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
-19.8	6.2	15.1	-65.6	13.8

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
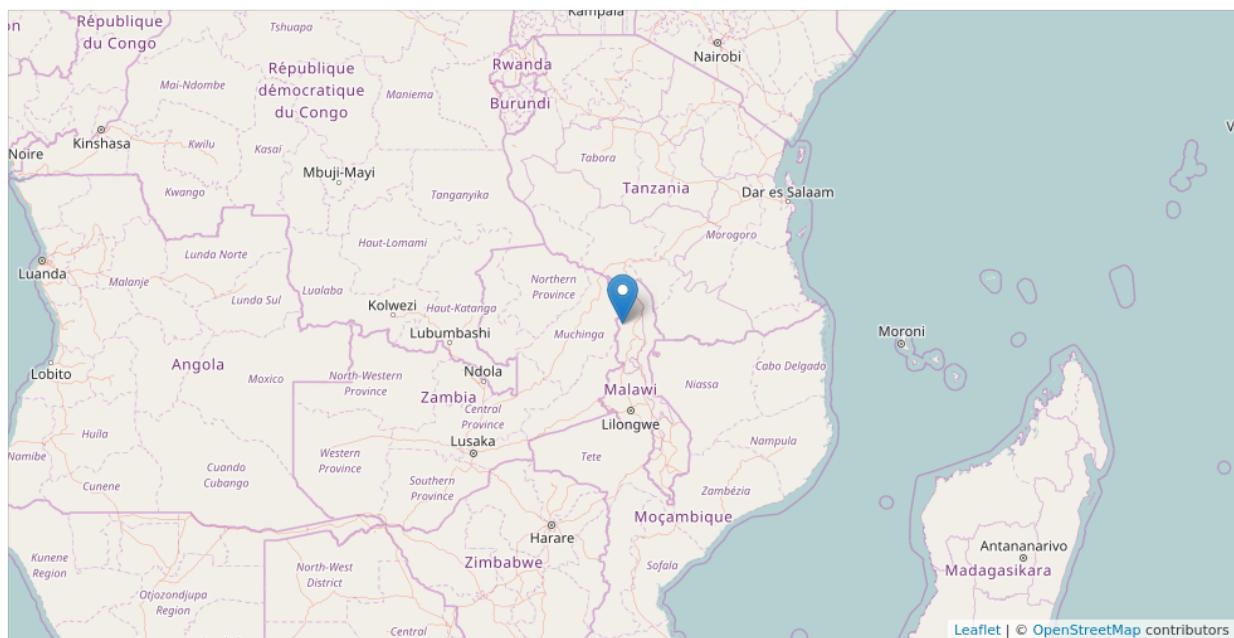
Best fitted reference sample:

- Site: Malawi, Rhumpi, Vwasa Marsh Game Reserve
- Country: MW
- Region: Southern Africa
- CITES: Appendix I
- Lat: -11.03
- Lon: 33.5

Assignment of test sample to nearest neighbours
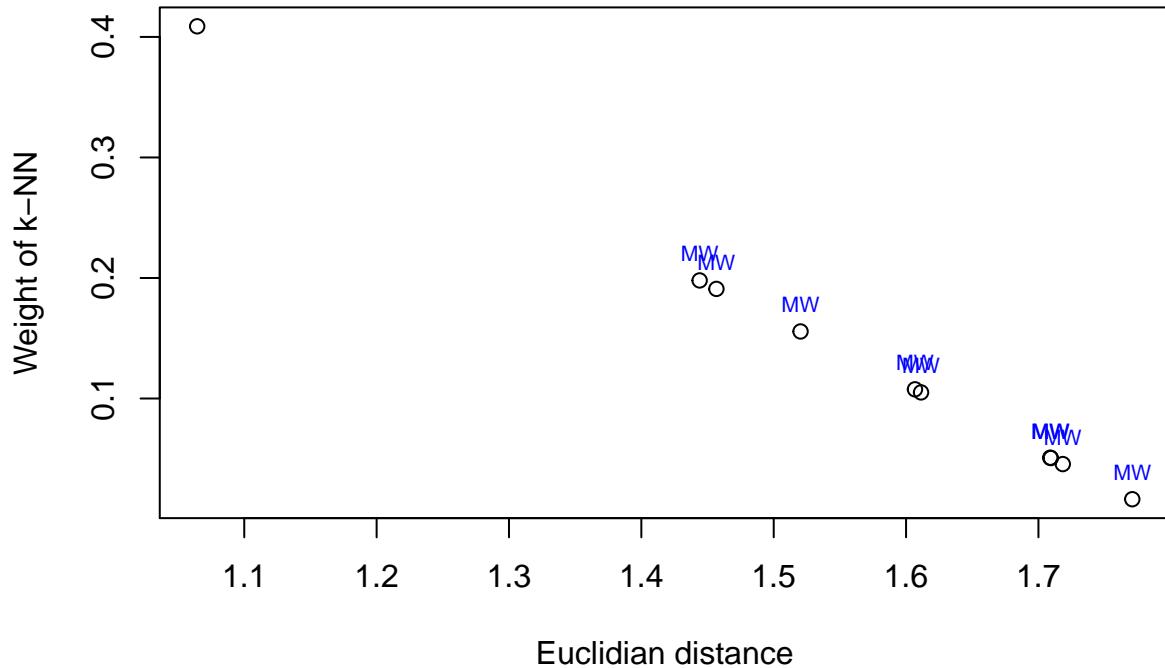
Best fitted reference entries

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
33.50	-11.03	Malawi, Rhumpi, Vwasa Marsh Game Reserve	-20.7	6.7	15.9	-58.0	12.3
33.62	-11.91	Malawi, Mzimba	-20.7	6.1	15.8	-57.0	10.2
33.13	-12.91	Malawi, Kasungu	-19.4	6.9	15.9	-57.5	10.0
33.13	-12.91	Malawi, Kasungu	-20.3	6.2	15.8	-51.9	11.4
33.13	-12.91	Malawi, Kasungu	-21.1	6.1	13.7	-57.7	10.2
33.13	-12.91	Malawi, Kasungu	-20.8	5.6	15.0	-54.2	10.2
35.33	-14.90	Malawi, Liwonde National Park	-21.5	6.2	15.6	-55.7	10.0
33.13	-12.91	Malawi, Kasungu	-21.1	5.8	15.0	-53.0	10.3
35.25	-14.48	Malawi, Mangochi	-22.1	7.3	14.7	-54.4	12.8
33.13	-12.91	Malawi, Kasungu	-20.4	6.4	14.9	-51.0	10.1

Country of prediction: MW

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

"0.000030996, 0.000007014, 0.000000052, 0.000000026, 0.000000026, 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**"