

# Spatial assignment of test sample

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## Input

Website Identifier: 140

## Isotope values of test sample

Table 1: Isotope values of test sample

13C/12C	15N/14N	18O/16O	2H/1H	34S/32S
-21.7	6.2	18.2	-43.1	10

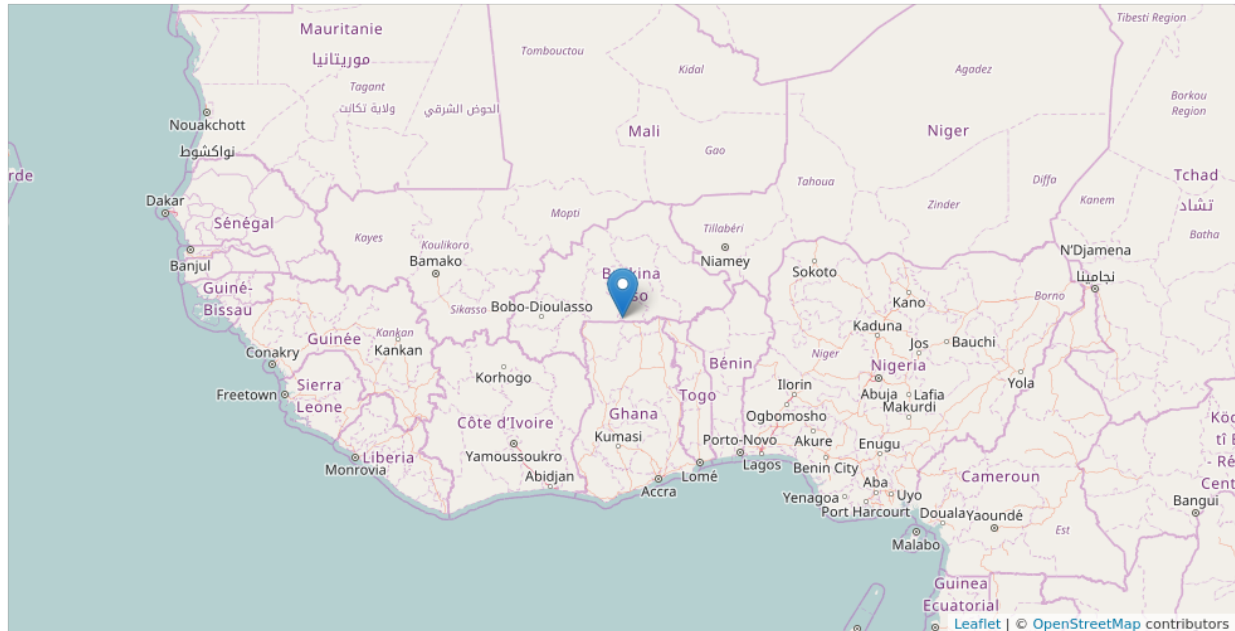
## Output

### 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**

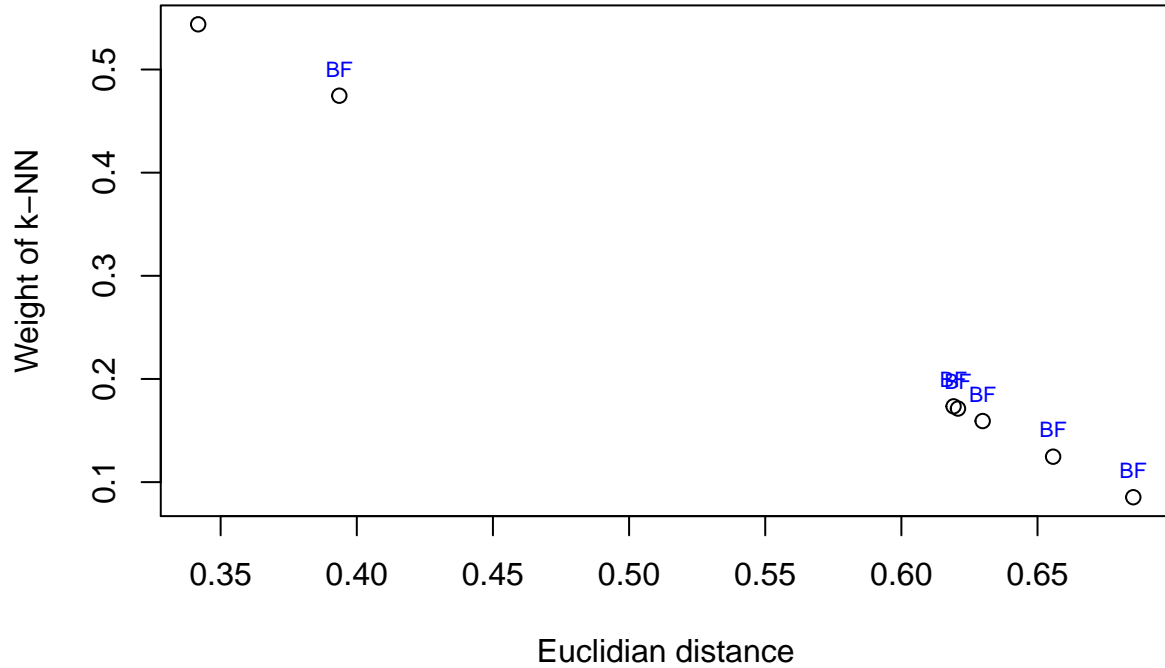
## Map of best fitted reference sample



### Best fitted reference sample:

- Site: Burkina Faso, Ranch de Nazinga
- Country: BF
- Region: West Africa
- CITES: Appendix I
- Lat: 11.083333
- Lon: -1.483333

## 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
-1.48	11.08	Burkina Faso, Ranch de Nazinga	-22.1	5.8	18.4	-44.6	10.2
-1.48	11.08	Burkina Faso, Ranch de Nazinga	-21.4	5.7	18.1	-45.8	10.1
0.72	11.47	Burkina Faso, Reserve partielle de Faune	-22.2	5.5	18.8	-46.3	10.4
0.92	11.28	Burkina Faso, Reserve partielle de Faune	-22.0	6.3	18.1	-49.3	10.5
-1.48	11.08	Burkina Faso, Ranch de Nazinga	-22.1	5.1	18.4	-41.1	10.0
0.92	11.28	Burkina Faso, Reserve partielle de Faune	-22.4	5.8	18.3	-40.4	11.5
-1.48	11.08	Burkina Faso, Ranch de Nazinga	-22.3	5.6	19.2	-41.3	10.3

Country of prediction: BF

### 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

“0.533, 0.252, 0.234, 0.102, 0.070, 0.052, 0.023”

**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**”