Northwest Atlantic Fisheries Organization

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NAFOtools: Tools for plotting maps and figures of the northwest Atlantic

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Abstract

As part of the NAFO internship programme, one of our interns, Thomas Reilly, worked with the Scientific Council Coordinator, Neil Campbell, to develop a R library of functions for plotting simple maps and charts of the NAFO regulatory area. The library can be downloaded from http://www.nafo.int/data/frames/data.html by following the link.

Package 'NAFOtools'

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Type: Package

Title: Tools for plotting maps and figures of the northwest Atlantic.

Version: 1.0

Date: 2013-10-18

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Description: Tools for plotting bathymetric and coastline maps and figures of the northwest Atlantic, including major ports, NAFO fishing footprint, EEZs of coastal states and spatial management measures.

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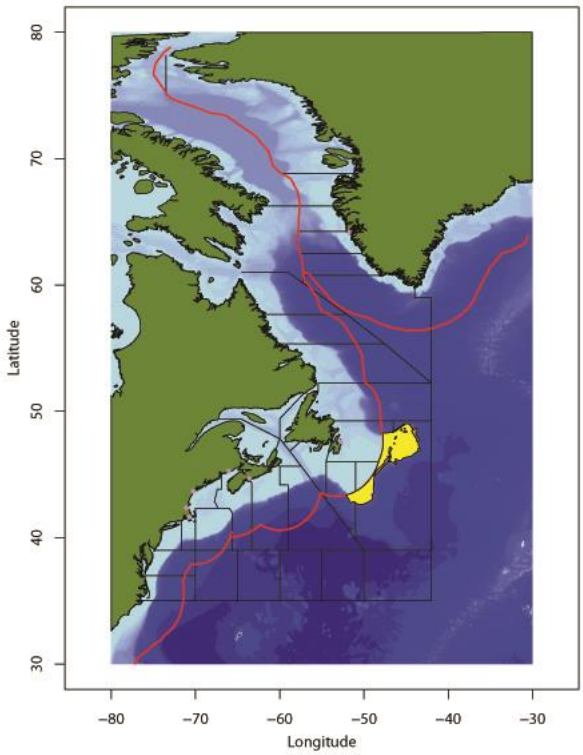
Depends: graphics, grDevices, stats, utils, geosphere, lattice, nnet

Packaged: 2013-10-21 16:48:27 UTC;

Built: R 3.0.2; ; 2013-10-21 16:52:09 UTC; windows



bathy *Plot bathymetric data for northwest Atlantic*

Description

Plots bathymetry in color or as bathymetric lines.

Usage

```
bathy(bathy.col = TRUE, file, line.col, line.lwd, line.lty)
```

Arguments

bathy.col	logical argument as to whether the bathymetry is plotted or not. Defaults to TRUE.
file	the name of a file that contains a subset of bathymetry levels, produced using bathy.subset.
line.col	the color to draw the bathymetric lines. Defaults to gray.

the line width, as in par. Defaults to 0.05.

References

See Also

bathy.subset, files created using bathy.subset can be used in conjunction with bathy.

Examples

```
# Plot colour layer
map.setup()
bathy(bathy.col = TRUE)

# Plot bathymetric lines
map.setup()
bathy(bathy.col = FALSE, line.col = "red", line.lwd = 0.5)
```

bathy.subset *Create a subset of bathymetric data from the northwest Atlantic*

Usage

```
bathy.subset(depths, line.col, line.lwd, line.lty)
```

Arguments

depths	a vector of depth levels you wish to subset.

`line.col` the color to draw the bathymetric lines. Defaults to gray.

`line.lwd` the line width, as in `par`. Defaults to 0.05.

`line.lty` the line type to be used, as in `par`. Defaults to 1.

Author(s)

Tom Reilly and Neil Campbell

References

http://archive.nafo.int/open/sc/2013/scs13-22.pdf

See Also

`bathy`, the depths.txt file created by `bathy.subset` can be used in conjunction with `bathy`.

Examples

```
map.setup()
bathy.subset(depths = c(100,500,1000,2000,3000,4000,5000,6000))
```

---

bathy3d *Plots a wireframe of bathymetry*

Usage

```
bathy3d(lon1, lat1, lon2, lat2)
```

Arguments

`lon1` starting longitude position.

`lat1` starting latitude position.

`lon2` end longitude position.

`lat2` end latitude position.

