

Spatial assignment of test sample

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Input

Website Identifier: 120

Isotope values of test sample

Table 1: Isotope values of test sample

| 13C/12C | 15N/14N | 18O/16O | 2H/1H | 34S/32S |
|---------|---------|---------|-------|---------|
| -20.8 | 6.6 | 17.4 | -40.6 | 6.9 |

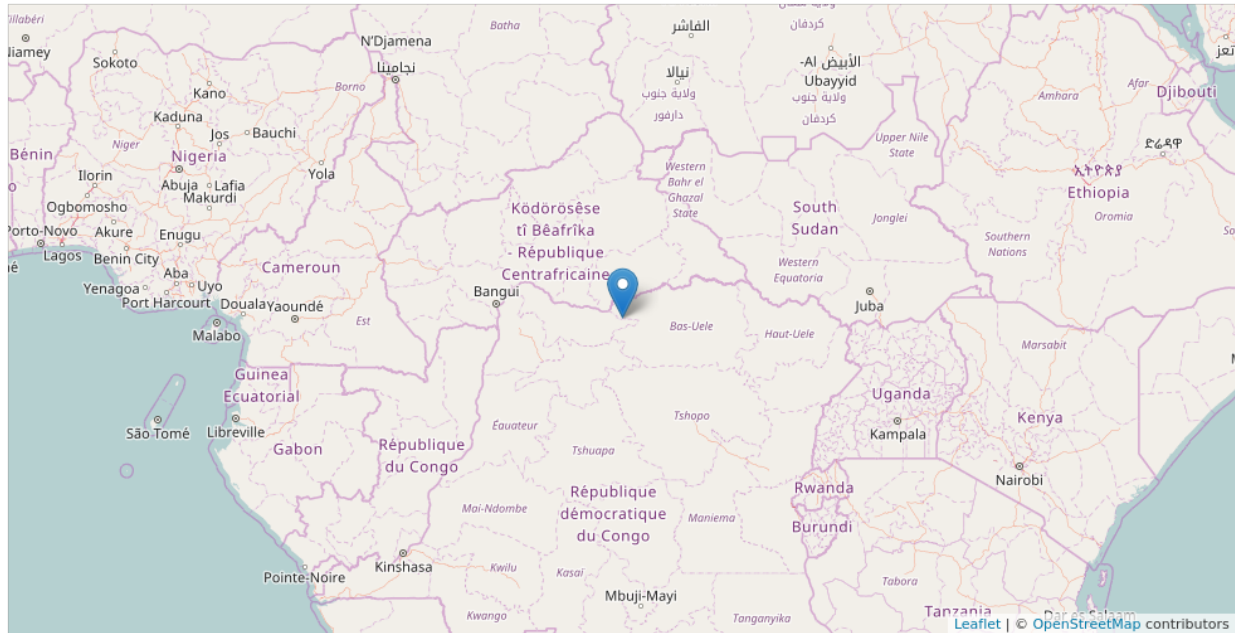
Output

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**

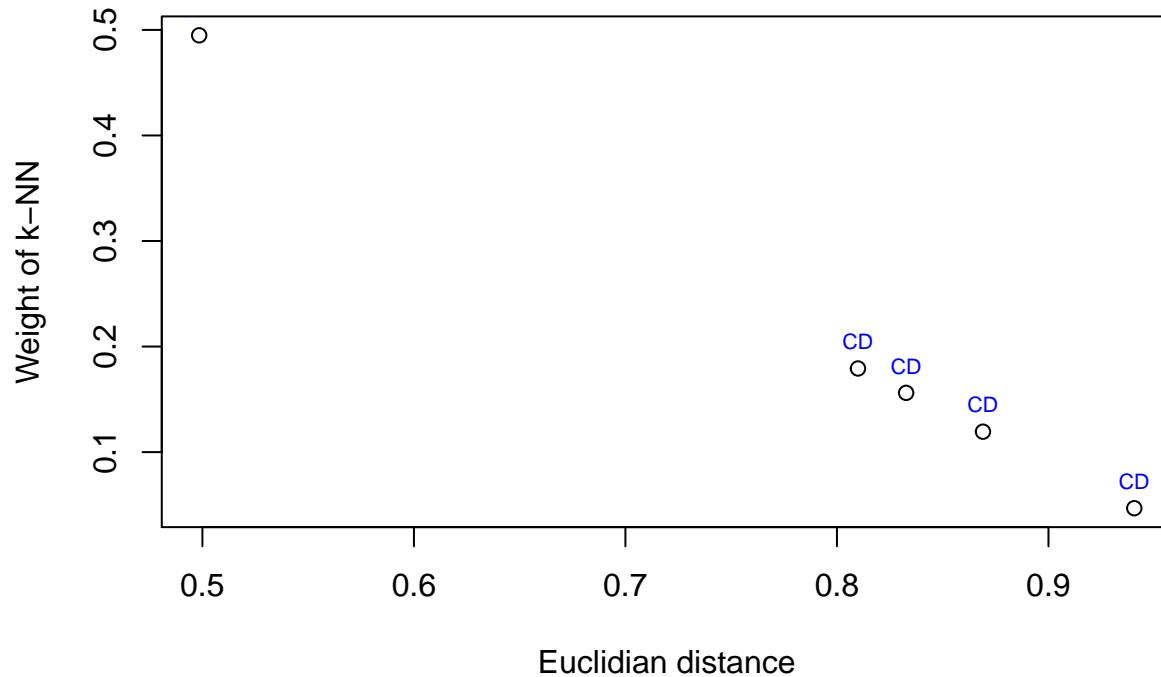
Map of best fitted reference sample



Best fitted reference sample:

- Site: Dem. Rep. Congo, Uele
- Country: CD
- Region: Central Africa
- CITES: Appendix I
- Lat: 3.88
- Lon: 22.92

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 |
|-------|-------|---------------------------------|---------|---------|---------|-------|---------|
| 22.92 | 3.88 | Dem. Rep. Congo, Uele | -20.8 | 6.3 | 18.2 | -38.5 | 6.3 |
| 19.52 | 4.14 | Dem. Rep. Congo, Bosobolo | -20.0 | 7.9 | 17.5 | -38.8 | 6.4 |
| 14.35 | -5.17 | Dem. Rep. Congo, Lukungu Vallei | -20.0 | 7.9 | 17.5 | -43.5 | 7.3 |
| 22.25 | -7.12 | Dem. Rep. Congo, Luisa terr | -21.0 | 8.3 | 17.5 | -40.9 | 6.7 |
| 29.12 | 3.71 | Dem. Rep. Congo, Gangala | -20.1 | 7.5 | 17.0 | -33.0 | 7.1 |

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

“0.3765884, 0.1120698, 0.1023086, 0.0007646, 0.0000025”

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**”