TASK 2: Intensity and Randomness

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The nest data from islet “nucli 84” is stored in *nucli84.txt*. Additionally, the coordinates of the islet are in *poly84.txt*.

1. Build a ppp object using the “nucli 84” data.

- Use the data in poly84.txt as window.
- Change the reference point to minimum and maximum values of X and Y.

2. Draw a plot with the intensity of the point process computed by the non-parametric approach. Briefly comment the results.

3. Assess the Completely Spatial Randomness hypothesis.

- Use the Chi-square test
- Use the Kolmogorov-Smirnov test

4. Assess the relation between the intensity of the point process and the covariates height and vegetation.

- Height: height of the terrain
- Vegetation: percentage of vegetation at location.
- Ordinary Krigging preditions are in files *height.txt* and *veg.txt*.
- The grids related to the predictions are in *grid.txt* and *grid_veg.txt* files.
- Use the Chi-square test. Categorize the covariates using the following intervals:
    - Height. [0,10], (10,20], (20,40]
    - Vegetation. [0,20], (20,50], (50,100]
- Use the Kolmogorov-Smirnov test

5. Fit an inhomogeneous Poisson model to data.

- Use the Cartesian coordinates,the height of the terrain and the percentage of vegetation as covariates.
- Search for the best model.
- Assess the goodness of fit of the model.
- Interpret model parameters.