Spatial assignment of test sample

November 24, 2016

Contents

Input

Website Identifier: Blind 10_BW

Isotope values of test sample

Table 1: Isotope values of test sample

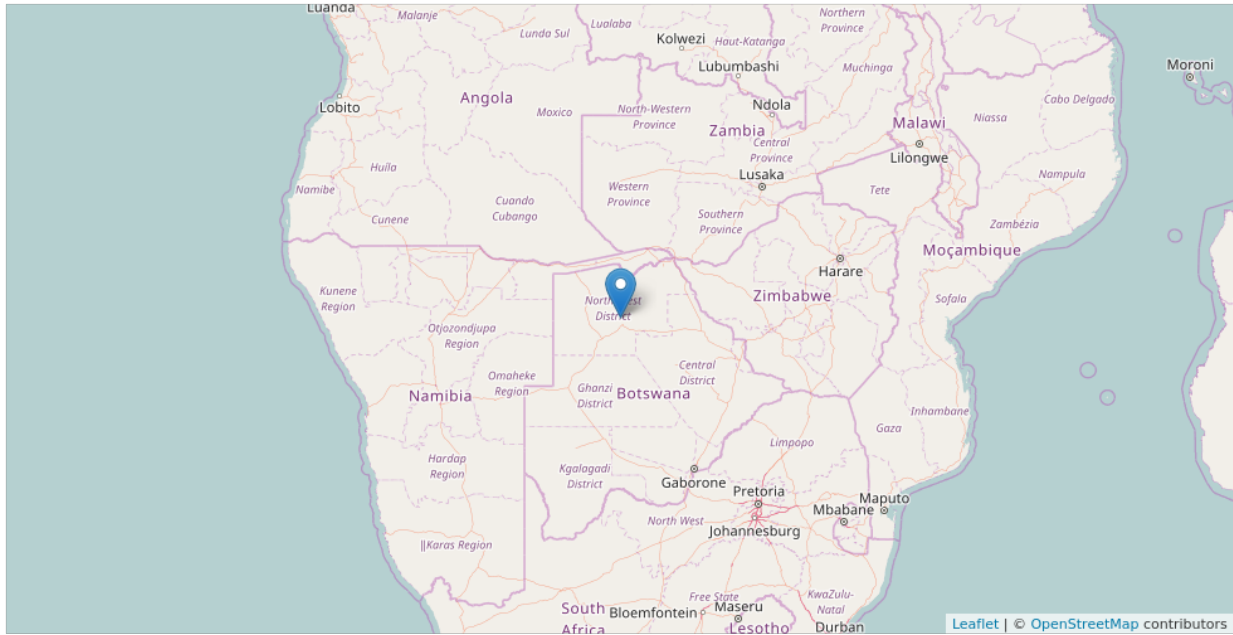| 13C/12C	15N/14N	18O/16O	2H/1H	34S/32S
-20.8	10.3	18.4	-27.6	15

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
```

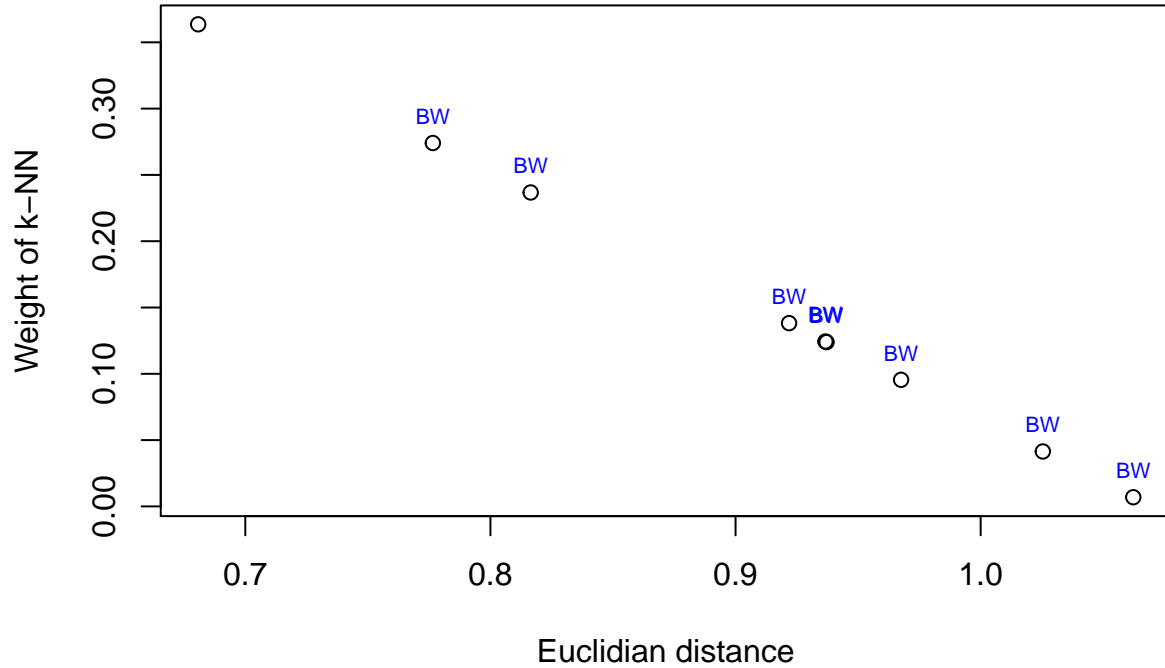Classifier: **country_code**

Map of best fitted reference sample

Best fitted reference sample:

- Site: Botswana, Maun area
- Country: BW
- Region: Southern Africa
- CITES: Appendix II
- Lat: -19.8
- Lon: 23.34

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
23.34	-19.80	Botswana, Maun area	-20.8	10.3	19.7	-29.1	14.4
27.57	-21.65	Botswana, Francistown area	-21.3	9.5	19.4	-30.5	14.2
21.93	-21.72	Botswana, Ghanzi area	-20.9	10.0	17.9	-35.0	13.9
27.73	-21.89	Botswana, Mmadinare area	-21.1	10.3	17.1	-27.2	12.8
25.81	-24.72	Botswana, Gaborone	-20.6	11.2	20.0	-27.0	15.6
23.34	-19.80	Botswana, Maun area	-20.7	10.9	19.5	-34.4	14.0
23.34	-19.80	Botswana, Maun area	-21.6	10.6	19.7	-33.6	15.4
23.34	-19.80	Botswana, Maun area	-20.7	8.5	17.5	-28.1	14.5
28.91	-22.20	Botswana, Mathathane area	-19.9	10.9	17.5	-29.9	12.4

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

"0.94862, 0.59074, 0.47731, 0.42526, 0.37659, 0.33140, 0.04110, 0.00111, 0.00022"

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**"