mile from the trail, with approximately 50% of users leaving the trail once or twice.	2 foot wide average trail width	15 feet in each direction
User Created Trails (non-motorized)	Hikers, mountain bikers, and equestrians use these trails.	Low use by hikers, mountain bikers, and equestrians	Activity usually limited to within 15 feet, 25% of users on average leave the trail once or twice.	2 feet wide	15 feet in each direction
Recreation Activities, Definitions, and Buffer Zones, ctd.					
Type of Facility	Usage Type	Usage Level	Activity Adjacent to Footprint	Footprint	Area of Influence
Motorized Trails	Used almost exclusively for OHV recreation. Most OHV use is day use, but there are those who camp also. Some people use OHV to explore or hunt, while the primary purpose of other OHV users is to simply ride their vehicle on trails.	According to NVUM, over 24,000 visitors to the Spring Mountains NRA recreated with off-highway vehicles in 2005, mainly riding on summer weekends. OHV use is concentrated in the warmer months between April and October. Observations of use by Forest Servi	Most OHV users stay on the existing motorized trails, but new trails are sometimes created by the few who ride off trail. In general, OHV users stay within 10 feet of trail for motorized activity and 10 yards of trail for on-foot activity, with an estimat	6 foot wide average trail width	20 feet in each direction
Dispersed Use Sites					
Concentrated Use Areas	These sites include camping as well as day use activities such as target shooting, and picnicking.	According to the NVUM survey, in 2005 over 4,600 visitors camped outside of the developed sites in non-developed dispersed areas. All areas with visible impact are recorded in the CUA.	People usually only venture out of the CUA about 60-90 feet. An estimated 35% of people may wander out of the CUA area.	Polygons mapped from CUA inventory, ranging from about 10 square feet to over 90,000 square feet in size.	100 feet in each direction, to reflect that some people as stated above wander outside of the CUA area.
Snowplay Areas	Sledding and general snowplay activities such as snowball fights and making snowmen. There is often trash left in snowplay areas.	Unknown number of people, however during winter weekends with snow, the developed canyons can become quite congested with people coming to snow play.	Concentrated snowplay use is within the digitized polygons provided by Forest Service.	Digitized polygons from information provided by Forest Service	None
Climbing Areas	Rock climbing up cliffs using ropes and hardware	Unknown as rock climbing was not a surveyed activity in the NVUM survey, and the Forest Service does not track the number of visits by rock climbers.	Very little as climbing areas accessed via user created trails, which are included in the user-created non-motorized trail activity.	1250 square feet surrounding the midpoint of the climbing wall to include the climbing wall and surrounding area (20-foot radius circle).	None
Caving Areas	Cave exploration	Many of the caves show some signs of visitation. Caves on the NRA receive low use, with perhaps fewer than 100 people visiting the caves annually. Use of tunnels is unknown.	Activity around cave sites includes accessing the cave via a user created trail or via rappelling, depending on the terrain surrounding the cave.	1250 square feet surrounding the midpoint of the climbing wall to include the cave opening and surrounding access area (20-foot radius circle).	None