

Recreation Use Model

Predicting When and
Where Our Visitors
Recreate

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Goal

Develop models to estimate the number of recreation site visits occurring on any given day at recreation areas across the Okanogan and Wenatchee National Forests.

Building the Model

- National Visitor Use Monitoring (NVUM) study results
- GIS analysis and spatial statistics
- Statistical analysis
- Statistical modeling
- Validation

NVUM Study Overview

Goal: to better understand the use of, importance of and satisfaction with national forest recreation opportunities

- Okanogan National Forest - 2000
 - Region 6: MBS, Olympic and Columbia River Gorge
 - Result summaries available

<http://www.fs.fed.us/recreation/recuse/recuse.shtml>

- Wenatchee National Forest – 2001
 - Results expected this fall

NVUM:

Developing the Pre-work Calendar

- Categorize recreation areas into five site types
 - **OUDS**: Overnight use developed site
 - **DUDS**: Day use developed site
 - **GFA**: General forest area
 - **WILD**: Wilderness
 - **VIEW**: Viewing scenery while traveling
 - not included

NVUM:

Developing the Pre-work Calendar

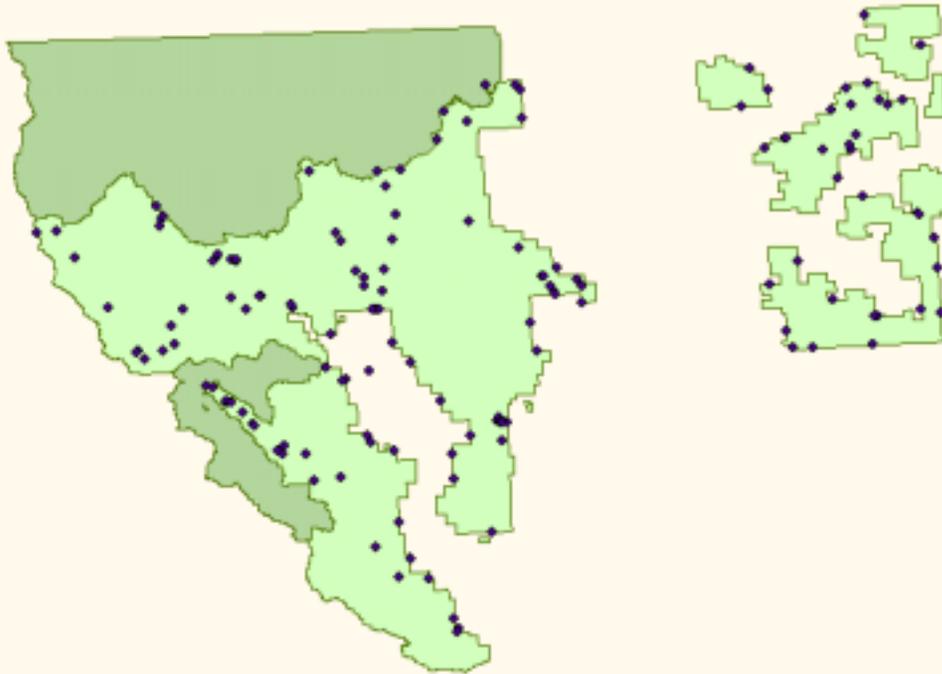
- Categorize exiting visitor traffic from each recreation area for each day of the year by site type
 - **High** (top 10% of exiting traffic)
 - **Medium** (11 – 50%)
 - **Low** (less than 50%)
 - **Closed**

NVUM:

Developing the Pre-work Calendar

- Site Day: Any day the site is not closed
Days data can be collected at the site
 - Total OUDS site days = 6381
 - OUDS High = 371
 - OUDS Med = 753
 - OUDS Low = 5257

