Identifying Wildland-Urban Interface Areas in San Diego County

Cartographer: S. Victoria Kwok
UEP 232 Intro to GIS (Fall 2007)

Objective

While natural wildfires are important in maintaining healthy forest ecosystems, they pose significant threats to lives and property in populated areas that intermingle with wildland vegetation. This analysis identifies such areas, known as the Wildland-Urban Interface / Intermix (WUI), within the San Diego County and their proximity to potential fire threats.

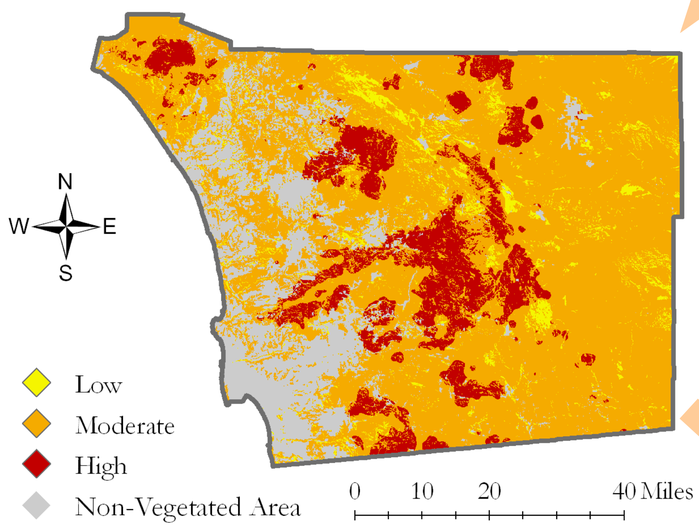
Fire Threat Zones

As shown in the table below, the fire hazard and fire history of San Diego County assessed in previous steps are combined to produce a fire threat map.

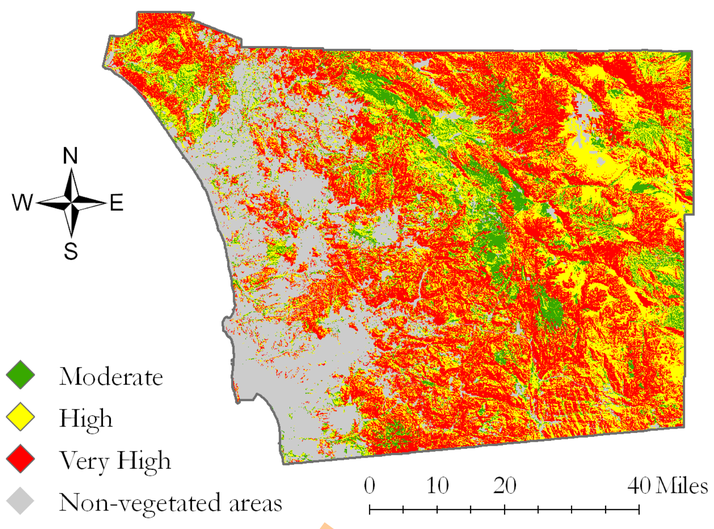
Fire threat matrix based on hazard rank and fire history

Hazard Rank / Fire History	1 (Moderate)	2 (High)	3 (Very High)
1 (Rare)	2 (Low)	4 (Moderate)	4 (Moderate)
2 (Frequent)	3 (Moderate)	4 (Moderate)	5 (High)
3 (Most Frequent)	4 (Moderate)	5 (High)	6 (High)

