

Spatial assignment of test sample

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Contents

| | |
|---|----------|
| Input | 1 |
| Isotope values of test sample | 1 |
| Output | 1 |
| Model | 1 |
| Map of best fitted reference sample | 2 |
| Best fitted reference entries | 3 |
| Testing robustness of assignment: Wilcoxon signed rank test | 3 |
| P-values for the k nearest neighbours in Wilcoxon Test | 3 |
| Goodness of fit of test sample: | 4 |

Input

Website Identifier: 005p562-35

Isotope values of test sample

Table 1: Isotope values of test sample

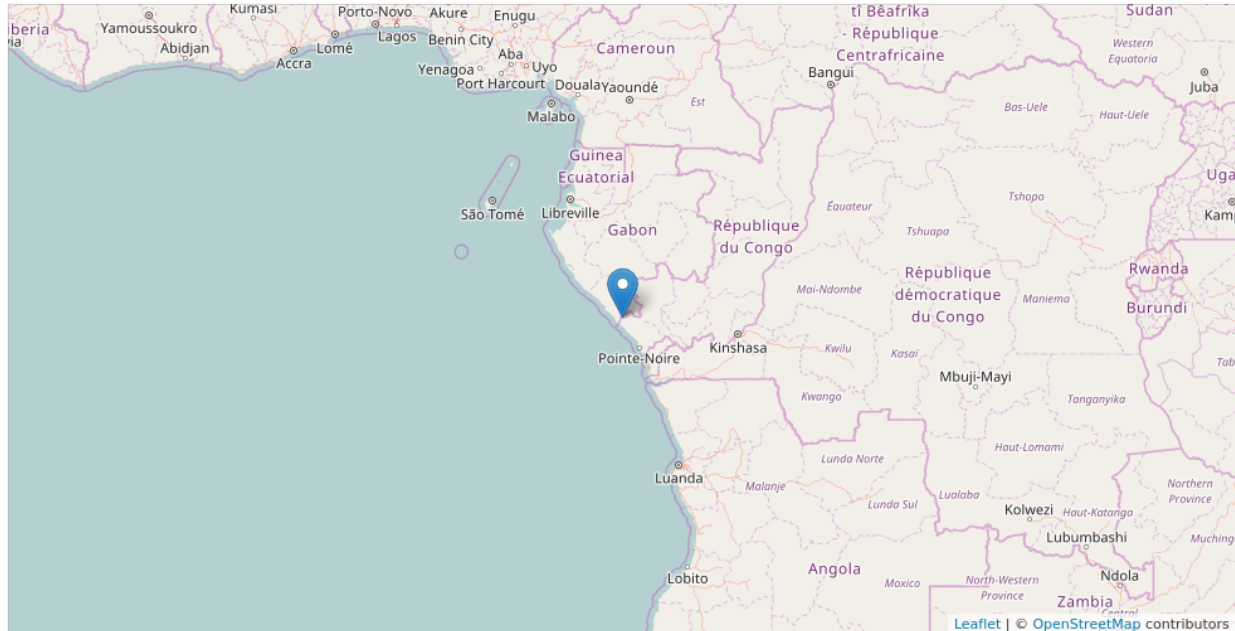
| 13C/12C | 15N/14N | 18O/16O | 2H/1H | 34S/32S |
|---------|---------|---------|-------|---------|
| -25.1 | 10.9 | 13.9 | -50.6 | 13.1 |

Output

Model

```
##
## Call:
## train.kknn(formula = fmla, data = ivory.train, kmax = 15, distance = 2, kernel = knl)
##
## Type of response variable: nominal
## Minimal misclassification: 0.3765867
## Best kernel: triangular
## Best k: 15
Classifier: country_code
```

