

# Spatial assignment of test sample

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## Contents

<b>Input</b>	<b>1</b>
Isotope values of test sample . . . . .	1
<b>Output</b>	<b>1</b>
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: 005p562-37

### Isotope values of test sample

Table 1: Isotope values of test sample

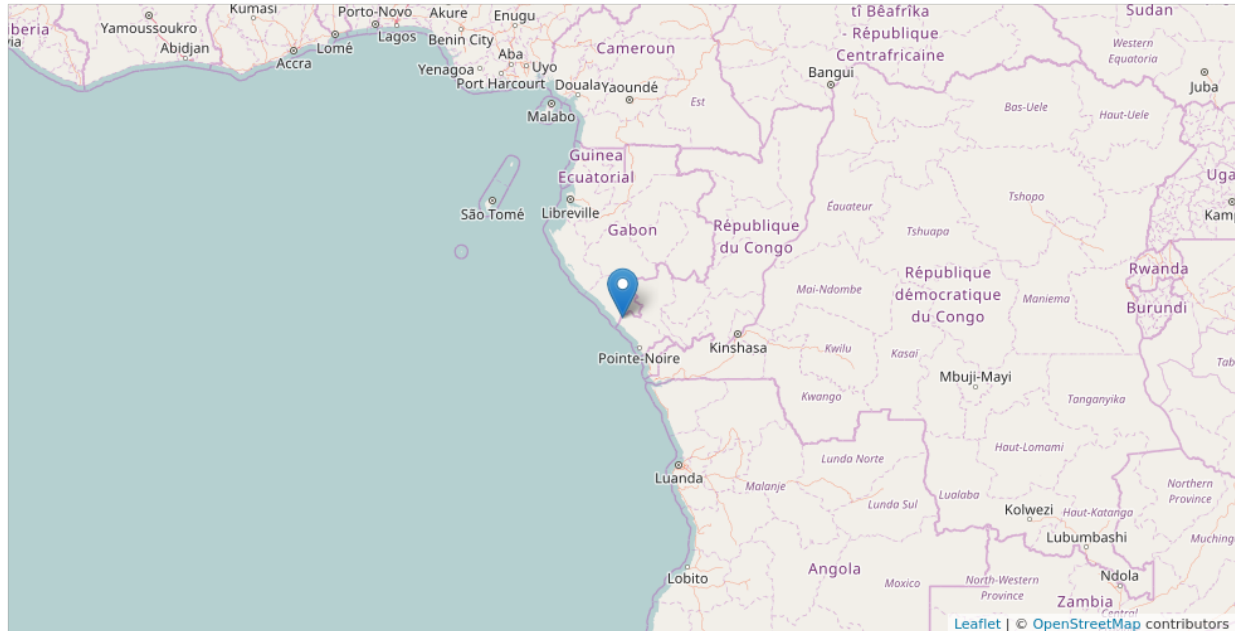
13C/12C	15N/14N	18O/16O	2H/1H	34S/32S
-25.7	11.2	13.2	-54.3	14.3

## 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
```

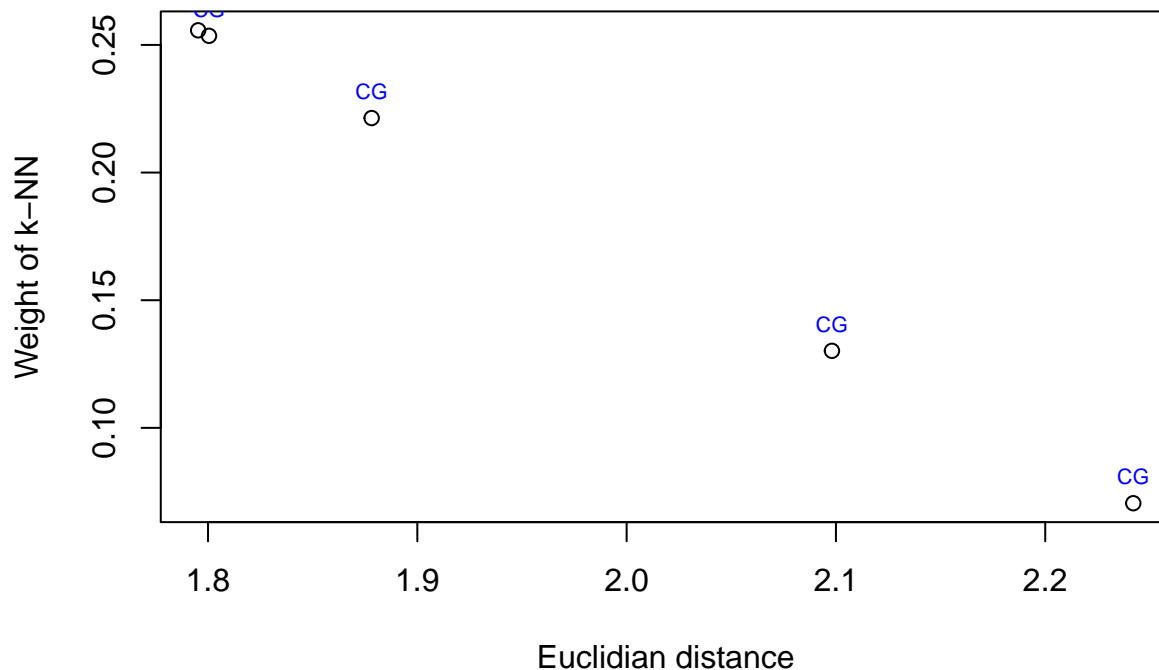
## Map of best fitted reference sample



### 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

“0.000017612, 0.000000309, 0.000000181, 0.000000052, 0.000000026”

**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: “**uncertain**”