

Spatial assignment of test sample

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Input

Website Identifier: 005p562-17

Isotope values of test sample

Table 1: Isotope values of test sample

13C/12C	15N/14N	18O/16O	2H/1H	34S/32S
-26	11.1	14.6	-54.8	11.7

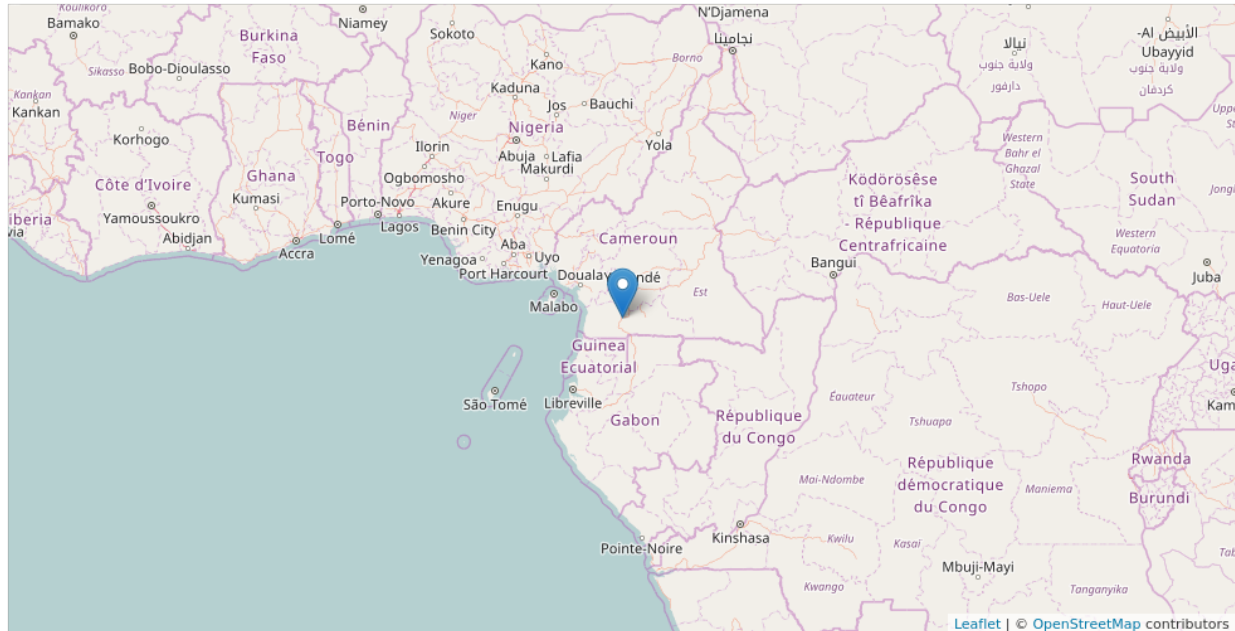
Output

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**

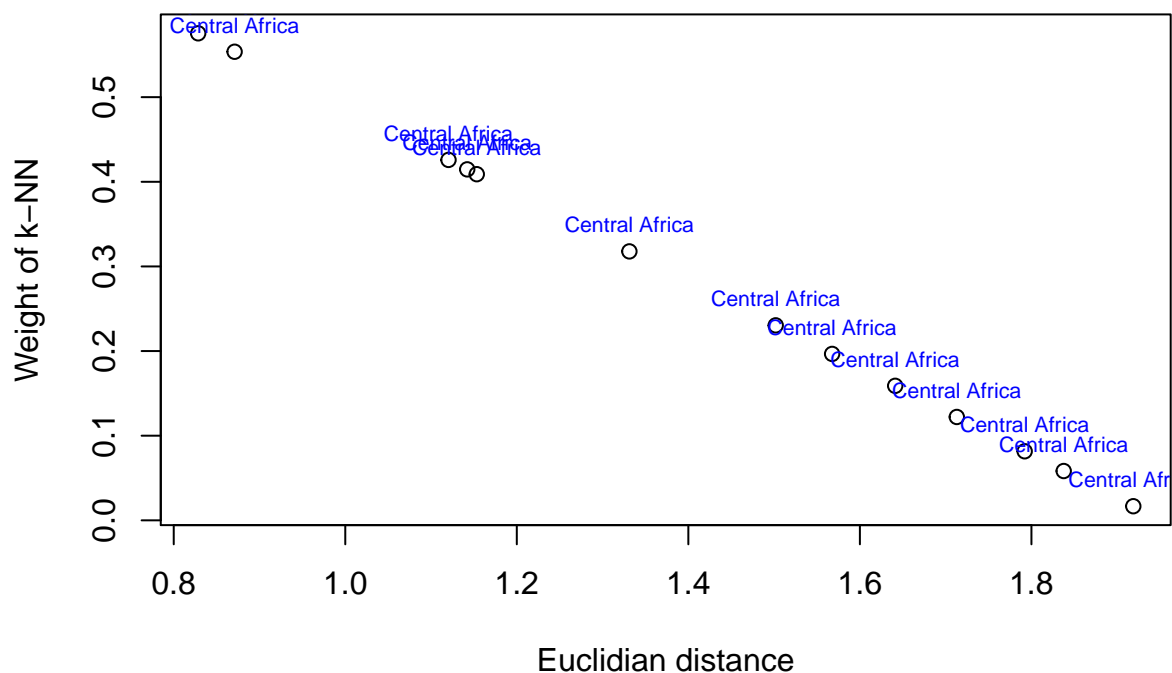
Map of best fitted reference sample



Best fitted reference sample:

- Site: Cameroon, near Ebolowa
- Country: CM
- Region: Central Africa
- CITES: Appendix I
- Lat: 2.86
- Lon: 11.15

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
11.15	2.86	Cameroon, near Ebolowa	-25.0	11.7	15.0	-52.0	10.1
12.76	-1.18	Gabon	-26.6	10.0	15.0	-56.9	9.9
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
12.76	-1.18	Gabon	-26.6	10.4	14.9	-57.1	8.2
14.57	-0.08	Dem. Rep. Congo	-24.9	10.3	16.4	-49.5	10.0
11.64	-4.13	Congo, Shot in Southern Congo, 50km from	-25.0	8.5	14.7	-49.4	11.9
10.20	3.13	Cameroon, Lokundji	-26.7	11.1	15.5	-51.6	6.8
17.11	-1.10	Dem. Rep. Congo, Lukolela	-24.8	10.5	15.4	-43.4	8.4
21.31	-2.34	Dem. Rep. Congo	-27.1	11.2	13.7	-62.0	6.9
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
12.47	4.98	Cameroon	-25.0	9.6	15.6	-53.1	6.2

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

“0.98097, 0.23882, 0.20201, 0.18518, 0.18518, 0.12786, 0.07627, 0.06094, 0.05425, 0.02547, 0.01675, 0.01448, 0.00026”

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: “**good fit**”