Rare Plant Inventory and Predictive Habitat Modeling

August 12, 2010

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- Background
- Modeling
- Rare Plant Inventory
- Field Season Update
- Next Steps

Threecorner milkvetch

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- Species list development
  - Conservation Management Strategy for rare plants
    - Identified information gaps regarding baseline information for nine low elevation rare plant species
  - Identified three additional priority species
    - Las Vegas buckwheat
    - Two-toned beardtongue
    - Beaver Dam breadroot
  - Two species removed
    - Mariposa lily
    - Parish phacelia

Beaver Dam breadroot

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- Project Goal:
  - Better understand the distribution of ten selected rare plant species in Clark County
    - Identify unknown populations
    - Identify the extent of known populations

Ten Rare Plant Species	
Pahrump Valley buckwheat	white bearpoppy
threecorner mikvetch	yellow two-tone beardtongue
sticky buckwheat	Las Vegas bearpoppy
white-margined beardtongue	Las Vegas buckwheat
Beaver Dam breadroot	sticky ringstem

- Initiated in 2009
- Project boundary is Clark County
  - Excluded inaccessible areas - tribal lands, DOD, Las Vegas Valley
- Project phases:
  - Phase one- Develop two predictive GIS habitat models
    - Predict distribution of sand and gypsum species
  - Phase two - Identify survey locations
  - Phase three- Rare plant inventory

Sticky ringstem
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- **Related Projects**
  - Determination of potential survey areas
    - Soil data analysis and methods
      - Remortel – complete
    - Survey design
      - TNC - complete
  - Development of habitat models
    - Remote sensing
      - TerraSpectra – complete
  - Inventories
    - Rare plant, habitat
      - Jones and Stokes (complete)
      - Jones and Stokes (in progress)

Yellow two-tone beardtongue

- **Predictive Habitat Model**
  - Initial draft inadequate - SSURGO soils data
- **Second draft - remote sensing technique**
  - Classifications were evaluated against
    - Aster Imagery, SSURGO Soils Data, and Landsat ETM+ Imagery
    - Selected geologic maps
    - Known plant locations
    - Validation field trips
  - Quick and relatively inexpensive
  - Classifications used to select survey locations

- # Predictive habitat model, cont.
  - Limitations
    - Could not model for white bearpoppy or two-tone beardtongue
    - Available rare plant data points
  - Results
    - Las Vegas buckwheat appears to prefer spring deposits

Las Vegas buckwheat

- Rare plant inventory
  - Sample design
    - 13 Geographic units
    - Sites were randomly selected using Generalized Random Tessellation Stratified (GRTS) survey design
    - 511 individual survey plots
    - Each survey plot is a four-hectare square (approx.10 acres)
    - Surveyed various elevations, aspects, and soil types

