# QGIS Conefor Inputs
# (for QGIS 2.2 or newer, e.g. 2.4)

## Installation

The plugin will be available (NOT YET) in the official QGIS plugins repository. It can be searched and installed directly from within QGIS using the plugin installer (Menu: **plugins > manage and install plugins**)
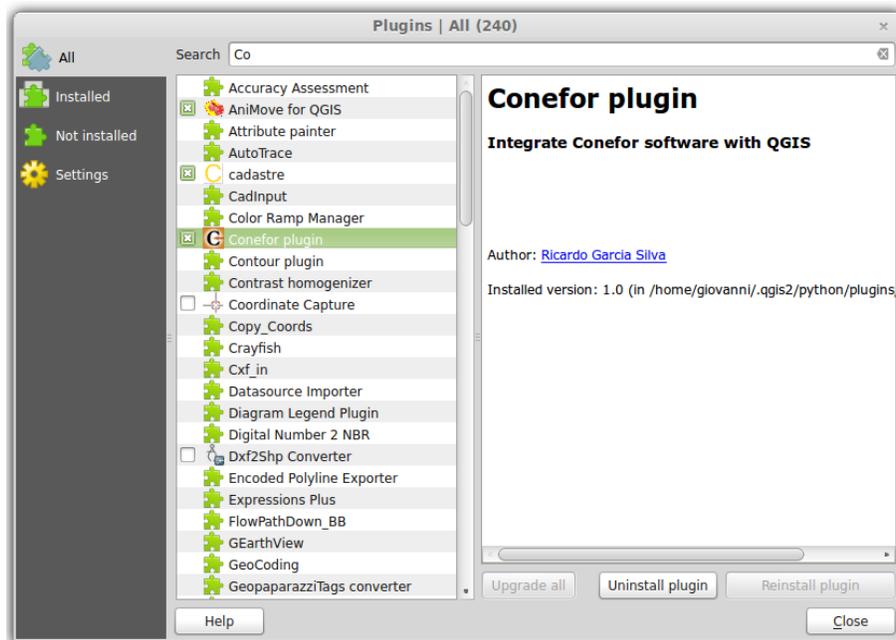


**Note! FOLLOW INSTRUCTIONS IN RED UNTIL THE FINAL PLUGIN VERSION IS AVAILABLE IN THE QGIS PLUGIN REPOSITORY**

*Alternatively the plugin can be **manually** installed:*

- *Download the plugin archive (zip file) from the Conefor site (link), or from the QGIS plugins repository (link) or from QGIS Conefor Github repository (link)*
- *Unzip the archive and place the resulting folder (qgisconefor) inside the QGIS plugins folder*
- *Under MS Windows the QGIS plugins folder is:*
  *c:\users\yourusername\.qgis2\python\plugins\*

- *Under GNU/Linux the QGIS plugins folder is:*
  */home/yourusername/.qgis2/python/plugins/*

- *Check (eventually after restarting QGIS) if the plugin is active in the QGIS plugin installer (Menu: **plugins > manage and install plugins**)*
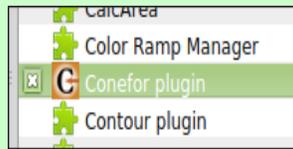
Once installed the plugin tools can be reached in different places:

- Menu: **vector > conefor inputs**
- The *Vector* toolbar

**Note!**

*In QGIS the toolbars can be activated/deactivated by using the following menu:*

*view > toolbars*

*The content of a toolbar may vary depending on what tools/plugins are installed/active in a specific QGIS installation, example:*

# Usage

## *Preparing the inputs for post-processing with Conefor Inputs*

The icon/shortcut available in the **vector > conefor inputs** menu or in the **Vector** toolbar gives the user access to an interface that allows the user to prepare/create the input files to be then processed with the Conefor application (see the Conefor user manual). This tool [1] is similar in its functionalities to the old "Conefor Inputs" QGIS plugin, the one that used to work in older QGIS releases (up to 1.8).

The tool generates the node file and connection file (distance file with Euclidean distances) needed as an input for the connectivity analyses in Conefor. This is done through the following distance analysis and node (feature) queries:

- distance from edges (for polygon layers)
- distance from centroids (for polygon layers)
- distance from points (for point layers)
- compute area of polygons (for polygon layers)

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1 Unlike the old version of the plugin, this tool accepts many different input (vector) formats, all the ones supported by QGIS. Among the others (but not limited to): ESRI Shapefiles, PostGIS, Spatialite, CSV, KML, GPX, ESRI Personal/File Geodatabases. See: http://www.gdal.org/ogr/ogr_formats.html for a complete list.

