

# DIGITAL TERRAIN AND VIEWSHED ANALYSIS OF CRATER LAKE NATIONAL PARK

FINDING THE IDEAL CAMPSITE ALONG THE PACIFIC CREST TRAIL



Source: Outdoor Travel Blog

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DIGITAL TERRAIN ANALYSIS  
GEOG 593

## CRATER LAKE NATIONAL PARK PROJECT OVERVIEW



Source: www.pcta.org

- LOCATION
- HISTORY OF PARK
- DATA SOURCES
- AREA OF STUDY
- CAMPSITE LIMITATIONS
- METHODOLOGY
  - SLOPE ANALYSIS
  - CREEKSIDE ANALYSIS
  - NATIONAL LAND COVER
  - VIEWSHED ANALYSIS
- RESULTS/WHAT IS LEFT
- CONCLUSIONS/POSSIBILITIES
- REFERENCES

# CRATER LAKE NATIONAL PARK LOCATION



# CRATER LAKE NATIONAL PARK HISTORY OF PARK

- PARK WAS ESTABLISHED IN 1902
- DEEPEST LAKE (1943 FT) IN THE UNITED STATES
- 90 MILES OF TRAILS
- TRAIL STRETCHES FROM MEXICO TO CANADA
- 33 MILES OF PACIFIC CREST TRAIL IN PARK
- SIZE: 183,000 ACRES



Source: Wikipedia

# CRATER LAKE NATIONAL PARK DATA SOURCES



## CRATER LAKE DEM:

OREGON EXPLORER INFO WEBSITE  
U.S. GEOLOGICAL SURVEY

## CRATER LAKE ROADS, WATER AND BOUNDARY:

U.S. GEOLOGICAL SURVEY

## NATIONAL LAND COVER DATA:

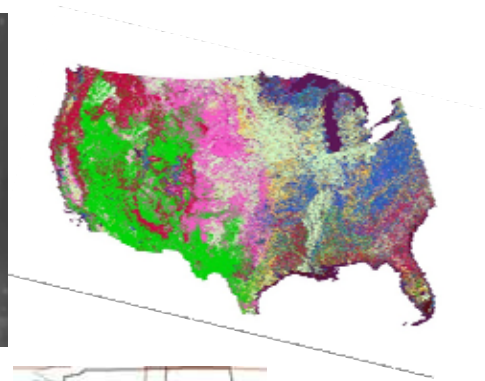
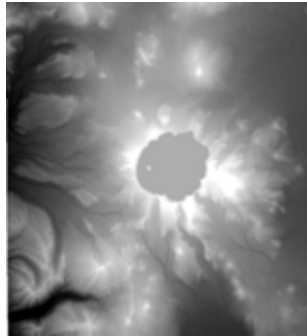
US FOREST SERVICE

## POINTS OF INTEREST:

CRATER LAKE NATIONAL PARK

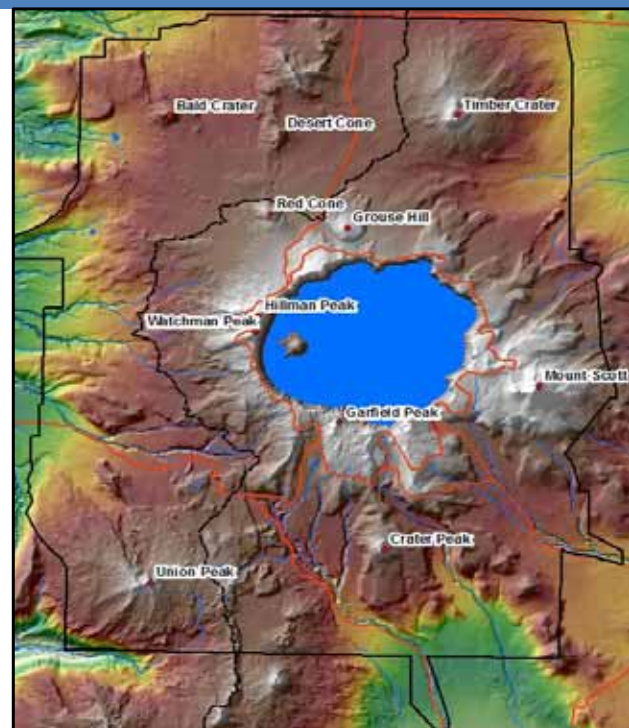
## PACIFIC CREST TRAIL:

PACIFIC CREST TRAIL ASSOCIATION

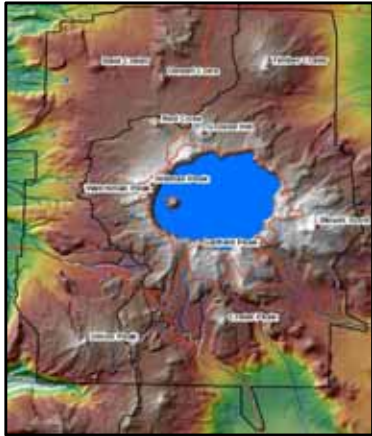


# CRATER LAKE NATIONAL PARK AREA OF STUDY

- CRATER LAKE NATIONAL PARK BOUNDARY
- POINTS OF INTEREST
- ROADS AND STREAMS
- PACIFIC CREST TRAIL

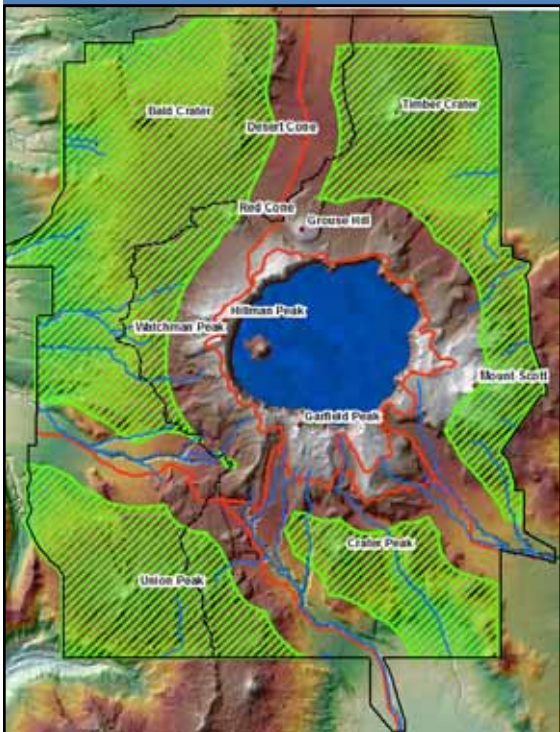


# CRATER LAKE NATIONAL PARK TASK: ESTABLISH CAMPING LIMITATION



- CRATER LAKE NATIONAL PARK REGULATIONS**
- ESTABLISH 1 MILE BUFFER
    - ALL ROADS
    - CRATER LAKE

# CRATER LAKE NATIONAL PARK CAMPSITE LIMITATIONS



- CAMPSITE LIMITATIONS**
- AT LEAST 1 MILE FROM ROAD
  - AT LEAST 1 MILE FROM RIM OF CRATER
  - 2 TENTS/8 PERSON LIMIT
-  BEST AVAILABLE AREA FOR CAMPSITE AFTER PARK LIMITATIONS
-  PACIFIC CREST TRAIL

# CRATER LAKE NATIONAL PARK TASK: SLOPE ANALYSIS



## BACKCOUNTRY STANDARDS FOR CAMPING

- CONDUCT A SLOPE ANALYSIS OF AVAILABLE AREA
  - 0 – 15 DEGREES IS ACCEPTABLE
  - 16 – UP IS UNACCEPTABLE FOR CAMPING

# CRATER LAKE NATIONAL PARK SLOPE ANALYSIS

## CAMPSITE SLOPE

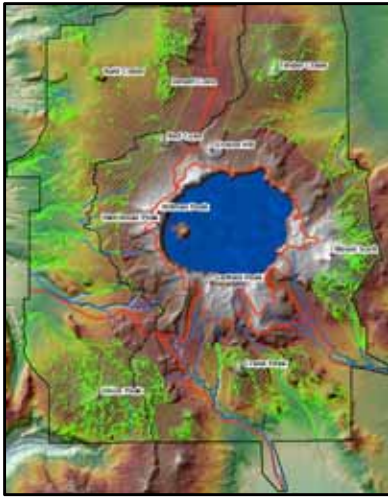
- LESS THAN 15 PERCENT SLOPE FOR CAMPSITE



