



Lodge Site Suitability Study

Where can Yellowstone National Park increase lodging to meet the rising visitor demands with least impact to wildlife?

final project by
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GEOG 492
March 2012

Study Area



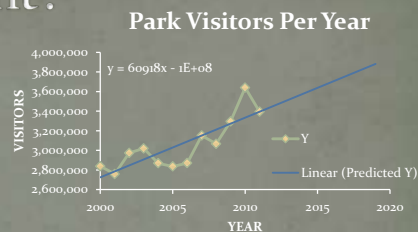
Why is it important?

- Park visitation increased nearly 80% from 2000 to 2010!
- No new lodging for 20 years.
- Reservation wait times are typically 6 to 24 months.
- Limited funding and space allows for only one new lodge and two campgrounds.
- YNP first priority is to the natural landscapes and its wildlife corridors.



Why is it important?

- Park visitation increased nearly 80% from 2000 to 2010! At this rate there may be 4 million visitors by 2020.



- The last lodging increase was in 1990's causing typical reservation wait times of 6 to 24 months.
- Limited funding and space allows for only one new lodge and two campgrounds.
- YNP's first priority is to the natural landscapes and its wildlife corridors.

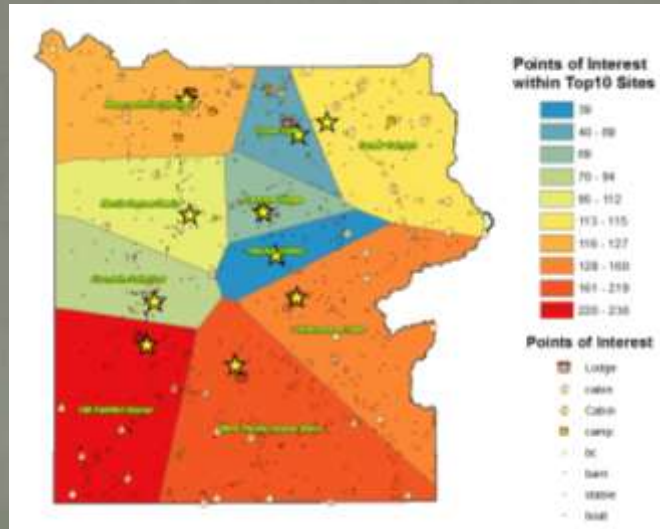
Data Used for Methods/Modeling

- Existing camping and lodge occupancies
- Points of interest
 - Camping, lodging, hiking trails, Ranger stations, geysers, hot springs, boating, horseback riding, waterfalls, scenic landscape and wildlife viewing areas.
- Yellowstone visitation statistics
- Top Ten list of attractions
- Wildlife habitat areas
- Historical seismic data

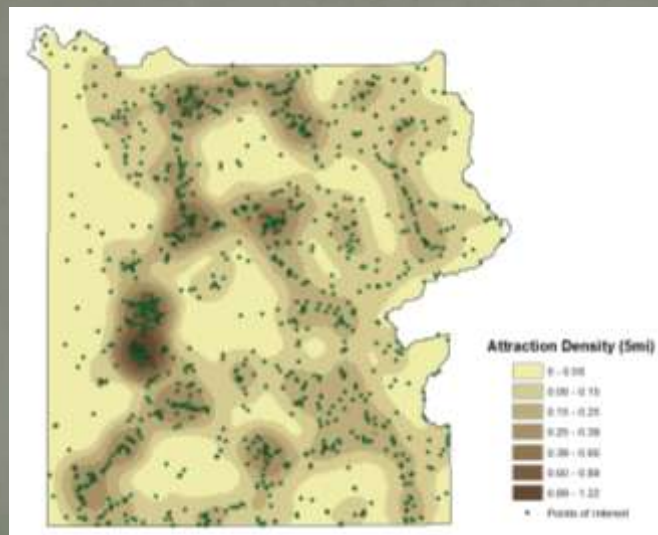
Methods in suitability factors

- Park divided into “Attraction Zones” based on number of interest points contained in the top 10 attractions of;
 - Old Faithful Geyser, Fountain Paint Pot, Norris Geyser Basin, mammoth Hot Springs, Tower Fall, Lamar Canyon, Canyon Village, Hayden Valley, Yellowstone Lake and West Thumb Geyser Basin.
- Combine density maps of existing overnight occupancy & points of interest
- Combine density of wildlife areas and roads as limiting factors.
- Combine last two spatial analysis into final map showing suitable areas for lodging facilities.

