Ocean Data Analyis with R Programming for Early Career Ocean Professionals (ECOPs) (Asia)

Module 2 - Lesson 1: Plotting the Distribution of Marine Species along Shore Distance and Depth

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```
setwd("C:/Users/Administrator/Desktop/R/")
```

```
library(tidyverse)
```

```
## -- Attaching core tidyverse packages ------------------------ tidyverse 2.0.0 --
## v dplyr     1.1.3     v readr     2.1.4
## v forcats   1.0.0     v stringr   1.5.0
## v ggplot2   3.4.3     v tibble    3.2.1
## v lubridate 1.9.3     v tidyr     1.3.0
## v purrr     1.0.2
## -- Conflicts ------------------------------------------ tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()    masks stats::lag()
## i Use the conflicted package (<http://conflicted.r-lib.org/>) to force all conflicts to become errors
```

```
library(hexbin)
```

```
obis <- read.csv(file = "obis_red_list_filtered_1000.csv")
head(obis)
```

```
##          scientificName date_year          family minimumDepthInMeters
## 1 Balaenoptera physalus      2003 Balaenopteridae                    0
## 2 Balaenoptera physalus      2003 Balaenopteridae                    0
## 3 Balaenoptera physalus      2003 Balaenopteridae                    0
## 4 Balaenoptera physalus      2003 Balaenopteridae                    0
## 5 Balaenoptera physalus      2003 Balaenopteridae                    0
## 6 Balaenoptera physalus      2002 Balaenopteridae                    0
##   shoredistance   sst   sss individualCount    country status
## 1        182964 -1.47 34.03               2 Antarctica     VU
## 2        135623 -1.58 34.01               2 Antarctica     VU
## 3        138638 -1.58 34.01               9 Antarctica     VU
## 4         77966 -1.57 34.06               4 Antarctica     VU
## 5        141441 -1.59 34.02               3 Antarctica     VU
## 6        -14124 -1.43 33.71               3 Antarctica     VU
```

```r
colnames(obis)
```

```
##  [1] "scientificName"       "date_year"            "family"
##  [4] "minimumDepthInMeters" "shoredistance"        "sst"
##  [7] "sss"                  "individualCount"      "country"
## [10] "status"
```

Instructions:

1. Plot the distribution of marine species along shore distance (x-axis) and depth in meters (y-axis) using ggplot in R.
2. Facet the plot by Red List category (IUCN Red List category of threatened species) and color each point by its family.
3. Add a custom palette to color each family (suggestion: check the pals package).
4. Add a regression line to each facet to show the relationship between shore distance, depth, and families.

```r
library(pals)
library(car)
```

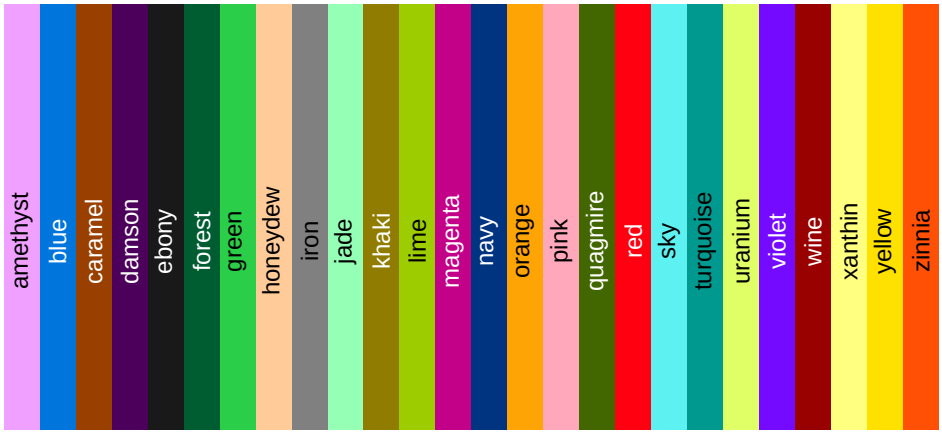
```
## Loading required package: carData
```

