

Spatial assignment of test sample

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Input

Website Identifier: 207

Isotope values of test sample

Table 1: Isotope values of test sample

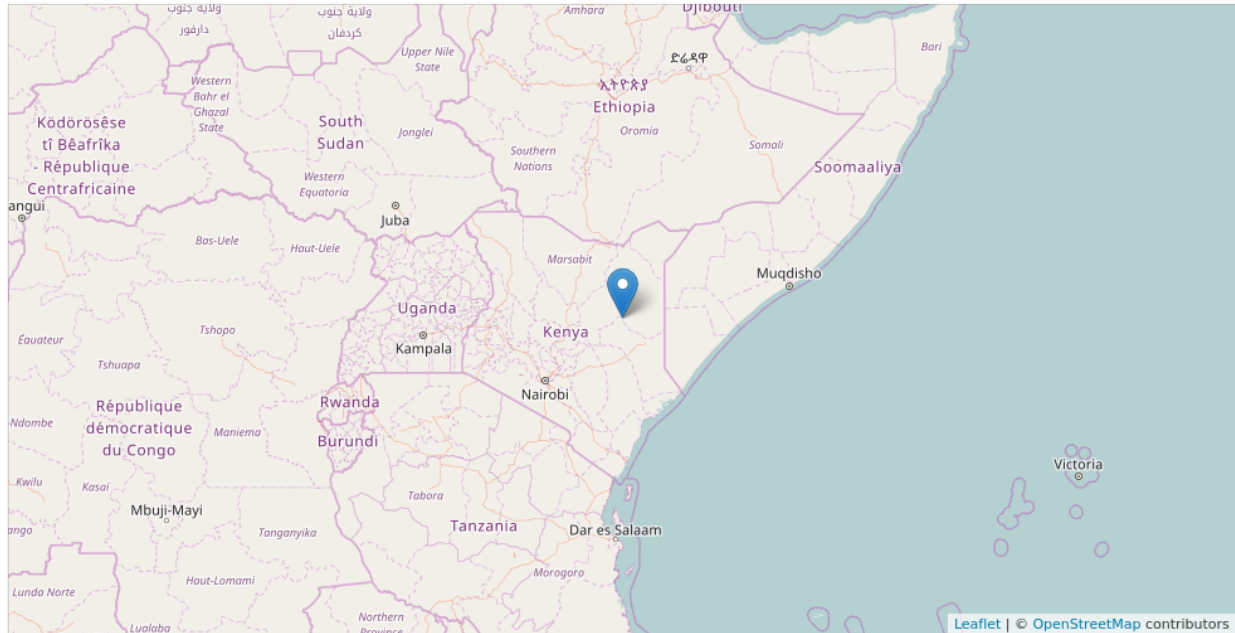
| 13C/12C | 15N/14N | 18O/16O | 2H/1H | 34S/32S |
|---------|---------|---------|-------|---------|
| -21 | 14.6 | 16.2 | -29.7 | 7.8 |

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
```

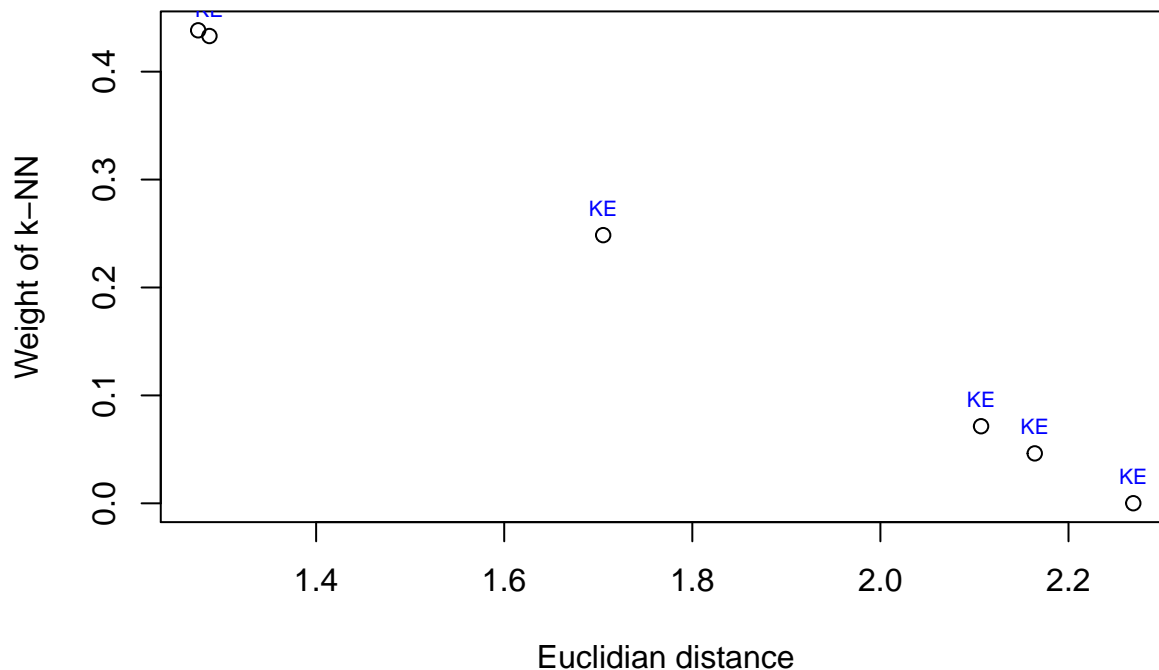
Map of best fitted reference sample



Best fitted reference sample:

- Site: Kenya, Amala River or Lorian Swamp]
- Country: KE
- Region: East Africa
- CITES: Appendix I
- Lat: 0.9
- Lon: 39.5

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 |
|-------|-------|--|---------|---------|---------|-------|---------|
| 39.50 | 0.90 | Kenya, Amala River or Lorian Swamp] | -19.6 | 14.7 | 18.3 | -31.0 | 7.8 |
| 38.12 | -2.13 | Kenya, Lat. 2 8 0 S; Long. 38 7 0 E | -19.5 | 13.4 | 14.8 | -27.7 | 9.2 |
| 37.35 | 0.71 | Kenya | -17.9 | 14.7 | 15.9 | -26.8 | 9.4 |
| 39.50 | -2.10 | Kenya, Elefant geschossen bei Assa nord | -18.2 | 12.6 | 15.9 | -36.1 | 11.1 |
| 37.88 | -2.90 | Kenya, Elefant wurde bei Iltital (zwischen | -19.4 | 12.0 | 15.3 | -42.8 | 10.4 |
| 37.00 | 0.00 | Kenya | -19.4 | 11.7 | 18.5 | -34.5 | 10.9 |

Country of prediction: **KE**

Testing robustness of assignment: Wilcoxon signed rank test

If $p\text{-value} > 0.05$, 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

“0.714829556, 0.145619321, 0.069658643, 0.000068155, 0.000001728, 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: “**good fit**”