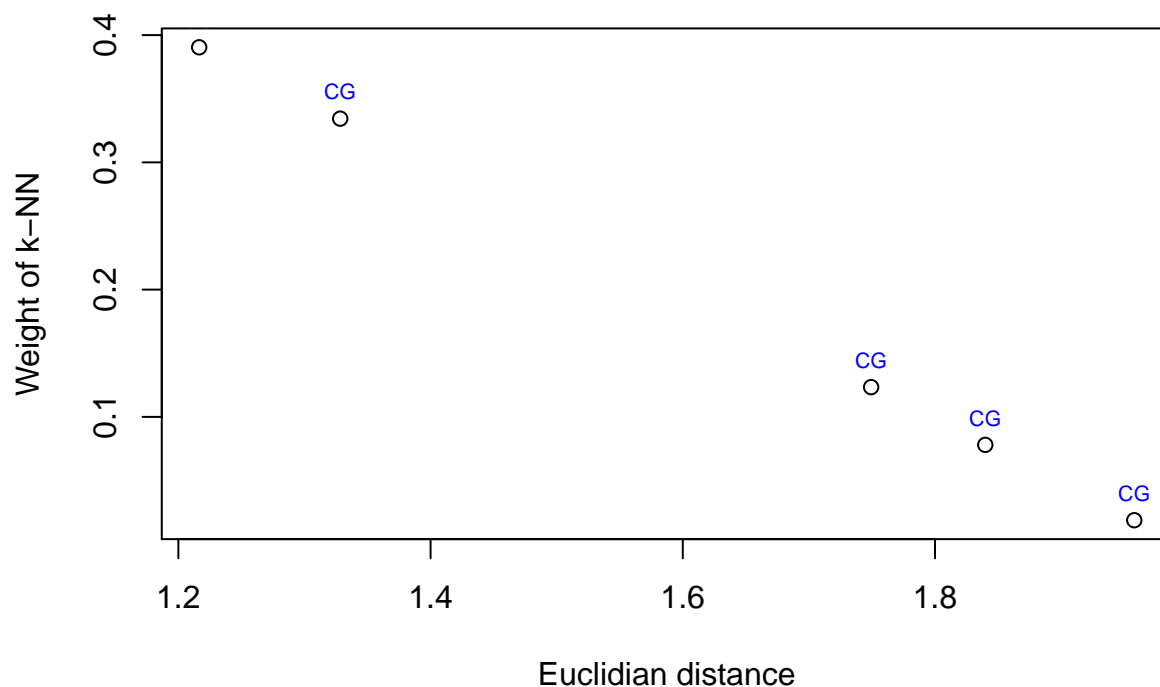
Map of best fitted reference sample



Best fitted reference sample:

- Site: Congo, Shot in Southern Congo, on the Atlantic shore very near the border with Gabon
- Country: CG
- Region: Central Africa
- CITES: Appendix I
- Lat: -3.78
- Lon: 11.27

Assignment of test sample to nearest neighbours



Best fitted reference entries

Table 2: Details of best fitted reference entry (row 1) and other fitted entries within best classifier

| lon | lat | location | 13C/12C | 15N/14N | 18O/16O | 2H/1H | 34S/32S |
|-------|-------|--|---------|---------|---------|-------|---------|
| 11.27 | -3.78 | Congo, Shot in Southern Congo, on the At | -24.7 | 11.6 | 15.8 | -48.1 | 11.0 |
| 11.64 | -4.13 | Congo, Shot in Southern Congo, 50km from | -25.0 | 8.5 | 14.7 | -49.4 | 11.9 |
| 12.79 | -3.01 | Congo, Litsandou village, 8km southeast | -23.5 | 10.2 | 13.3 | -64.6 | 10.8 |
| 20.96 | -1.44 | Congo | -23.7 | 9.2 | 13.6 | -62.2 | 9.8 |
| 13.54 | -2.82 | Congo, Shot in Central Congo near Sibiti | -24.1 | 7.2 | 13.5 | -52.2 | 12.8 |

Country of prediction: CG

Testing robustness of assignment: Wilcoxon signed rank test

If $p\text{-value} > 0.05$, the test concludes that the isotope signature of the test sample is similar to the respective nearest neighbour reference sample.

P-values for the k nearest neighbours in Wilcoxon Test

“0.2012, 0.0292, 0.0105, 0.0079, 0.0019”

Goodness of fit of test sample:

- good fit: if $p > 0.05$ for at least two tested nearest neighbour reference samples;
- moderate fit: if $p > 0.05$ for at least one tested nearest neighbour reference samples;
- uncertain: if $p > 0.05$ for none of the tested nearest neighbour reference samples.

Assumption: At least two nearest reference samples are available.

Overall goodness of fit of test sample: “**moderate fit**”