Spatial assignment of test sample

November 24, 2016

Contents

Input

Website Identifier: 136-N

Isotope values of test sample

Table 1: Isotope values of test sample

13C/12C	15N/14N	18O/16O	2H/1H	34S/32S
-17.9	15.6	20.1	-9.9	13.2

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
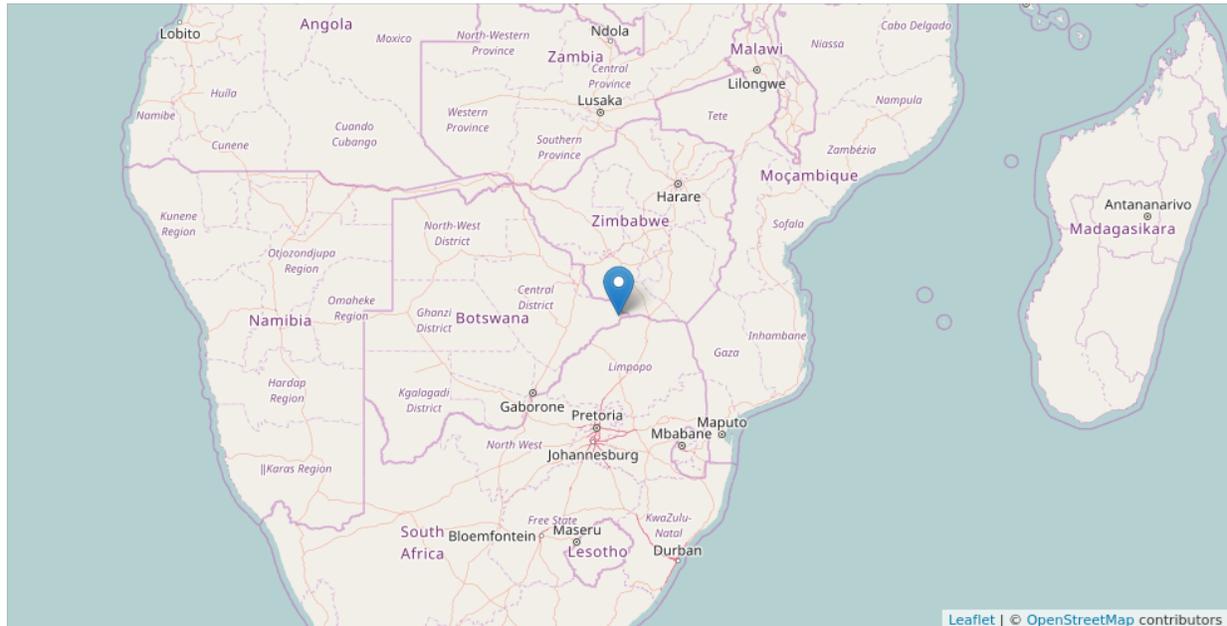
Best fitted reference sample:

- Site: Botswana, Mathathane area
- Country: BW
- Region: Southern Africa
- CITES: Appendix II
- Lat: -22.2
- Lon: 28.91

Assignment of test sample to nearest neighbours
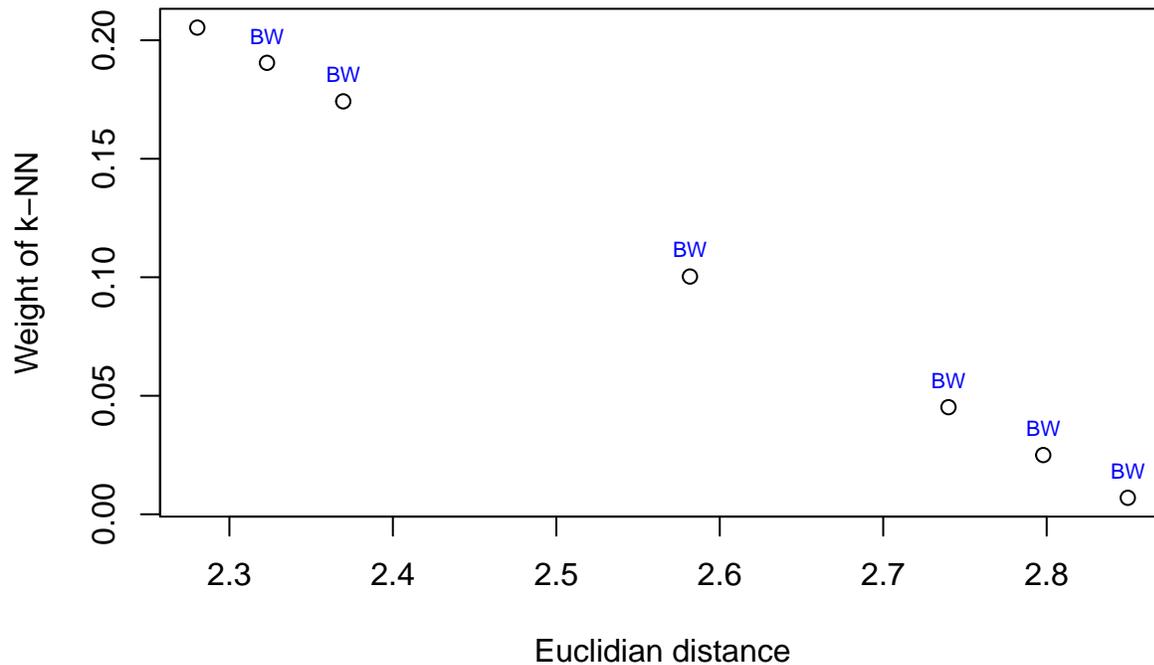
Best fitted reference entries

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
28.91	-22.20	Botswana, Mathathane area	-18.6	11.8	18.4	-16.4	11.3
28.91	-22.20	Botswana, Mathathane area	-18.0	12.2	17.5	-8.2	10.2
28.91	-22.20	Botswana, Mathathane area	-16.5	11.6	19.1	-15.0	10.7
28.91	-22.20	Botswana, Mathathane area	-16.8	11.4	19.3	-22.3	11.2
27.57	-21.65	Botswana, Francistown area	-20.6	11.8	21.5	-20.8	15.2
23.34	-19.80	Botswana, Maun area	-20.2	13.9	17.3	-30.4	14.2
23.34	-19.80	Botswana, Maun area	-18.9	11.6	20.0	-30.6	12.6

Country of prediction: BW

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

"0.000052786, 0.000005028, 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**"