- extract one attribute (this will be the node attribute in the node file as used by Conefor)

The results are placed into (separate) text files (with the .txt file extension) inside an output folder chosen by the user.

For distance queries is available the option to compute also a vector layer (in ESRI Shapefile format) that represents the segments with the minimum distance between the input features. Be careful and only use this option when needed if you are processing large layers, because this option can largely increase required processing times.

When opening the tool, by default it loads just the first available layer or the selected ones (in the **Layers** QGIS panel). If you want to process multiple layers then make the proper layer selection in QGIS main window (**Layers** panel) by using the CTRL key.
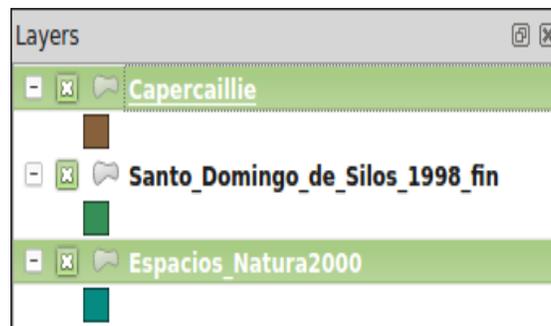


For example, the above selection will load inside the tool the "*Capercaille*" and "*Espacios_Natura_2000*" layers but not the "*Santo_Domingo_de_Silos_1998_fin*" one.

This is how the interface looks like:
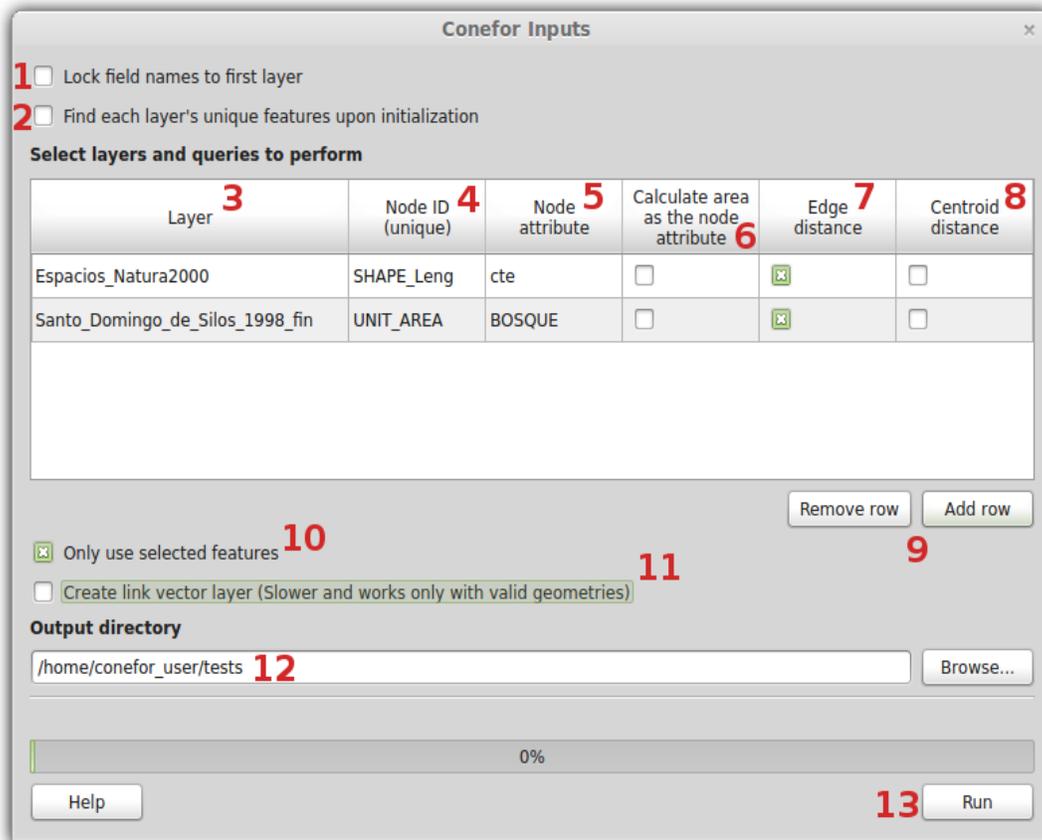
The options are described here below:

1. **Lock field names to first layer**: before running any analysis/query, for each layer it is mandatory to select a few options (a unique ID among the others, see below for details). If the number of layers to be analyzed/queried is high then this can become a tedious operation. By checking this option the user can force the tool to assume that the same analysis/queries have to be run for all the layers. The tool will also assume that all the layers have a unique ID with the same name. See image below:
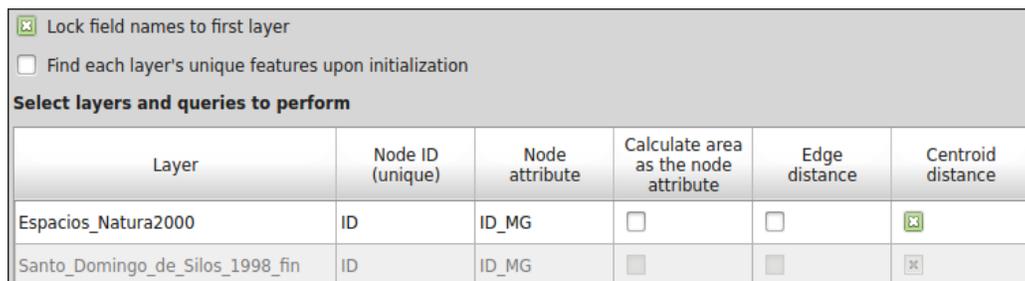
2. **Find each layer's unique features upon initialization**: for each layer the user must select an attribute (by double clicking the option "NODE ID (unique)") that represents an unique ID for the features of that particular layer. When this option is active the tool scans the tables of attributes of input layers and checks for columns that are appropriate as unique IDs. These columns are then the only ones available when double clicking "NODE ID (unique)". Scanning tables for unique IDs can take a while (depends on how many records input layers have) but it is useful when the user doesn't know what attribute can be used as a unique ID.

3. **Layer**: the list of loaded layers to be analyzed/queried. If the user mistakenly loads a layer that is not to be used, then it can double click on its name and a dropdown will show, allowing to choose any other proper (point or polygon) layer loaded in the QGIS project.

4. **NODE ID (unique)**: this option allows to choose what is the attribute to be used as unique ID.

5. **Node Attribute**: this option allows the user to query (extract) one attribute from the table of attributes of the input layer. Results will be placed in a text file beside the "NODE ID" values.

6. **Calculated area as the node attribute**: this option is only available when the input layer is a polygon one. When this option is active an output text file will be created and it will contain the area (in map units) of each feature.

7. **Edge distance**: this option is only available when the input layer is a polygon one. When this option is active an output text file will be created and it will contain the minimum distance between the edges (boundaries) of each feature.

8. **Centroid distance**: this option is available when the input layer is a polygon one or a point one. When this option is active an output text file will be created and it will contain the minimum distance between the centroids of polygon features or between the point features.

9. **Remove Row/Add Row** buttons: this buttons allow the user to remove one input layer or to add a new one that was previously not selected when the tool was open.

10. **Use only selected features**: by default the analysis/queries are run in all the features of all input layers. If a selection is made in the QGIS canvas (in one or more input layers) and this option is checked, then the analysis/queries will be run only using the selected features.

11. **Create link vector layer**: when this option is active (together with one distance analysis/query) then an additional output is created. The additional output is vector layer that contains as attributes the distances between features (edges and/or centroids/points) and as geometries the segments (lines) that represent such distances. When this option is active the analysis can take a while (depends on the number of features in input layers), moreover the (polygon) input layer must contain only valid geometries [2].

12. **Output directory**: the folder where output files where be placed.

13. **Run** button: to run the analysis/queries. The output file names contain the type of query and the layer name. For example, if the input file name is

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[2] In case of invalid geometries QGIS has a number of tools that allow to check/fix them. Please refer to the QGIS manual for details.

"espacios_natura2000" (polygon vector layer) then all the possible outputs will be:

- distances_centroids_espacios_natura2000.txt
- distances_edges_espacios_natura2000.txt
- nodes_calculated_area_espacios_natura2000.txt
- nodes_NODE_ATTRIBUTE_espacios_natura2000.txt
- link_vector_layers/centroid_links_espacios_natura2000.shp
- link_vector_layers/edge_links_espacios_natura2000.shp

### Note!

*When running multiple times the same analysis/query then the output files will not be overwritten, instead a underscore and a progressive number is added at the end of the output file name, for example:*

- *distances_centroids_espacios_natura2000_2.txt*