Amount of Attractions in each Top 10



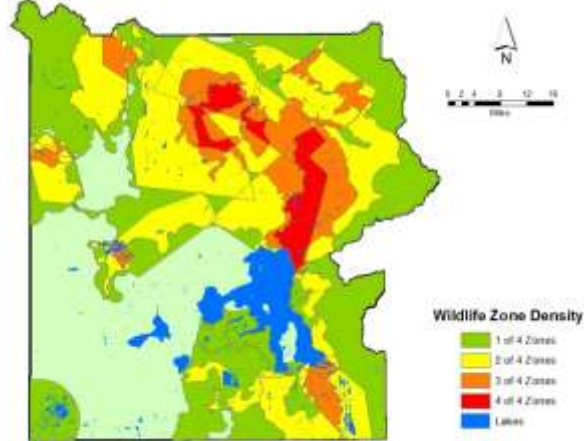
Density of Attraction Points of Interest





Wildlife Habitat Density

Increasing limitations of suitability with the increasing to RED zone

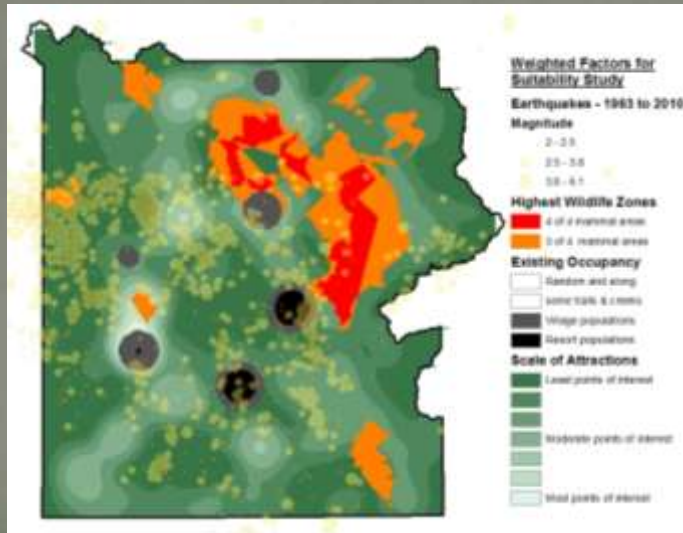


Pulling it all together.....



Resulting Areas of Suitability

The darker the shade the less desirable it would be to develop lodging



Conclusions

- The western areas contain the lightest areas which are suitable to campsites and lodge development, not including the yellow seismic areas.
- Suitability doesn't mean buildable at this level.

Limitations and Future Considerations

- "More than four"
- Quake analysis incomplete
- Suitability doesn't mean buildable at this level.
- Literary research suggests that any further occupancy for park visitors will actually be outside of park limits due to a heated mixture of commercial and environmental pressures, making this null and void.

References (data source)

- National Park Service Dataserver (<https://irma.nps.gov/>)
→ Yellowstone National Park boundary, roads, rivers, populated areas, bear mgmt areas, campsites, patrol cabins, bathymetry, trails.
- National Atlas (<http://www.nationalatlas.gov/mld/statesp.html>) → State boundaries
- Wyoming State Geological Survey (<http://www.wsgs.wyo.edu/Yellowstone/GIS.aspx?site/Metadata/DEM.mdb.aspx>)
→ Hillshade 10m, points of interest, Old Faithful Volcanic Springs, Geothermal Springs
- Yellowstone National Park (<http://www.yellowstone.net/top10.htm>) → Top Ten list
- National Park Service, Yellowstone-Plan your visit (<http://www.nps.gov/yell/planyourvisit/factsheet.htm>)
→ Visitation, lodging & campsite statistics

References (review articles)

- Yellowstone Wolf Project., & Yellowstone Center for Resources. (1997). *Annual report*. Yellowstone National Park, Wyo: National Park Service, Yellowstone Center for Resources.
- Plumb, G. E., White, P. J., Coughenour, M. B., & Wallen, R. L. (January 01, 2009). Carrying capacity, migration, and dispersal in Yellowstone bison. *Biological Conservation*, 142, 11, 2377-2387.
- Garrott, R. A., White, P. J., & Watson, F. G. R. (2009). *The ecology of large mammals in central Yellowstone: Sixteen years of integrated field studies*. San Diego, CA: Academic Press.
- Craighead, J. J., Sumner, J. S., & Mitchell, J. A. (1995). *The grizzly bears of Yellowstone: Their ecology in the Yellowstone ecosystem, 1959-1992*. Washington, D.C: Island Press.
- Koontz, L., & Hoag, D. L. (January 01, 2008). Incorporating Institutional Power into the Disparate Stakeholder Management Approach: A Case Study of Wildlife Management in the Southern Greater Yellowstone Area. *International Journal of Organization Theory and Behavior*, 11, 1, 103-124. **Chicago** (Author-Date, 15th ed

Questions?

