Assignment 3 Spatial Epidemiology

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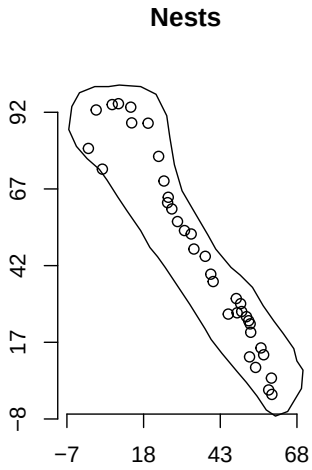
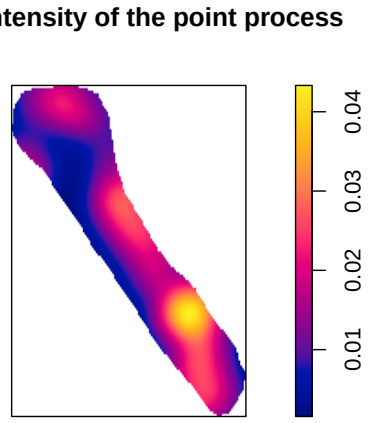
The nest data from islet "nucli 23" is stored in nucli23.txt. Additionally, the coordinates of the islet are in poly23.txt.

1) Build a ppp object using the "poly23" data as a window



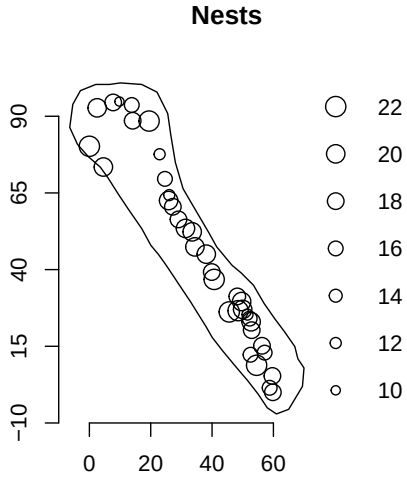
2) Describe the point pattern process and its intensity.

```
## Planar point pattern:  36 points
## Average intensity 0.01451131 points per square unit
##
## Coordinates are given to 6 decimal places
##
## Window: polygonal boundary
## single connected closed polygon with 47 vertices
## enclosing rectangle: [-6.40267, 69.97237] x [-7.06032, 100.8694] units
##                      (76.38 x 107.9 units)
## Window area = 2480.82 square units
## Fraction of frame area: 0.301
```



3) Create a multi-type mark indicating the order of the nesting according to the nesting time.

```
## Marked planar point pattern: 36 points
## marks are numeric, of storage type  'integer'
## window: polygonal boundary
## enclosing rectangle: [-6.40267, 69.97237] x [-7.06032, 100.8694] units
```

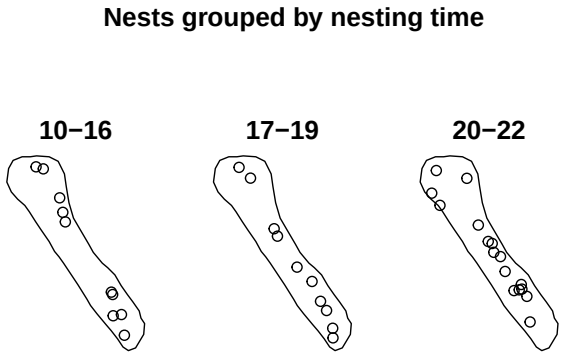


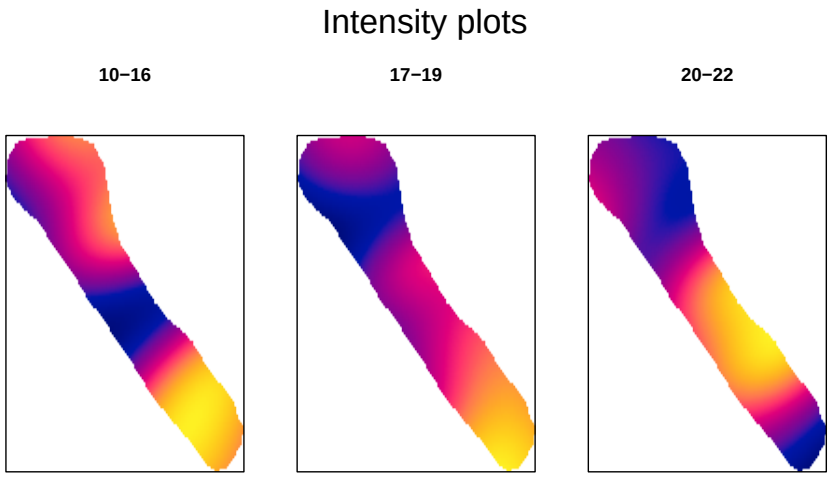

```
## DPOScat
## 10-16 17-19 20-22
##    10    10    16
```

The suddivision of the nests in the 3 temporal groups seems homogeneous

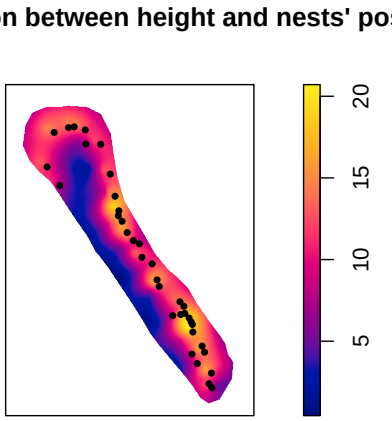
```
## Marked planar point pattern:  36 points
## Average intensity 0.01451131 points per square unit
##
## Coordinates are given to 6 decimal places
##
## Multitype:
##       frequency proportion   intensity
## 10-16        10  0.2777778 0.004030920
## 17-19        10  0.2777778 0.004030920
## 20-22        16  0.4444444 0.006449472
##
## Window: polygonal boundary
## single connected closed polygon with 47 vertices
## enclosing rectangle: [-6.40267, 69.97237] x [-7.06032, 100.8694] units
##                      (76.38 x 107.9 units)
## Window area = 2480.82 square units
## Fraction of frame area: 0.301
```

4) Describe the marked point process and its intensity





5) Add to the analysis the height of the islet.



We notice that the nests seem to be concentrated in the locations where the height is higher. So there will be a correlation between these two # .....?