```
##
## Attaching package: 'car'
```

```
## The following object is masked from 'package:dplyr':
##
##     recode
```

```
## The following object is masked from 'package:purrr':
##
##     some
```

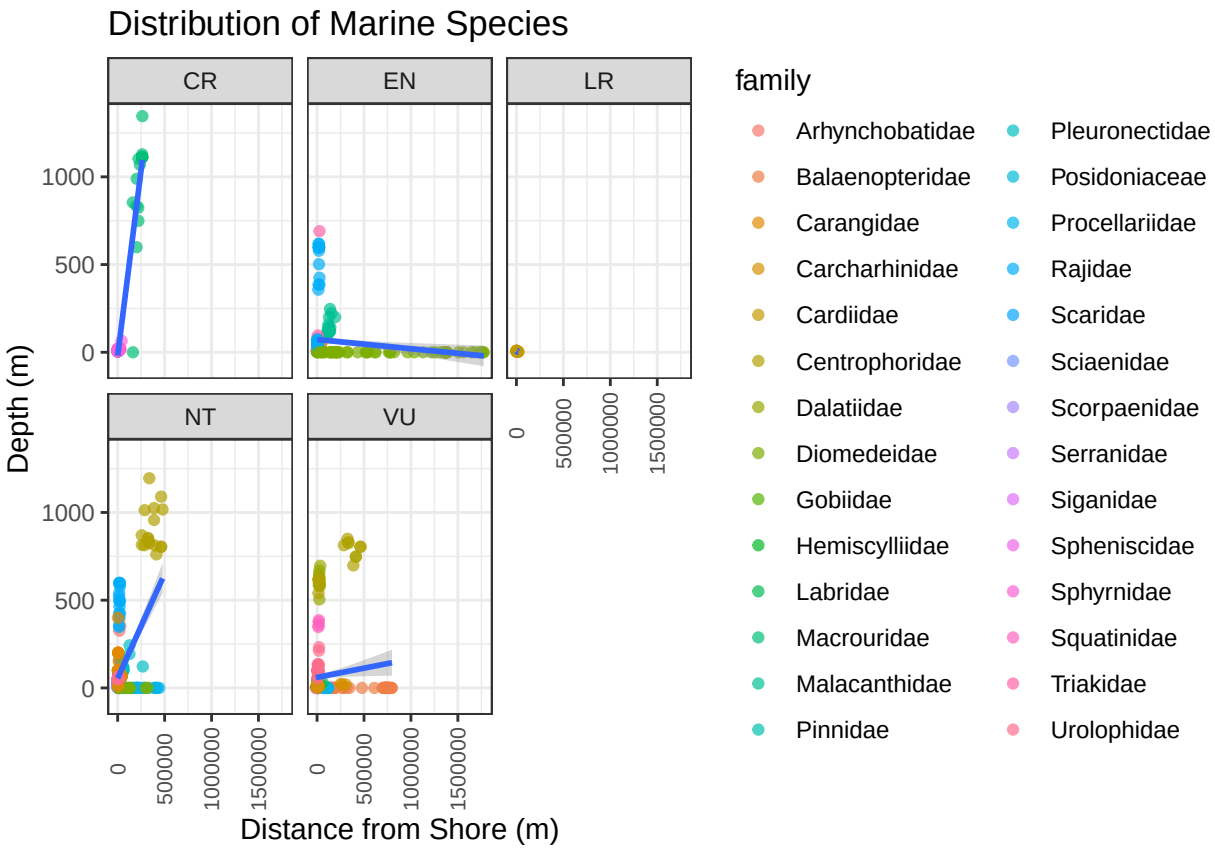
```r
pal.bands(alphabet())
```




```
plot_distribution <- ggplot(data=obis, mapping=aes(x=shoredistance, y=minimumDepthInMeters)) +
  geom_point(alpha=0.7, aes(color=family)) +
  facet_wrap(facets = vars(status)) +
  labs(title="Distribution of Marine Species", x="Distance from Shore (m)", y="Depth (m)") +
  theme_bw() +
  theme(axis.text.x = element_text(angle=90,hjust=0.5, vjust=0.5, size=8)) +
  stat_smooth(method="lm")

plot_distribution
```

```
## `geom_smooth()` using formula = 'y ~ x'
```


Distribution of Marine Species
CR
EN
LR
NT
VU
Depth (m)
1000
500
0
0
500000
1000000
1500000
Distance from Shore (m)
family
Arhynchobatidae
Balaenopteridae
Carangidae
Carcharhinidae
Cardiidae
Centrophoridae
Dalatiidae
Diomedeidae
Gobiidae
Hemiscylliidae
Labridae
Macrouridae
Malacanthidae
Pinnidae
Pleuronectidae
Posidoniaceae
Procellariidae
Rajidae
Scaridae
Sciaenidae
Scorpaenidae
Serranidae
Siganidae
Spheniscidae
Sphyrnidae
Squatinidae
Triakidae
Urolophidae