

Spatial assignment of test sample

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Input

Website Identifier:

Isotope values of test sample

Table 1: Isotope values of test sample

13C/12C	15N/14N	18O/16O	2H/1H	34S/32S
-23.1	8.6	18.7	-52.9	4.9

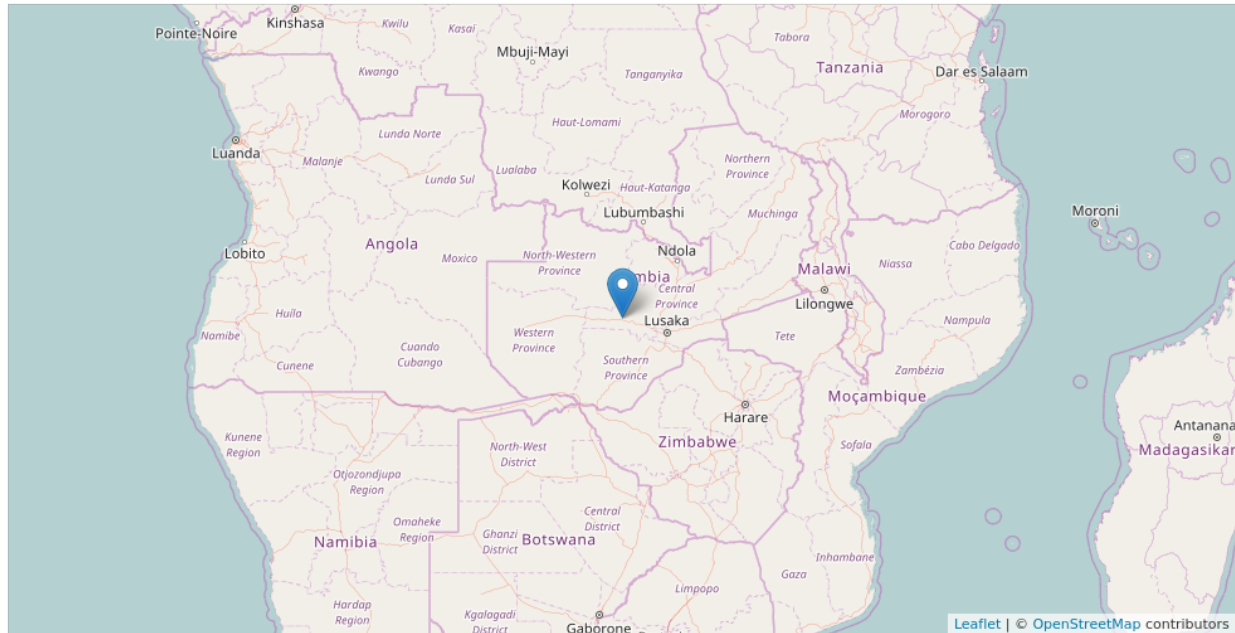
Output

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**

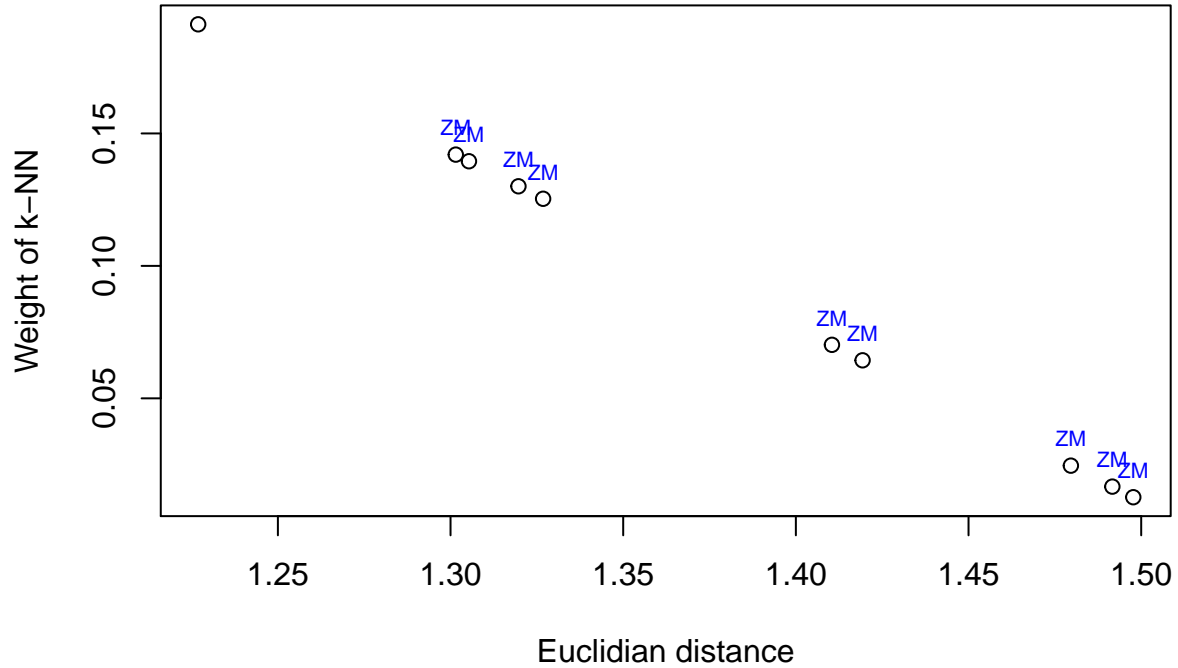
Map of best fitted reference sample



Best fitted reference sample:

- Site: South Zambia, East of Kafue National Park
- Country: ZM
- Region: Southern Africa
- CITES: Appendix I
- Lat: -14.964059
- Lon: 26.7110926

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
26.71	-14.96	South Zambia, East of Kafue National Par	-21.9	7.7	18.6	-50.8	8.1
32.55	-12.22	East Zambia, east to North Luangwa Natio	-21.3	7.5	18.4	-52.9	7.3
25.70	-16.73	Southern Zambia	-22.5	7.6	18.4	-50.8	8.8
32.13	-11.41	Southern Zambia	-20.8	9.1	18.4	-49.1	6.0
32.30	-11.10	North Zambia, near Chibesakunda	-22.1	6.7	17.6	-56.4	6.3
25.70	-16.73	Southern Zambia	-22.1	8.0	18.0	-51.8	9.1
26.33	-14.73	Southern Zambia	-23.1	7.0	18.8	-53.1	8.9
26.71	-14.96	Zambia, Eastern of Kafue National Park	-22.0	7.5	17.3	-54.9	8.4
32.32	-11.27	Southern Zambia	-21.5	7.9	17.4	-51.6	8.3
32.43	-11.16	Southern Zambia	-22.2	8.1	17.4	-55.3	9.1

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

“0.000005070, 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**”