NVUM Results: Okanogon NF Visitation Estimates

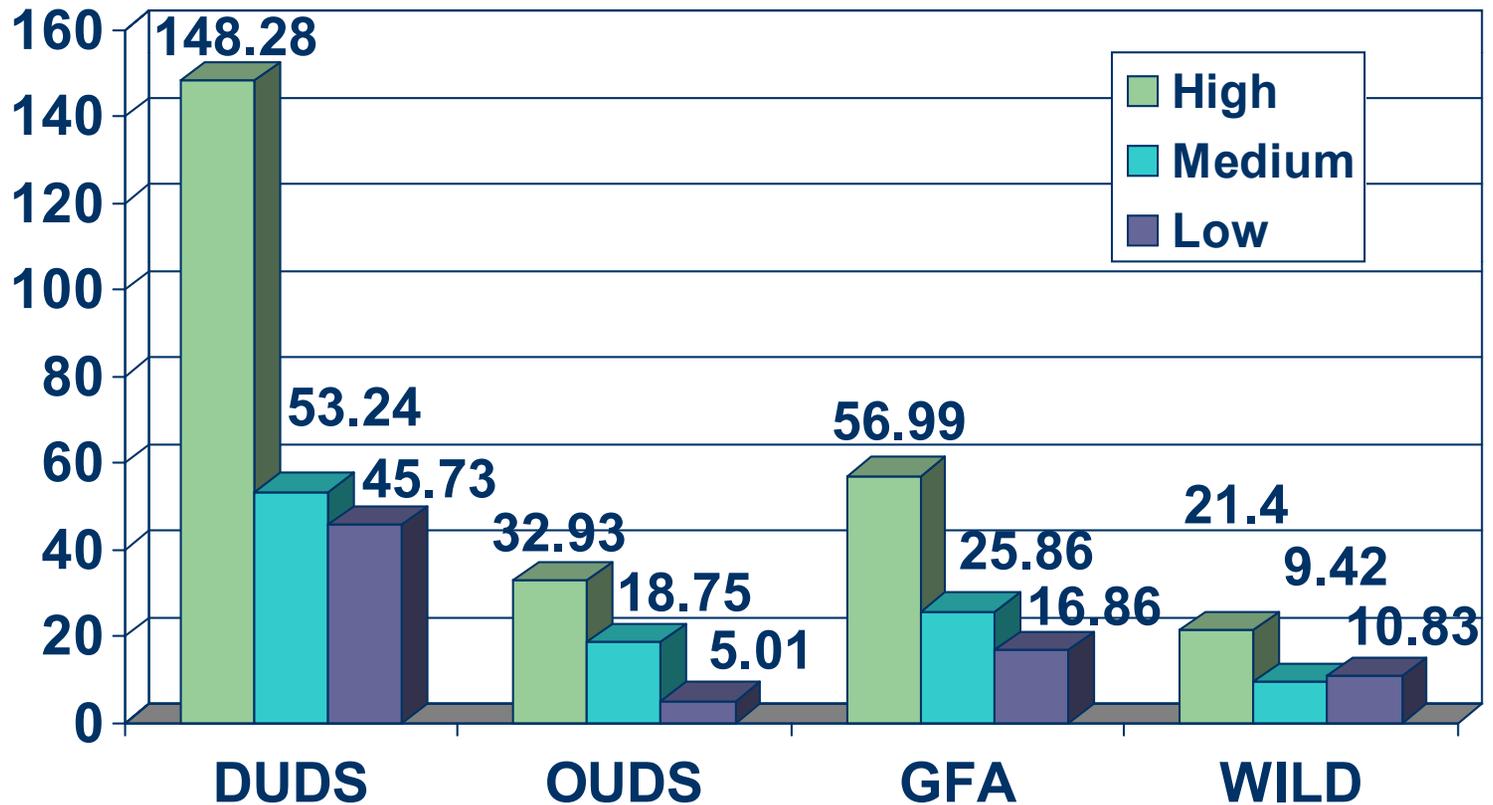


◆ Recreation Area Exit Points

National Forest Visits	389,929 (± 23.1%)
Average Site Visits per NF Visit	1.2
Site Visits	452,953 (± 20.3%)

80% Confidence Interval

NVUM Results: Average Number of Site Visits Per Day

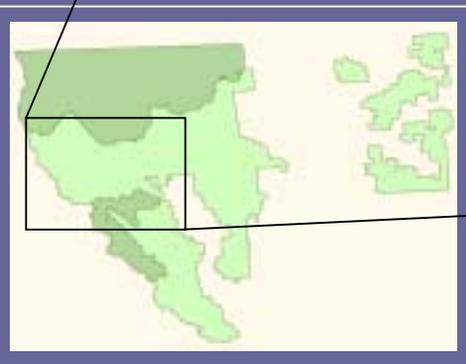


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-  DUDS
-  GFA
-  OUDS
-  VIEW
-  WILD



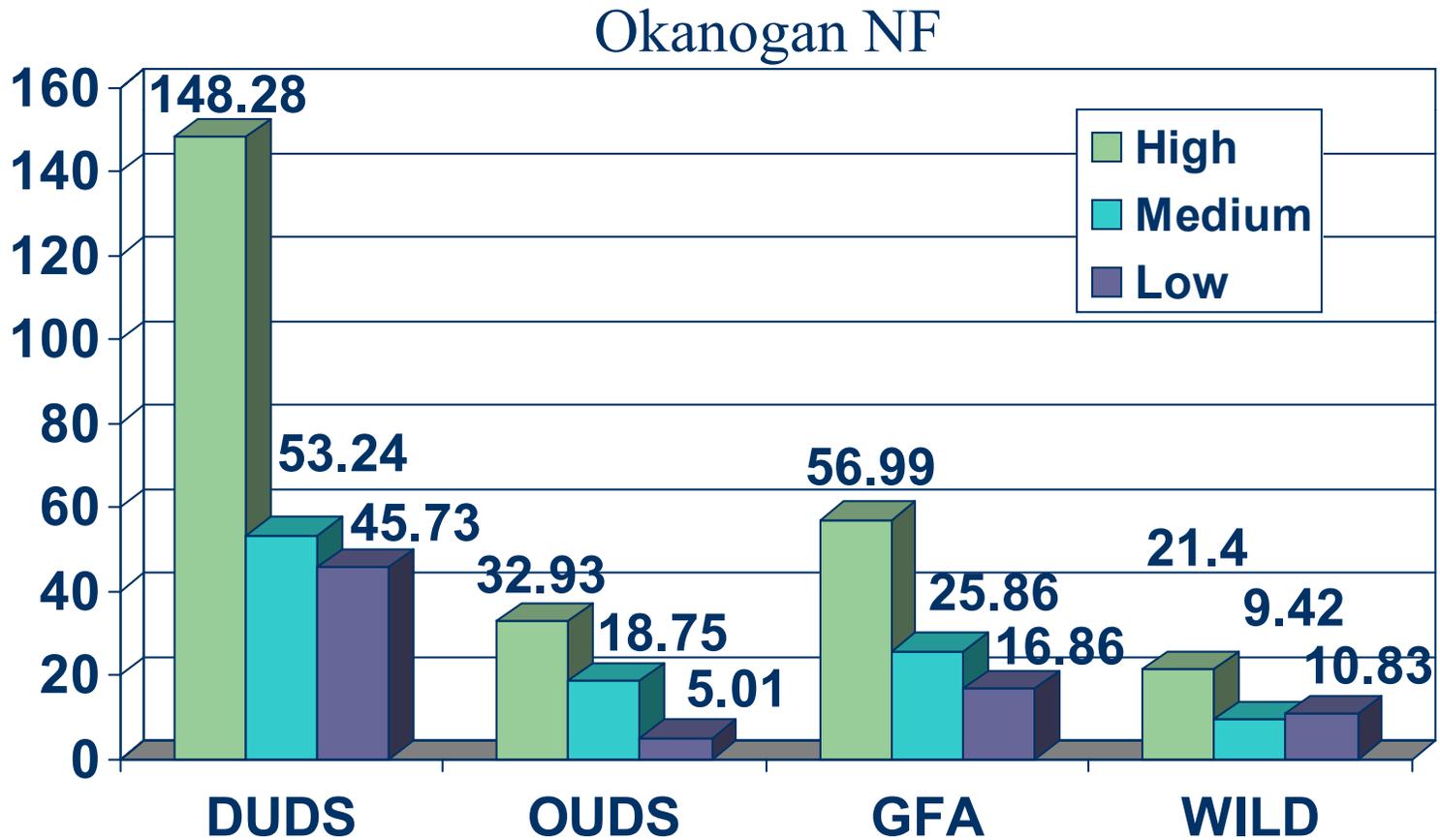
NVUM Average DUDS High = 148.28



Building the Model: NVUM Results

- Review/revise the pre-work calendar and site stratification
- Identify the seasonal use trends

