Floodplain Forest ca. 2010

Technical Details

Floodplain Forest ca. 2010 is reported in acres for each 100m slice. In the GIS data, 2010 floodplain forest is reported in the field *FPF2010*; in the spreadsheet, floodplain forest is reported in the column *2010 Floodplain Forest*.

The representation of floodplain forest in the 100m SLICES is derived from multiple datasets and two sources with different underlying spatial grains. In slices 1 – 7907, the primary data source is Landsat satellite data at a 30m spatial grain. In slices 7908 – 22907, the representation was processed at a 6ft. grain using 2011 NAIP imagery and ca. 2009 LiDAR data. Each processing path is described below.

SLICES 1 - 7907

The foundation of floodplain forest classification in 100m slices 1 – 7907 comes from a ca. 2000 land use/ land cover representation (http://www.fsl.orst.edu/pnwerc/wrb/access.html) based on supervised classification of Landsat TM imagery from 2000 and 2001. The Landsat data were processed at a 30m grid cell size. For 2010 floodplain forest, these data were updated and refined with LiDAR derived data, 2009 National Agriculture Imagery Program (NAIP) aerial photographs, 2- year flood inundation data and features in the National Hydrologic Database (NHD Plus). Details about these data and processing are described in the following paragraphs.

A LiDAR based delimitation of riparian vegetation produced by the Oregon Biodiversity Information Center was used in conjunction with the Landsat derived floodplain forest to produce an initial GIS 30m raster representation of floodplain forest. This initial 30m grid was refined as follows:

Territory was determined to be floodplain forest if it was 1) covered with natural vegetation identified from on-screen inspection of the 2009 NAIP aerial photos, and 2) regularly inundated based on a) River Design Group's 2-year flood inundation mapping for the main stem Willamette River (http://www.riverdesigngroup.com/projects//523/) and b) wet features included in the National Hydrologic Database (NHD Plus). In some locations, territory that is not included in the 2-year flood inundation footprint was mapped as floodplain forest. These are places that are surrounded by, or adjacent to, 2-year inundated territory, would likely be inundated in a 5 to 10 year flood event, and are dominated by natural vegetation in the NAIP imagery. In cases where contiguous patches of vegetated territory were partially included within a frequently inundated zone but also extended beyond that zone, topographic breaks, evident in the 10m LiDAR and NAIP aerial photography, were used to delimit the floodplain forest. Sand and gravel bars, primarily located in the active channel of the main stem Willamette River, were mapped as

floodplain forest. Even if not vegetated, it is presumed that those locations are potentially on a trajectory to become floodplain forest.

SLICES 7908 – 22907

Overview

Floodplain forest ca. 2010 was mapped as part of the Institute for a Sustainable Environment's mapping of 2010 land use/ land cover (ise.uoregon.edu/slices/lulc.html). The availability of bare earth and highest hit LiDAR limited the territory over which floodplain forest could be mapped for 2010 land use/ land cover to 100m slices 7908 - 22907.

There are three classes of floodplain forest in 2010 land use/ land cover: floodplain forest vegetation < 3ft, floodplain forest vegetation 3-10ft and floodplain forest vegetation >10ft. The three floodplain forest height classes have been aggregated into a single class for reporting in the SLICES.

Criteria for floodplain forest

In 100m slices 7908 – 22907, areas were defined as floodplain forest if they met the following criteria: are covered by natural vegetation as defined in the Pacific Northwest Ecosystem Research Consortium vegetation classes and are regularly inundated by a 2 year flood event; or, are in selected locations adjacent to the 2-year flood inundation footprint, are likely to be inundated at 5 -10 year intervals, are dominated by natural vegetation in aerial photography and are within appropriate topographic bounds evident in the LiDAR data.

-Processing of floodplain forest

The first step in the identification of floodplain forest was image processing using Feature Analyst software and 2011 aerial images from the National Agriculture Imagery Program (NAIP) (http://www.fsa.usda.gov/programs-and-services/aerial-photography/imagery-programs/naip-imagery/index). The training sets, initial image processing and output from Feature Analyst included both floodplain forest and water. The areas identified as floodplain forest by Feature Analyst then went through a process of refining the territory and manual edits to meet the criteria previously described. The territory of floodplain forest was defined to lie within the 2-yr flood inundation zone produced by River Design Group (http://www.riverdesigngroup.com/projects//523/). The 2-yr flood inundation map does not cover the entire extent of the SLICES. Floodplain forest in riparian locations lying outside of the RDG inundation map were identified as such if they were vegetated in aerial photography and were adjacent to National Hydrologic Database Plus stream center lines.

Individual floodplain forest patches were then manually edited using the NAIP images and previous identification of floodplain forest as guides. The results of this step define the "footprint" (spatial extent) of floodplain forest. Height derived from LiDAR was applied to the floodplain forest footprint to assign the specific land use/ land cover class: floodplain forest

vegetation < 3 feet (class 40), floodplain forest vegetation 3 – 10 feet (class 41), floodplain forest > 10 feet (class 42). As noted above, these three classes have been aggregated into a single representation of floodplain forest for the SLICES.