Details

a 3d area is returned based on the diagonal from the start coordinate to the end coordinate.

References

http://archive.nafo.int/open/sc/2013/scs13-22.pdf

Examples

```
bathy3d(-50,45,-45,50)
```

---

closures *Adds seamount, sponge and coral closures to plots*

Description

Plot seamount, coral or both sets of closures.

Usage

```
closures(seamounts = TRUE, corals = TRUE, sea.col, sea.trans, sea.border,
sea.lwd, sea.lty, cor.col, cor.trans, cor.border, cor.lwd, cor.lty)
```

Arguments

`seamounts`	a logical argument as to whether the seamount closures are plotted or not. Defaults to TRUE.
`corals`	a logical argument as to whether the sponge and coral closures are plotted or not. Defaults to TRUE.
`sea.col`	the color to draw the seamount closures. Defaults to gray5.
`sea.trans`	alter the transparency of the seamount closures, values from 0 to 1. Defaults to 0.5.
`sea.border`	the color to draw the seamount closures border. Defaults to black.
`sea.lwd`	the line width of the seamount closures border, as in `par`.
`sea.lty`	the line type to be used for the seamount closures border, as in `par`.
`cor.col`	the color to draw the sponge and coral closures. Defaults to gray5.
`cor.trans`	alter the transparency of the coral closures, values from 0 to 1. Defaults to 0.5.
`cor.border`	the color to draw the coral closures border. Defaults to black.
`cor.lwd`	the line width of the coral closures border, as in `par`.
`cor.lty`	the line type to be used for the coral closures border, as in `par`.

Author(s)

Tom Reilly and Neil Campbell

References

http://archive.nafo.int/open/sc/2013/scs13-22.pdf

Examples

```
map.setup()
closures(seamounts = TRUE, corals = TRUE, sea.border = NA, cor.border = NA)
```

`depth.transect` *Return a bathymetric transect between a pair of lat/lon coordinates.*

Description

Get depth information along a transect between user-defined start and end coordinates. For use in plotting depth profile transects.

Usage

```
depth.transect(lon1, lat1, lon2, lat2)
```

Arguments

`lon1` Start longitude coordinate for depth transect.
`lat1` Start latitude coordinate for depth transect.
`lon2` End longitude coordinate for depth transect.
`lat2` End latitude coordinate for depth transect.

Value

Returns a matrix of depths along the transect and the distance in between each depth position.

Author(s)

Tom Reilly and Neil Campbell

References

http://archive.nafo.int/open/sc/2013/scs13-22.pdf

See Also

`plot.depth.transect`

Examples

```
lon1 <- -56.76480
lat1 <- 37.33766
lon2 <- -47.07992
lat2 <- 42.07248
depth.transect (lon1, lat1, lon2, lat2)

## Not run:
plot.NAFO.map ()
pos <- locator () ## Click twice on map for start and end of transect
depth.transect (unlist(pos)[1], unlist(pos)[3], unlist(pos)[2],
unlist(pos)[4])
## End(Not run)
```

---

divs *Adds NAFO subarea boundaries to plots*

Usage

```
divs(div.col, div.lwd, div.lty)
```

Arguments

`div.col` the color to draw the division lines.

`div.lwd` the line width, as in `par`.

`div.lty` the line type to be used, as in `par`.

Author(s)

Tom Reilly and Neil Campbell

References

http://archive.nafo.int/open/sc/2013/scs13-22.pdf

Examples

```
map.setup()
bathy(bathy.col=FALSE)
divs()
land()
```

---

eez *Adds the exclusive economic zone for coastal states*

Usage

```
eez(eez.col = 1, eez.lwd = 2, eez.lty)
```

Arguments

`eez.col` the color to draw the EEZ line.

`eez.lwd` the line width, as in `par`.

`eez.lty` the line type to be used, as in `par`.

Author(s)

Tom Reilly and Neil Campbell

References

http://archive.nafo.int/open/sc/2013/scs13-22.pdf

Examples

```
map.setup()
eez()
land()
```

---

footprint *Adds the NAFO fishing footprint to plots*

Usage

```
footprint(f.col, f.trans, f.border, f.lwd, f.lty)
```

Arguments

`f.col` the color to draw the footprint.

`f.trans` alter the transparency of the footprint polygon.

`f.border` the color to draw the footprint border.

`f.lwd` the line width of the footprint border, as in `par`.