Review/Revise the Pre-Work: Average Number of Visits Per Day



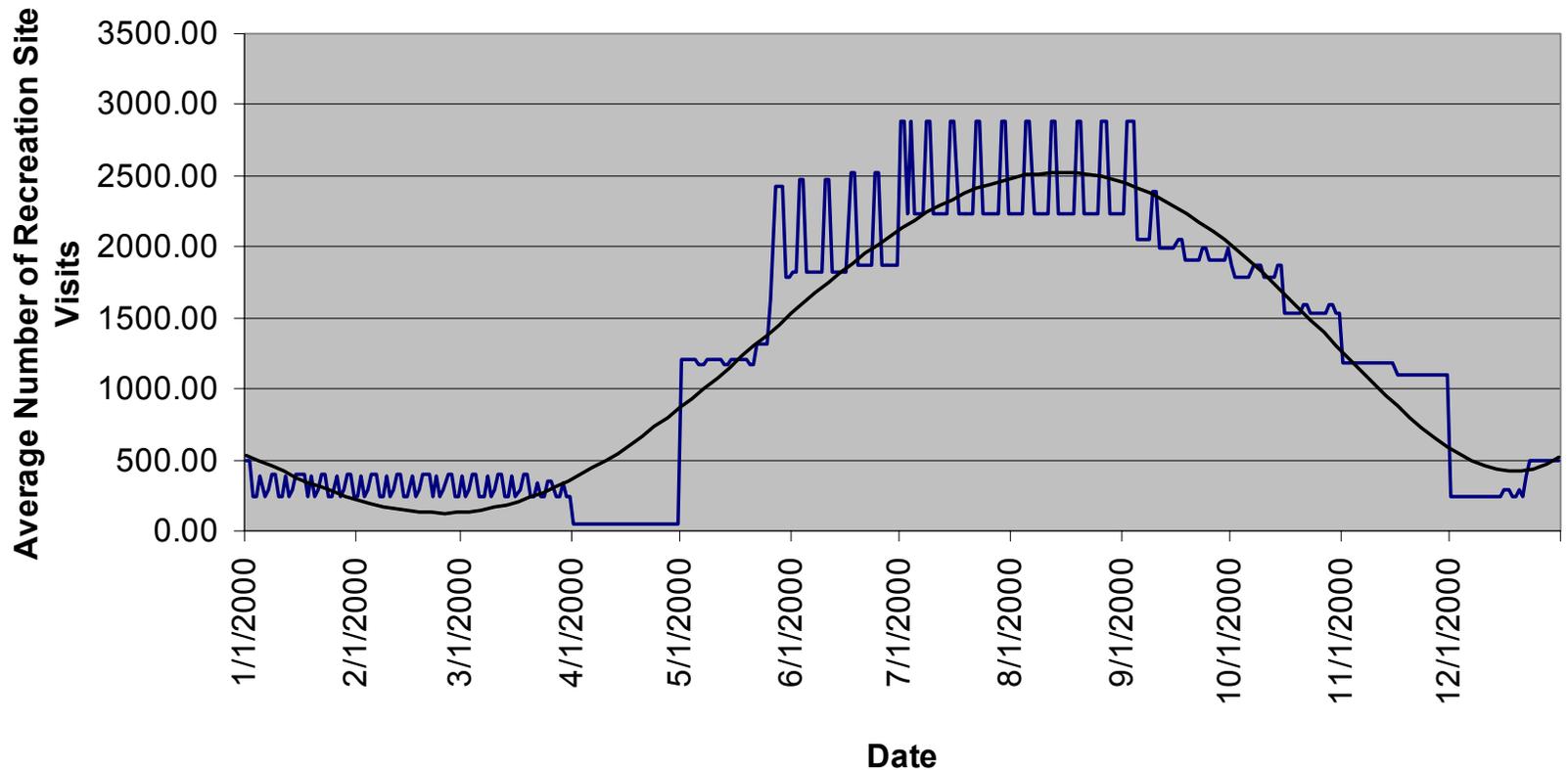
Identify the Seasonal Use Trends

- Change in site stratification
- Total recreation site visits
- Visits to each site type
 - DUDS/OUDS/GFA/WILD