BEST AVAILABLE AREA FOR CAMPSITE  
AFTER PARK LIMITATIONS AND SLOPE  
ANALYSIS



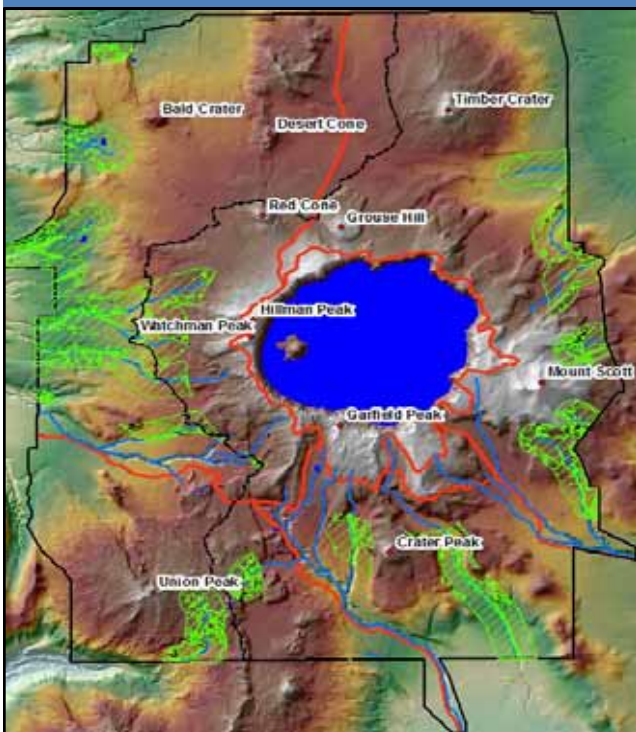
# CRATER LAKE NATIONAL PARK TASK: WITHIN ½ MILE OF STREAM




## BACKCOUNTRY STANDARDS FOR CAMPING

- SUGGESTION FROM SEVERAL PAST HIKERS

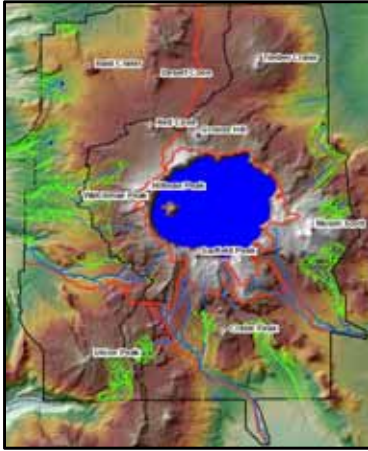
# CRATER LAKE NATIONAL PARK STREAM ANALYSIS



