

# Technical Study and GIS Model for Migratory Deer Range Habitat

February 28, 2008  
Butte County General Plan  
Citizens Advisory Committee



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# Objectives

- Develop a data ranking system for identification of intermediate, winter and critical winter range habitats.
- Develop a GIS model to update the intermediate, winter and critical winter range maps.
- Summarize the data inputs, techniques and use of the data.
- Develop a GIS model that can be updated as new scientific data becomes available.

# Data Selection

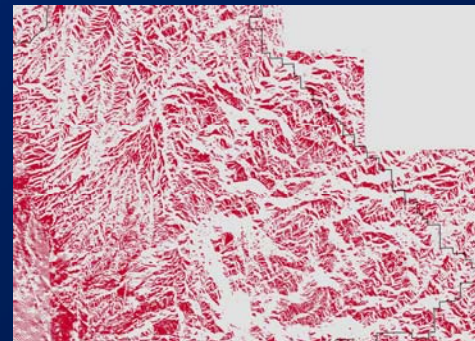
- Full County Coverage
- Best Currently Available Data
- Accepted by CDFG Biologists, and the County

# Data Sources

- Fire Management Environments
  - California Department of Forestry Fire and Resource Assessment Program
  - Delineates fire suppression efforts in three categories; high, moderate, and low



- Digital Elevation Model
  - U.S. Geological Survey
  - Identifies aspect and elevation



# Data Sources continued

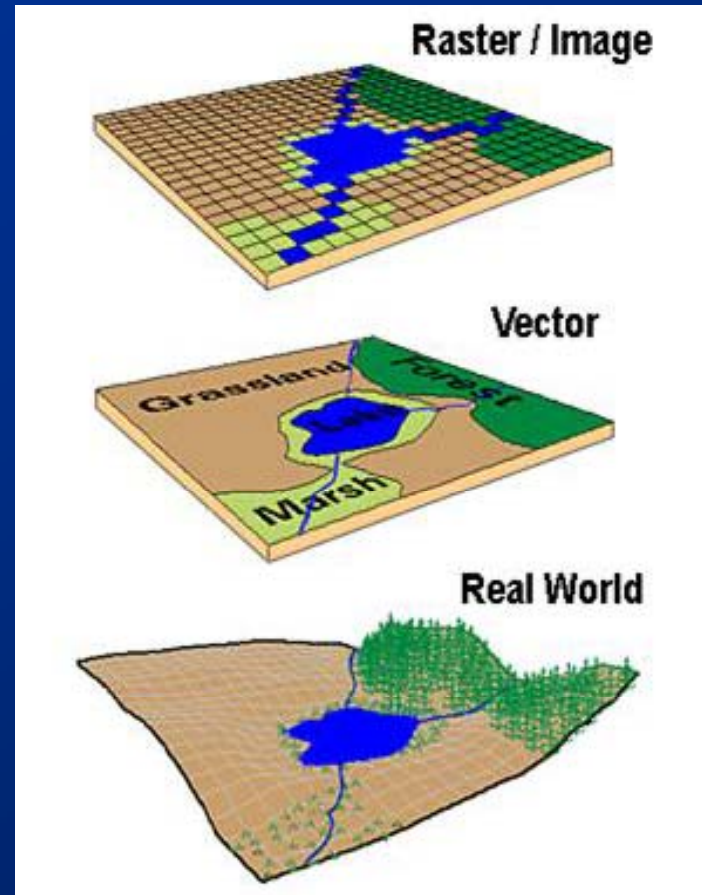
- California Vegetation Classification (CALVEG)
  - California Department of Forestry and U.S. Forest Service
  - Identifies habitat types



- Historical Migratory Deer Range Maps
  - Butte County and California Department of Fish and Game
  - Provides integration of existing and generally accepted location data



# Data Conversion



# Temporal Habitat Requirements

- Critical Winter Habitat
  - South and Southwest Aspect
  - Minimal Fire Suppression
  - 1,000 ft. to 3,000 ft. Elevation
  - Suitable Vegetation for Critical Winter Requirements
  
