

#Calculating percentage of catches landed by passive gears

Data were downloaded from the following IMAS database:

<https://metadata.imas.utas.edu.au/geonetwork/srv/eng/catalog.search#/metadata/5c4590d3-a45a-4d37-bf8b-ecd145cb356d>

For definitions, and background information refer to: Reg A.Watson, A.Tidd,2018. Mapping nearly a century and a half of global marine fishing: 1869–2015

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library(ggplot2)
library(tidyverse)

# Download Industrial and non industrial data for most
# recent year (2015) from link above

mydata = read.table("CatchNInd2015_2015.txt", sep = ",", header = T) #catch data
# per grid cell for global non-industrial fleet
mydata$type_fishery <- "nind"

Index = read.csv("IndexNInd.csv") # MASTER INDEX FILE (global catch per fishing event) -
# NON-INDUSTRIAL fishing

nrow(mydata)
mydata <- merge(mydata, Index[, c("ID", "IYear", "CNumber", "Taxonkey",
  "Gear", "FGearCode", "NumCells")], by = "ID")
nrow(mydata)

mydata_ind = read.csv("CatchInd2015_2015.csv") #industrial fishery data
mydata_ind$type_fishery <- "ind"
nrow(mydata_ind)
Index_ind = read.csv("IndexInd.csv") #MASTER INDEX FILE (global catch per fishing event) -
# INDUSTRIAL fishing
mydata_ind <- merge(mydata_ind, Index_ind[, c("ID", "IYear",
  "CNumber", "Taxonkey", "Gear", "FGearCode", "NumCells")],
  by = "ID")
nrow(mydata_ind)

# join industrial with non-industrial
all_data <- rbind(mydata_ind, mydata)

gear_code = read.csv("gear_code.csv", sep = ",") # from: DATA CODE DEFINITIONS
# (gear/taxa/country codes and cell lat/lon references)
# file, Gear spreadsheet An extra column was added using
# the following source from FAO to assign a 'passive' or
# 'active' gear classification

# Retrieved from:
# https://www.fao.org/fishery/en/geartype/search?page=1#search
# Each gear is classified as either passive or active: One
# example for beach seines: © FAO 2022. Fishing Gear types.
# Beach seines. Technology Fact Sheets. Fisheries and
# Aquaculture Division [online]. Rome. [Cited Wednesday,
# September 7th 2022].
# https://www.fao.org/fishery/en/geartype/202/en
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gear_code <- gear_code %>%
  select(Gear, Type_gear) %>%
  group_by(Gear, Type_gear) %>%
  distinct(Gear, Type_gear)

all_data <- merge(all_data, gear_code[, c("Gear", "Type_gear")],
  by = "Gear")
nrow(all_data)

# Catches per gear classified into Reported, IUU, Discards

catches_gear_type <- all_data %>%
  group_by(Type_gear) %>%
  summarise(total_reported = sum(Reported, na.rm = TRUE), total_IUU = sum(IUU,
    na.rm = TRUE), total_discards = sum(Discards), total_catch = sum(total_reported,
    IUU, Discards))

catch_passive <- catches_gear_type %>%
  filter(Type_gear == "passive") %>%
  select(total_catch)

catch_active <- catches_gear_type %>%
  filter(Type_gear == "active") %>%
  select(total_catch)

catch_passive/(catch_passive + catch_active) * 100
# 18% of all landings are caught by passive gears.

write.csv(catches_gear_type, "catches_gear_type.csv", row.names = FALSE)

```