

Description of WUI Maps¹

The Wildland-Urban Interface (WUI) is the area where houses meet or intermingle with undeveloped wildland vegetation. This makes the WUI a focal area for human-environment conflicts such as wildland fires, habitat fragmentation, invasive species, and biodiversity decline. Using geographic information systems (GIS), we integrated U.S. Census and USGS National Land Cover Data, to map the Federal Register definition of WUI (**Federal Register 66:751, 2001**). These data are useful within a GIS for mapping and analysis at national, state, and local levels.

The Wildland-Urban Interface defined

Housing density

Housing density information was derived from U.S. Census data. Analysis was conducted at the finest demographic spatial scale possible, Census blocks, from the 2000 Census. All measures of housing density are reported as the number of housing units per square kilometer.

Landcover

We utilized the National Land Cover Dataset, a satellite data classification produced by the USGS with 30m resolution based on 1992/93 imagery and available for the entire U.S. (Vogelmann et al. 2001) to identify 'wildlands'. Our definition of 'wildlands' encompasses a range of management intensities. NLCD classes that we included as 'wildlands' are forests (coniferous, deciduous and mixed), native grasslands, shrubs, wetlands, and transitional lands (mostly clear-cuts). We exclude orchards, arable lands (e.g., row crops) and pasture.

The Wildland-Urban Interface (WUI)

WUI is composed of both interface and intermix communities. In both interface and intermix communities, housing must meet or exceed a minimum density of one structure per 40 acres (16 ha). Intermix communities are places where housing and vegetation intermingle. In intermix, wildland vegetation is continuous, more than 50 percent vegetation, in areas with more than 1 house per 16 ha. Interface communities are areas with housing in the vicinity of contiguous vegetation. Interface areas have more than 1 house per 40 acres, have less than 50 percent vegetation, and are within 1.5 mi of an area (made up of one or more contiguous Census blocks) over 1,325 acres (500 ha) that is more than 75 percent vegetated. The minimum size limit ensures that areas surrounding small urban parks are not classified as interface WUI.

Buffer Distance for Interface

The California Fire Alliance (2001) defined "vicinity" as all areas within 1.5 mi (2.4 km) of wildland vegetation, roughly the distance that firebrands can be carried from a wildland fire to the roof of a house. It captures the idea that even those homes not sited within the forest are at risk of being burned in a wildland fire. We adopt this buffer distance to identify interface areas. With minimum housing densities, vegetation types, and interface buffer distances determined, the operational definition of the WUI is complete:

WUI Maps

WUI maps are intended to illustrate where the WUI was located in 2000. We map two types of WUI: intermix and interface. Intermix WUI are areas where housing and vegetation intermingle; interface WUI are areas with housing in the vicinity of contiguous wildland vegetation. In maps of the whole US and the large regions, the WUI is shown in just one color, but in state (or in a few cases, multi-state) maps, we use different colors to

¹ FROM URL: [HTTP://SILVIS.FOREST.WISC.EDU/LIBRARY/WUI_STATE_DOWNLOAD.ASP](http://silvis.forest.wisc.edu/library/WUI_STATE_DOWNLOAD.ASP)

show interface and intermix WUI. WUI Maps are available in three different styles: black-background images designed for presentations and slides, blue-border images designed for 8.5 x 11" handouts and publication quality high resolution white-background images.





WUI Statistics

The total area (m2) in different WUI classes were calculated at the County level for each state, excluding Alaska and Hawaii. Statistics are available for download as Microsoft Excel (.xls), Dbase IV (.dbf), or comma delimited text (.txt) files. Fields included in the statistics files are described in the table below. National level statistics are summarized in an Adobe Acrobat file (.pdf).

