

Spatial assignment of test sample

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Input

Website Identifier: 12

Isotope values of test sample

Table 1: Isotope values of test sample

13C/12C	15N/14N	18O/16O	2H/1H	34S/32S
-28.1	10.7	17.6	-46.7	9.5

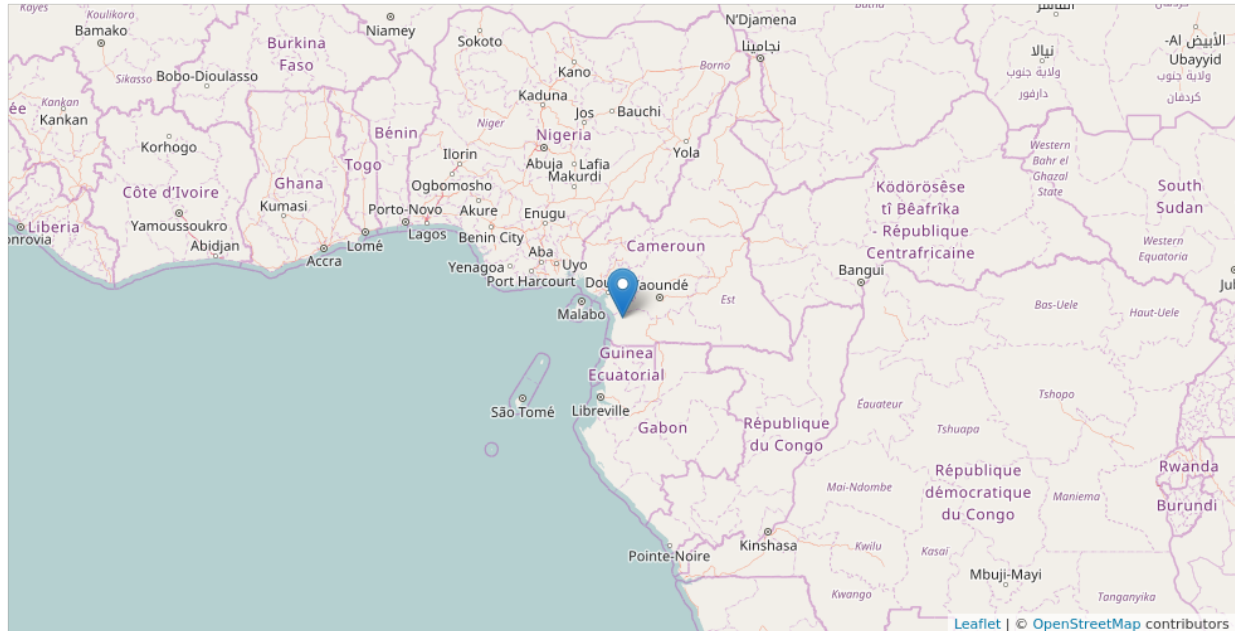
Output

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**

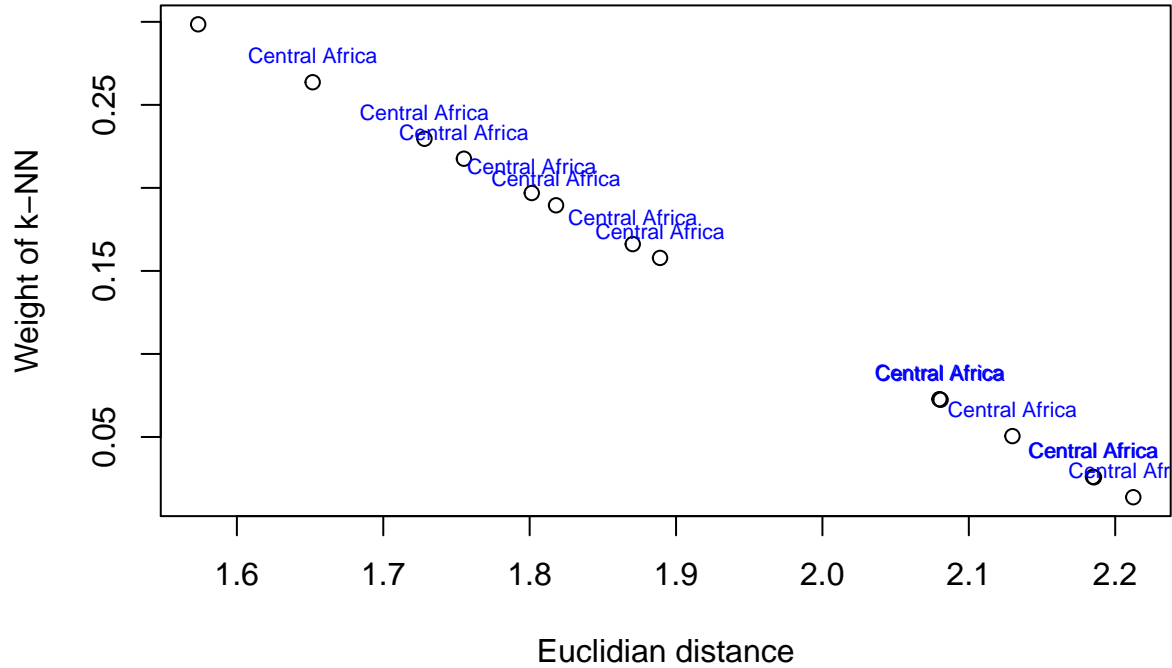
Map of best fitted reference sample



Best fitted reference sample:

- Site: Cameroon, Lokundji
- Country: CM
- Region: Central Africa
- CITES: Appendix I
- Lat: 3.13
- Lon: 10.2

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
10.20	3.13	Cameroon, Lokundji	-26.7	11.1	15.5	-51.6	6.8
18.20	-1.55	Dem. Rep. Congo, Leopold ii meer	-25.9	10.9	17.1	-39.7	6.2
23.20	-1.00	Dem. Rep. Congo, Tshuapa	-26.4	12.1	16.2	-46.3	5.7
23.55	-1.35	Dem. Rep. Congo, Moma	-25.6	10.8	16.9	-44.4	5.7
14.57	-0.08	Dem. Rep. Congo	-24.9	10.3	16.4	-49.5	10.0
12.76	-1.18	Gabon	-26.6	10.0	15.0	-56.9	9.9
12.76	-1.18	Gabon	-26.6	10.4	14.9	-57.1	8.2
14.47	-0.01	Dem. Rep. Congo	-25.0	10.2	15.8	-49.9	10.1
11.27	-3.78	Congo, Shot in Southern Congo, on the At	-24.7	11.6	15.8	-48.1	11.0
17.11	-1.10	Dem. Rep. Congo, Lukolela	-24.8	10.5	15.4	-43.4	8.4
23.55	-1.35	Dem. Rep. Congo, Moma	-24.9	11.1	16.3	-48.5	5.6
19.00	8.00	Central African Republic	-25.7	12.8	19.8	-36.6	9.0
11.15	2.86	Cameroon, near Ebolowa	-25.0	11.7	15.0	-52.0	10.1
15.24	-4.26	Congo (Brazzaville)	-24.9	10.6	19.5	-42.6	5.9

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

“0.4582687, 0.0000007, 0.0000007, 0.0000001, 0.0000001, 0.0000001, 0.0000001, 0.0000001, 0.0000001, 0.0000001, 0.0000001, 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**”