Analyzing Seasonal Use Trends

Total Recreation Site Visits

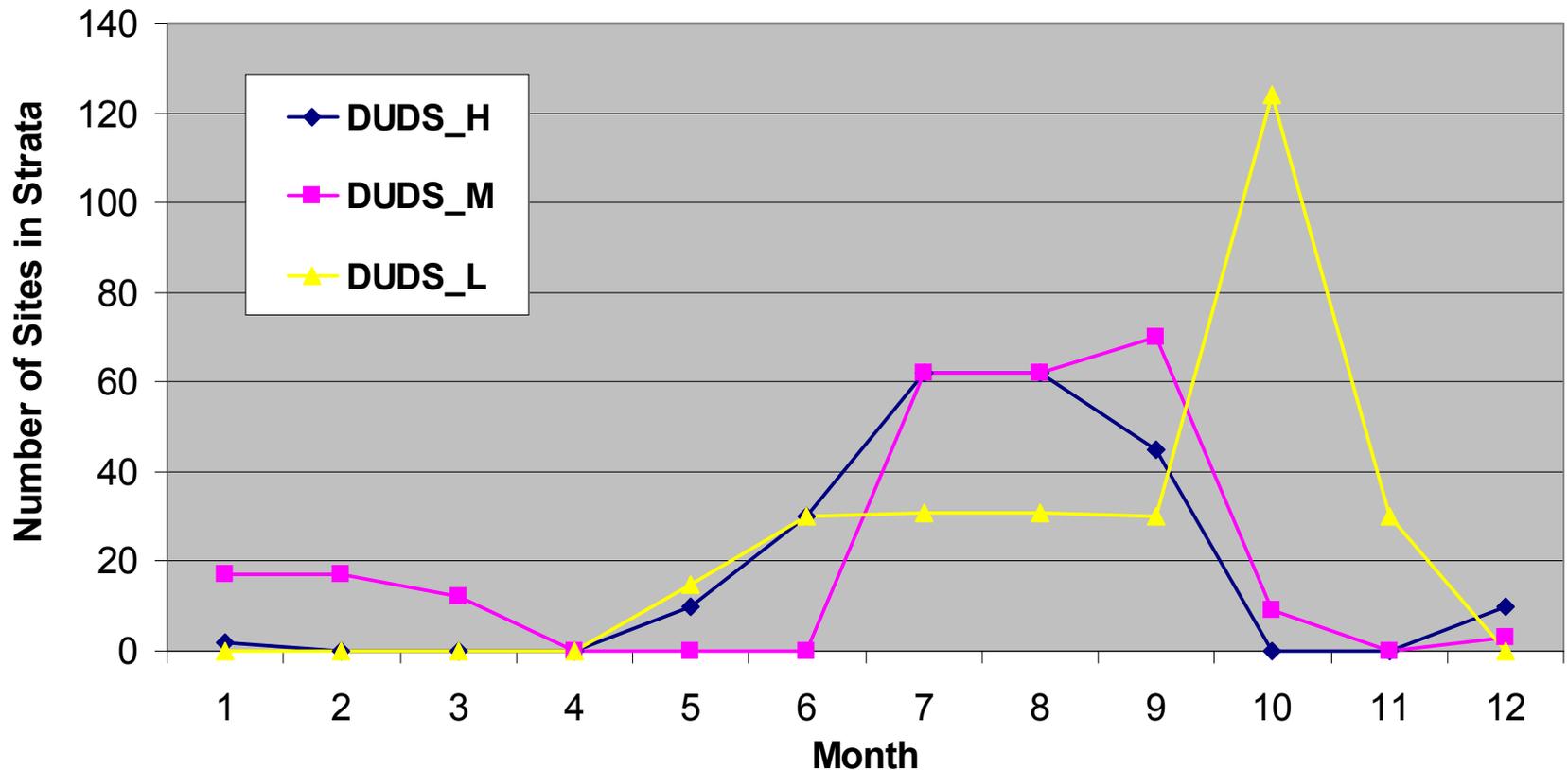
Average Number of Site Visits per Site Type/Strata



Analyze the Seasonal Use Trends

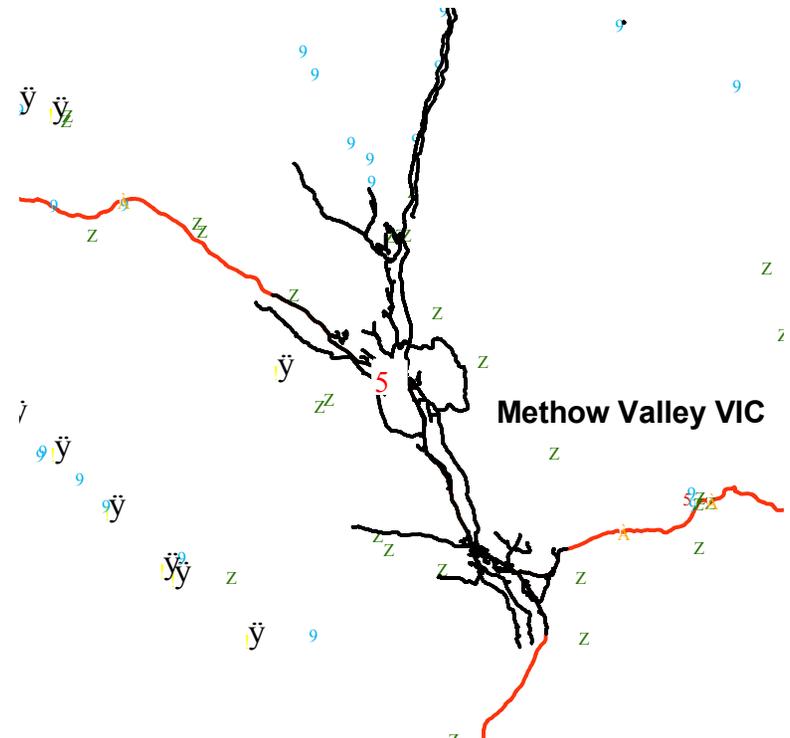
Change in Site Stratification

Stratification of Day Use Developed Sites



Building the Model: GIS Analysis and Spatial Modeling

- Base layer of recreation sites
- Network analysis
- Spatial analysis
- Spatial statistics



Building the Model:

Statistical Modeling and Validation

- Regression Analysis
- Statistical Modeling
 - Logit and probit models
 - Don English, Social Scientist - Southern Research Station, Athens, GA

