

Spatial assignment of test sample

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Input

Website Identifier: 112

Isotope values of test sample

Table 1: Isotope values of test sample

13C/12C	15N/14N	18O/16O	2H/1H	34S/32S
-25.7	10.2	17.5	-42	10.6

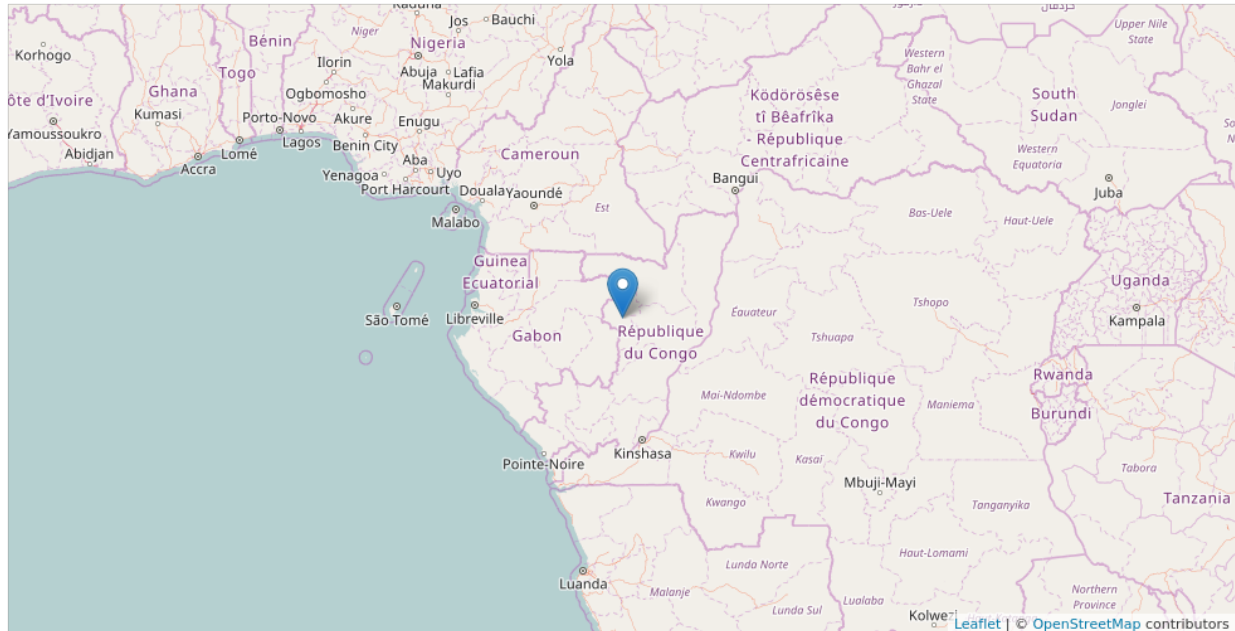
Output

Model

```
##  
## Call:  
## train.kknn(formula = fmla, data = ivory.train, kmax = 15, distance = 2, kernel = knl)  
##  
## Type of response variable: nominal  
## Minimal misclassification: 0.1889986  
## Best kernel: triangular  
## Best k: 14
```