Fire Threats



Fire Hazard



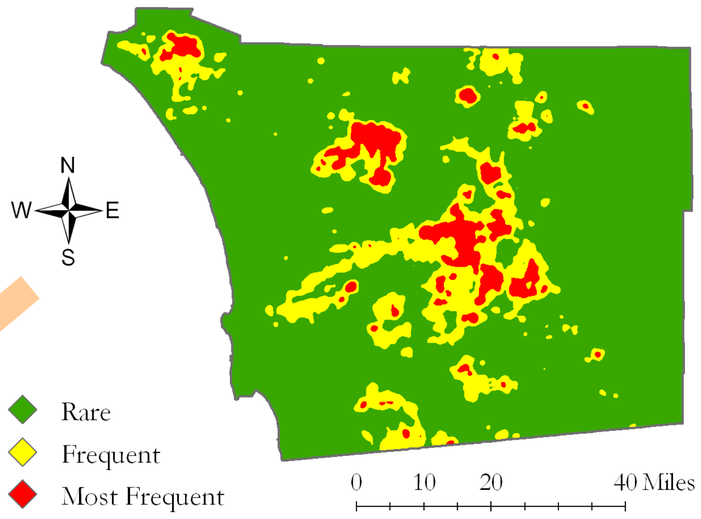
Fire Hazard

Vegetation flammability, slope steepness, and slope aspect are integrated to create a map showing the overall fire hazard of San Diego County. Higher weights are given to characteristics that promote spreading of fires.

Fire History

Annual fire data are collected to generate a map showing areas with their frequency of wildfire during the 2000-2006 period.

Fire History Bewteen 2000 and 2006



Fire Threatened WUI Areas

The final step is to search for all identified WUI areas that are within 1.5 miles of a fire threat zone; this is approximately how far firebrands can be carried from a wildland fire to the roof of a house. A WUI area locating within or near national forests is especially of concern because there tends to be build-ups of fuel loads resulted from regular fire suppression efforts.

Conclusion

This analysis offers a general insight to the concern of fire threatened WUI areas in cities, where rapid population growth is happening in biophysically hazardous areas. Government agencies are urged to make adjustments to their fire management, fuel treatments, and evacuation plans for these areas. It is up to each individual, however, to decide whether to call an WUI area home.

Wildland-Urban Interface / Intermix Areas

Interface areas are Census blocks with:

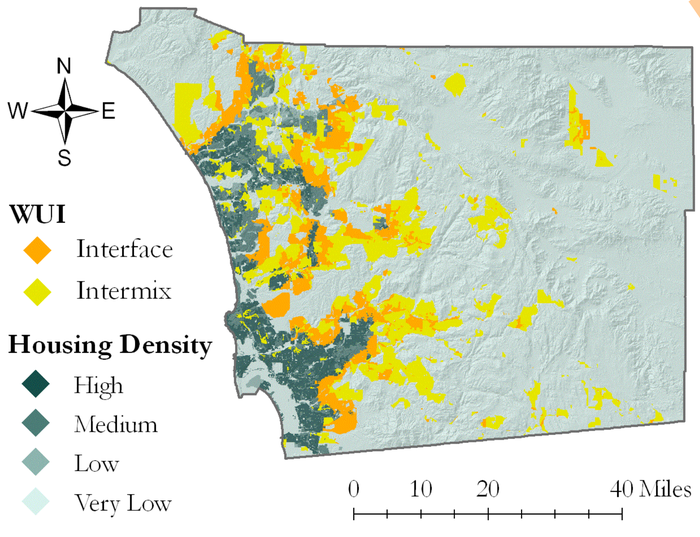
1. more than 1 house per 16 ha
2. less than 50% vegetation cover
3. within 1.5 miles of an area over 500 ha with greater than 75% vegetation cover

Intermix areas are Census blocks with:

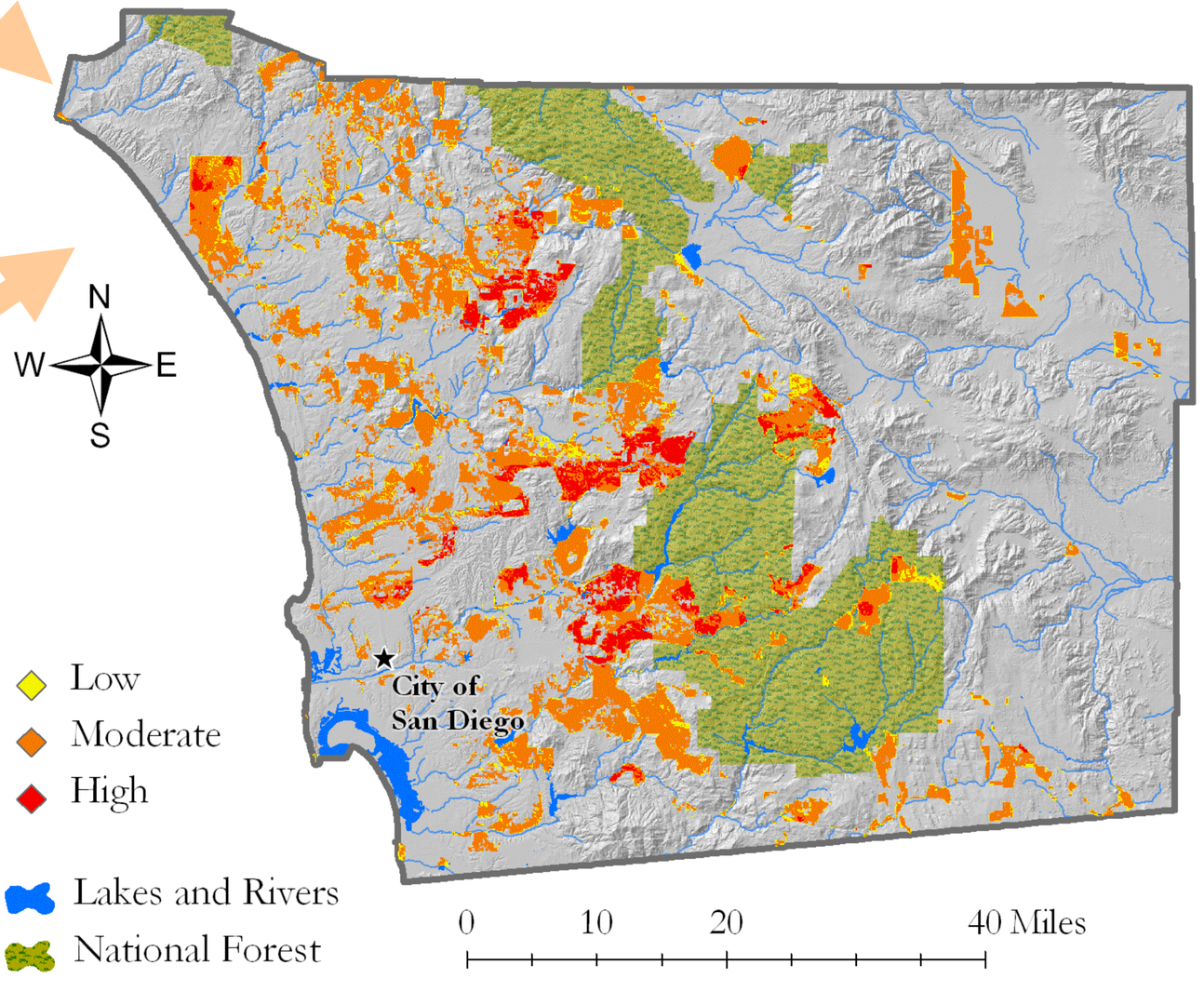
1. more than 1 house per 16 ha
2. more than 50% vegetation cover

Note: Each Census block contains ~100 people.

Wildland-Urban Interface / Intermix



Fire Threatened Wildland-Urban Interface / Intermix Areas



Data Sources: SanGIS (2007), U.S. Geological Survey (1999), U.S. Department of Agriculture Forest Service (2000-2006), and Census Bureau (2000)
Projected Coordinate System: NAD 1983 StatePlane California VI FIPS 0406 Feet
Geographic Coordinate System: North American 1983