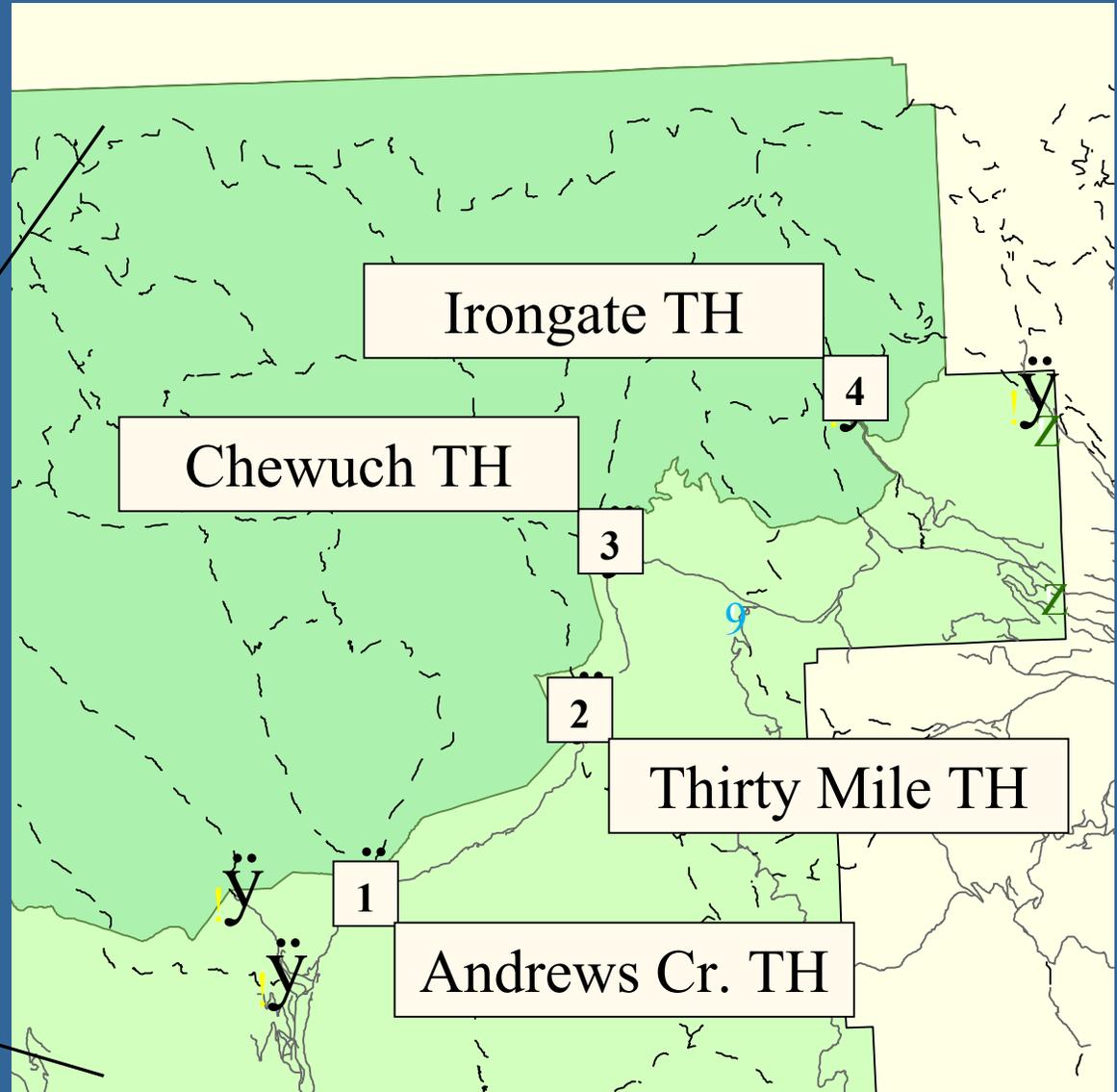
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Site Characteristics

- Trailhead size/capacity
- Access road type
- Site Amenities



Regression Analysis



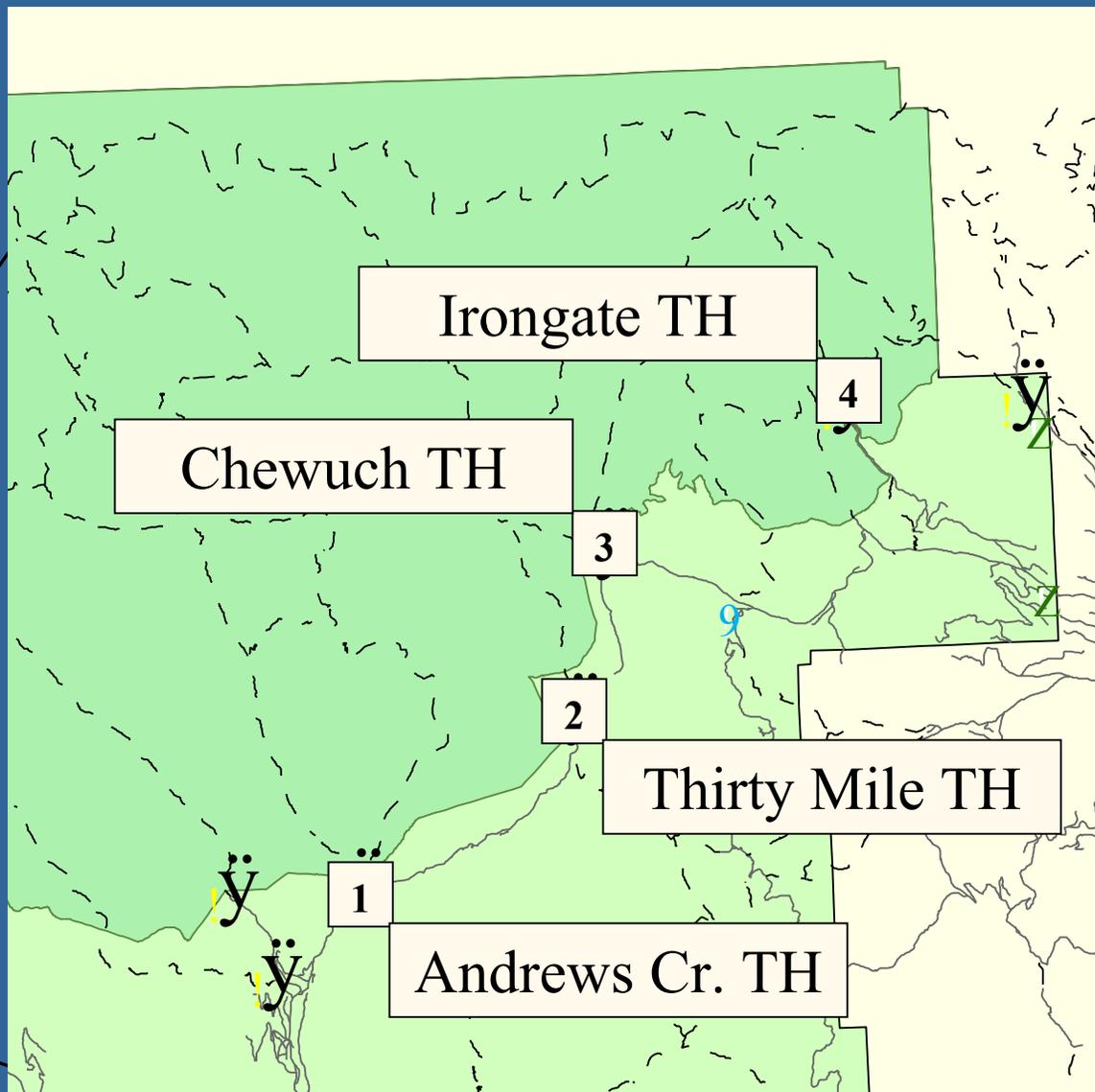
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NVUM Data