## CAMPSITE WITHIN ½ MILE OF CREEK

-  BEST AVAILABLE AREA FOR CAMPSITE AFTER PARK LIMITATIONS, SLOPE ANALYSIS, AND WITHIN ½ MILE OF STREAM

# CRATER LAKE NATIONAL PARK TASK: NATIONAL LAND COVER DATA

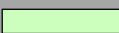


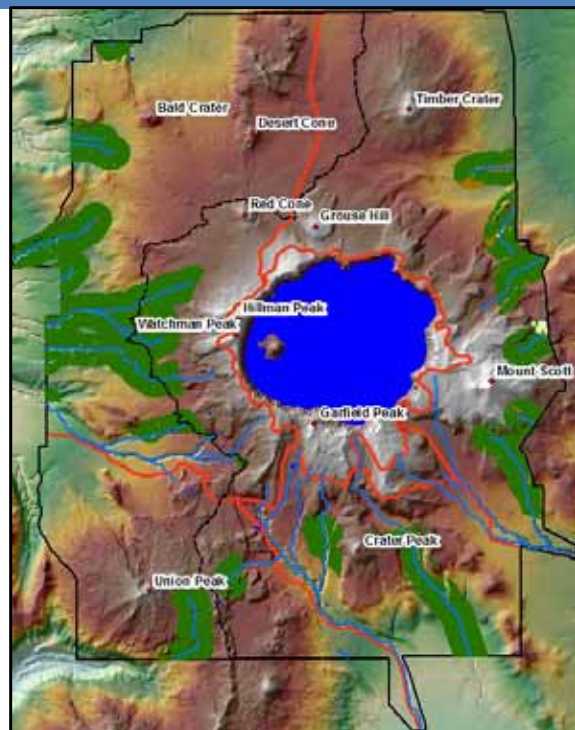
## GENERAL INFORMATION FOR CAMPERS

- TREES
- GRASSLAND
- BARREN LAND

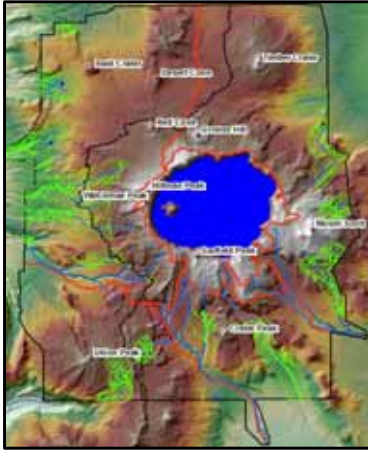
# CRATER LAKE NATIONAL PARK NATIONAL LAND COVER DATA (FOREST AREAS)

## NATIONAL LAND COVER DATA (FOREST AREAS)

- BARREN LAND 
- EVERGREEN FOREST 
- SHRUB 
- GRASSLAND 

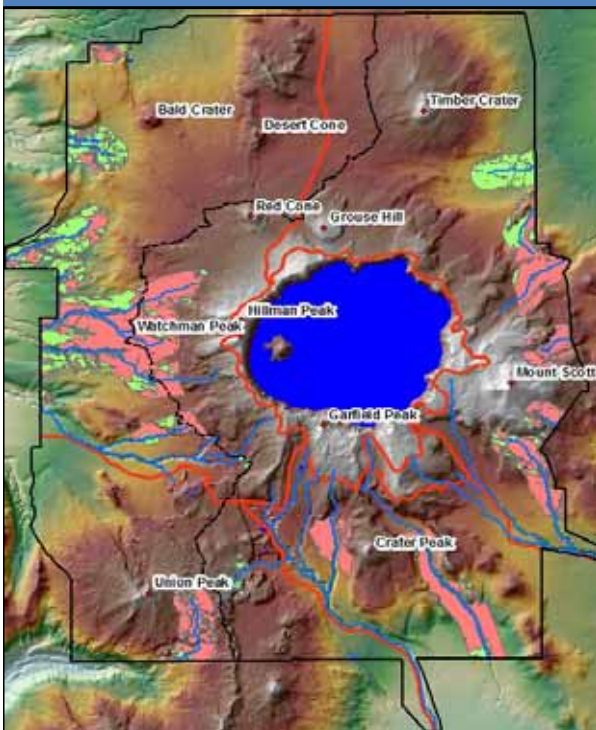


# CRATER LAKE NATIONAL PARK TASK: VIEWSHED ANALYSIS



WHAT CAN YOU SEE WHERE YOU MIGHT SET UP  
CAMP FOR THE NIGHT

# CRATER LAKE NATIONAL PARK VIEWSHED ANALYSIS



VIEWABLE

NON  
VIEWABLE

## POINTS OF INTEREST

- MT SCOTT 8938 FEET
- HILLMAN PEAK 8149 FEET
- GARFIELD PEAK 8021 FEET
- WATCHMAN PEAK 8011 FEET
- TIMBER CRATER 7725 FEET
- UNION PEAK 7709 FEET
- GROUSE HILL 7414 FEET
- RED CONE 7365 FEET
- CRATER PEAK 7263 FEET
- DESERT CONE 6675 FEET
- BALD CRATER 6479 FEET



