Spatial assignment of test sample

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Input

Website Identifier:

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>-20.6</td>
<td>9.5</td>
<td>22.5</td>
<td>-35.6</td>
<td>6.4</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: Northeast Namibia, Mamili National Park
- Country: NA
- Region: Southern Africa
- CITES: Appendix I
- Lat: -18.35119
- Lon: 23.67365
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>23.67</td>
<td>-18.35</td>
<td>Northeast Namibia, Mamili National Park</td>
<td>-19.8</td>
<td>9.6</td>
<td>21.5</td>
<td>-37.3</td>
<td>7.9</td>
</tr>
<tr>
<td>24.52</td>
<td>-17.83</td>
<td>Salambala Conservancy, Northeast Namibia</td>
<td>-20.4</td>
<td>9.3</td>
<td>23.0</td>
<td>-28.1</td>
<td>9.6</td>
</tr>
<tr>
<td>23.06</td>
<td>-17.80</td>
<td>Caprivi, Southeast Namibia</td>
<td>-20.8</td>
<td>8.6</td>
<td>21.8</td>
<td>-32.4</td>
<td>10.7</td>
</tr>
<tr>
<td>23.34</td>
<td>-17.76</td>
<td>Northeast Namibia, Susuwe</td>
<td>-20.9</td>
<td>10.2</td>
<td>22.7</td>
<td>-37.9</td>
<td>11.0</td>
</tr>
<tr>
<td>24.25</td>
<td>-17.52</td>
<td>Sikunga Conservancy, Northeast Namibia</td>
<td>-20.7</td>
<td>9.6</td>
<td>21.6</td>
<td>-33.8</td>
<td>12.0</td>
</tr>
</tbody>
</table>

Country of prediction: NA

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

“0.9828649, 0.0002245, 0.0001771, 0.0000050, 0.0000036”
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**"