Classifier: **region**

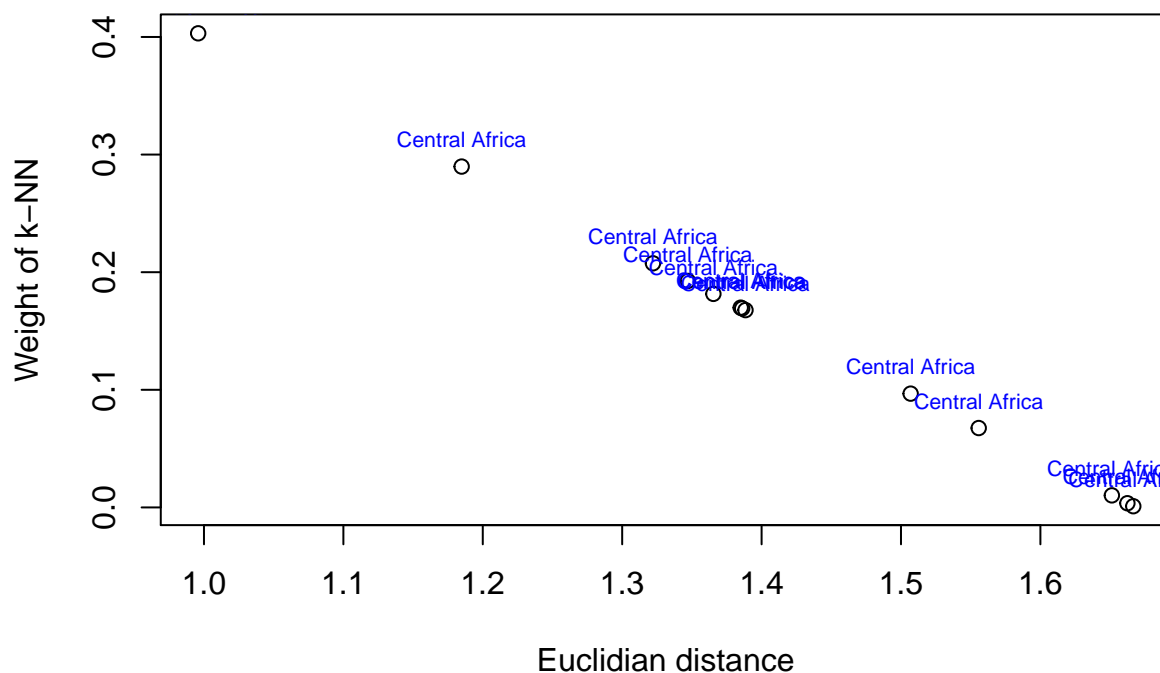
Map of best fitted reference sample



Best fitted reference sample:

- Site: Dem. Rep. Congo
- Country: CD
- Region: Central Africa
- CITES: Appendix I
- Lat: -0.082275
- Lon: 14.573353

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
14.57	-0.08	Dem. Rep. Congo	-24.9	10.3	16.4	-49.5	10.0
14.47	-0.01	Dem. Rep. Congo	-25.0	10.2	15.8	-49.9	10.1
17.11	-1.10	Dem. Rep. Congo, Lukolela	-24.8	10.5	15.4	-43.4	8.4
11.27	-3.78	Congo, Shot in Southern Congo, on the At	-24.7	11.6	15.8	-48.1	11.0
18.20	-1.55	Dem. Rep. Congo, Leopold ii meer	-25.9	10.9	17.1	-39.7	6.2
13.02	-1.43	Dem. Rep. Congo, Itoko	-24.2	10.4	18.1	-38.4	7.0
27.37	1.40	Dem. Rep. Congo, Nepoko	-24.3	10.5	18.0	-34.9	7.4
21.45	-1.00	Dem. Rep. Congo, Itoko	-24.2	10.2	16.9	-42.9	6.8
23.55	-1.35	Dem. Rep. Congo, Moma	-25.6	10.8	16.9	-44.4	5.7
23.55	-1.35	Dem. Rep. Congo, Moma	-24.2	9.9	16.8	-35.4	6.7
27.18	2.25	Dem. Rep. Congo, Medje	-24.2	11.9	17.4	-37.8	6.8
13.00	2.00	Congo	-23.2	8.4	18.4	-40.9	11.3
23.55	-1.35	Dem. Rep. Congo, Moma	-24.1	11.3	16.6	-40.9	6.3

Region of prediction: Central Africa

Testing robustness of assignment: Wilcoxon signed rank test

If p -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

“0.3753862, 0.0008231, 0.0001552, 0.0000139, 0.0000030, 0.0000030, 0.0000019, 0.0000019, 0.0000012, 0.0000007, 0.0000007, 0.0000001, 0.0000001”

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**”