

Spatial assignment of test sample

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Input

Website Identifier: 62

Isotope values of test sample

Table 1: Isotope values of test sample

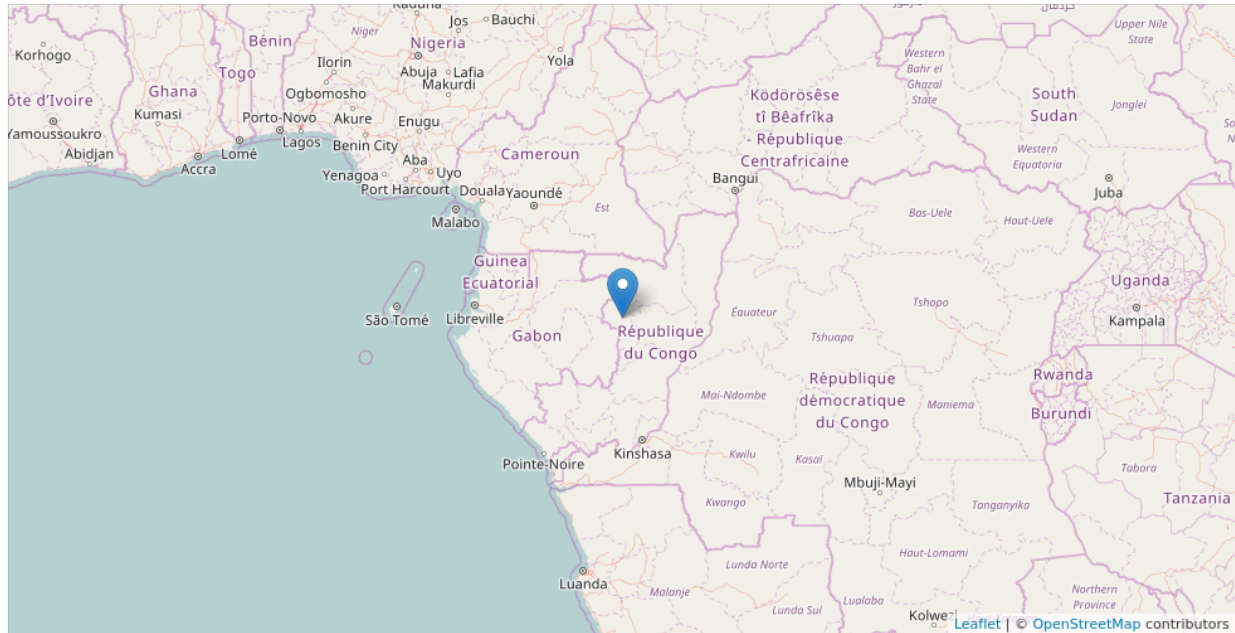
| 13C/12C | 15N/14N | 18O/16O | 2H/1H | 34S/32S |
|---------|---------|---------|-------|---------|
| -27.4 | 10.2 | 17.4 | -44 | 10.6 |

Output

Model

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

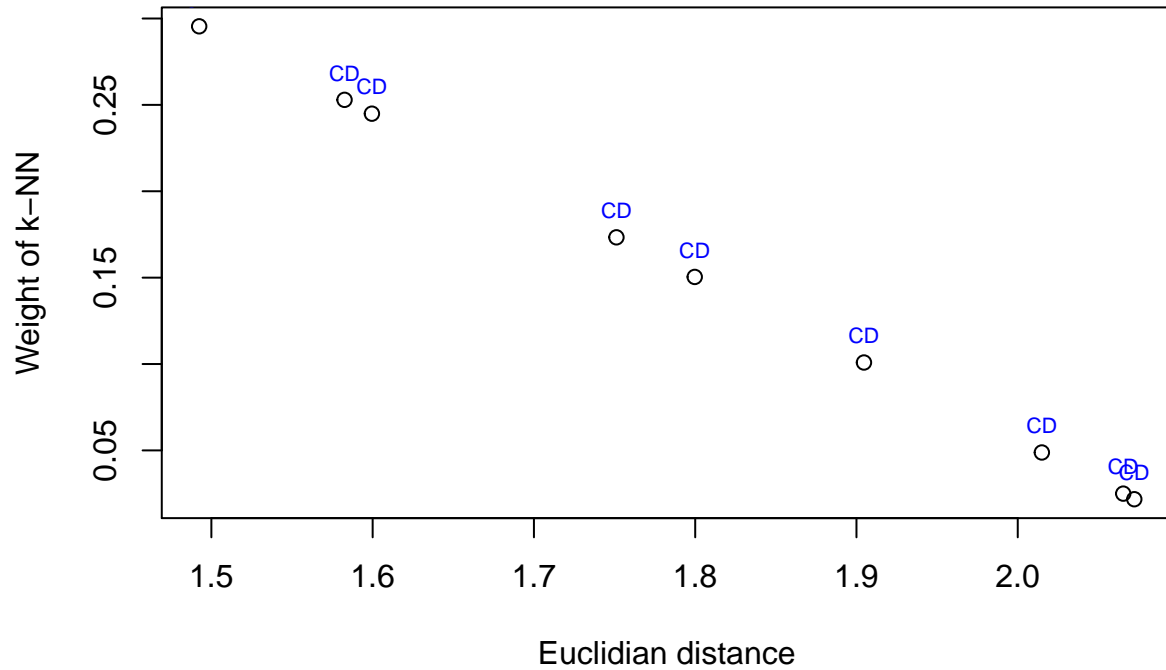
Map of best fitted reference sample



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 |
| 18.20 | -1.55 | Dem. Rep. Congo, Leopold ii meer | -25.9 | 10.9 | 17.1 | -39.7 | 6.2 |
| 23.55 | -1.35 | Dem. Rep. Congo, Moma | -25.6 | 10.8 | 16.9 | -44.4 | 5.7 |
| 17.11 | -1.10 | Dem. Rep. Congo, Lukolela | -24.8 | 10.5 | 15.4 | -43.4 | 8.4 |
| 23.20 | -1.00 | Dem. Rep. Congo, Tshuapa | -26.4 | 12.1 | 16.2 | -46.3 | 5.7 |
| 21.45 | -1.00 | Dem. Rep. Congo, Itoko | -24.2 | 10.2 | 16.9 | -42.9 | 6.8 |
| 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 |

Country of prediction: CD

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

“0.000000026, 0.000000026, 0.000000026, 0.000000026, 0.000000026, 0.000000026, 0.000000026, 0.000000026,
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**”