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|  | **IFWPPS User Manual**  ***IIRS Forest Working Plan Preparation Software (IFWPPS)***  **MOEF sponsored orientation course on**  **“Working plan preparation using Remote Sensing & GIS technology” for Officials of Indian Forest Services** |
|  | **ISROLogo.gif**  **September 24, 2014**  **IIRS, Dehradun** |

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*\* Yet to implement*

**1 SAMPLE POINTS**

**A. RASTERIZATION**

1. Open QGIS 2.4.0 ‘Chugiak’
2. Click on Layer – Add Vector Layer
   1. Add Forest Density and Forest Type vector layers to Map Canvas

*If the files are large, or have too many polygons, you may switch off “Render” by clicking on “X” sign at bottom right hand side of QGIS software. If you wish to visualize the layers on map canvas, click on the “X” sign again to turn on visualization.*

1. Click on Raster – Conversion – Rasterize (Vector to Raster)
   1. Select Forest Density layer in the Input File dropdown
   2. Make sure the field having data for Forest Crown is selected in Attribute Field drop down
   3. Select location for output file
   4. Click on Raster resolution in map units per pixel and enter 30 for Horizontal and 30 for Vertical
   5. Click on OK

*30 meters is the length of one side of the plot. You may change this if you have a different plot size. Also, make sure your input vector files have UTM projection (meters).*

**B. CREATION OF STRATA**

1. Repeat step 4 using Forest Type layer
2. Click on Raster – Raster Calculator
   1. Let’s say the Forest Density raster layer is denoted by “forestdensity@1” and the Forest Type raster layer is denoted by “foresttype@1”
   2. Type the expression in the Raster calculator expression box:

“forestdensity@1” \* 100 + “foresttype@1”

* 1. Select location for output file
  2. Click on OK

*Step 6 assumes that the Density/Crown class and Type class will lie between the values 0 to 99. This step will create a strata raster layer having values xxyy where xx is forest density and yy is forest type.*

**C. CREATION OF SAMPLE PLOTS**

1. Click on Processing – Toolbox
2. Expand Scripts – IFWPPS
3. Double click on Strata\_Sampling
4. Give appropriately inputs for
   1. Input Strata Raster – same as that created in step 5
   2. Output Sample Vector – location of output file
   3. Number of Samples can be derived from the formula

**Number of Samples = Total area \* Percentage sampling / Area of each sample plot**

1. Click on Run

*Step 10 will create square polygons of 0.1 hectare area on sampling plots.*

**D. CREATION OF SAMPLE POINTS**

1. Click on Layer – Add Vector Layer
   1. Add the sample plot vector layer created in step 11
2. Click on Vector – Geometry Tools – Polygon centroids
   1. Select sample plot layer on Input polygon vector layer dropdown
   2. Select location of Output point shapefile
   3. Click on OK

*Section 1C and 1D create an area weighted, stratified sampling for a given strata raster layer.*

**2 MANAGEMENT BOUNDARY**

**A. ADDITION OF BOUNDARY INFORMATION TO POINTS**

1. Open QGIS 2.4.0 ‘Chugiak’
2. Click on Layer – Add Vector Layer
   1. Add Management boundary and Sample Point vector layers to Map Canvas
3. Click on Vector – Geoprocessing Tools – Intersect
   1. Select Sample Point layer in Input vector layer
   2. Select Management layer in Intersect layer
   3. Select location for output file
   4. Click on OK

**B. ADDITION OF GEOMETRY INFORMATION**

1. Click on Project – Project Properties
   1. Select CRS – put “X” sign in box for “Enable on the fly CRS transformation”
   2. Type in Filter box “4326”
   3. Click on WGS 84 – EPSG:4326
   4. Click on OK

*4326 is the EPSG (European petroleum survey group) code for the projection system latitude longitude and WGS84 datum.*

1. Click on Vector – Geometry Tools – Export/Add geometry columns
   1. Select Sample point layer with management boundary information in the Input vector layer dropdown
   2. Select “Project CRS” in the “Calculate using” dropdown
   3. Select location for output file
   4. Click on OK

**C. SEPARATION INTO SHAPEFILES & EXCEL FILES**

1. Click on Vector – Data management tools – Define current projection
   1. Select sample points vector layer with management & geometry information in the Input vector layer dropdown
   2. Click on Choose
      1. Filter for 4326
      2. Select WGS 84 – EPSG:4326
      3. Click on OK
   3. Click on OK
2. Click on Vector – Data management tools – Split vector layer
   1. Select sample points vector layer with management & geometry information in the Input vector layer dropdown
   2. Click on desired management boundary category in the Unique ID field dropdown
   3. Select output folder location
   4. Click on OK
3. The .dbf files created along with the shapefiles can be opened in Excel and analyzed for each management boundary category value

**3 RECORD SAMPLING DATA**

1. Open QGIS 2.4.0 ‘Chugiak’
2. Click on Layer – Add Vector Layer
   1. Add sampling point layer with management boundary information, plot IDs and strata information
3. Click on Processing – Toolbox
4. Expand Scripts – IFWPPS
5. Double click on Database\_Generation
6. Give appropriately inputs for
   1. Sampling points vector layer – Select layer added in Step 2 in the dropdown
   2. Select the field specifying management boundary information and plot ID information
   3. Browse for file containing Volumetric Equations in CSV format
   4. Specify the column name in CSV file specifying Species Names
   5. Select output location
7. Click on Run
8. Ignore any warnings for file not being able to save etc.
9. A new dialog will pop up for database generation
10. Select the Administrative zone. All plots in that zone will be listed in the Sampling plot ID dropdown
11. Select the correct Sampling plot ID from dropdown for which you wish to enter the information
12. Select the appropriate Species Name. In case the desired species is not listed, edit the Volumetric\_Equations.csv file and restart QGIS
13. Enter local name, GBH, Bole & Tree Height and specify whether sample is a timber specie or not. GBH is a mandatory field
14. You may wish to save and continue or save and close
15. To exit from the program, close the dialog or click on save and close (ignore the warning).

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**Code for the project will be available on** [**www.github.com/prasunkgupta/ifwpps**](http://www.github.com/prasunkgupta/ifwpps)

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*Quantum GIS (QGIS) is a user friendly Open Source Geographic Information System (GIS) licensed under the GNU General Public License. QGIS is an official project of the Open Source Geospatial Foundation (OSGeo).*

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