

Spatial assignment of test sample

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Contents

| | |
|---|----------|
| Input | 1 |
| Isotope values of test sample | 1 |
| Output | 1 |
| Model | 1 |
| Map of best fitted reference sample | 2 |
| Best fitted reference entries | 3 |
| Testing robustness of assignment: Wilcoxon signed rank test | 3 |
| P-values for the k nearest neighbours in Wilcoxon Test | 3 |
| Goodness of fit of test sample: | 4 |

Input

Website Identifier: 181

Isotope values of test sample

Table 1: Isotope values of test sample

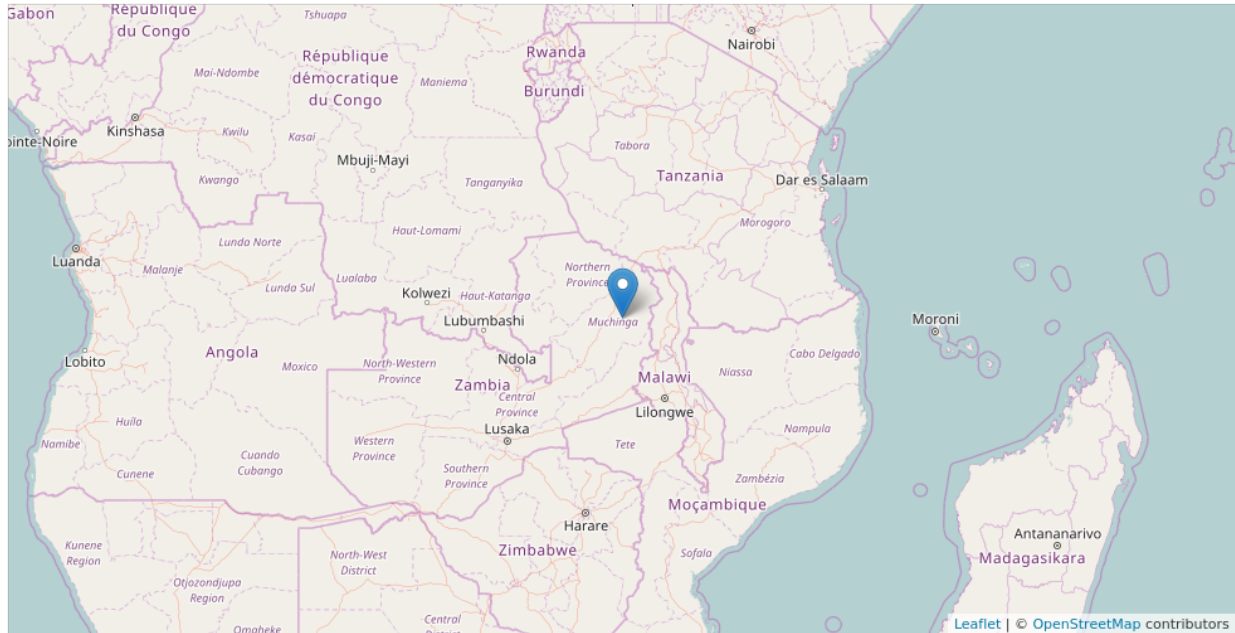
| 13C/12C | 15N/14N | 18O/16O | 2H/1H | 34S/32S |
|---------|---------|---------|-------|---------|
| -21.6 | 8.1 | 16.4 | -48 | 9.1 |

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
```

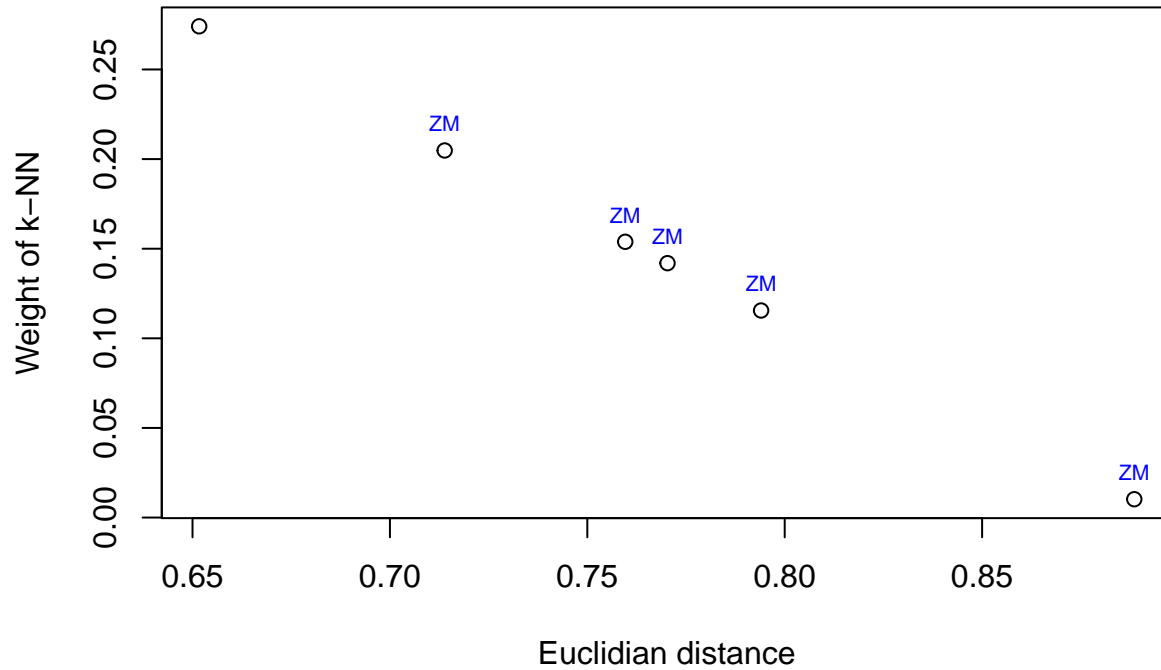
Map of best fitted reference sample



Best fitted reference sample:

- Site: Southern Zambia
- Country: ZM
- Region: Southern Africa
- CITES: Appendix I
- Lat: -11.27
- Lon: 32.32

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 |
|-------|--------|--|---------|---------|---------|-------|---------|
| 32.32 | -11.27 | Southern Zambia | -21.5 | 7.9 | 17.4 | -51.6 | 8.3 |
| 25.84 | -15.96 | Southern Zambia | -21.0 | 8.6 | 17.4 | -51.4 | 8.9 |
| 25.93 | -15.15 | Southern Zambia | -21.1 | 8.3 | 17.7 | -51.0 | 9.4 |
| 25.80 | -15.99 | Southern Zambia | -21.9 | 8.0 | 17.2 | -54.6 | 9.7 |
| 25.84 | -16.27 | Southern Zambia | -21.2 | 8.4 | 17.3 | -53.5 | 10.2 |
| 26.71 | -14.96 | Zambia, Eastern of Kafue National Park | -22.0 | 7.5 | 17.3 | -54.9 | 8.4 |

Country of prediction: ZM

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

“0.2703, 0.0848, 0.0105, 0.0059, 0.0019, 0.0013”

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**”