WUI GIS data

WUI GIS data were designed to provide a spatially detailed national assessment of the Wildland Urban Interface (WUI) across the coterminous U.S. to support inquiries into the effects of housing growth on the environment, and to inform both national policy and local land management concerning the WUI and associated issues. These data are useful within a GIS for mapping and analysis at national, state, and local levels and are available for download as compressed ArcInfo interchange (.e00) files. Detailed metadata is included with each coverage. [Click here for example metadata.](#)

Description	Map legend label	Statistics file column heading	GIS data WUIFac00 attribute value
Low density interface: Areas with housing density ≥ 6.177635 (housing units/km ²) and < 49.42108 (housing units/km ²), Vegetation $\geq 50\%$, within 2.414 km of an area with $\geq 75\%$ Vegetation.	 interface	LDInterface	Low_Dens_Interface
Medium density interface: Areas with housing density ≥ 49.42108 and < 741.3162 , Vegetation $\geq 50\%$, within 2.414 km of an area with $\geq 75\%$ Vegetation.	 interface	MDInterface	Med_Dens_Interface
High density interface: Areas with housing density ≥ 741.3162 , Vegetation $\geq 50\%$, within 2.414 km of an area with $\geq 75\%$ Vegetation.	 interface	HDInterface	High_Dens_Interface
Low density intermix: Areas with housing density ≥ 6.177635 and < 49.42108 , Vegetation $> 50\%$.	 intermix	LDIntermix	Low_Dens_Intermix
Medium density intermix: Areas with housing density ≥ 49.42108 and < 741.3162 , Vegetation $> 50\%$.	 intermix	MDIntermix	Med_Dens_Intermix
High density intermix: Areas with housing density ≥ 741.3162 , Vegetation $> 50\%$.	 intermix	HDIntermix	High_Dens_Intermix
Wildland intermix: Areas with Housing density > 0 and < 6.177635 , Vegetation $> 50\%$.	 Non-WUI Vegetated with very low density housing	Non-WUI	Wildland_Intermix
Uninhabited with vegetation: Areas with housing density = 0, Vegetation $\geq 50\%$.	 Non-WUI Vegetated with no housing	Non-WUI	Uninhabited_Veg
Uninhabited and no vegetation: Areas with	 Non-vegetated or	Non-WUI	Uninhabited_NoVeg

Description	Map legend label	Statistics file column heading	GIS data WUIFac00 attribute value
housing density = 0, Vegetation <= 50%.	agriculture with low and very low density housing		
Wildland with no vegetation: Areas with housing density > 0 and < 6.177635, Vegetation <= 50%.	 Non-vegetated or agriculture with low and very low density housing	Non-WUI	Wildland_NoVeg
Low density with no vegetation: Areas with housing density >= 6.177635 and < 49.42108, Vegetation <= 50%.	 Non-vegetated or agriculture with low and very low density housing	Non-WUI	Low_Dens_NoVeg
Medium density with no vegetation: Areas with housing density >= 49.42108 and < 741.3162, Vegetation <= 50%.	 Non-vegetated or agriculture with medium and high density housing	Non-WUI	Med_Dens_NoVeg
High density with no vegetation: Areas with housing density >= 741.3162, Vegetation <= 50%.	 Non-vegetated or agriculture with medium and high density housing	Non-WUI	High_Dens_NoVeg

References

California Fire Alliance. 2001 *Characterizing the fire threat to wildland-urban interface areas in California*. Sacramento: California Fire Alliance.

Teie, W.C., B.F. Weatherford. 2000. *Fire in the west: The wildland/urban interface fire problem*. Report to the Council of Western State Foresters. Rescue, CA: Deer Valley Press.

U.S. Department of Agriculture, U.S. Department of the Interior. 2001. *Urban Wildland Interface Communities Within The Vicinity Of Federal Lands That Are At High Risk From Wildfire*. Federal Register 66: 751.

Vogelmann, J.E., S.E. Howard, L. Yang, C.R Larson, B.K. Wylie, N. van Driel. 2001. *Completion of the 1990s National Land Cover Data set for the conterminous United States from Landsat Thematic Mapper data and ancillary data sources*. Photogr. Eng. & Remote Sensing 67, 650-662.