- **Two field seasons (2009, 2010)**
  - **Began in April**
    - Associated with annual species' blooming periods
    - Prioritized based on lifecycle, elevation of survey plots
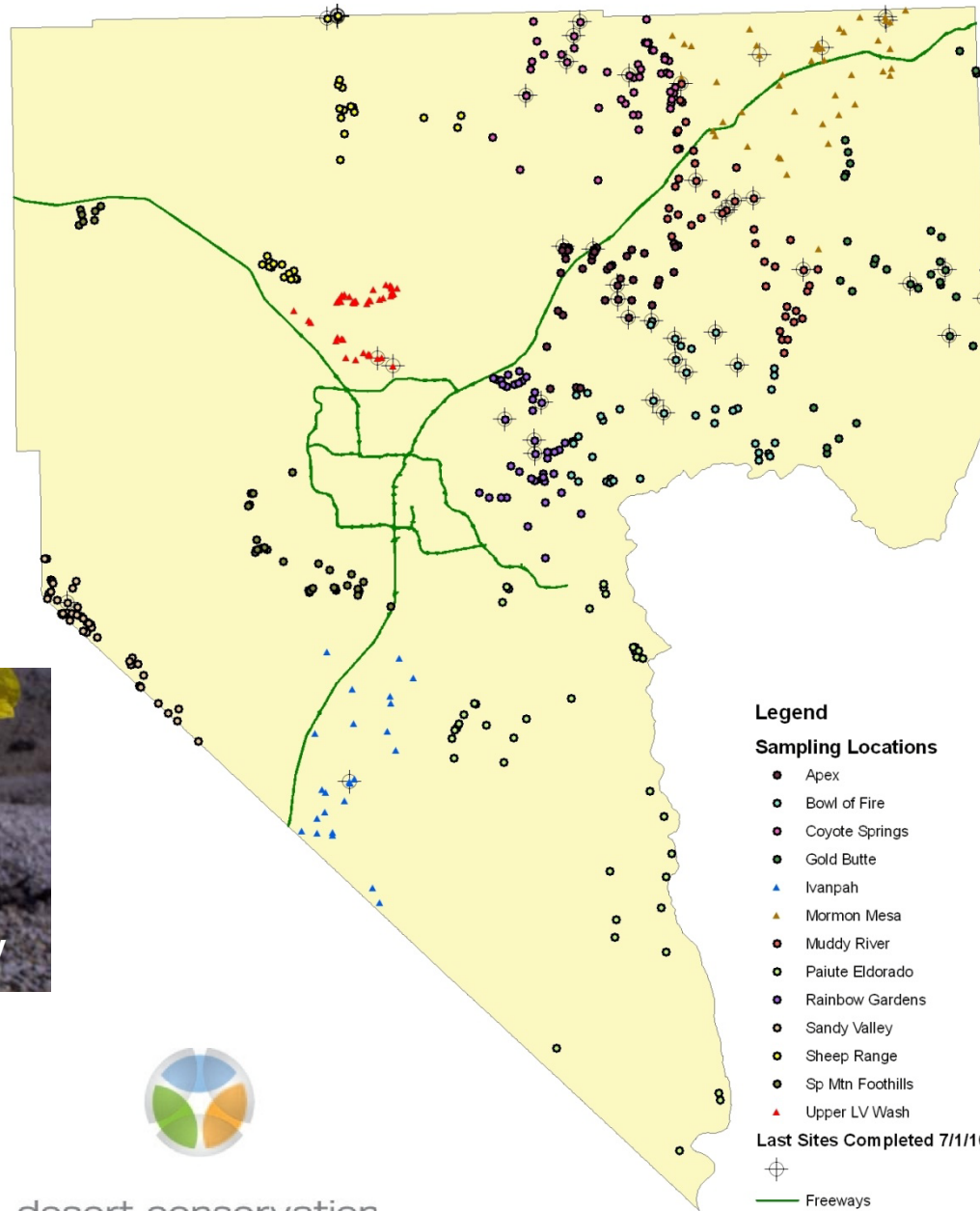
White bearpoppy

White margined beardtongue

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- **2009 Field Season**
  - Developed Models
  - Survey plots were identified
  - Inventoried 466 survey plots
  - Preliminary data
- **2010 Field Season**
  - Completed Inventories
  - Inventoried 45 survey plots
  - Finalizing quality control on field survey data
  - Finalizing reporting

Project 497 Sampling Locations

Las Vegas bearpoppy

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Legend

Sampling Locations

- Apex
- Bowl of Fire
- Coyote Springs
- Gold Butte
- Ivanpah
- Mormon Mesa
- Muddy River
- Paiute Eldorado
- Rainbow Gardens
- Sandy Valley
- Sheep Range
- Sp Mtn Foothills
- Upper LV Wash

Last Sites Completed 7/1/10

- Freeways
- Clark County

- Data Collected
  - Target species detected
  - Incidental observations
  - Habitat
    - Aspects, slope, threats/disturbance, cryptogamic crust, soils (sand rock gypsum/calcareous) rock outcrops, other rare species, invasive plants
    - Vegetation composition (dominant, co-dominant and associate), indicator species
  - Photographs
  - Other observations

Upper Las Vegas Wash (W-12) Survey Location

W-12
Las Vegas Buckwheat
Las Vegas Bearpoppy
Las Vegas Buckwheat
Las Vegas Bearpoppy

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- Prepare final report
- Refine the predictive model incorporating latest information: vegetation layers, soils information, elevation, fire history, data collected from surveys, etc.
  - Jones and Stokes presence absence data, habitat characteristics
  - UNLV gypsum soil data
  - UNR geomorphology
  - Collaborate with agencies collecting additional data
- Potential partnership with BLM
- Put the predictive models to use

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- Sonja Kokos for project development, implementation and support
- Sara Zimnavoda, Matt Hamilton and Lee Bice for their assistance and support on all aspects of the project
- Dave Brickey and Larry Tinney for their assistance in developing the gypsum and sand models
- Rob Sutter and Analie Barnett for their assistance with the sample design
- Jones & Stokes and their subcontractors for the inventory work
- BLM, FWS, NPS, BOR, NDF, NDSL, NRCS, NNHP and SNPLMA

Questions?