# CRATER LAKE NATIONAL PARK ANALYSIS OF WHAT IS LEFT AVAILABLE



VIEWABLE

NON  
VIEWABLE

FROM WHAT IS LEFT CAN YOU  
IDENTIFY THE BEST POSSIBLE  
CAMP SITES

# CRATER LAKE NATIONAL PARK CONCLUSIONS/POSSIBLE CAMP SITES

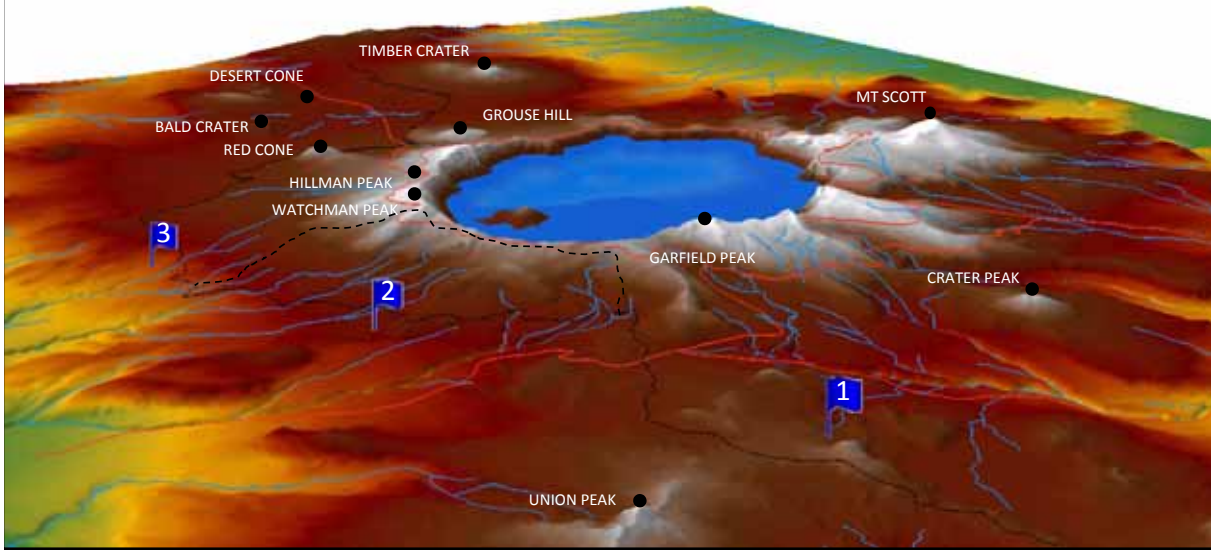


**POINT #3**  
495 METERS FROM TRAIL  
LESS THAN 220 METERS FROM STREAM  
ABLE TO SEE 8 POINTS OF INTEREST

**POINT #2**  
600 METERS FROM TRAIL  
LESS THAN 550 METERS FROM STREAM  
ABLE TO SEE 6 POINTS OF INTEREST

**POINT #1**  
700 METERS FROM TRAIL  
LESS THAN 240 METERS FROM STREAM  
ABLE TO SEE 5 POINTS OF INTEREST

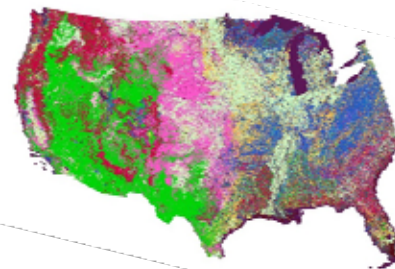
# CRATER LAKE NATIONAL PARK 3 POSSIBLE CAMPSITES



**VIEW LOOKING NORTHEAST  
WHERE WOULD YOU CAMP?**

# CRATER LAKE NATIONAL PARK FUTURE STUDIES

- **TRY TO FIND BETTER WAYS TO USE THE NATIONAL LAND COVER DATA**
- **ANALYSIS OF THE DIFFICULTY FOR THIS SECTION OF THE PACIFIC CREST TRAIL**
- **CONSIDER DOING A COMPLETE PACIFIC CREST TRAIL ANALYSIS GIVING SUGGESTED REST SITES AND DAILY MILEAGE**



# CRATER LAKE NATIONAL PARK REFERENCES

Backcountry Regulations, *Crater Lake: Summer Backcountry Use*, National Park Service, U.S. Department of the Interior, Revised May 2010

National Park Service, U.S. Department of the Interior, *Crater Lake Reflections Visitor Guide*, Pacific Crest Trail, Summer/Fall 2014

U.S. Geological Survey, Data Series 716, High-Resolution Digital Elevation Dataset for Crater Lake National Park and Vicinity, Oregon, based on LiDAR Survey of August-September 2010

Crater Lake National Park, <http://www.nps.gov/crla/index.htm>

ESRI Inc., Spatial Analyst Tutorial, PSU I Drive, I\Students\Data\GIS\ArcTutor\10\Spatial Analyst

<http://npmaps.com/crater-lake/> - Map pic of Oregon

Pacific Crest Trail Association, <http://www.pcta.org/>