Spatial assignment of test sample

December 14, 2016

Contents

Input

Website Identifier: 229

Isotope values of test sample

Table 1: Isotope values of test sample

13C/12C	15N/14N	18O/16O	2H/1H	34S/32S
-22.3	9.9	17.3	-32.4	12.8

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
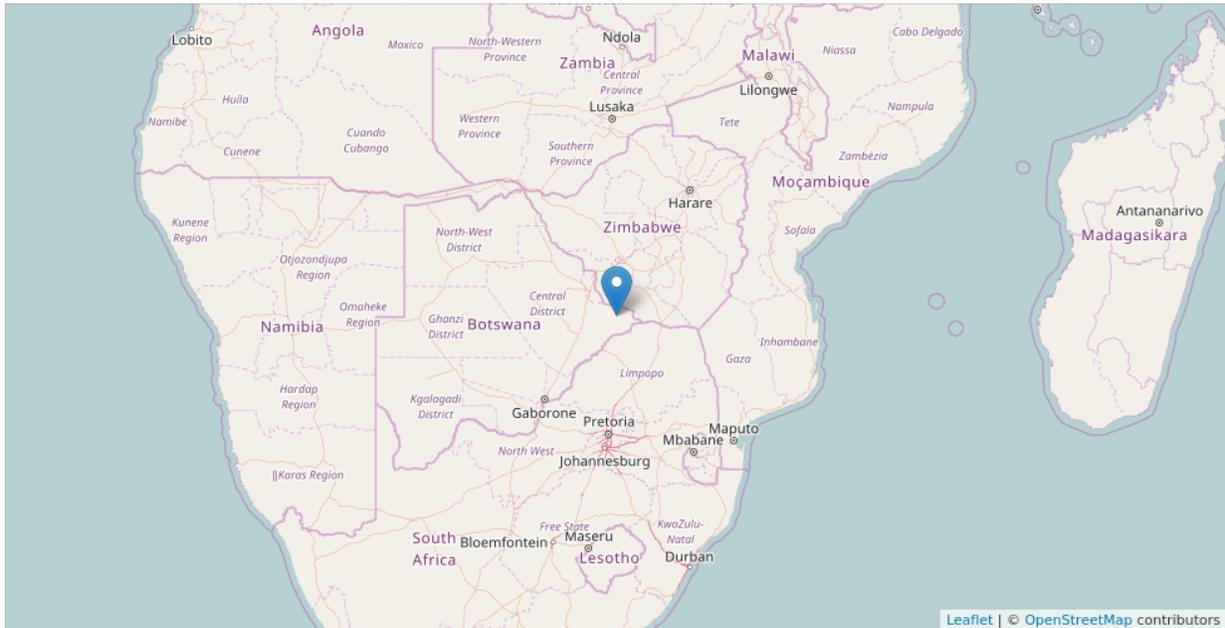
Best fitted reference sample:

- Site: Botswana, Bobonong area
- Country: BW
- Region: Southern Africa
- CITES: Appendix II
- Lat: -22
- Lon: 28.42

Assignment of test sample to nearest neighbours
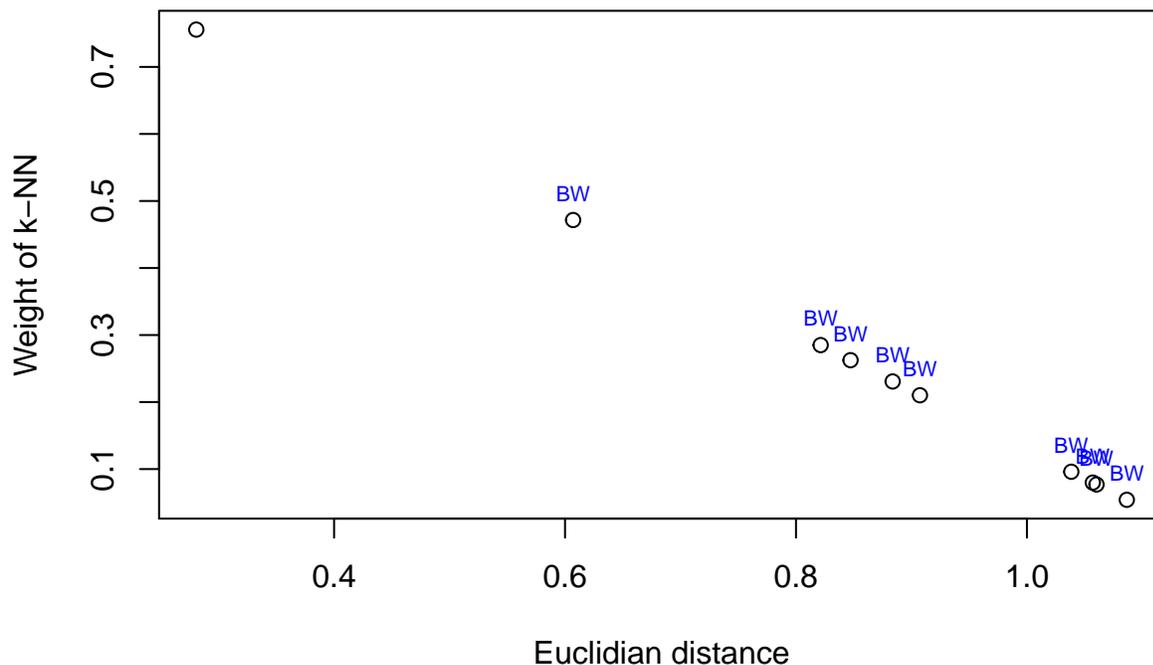
Best fitted reference entries

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
28.42	-22.00	Botswana, Bobonong area	-22.0	9.6	17.2	-34.2	12.9
28.42	-22.00	Botswana, Bobonong area	-22.0	9.6	16.3	-34.7	12.2
27.73	-21.89	Botswana, Mmadinare area	-21.1	10.3	17.1	-27.2	12.8
28.91	-22.20	Botswana, Mathathane area	-21.6	10.5	16.9	-33.2	10.5
21.93	-21.72	Botswana, Ghanzi area	-20.9	10.0	17.9	-35.0	13.9
25.13	-17.84	Botswana, Kasane/Chobe area	-21.8	10.2	18.7	-36.8	11.8
25.13	-17.84	Botswana, Kasane / Chobe area	-21.0	10.1	16.7	-40.1	12.5
28.91	-22.20	Botswana, Mathathane area	-21.8	9.3	17.9	-32.1	9.6
27.57	-21.65	Botswana, Francistown area	-21.0	9.7	16.9	-32.5	10.1
25.13	-17.84	Botswana, Kasane/Chobe area	-21.8	9.3	18.2	-42.1	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

"0.715, 0.561, 0.377, 0.310, 0.252, 0.172, 0.085, 0.029, 0.029, 0.020"

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**"