Spatial assignment of test sample

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Input
Website Identifier: 117

Isotope values of test sample

Table 1: Isotope values of test sample

<table>
<thead>
<tr>
<th>13C/12C</th>
<th>15N/14N</th>
<th>18O/16O</th>
<th>2H/1H</th>
<th>34S/32S</th>
</tr>
</thead>
<tbody>
<tr>
<td>-18.2</td>
<td>12.6</td>
<td>18.2</td>
<td>-24.9</td>
<td>5.7</td>
</tr>
</tbody>
</table>

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
- Country: KE
- Region: East Africa
- CITES: Appendix I
- Lat: 0.71
- Lon: 37.35
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

<table>
<thead>
<tr>
<th>lon</th>
<th>lat</th>
<th>location</th>
<th>13C/12C</th>
<th>15N/14N</th>
<th>18O/16O</th>
<th>2H/1H</th>
<th>34S/32S</th>
</tr>
</thead>
<tbody>
<tr>
<td>37.35</td>
<td>0.71</td>
<td>Kenya</td>
<td>-17.5</td>
<td>12.1</td>
<td>17.7</td>
<td>-29.2</td>
<td>4.8</td>
</tr>
<tr>
<td>37.00</td>
<td>1.00</td>
<td>Kenya</td>
<td>-18.1</td>
<td>12.3</td>
<td>20.2</td>
<td>-22.1</td>
<td>8.3</td>
</tr>
<tr>
<td>37.00</td>
<td>0.00</td>
<td>Kenya</td>
<td>-18.2</td>
<td>12.0</td>
<td>19.7</td>
<td>-25.5</td>
<td>9.8</td>
</tr>
<tr>
<td>39.50</td>
<td>0.90</td>
<td>Kenya, Amala River or Lorian Swamp</td>
<td>-19.6</td>
<td>14.7</td>
<td>18.3</td>
<td>-31.0</td>
<td>7.8</td>
</tr>
</tbody>
</table>

Country of prediction: KE

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

“0.91448, 0.05109, 0.00226, 0.00063”

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”