- Site strata
- Activity type
- Amount of day use
- Group Size



Regression Analysis



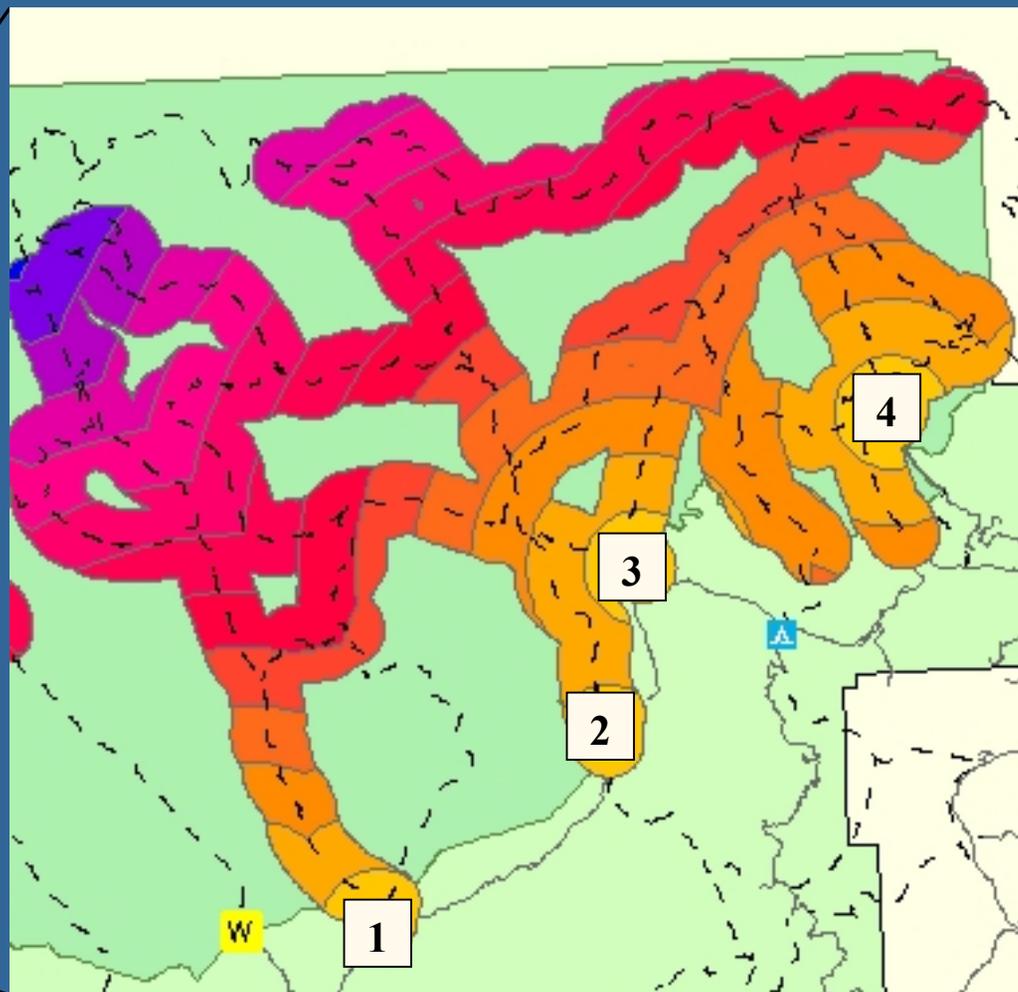
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Site Information

- Permit info:
 - Destination
 - Trip Length
 - Group size
- Campsite inventory
- Encounter data
- Outfitter guide data
- Guide book publications/ media



