Spatial assignment of test sample

November 24, 2016

Contents

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
-21.8	7.1	18.2	-51.3	4.7

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
```
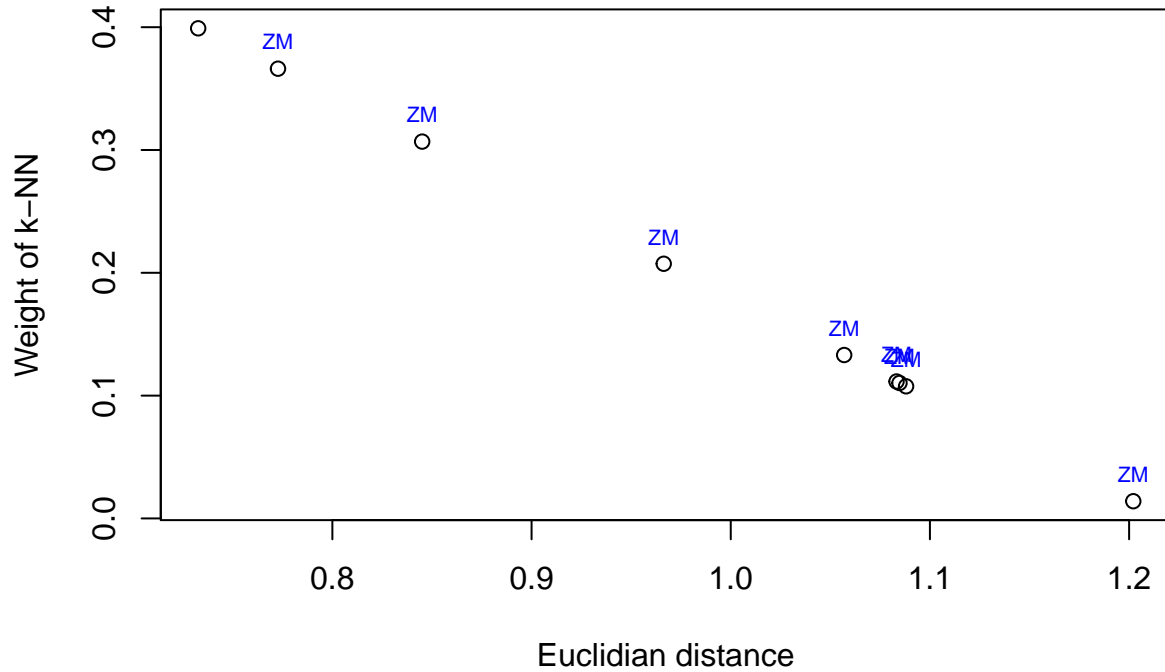
Classifier: **country_code**

Map of best fitted reference sample
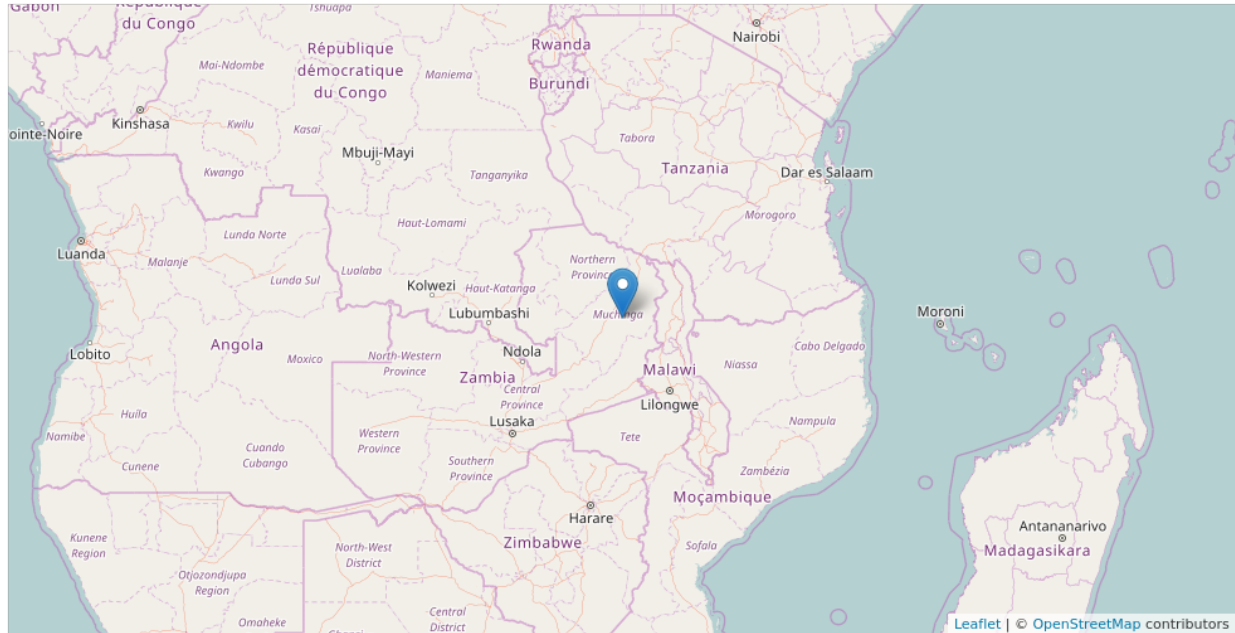
Best fitted reference sample:

- Site: Southern Zambia
- Country: ZM
- Region: Southern Africa
- CITES: Appendix I
- Lat: -11.52014
- Lon: 32.10599

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
32.11	-11.52	Southern Zambia	-21.2	6.1	18.3	-53.4	3.4
32.30	-11.10	North Zambia, near Chibesakunda	-22.1	6.7	17.6	-56.4	6.3
32.55	-12.22	East Zambia, east to North Luangwa Natio	-21.3	7.5	18.4	-52.9	7.3
31.44	-12.12	Northeastern Zambia, near Chilonga	-20.9	6.9	18.7	-53.0	7.4
26.71	-14.96	South Zambia, East of Kafue National Par	-21.9	7.7	18.6	-50.8	8.1
32.11	-11.52	Southern Zambia	-21.4	5.9	17.5	-57.2	2.7
32.09	-11.48	Southern Zambia	-21.8	6.0	18.4	-46.6	1.9
32.19	-11.41	Southern Zambia	-20.6	7.2	18.4	-46.4	7.3
32.32	-11.27	Southern Zambia	-21.5	7.9	17.4	-51.6	8.3

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

"0.051089883, 0.015683593, 0.001600026, 0.000925286, 0.000017612, 0.000002501, 0.000001728, 0.000000103, 0.000000052"

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: "**moderate fit**"