Spatial assignment of test sample

December 14, 2016

Contents

Input

Website Identifier: 143

Isotope values of test sample

Table 1: Isotope values of test sample

13C/12C	15N/14N	18O/16O	2H/1H	34S/32S
-21	7.3	15	-41.4	5.7

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
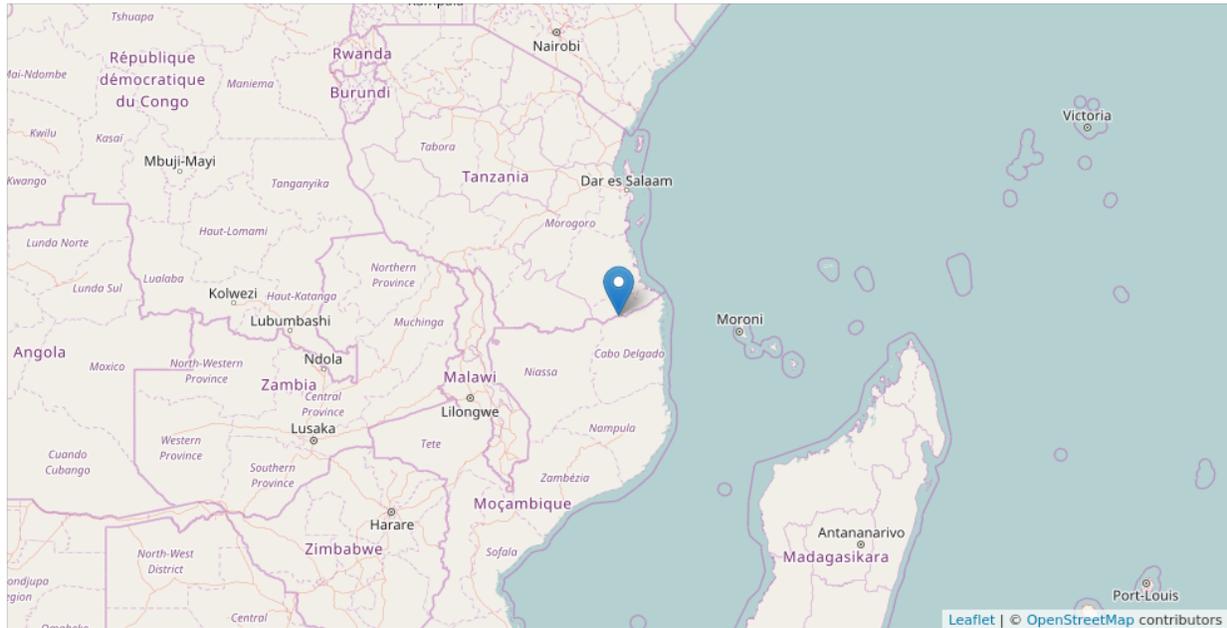
Best fitted reference sample:

- Site: Mozambique, Rovuma river area
- Country: MZ
- Region: Southern Africa
- CITES: Appendix I
- Lat: -11.18
- Lon: 39

Assignment of test sample to nearest neighbours
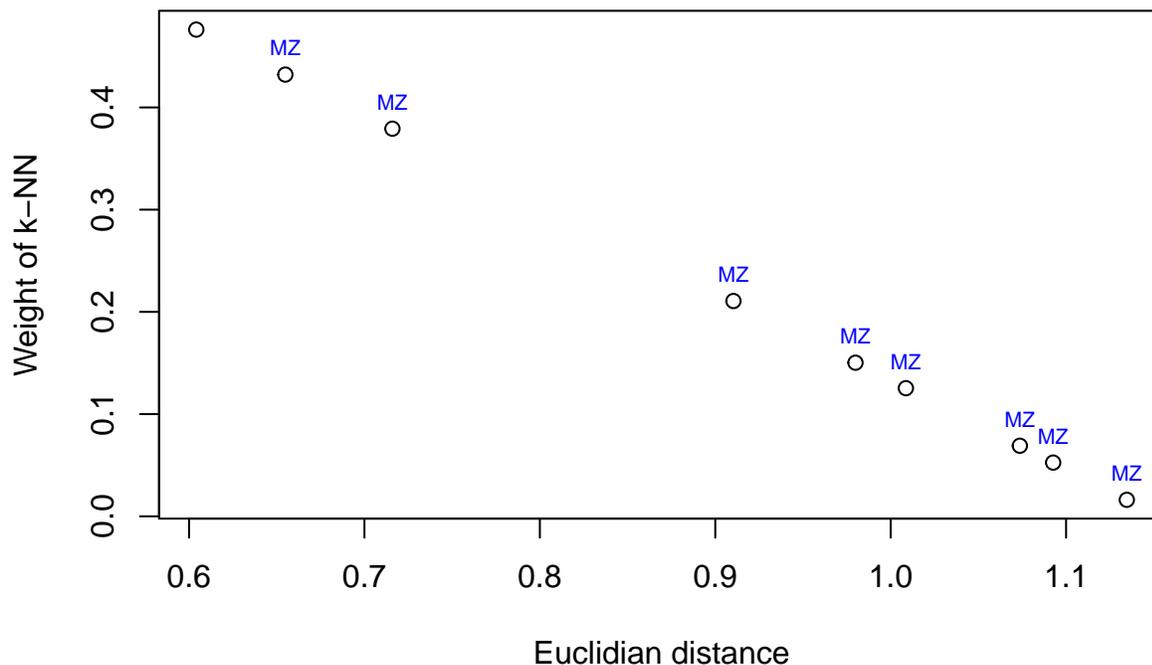
Best fitted reference entries

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
39.00	-11.18	Mozambique, Rovuma river area	-20.8	7.0	15.4	-40.0	7.5
37.35	-12.00	Mozambique, Gomba	-21.6	8.0	14.3	-38.5	6.1
38.91	-11.26	Mozambique, Chipupa / Rovuma	-21.1	7.4	16.1	-44.6	4.5
37.55	-13.30	Mozambique, Niassa Nature Reserve	-20.8	5.7	15.0	-43.6	6.9
37.84	-12.30	Mozambique, Block L7 - Lugenda south ban	-22.0	7.5	15.5	-41.6	8.4
37.15	-12.29	Mozambique, Naulala village	-20.2	8.1	16.6	-38.9	5.6
37.64	-12.44	Mozambique, Mbamba village area - Lugend	-22.3	8.5	16.0	-38.3	5.6
37.84	-12.31	Mozambique, Block L7 - Lugenda south ban	-22.1	8.0	16.2	-44.5	7.6
38.52	-12.00	Mozambique, Mbamba village area - Lugend	-22.4	8.5	14.7	-34.9	5.6

Country of prediction: MZ

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

"0.813179, 0.714830, 0.133700, 0.133700, 0.076919, 0.056773, 0.010482, 0.009115, 0.000053"

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**"