Regression Analysis

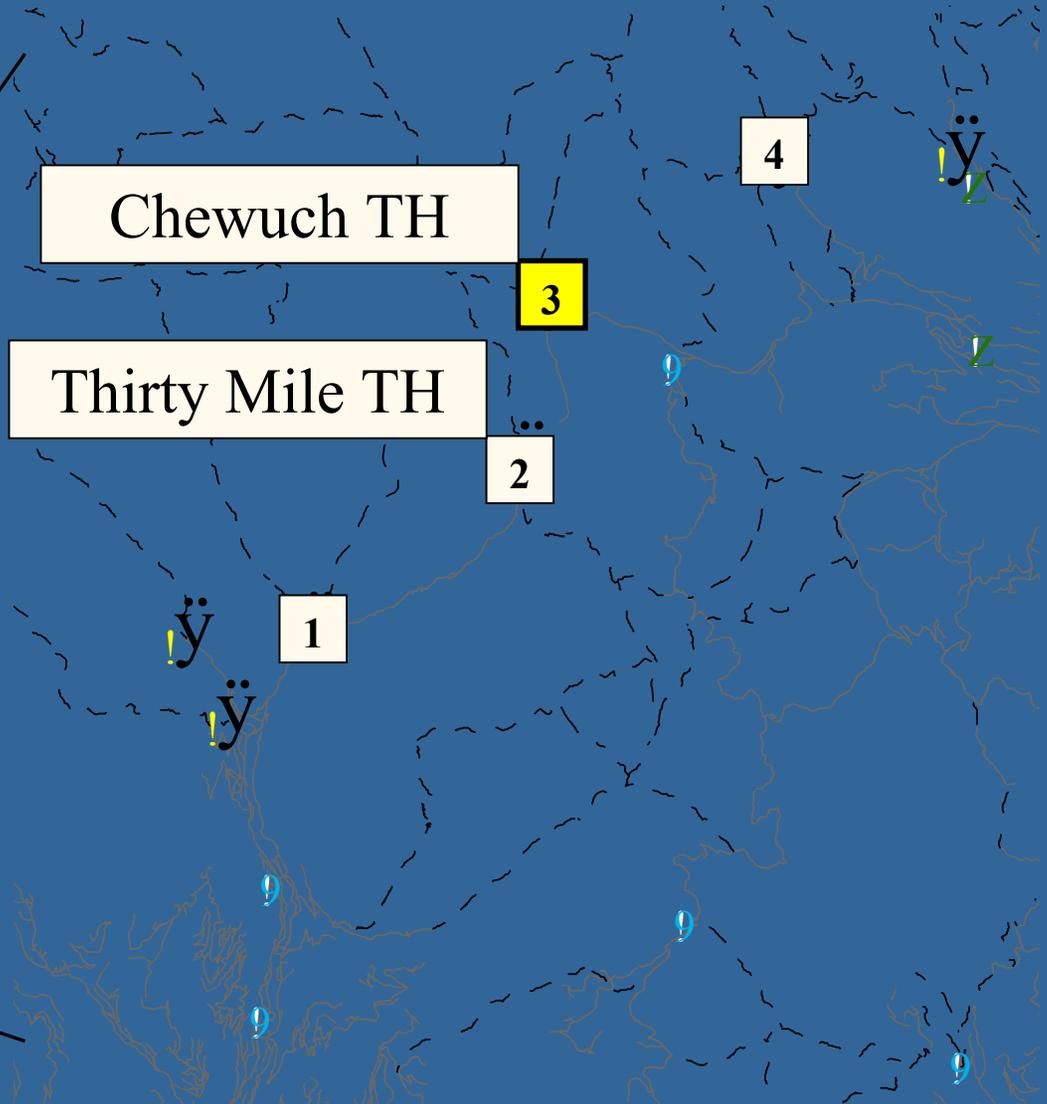


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Spatial/Temporal Data

- Distance from towns
- Proximity to other sites
- Trail difficulty rating
- High use seasons
 - Hunting season
 - Wildflower

Regression and Spatial/Temporal Analysis

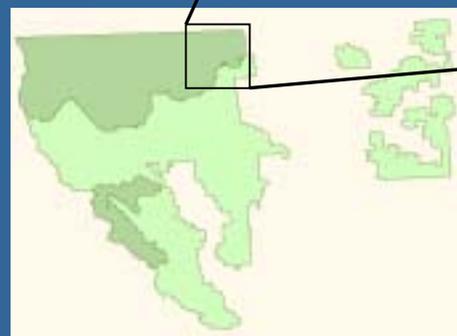
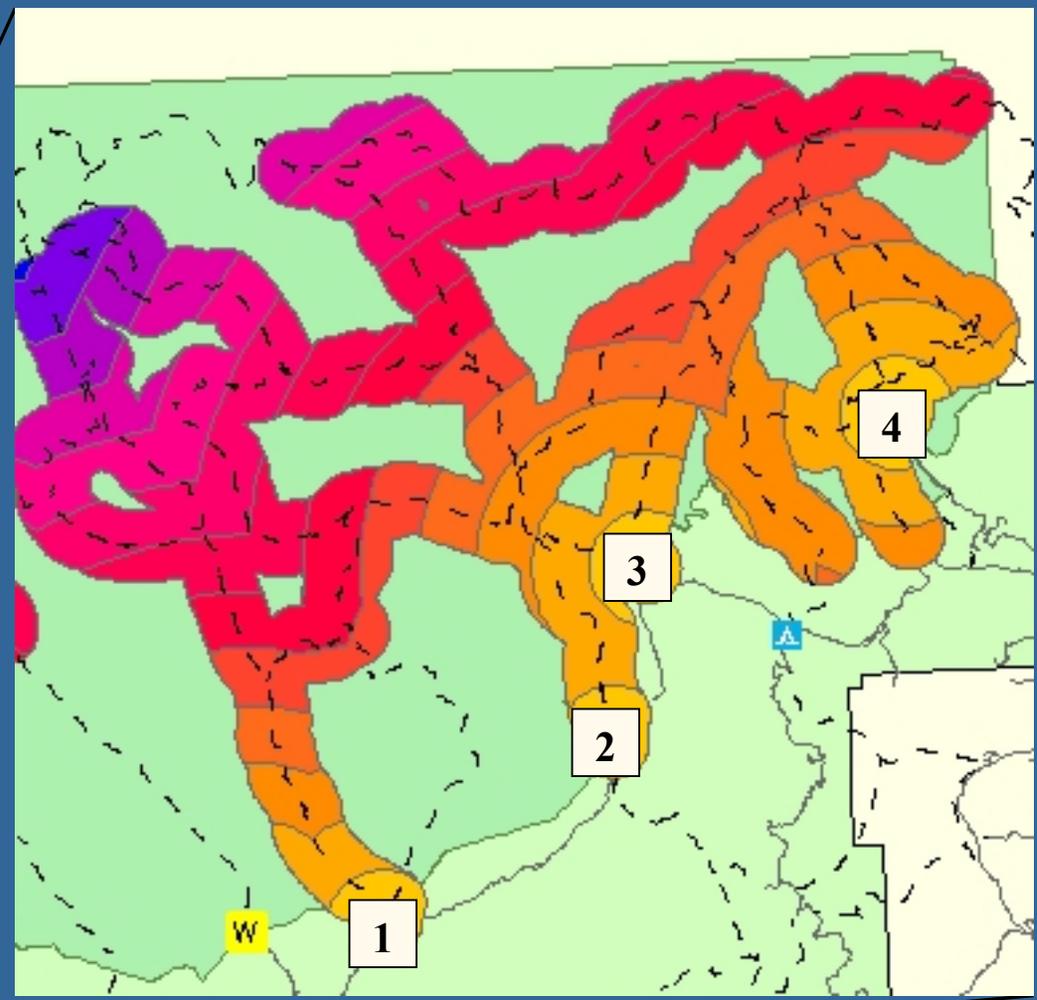