- Winter Habitat
  - South and Southwest Aspect
  - Minimal Fire Suppression
  - 500 ft. to 4000 ft. Elevation
  - Suitable Vegetation for Winter Requirements

# Weighting Assignments

- Critical Winter Habitat
  - Aspect
    - South and Southwest Aspect received a score of “1”
    - All other aspects received a score of “0”
  - Fire Environment
    - Minimal fire suppression received a score of “2”
    - Moderate fire suppression regions received a score of “1”
    - Intense fire suppression regions received a score of “0”
  - Elevation
    - 1,000 ft. to 3,000 ft. Elevation received a score of “1”
    - All other elevations received a score of “0”
  - Vegetation
    - Suitable Vegetation for Critical Winter Requirements received a score of “1”
    - All other vegetation classes received a score of “0”
  - Historic Critical Winter Range
    - Within historic winter range received a score of “1”
    - All other areas received a score of “0”

Based on the weighting assignments described, there are seven possible outcomes (0-6)

# Compiling the Scores

1	1	0	0
0	0	1	0
0	0	0	0
1	1	0	0
1	1	0	0

Aspect

+

0	0	0	0
0	0	1	0
0	0	0	1
1	0	0	0
1	1	0	0

Vegetation

=

1	1	0	0
0	0	2	0
0	0	0	1
2	1	0	0
2	2	0	0

Result

2 = Best

1 = Moderate

0 = Least

# Compiling the Scores

Continue this process of overlaying and summarizing the scores for each suitability attribute provides us with the following:

2	3	0	0
0	0	5	0
0	1	1	3
6	3	1	0
5	4	0	1

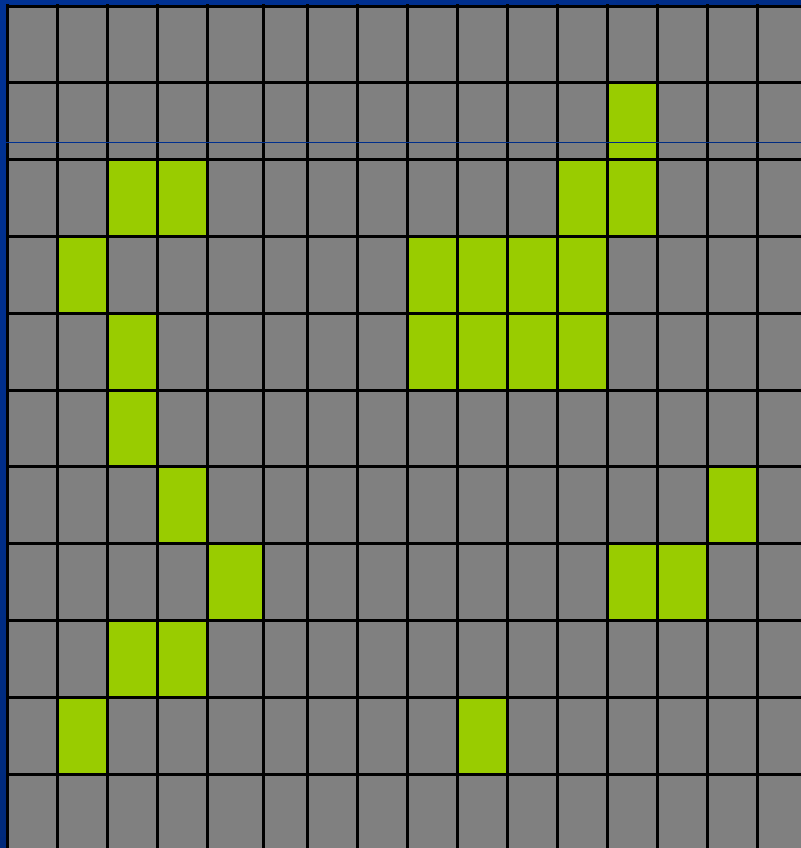
# Identifying Suitable Critical Winter Habitat Values

