

# Spatial assignment of test sample

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## Input

Website Identifier: 181

### Isotope values of test sample

Table 1: Isotope values of test sample

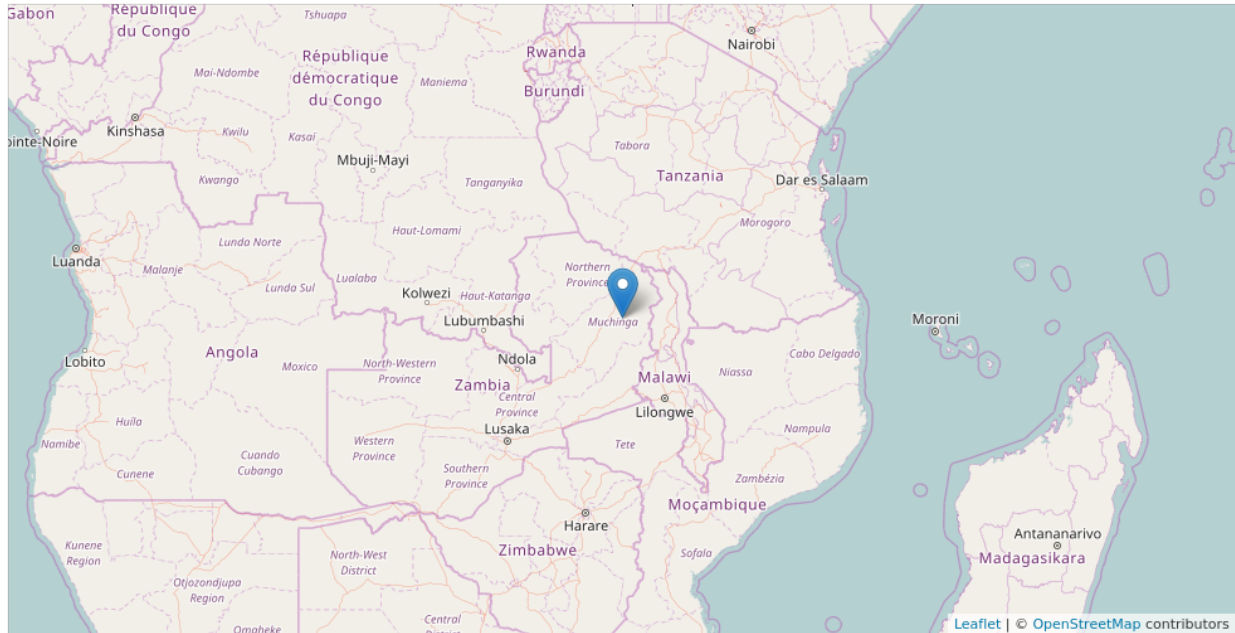
13C/12C	15N/14N	18O/16O	2H/1H	34S/32S
-21.6	8.1	16.4	-48	9.1

## 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
```

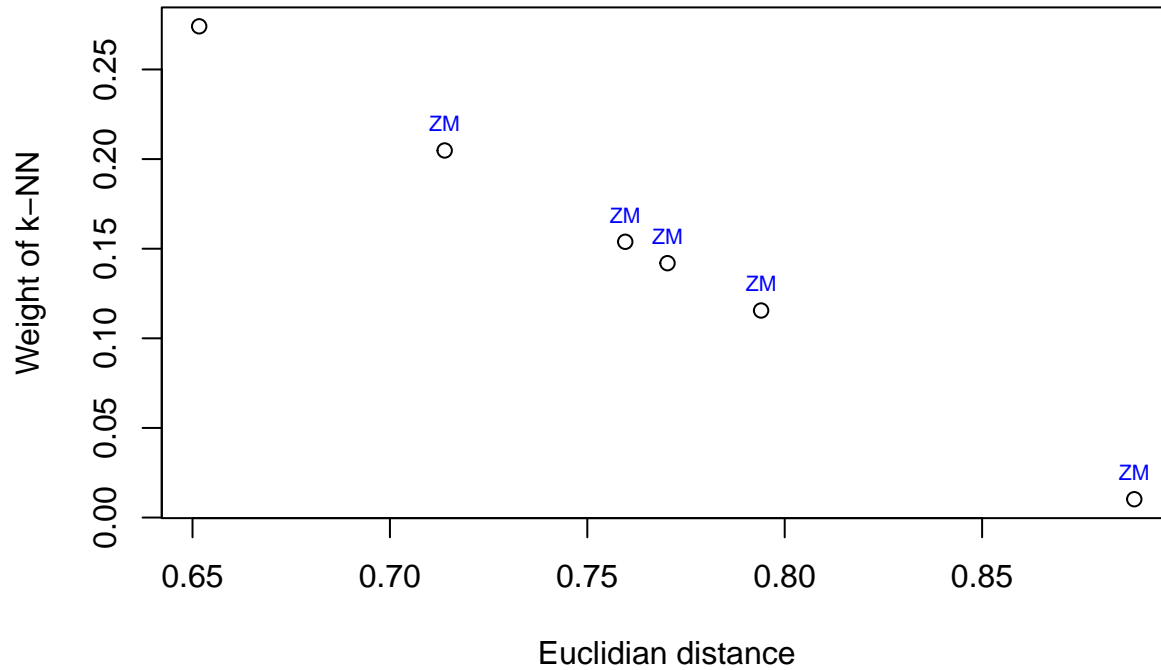
## Map of best fitted reference sample



### Best fitted reference sample:

- Site: Southern Zambia
- Country: ZM
- Region: Southern Africa
- CITES: Appendix I
- Lat: -11.27
- Lon: 32.32

## 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
32.32	-11.27	Southern Zambia	-21.5	7.9	17.4	-51.6	8.3
25.84	-15.96	Southern Zambia	-21.0	8.6	17.4	-51.4	8.9
25.93	-15.15	Southern Zambia	-21.1	8.3	17.7	-51.0	9.4
25.80	-15.99	Southern Zambia	-21.9	8.0	17.2	-54.6	9.7
25.84	-16.27	Southern Zambia	-21.2	8.4	17.3	-53.5	10.2
26.71	-14.96	Zambia, Eastern of Kafue National Park	-22.0	7.5	17.3	-54.9	8.4

Country of prediction: ZM

### 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

“0.2703, 0.0848, 0.0105, 0.0059, 0.0019, 0.0013”

**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**”