`f.lty` the line type to be used for the footprint border, as in `par`.

References

NAFO Secretariat (2009) Delineation of Existing Bottom Fishing Areas in the NAFO Regulatory Area. NAFO SCS Doc. 09/21. 9pp. http://archive.nafo.int/open/sc/2009/scs09-21.pdf

Examples

```
map.setup()
bathy(bathy.col=FALSE)
footprint()
land()
```

---

hexagons *Adds a layer of hexagonal cells to the footprint area*

Usage

```
hexagons(hex.col, hex.trans, hex.border, hex.lty, hex.lwd)
```

Arguments

`hex.col`	the color to draw the hexagons.
`hex.trans`	alter the transparency of the hexagons, values from 0 to 1.
`hex.border`	the color to draw the hexagon borders.
`hex.lty`	the line type to be used for the hexagon borders, as in `par`.
`hex.lwd`	the line width of the hexagon borders, as in `par`.

Author(s)

Tom Reilly and Neil Campbell

References

http://archive.nafo.int/open/sc/2013/scs13-22.pdf

Examples

```
map.setup()
hexagons()
land()
```

---

land *Adds coastline data to plots*

Usage

```
land(land.col, land.trans, land.border, land.lwd, land.lty)
```

Arguments

`land.col` the color to draw the land mass.

`land.trans` alter the transparency of the land mass, values from 0 to 1.

`land.border` the color to draw the land border.

`land.lwd` the line width of the land mass border, as in `par`.

`land.lty` the line type to be used for the land mass border, as in `par`.

Author(s)

Tom Reilly and Neil Campbell

References

http://archive.nafo.int/open/sc/2013/scs13-22.pdf

Examples

```
map.setup()
land()
```

`map.setup` *Preliminary function for plotting maps of NW Atlantic*

Usage

```
map.setup(lon.lim, lat.lim, lon.int, lat.int, cex)
```

Arguments

`lon.lim` a vector of longitudinal limits for the plot.

`lat.lim` a vector of latitudinal limits for the plot.

`lon.int` the intervals at which to place longitudinal tick marks.

`lat.int` the intervals at which to place latitudinal tick marks.

`cex` alter the label text size.

Author(s)

Tom Reilly and Neil Campbell

References

http://archive.nafo.int/open/sc/2013/scs13-22.pdf

Examples

```
map.setup(lon.lim=c(-50,-45),lat.lim=c(40,45),lon.int=1,lat.int=1)
```

`plot.depth.transect` *Plot a depth transect between a pair of lat/lon coordinates*

Description

Using data acquired from depth.transect to plot a depth profile of a transect.

Usage

```
plot.depth.transect(depdis)
```

Arguments

`Depdis` output from the depth.transect

Details function that contains the depths and distance between depth positions to be plotted.

Example

depth.transect

```
lon1 <- -56.76480
lat1 <- 37.33766
lon2 <- -47.07992
lat2 <- 42.07248
depdis <- depth.transect (lon1, lat1, lon2, lat2)
plot.depth.transect(depdis)
```

Author(s)

Tom Reilly and Neil Campbell

References

http://archive.nafo.int/open/sc/2013/scs13-22.pdf

port.labels *Add major ports to plots of northwest Atlantic*

Description

Select which ports to add labels to and assign the position of those labels.

Usage

```
port.label(pos1, cex1 = 0.6, offset1 = 0.2, col1 = "deeppink")
```

Arguments

pos1	a vector of position specifiers for each label. Values of 1, 2, 3 and 4, respectively indicate positions below, to the left of, above and to the right of the specified coordinates.
cex1	a numerical value that alters the text size of each label. Defaults to 0.6.
offset1	a numerical value that gives the offset of each label from the specified coordinate in fractions of a character width. Defaults to 0.2.
col1	a specification for the default plotting colour. Defaults to deeppink.

Details

Ports to add labels to are selected using a locator based system, by clicking on a loaded plot. The number of label positions specified must be equal to the number of ports selected for labels otherwise an error will be returned.

Author(s)

Tom Reilly and Neil Campbell

References

http://archive.nafo.int/open/sc/2013/scs13-22.pdf

See Also

locator

Examples

```
## Not run:
plot.NAFO.map()
## Select 3 ports to label, with the positions set to bottom, left, left
respectively
port.file(pos1 = c(1,2,2), col1 = "orange")

## End(Not run)
```