Cells with scores of 4, 5 and 6 (the top three scores) were identified as the highest potential for suitable Critical Winter habitat:

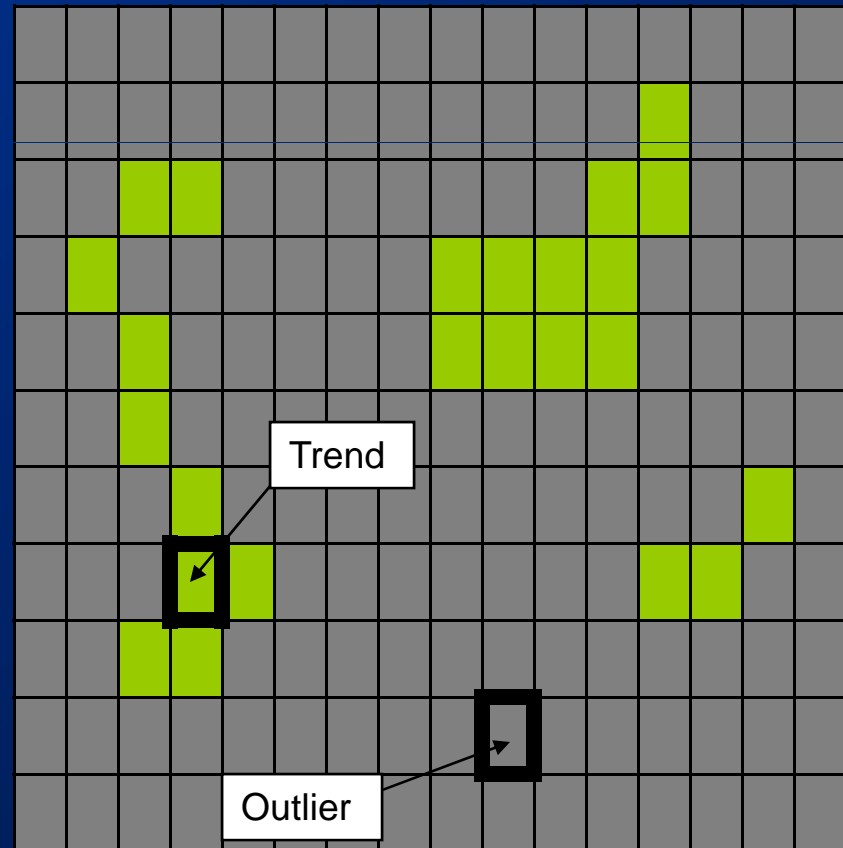
3	3	0	0
0	0	5	0
0	1	1	2
6	3	1	0
5	4	0	1

# Trends Analysis

The resulting values were placed into a modeling environment (local polynomial interpolation) to remove outliers and locate trends in the positive indicators:



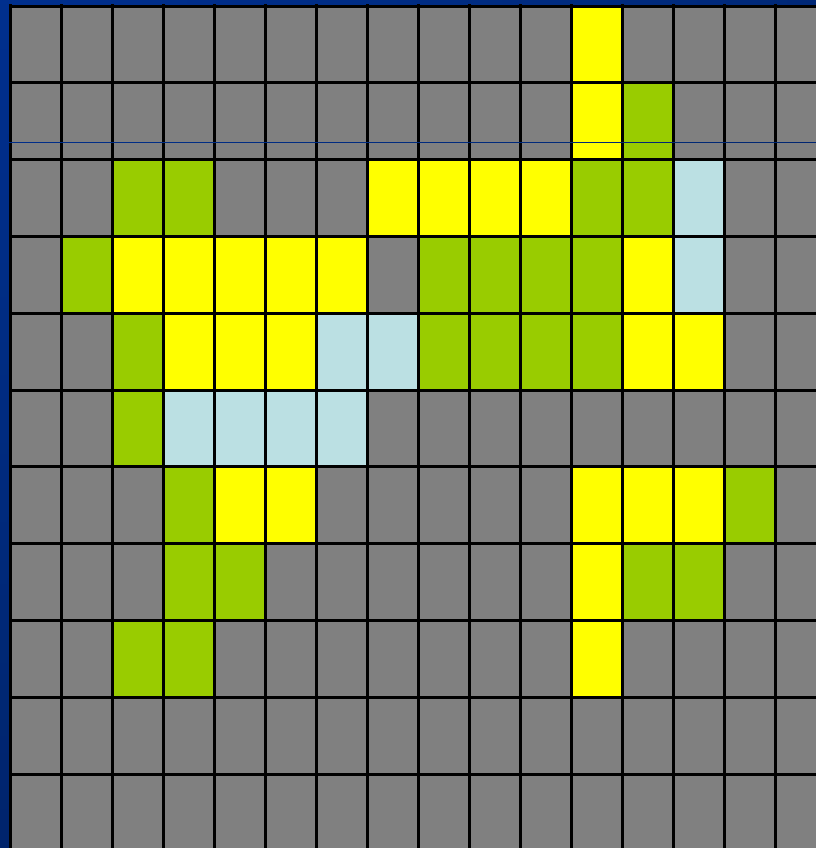
Raw Values



Local Polynomial Interpolation

# Repeat for Winter and Intermediate Habitat Requirements

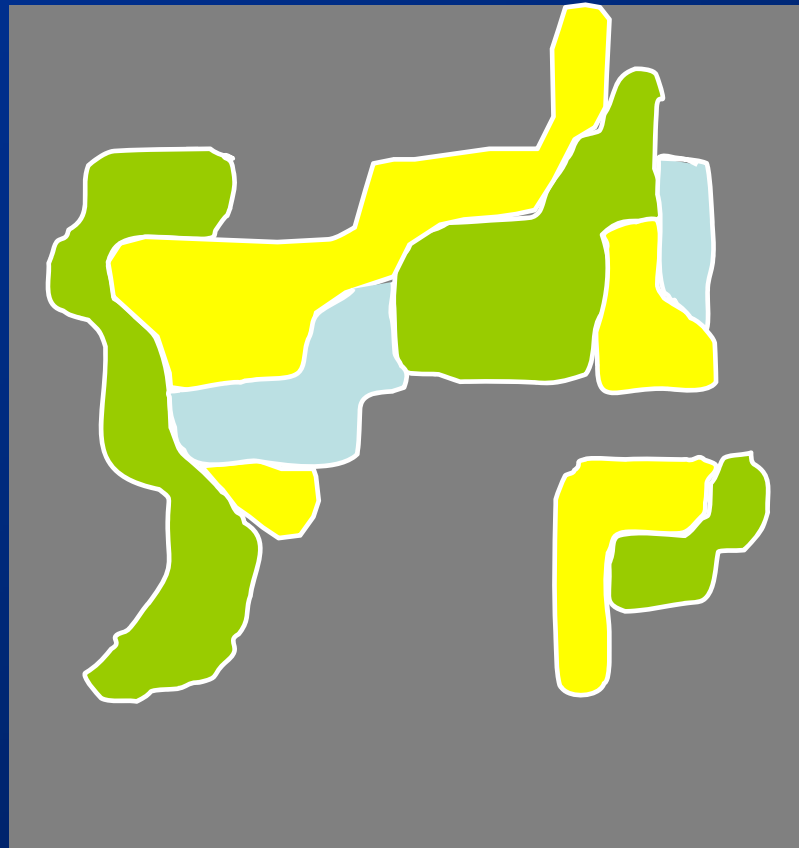
Running the preceding steps for winter and intermediate habitat requirements results in a patchwork of habitat values



