

# Spatial assignment of test sample

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## Contents

<b>Input</b>	<b>1</b>
Isotope values of test sample . . . . .	1
<b>Output</b>	<b>1</b>
Model . . . . .	1
Map of best fitted reference sample . . . . .	2
Best fitted reference entries . . . . .	3
Testing robustness of assignment: Wilcoxon signed rank test . . . . .	3
P-values for the k nearest neighbours in Wilcoxon Test . . . . .	3
Goodness of fit of test sample: . . . . .	4

## Input

Website Identifier: 127-C

## Isotope values of test sample

Table 1: Isotope values of test sample

13C/12C	15N/14N	18O/16O	2H/1H	34S/32S
-21.9	10.4	19	-27.8	8.4

## Output

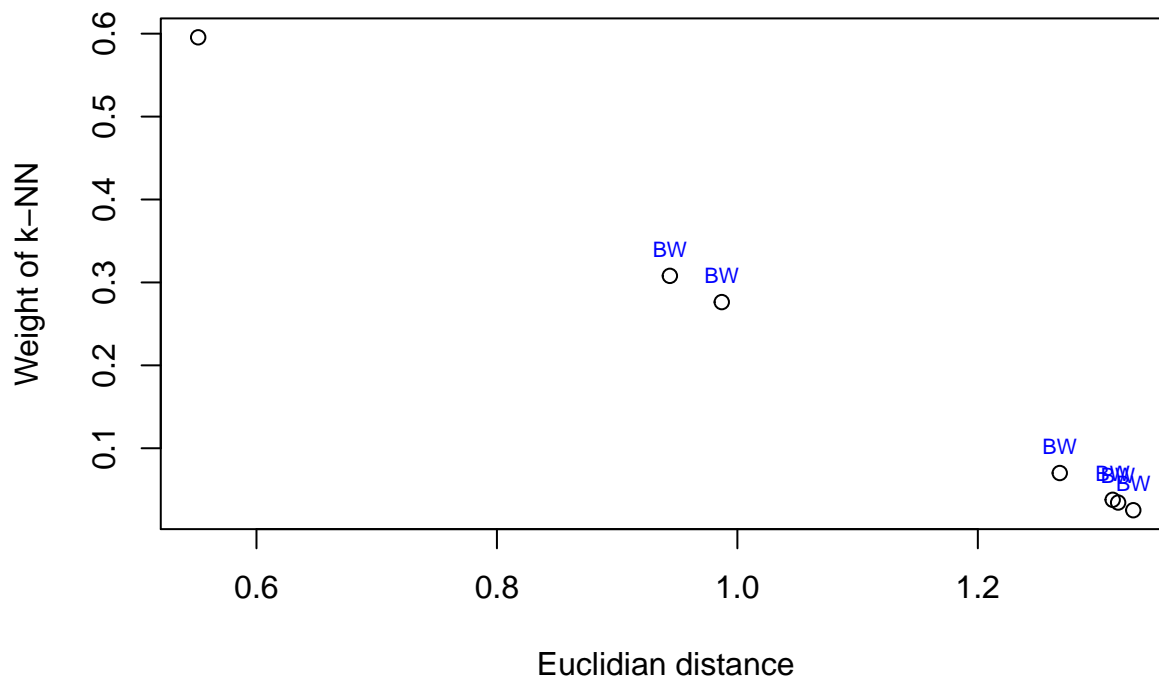
### Model

```
##
## 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**



## 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
28.91	-22.20	Botswana, Mathathane area	-21.7	10.6	18.2	-24.0	8.5
28.91	-22.20	Botswana, Mathathane area	-21.8	9.3	17.9	-32.1	9.6
27.73	-21.89	Botswana, Mmadinare area	-21.4	10.2	17.1	-27.7	8.0
28.91	-22.20	Botswana, Mathathane area	-20.4	10.3	18.7	-34.6	11.0
25.13	-17.84	Botswana, Kasane/Chobe area	-21.8	10.2	18.7	-36.8	11.8
28.91	-22.20	Botswana, Mathathane area	-21.6	10.5	16.9	-33.2	10.5
28.42	-22.00	Botswana, Bobonong area	-21.4	8.7	18.5	-35.0	10.7

Country of prediction: BW

### 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

“0.056773, 0.012021, 0.000629, 0.000516, 0.000276, 0.000276, 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: “**moderate fit**”