Modeling Wildlife and Recreation Interactions

- To evaluate current condition of wildlife habitats
 - district recreation specialists attributed each trail or trail segment with information on trail use levels
- Expert knowledge will be greatly enhanced by the information gained from the NVUM study and the recreation use model

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- Expert Knowledge
- Day use
- Decreasing use as distance increases
- Merging use from different TH

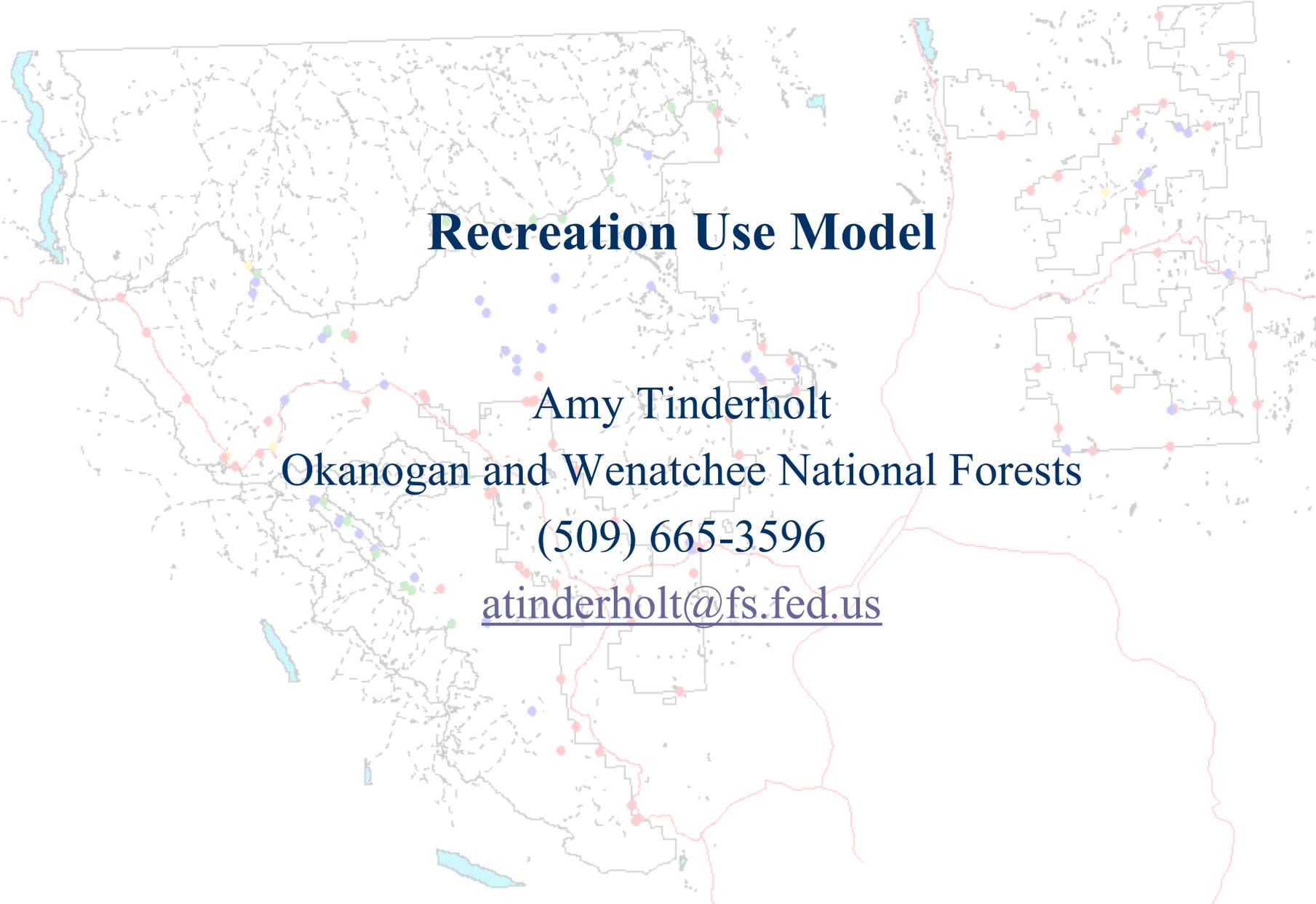


Recreation Use Model Output

1) Andrews Cr. TH	(H)	27.3
2) Thirty Mile TH	(M)	12.8
3) Chewuch TH	(L)	3.2
4) Irongate TH	(H)	22.1

Application and Future Analysis

- The recreation use models will provide data that is more useful at the forest and district levels
- Reliable data at the site level
 - Public information
 - Unlimited analysis potential across all fields

A map of the Okanogon and Wenatchee National Forests in Washington state, showing a Recreation Use Model. The map features a network of roads, rivers, and lakes. Numerous colored dots (red, blue, green, yellow) are scattered across the forest area, representing different recreation use levels. The text 'Recreation Use Model' is centered over the map.

Recreation Use Model

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