Spatial assignment of test sample

November 24, 2016

Contents

Input

Website Identifier: 139-N

Isotope values of test sample

Table 1: Isotope values of test sample

13C/12C	15N/14N	18O/16O	2H/1H	34S/32S
-22.8	9.1	19	-29.6	9.5

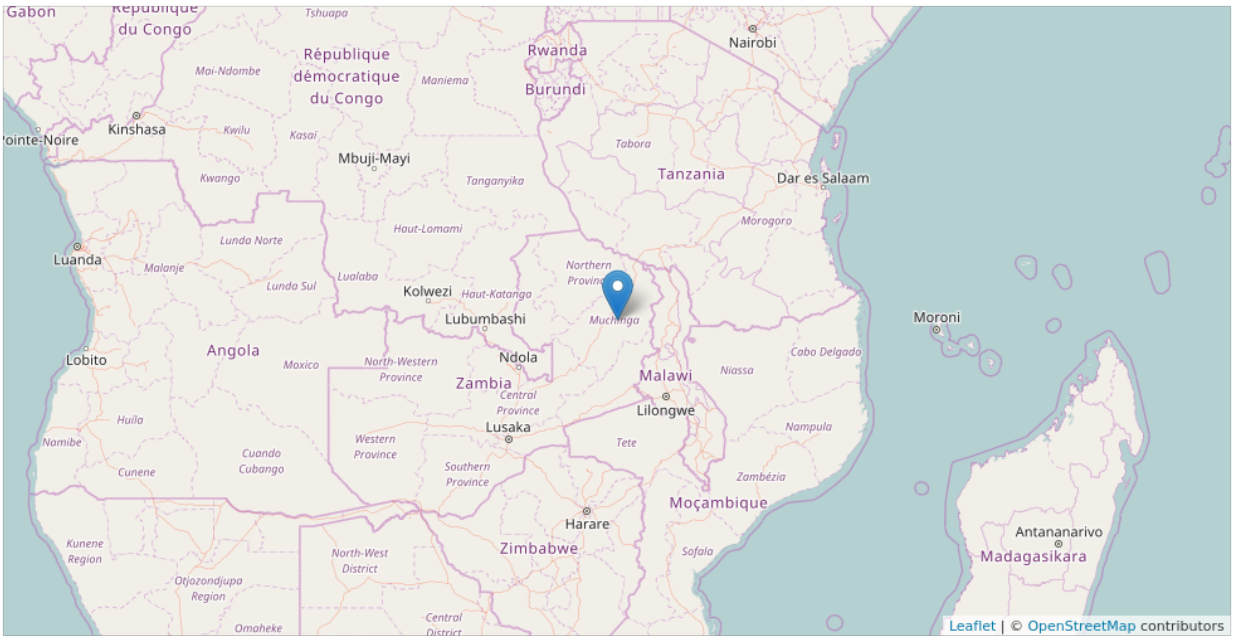
Output

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
```

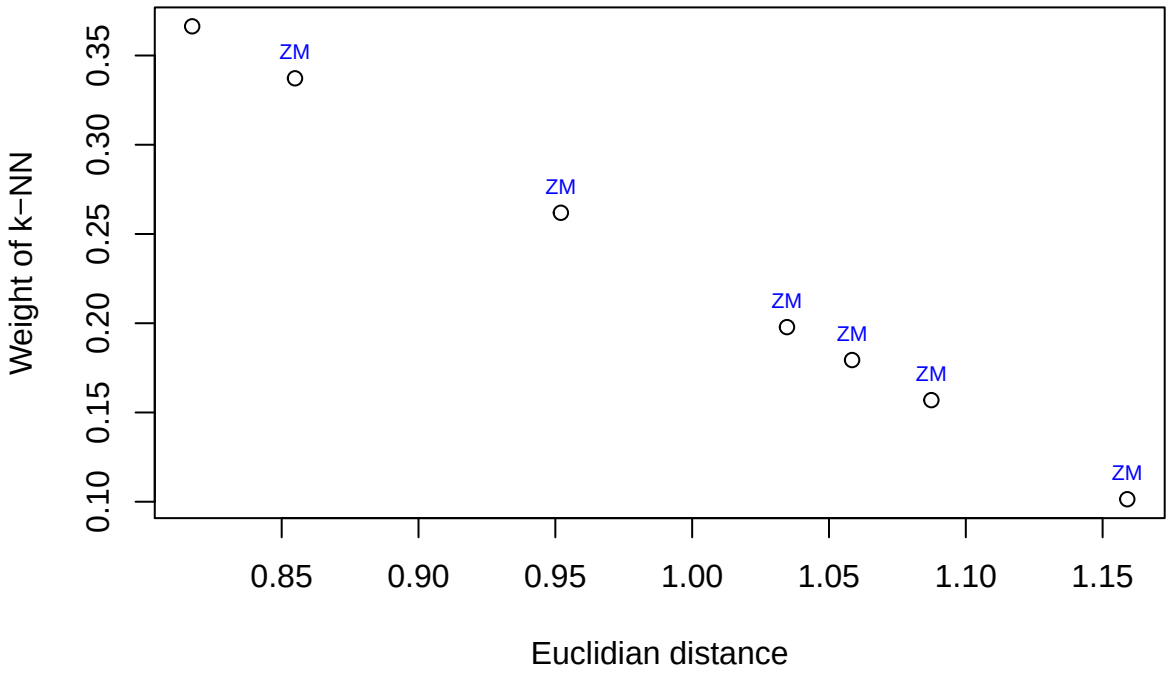
Classifier: **country_code**

Map of best fitted reference sample



Best fitted reference sample:

- Site: Southern Zambia
- Country: ZM
- Region: Southern Africa
- CITES: Appendix I
- Lat: -11.38
- Lon: 32.06



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
32.06	-11.38	Southern Zambia	-22.6	8.7	19.0	-37.8	8.9
26.06	-15.91	Southern Zambia	-22.2	8.8	19.4	-37.7	9.5
26.49	-12.20	Southern Zambia	-22.8	8.2	18.0	-36.8	9.3
31.57	-12.28	Southern Zambia	-22.1	8.8	18.8	-39.2	10.6
31.51	-12.09	Southern Zambia	-21.7	9.6	19.5	-37.9	8.6
31.86	-12.11	Northeast Zambia, North Luangwa National	-21.5	9.6	20.0	-36.5	9.3
31.37	-14.17	Southern Zambia	-21.7	8.8	17.8	-37.9	8.8

Country of prediction: ZM

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

"0.0007646, 0.0006293, 0.0002757, 0.0000682, 0.0000682, 0.0000050, 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: "**uncertain**"