3 Habitat Values in Raster Format

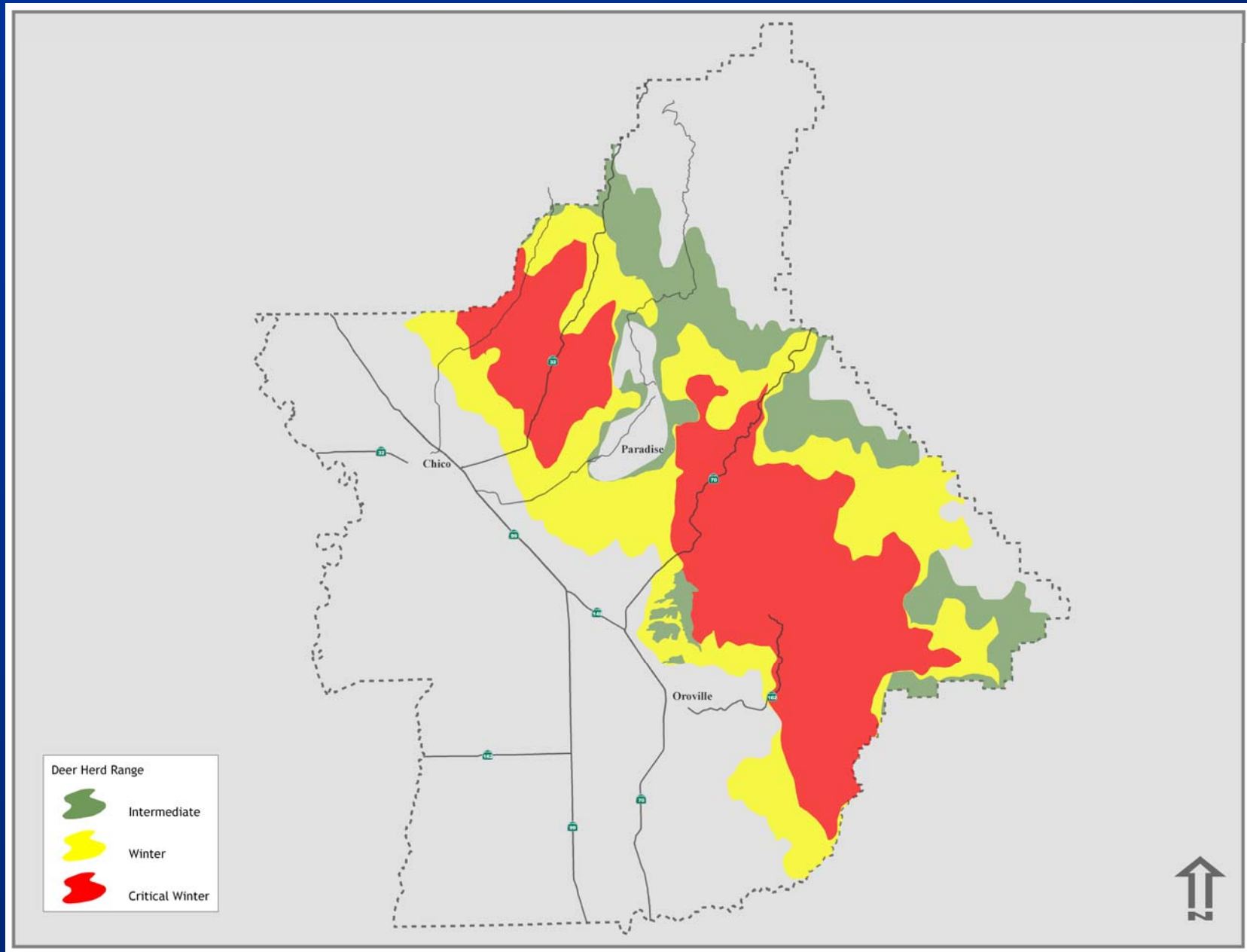
# Convert to Vector Data

Vector data allows for easier viewing and cross referencing with existing vector based data sources



3 Habitat Values in Vector Format

# Migratory Deer Range Habitats



End