00\_SpeciesDataLoading

Madrone Environmental Services

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## Standardize your libraries for use for the modelling process.

## Loading Data from GBIF

Use this script to load data from Global Biodiversity Information Framework (GBIF):

myspecies <- c("Plestiodon skiltonianus")  
  
# download GBIF occurrence data for this species; this takes time if there are many data points!  
gbif\_data <- occ\_data(scientificName = myspecies, hasCoordinate = TRUE, limit = 20000, decimalLongitude = "-124, -114", decimalLatitude = "49, 50")  
  
# take a look at the downloaded data:  
gbif\_data

## Records found [61]   
## Records returned [61]   
## Args [hasCoordinate=TRUE, decimalLatitude=49, 50, decimalLongitude=-124, -114,  
## occurrenceStatus=PRESENT, limit=20000, offset=0, scientificName=Plestiodon  
## skiltonianus]   
## # A tibble: 61 x 107  
## key scientificName decimalLatitude decimalLongitude issues datasetKey  
## <chr> <chr> <dbl> <dbl> <chr> <chr>   
## 1 3760409541 Plestiodon ski~ 49.2 -118. cdc,c~ 50c9509d-~  
## 2 3859475795 Plestiodon ski~ 49.1 -120. cdc,c~ 50c9509d-~  
## 3 3947544710 Plestiodon ski~ 49.3 -119. cdc,c~ 50c9509d-~  
## 4 3873184905 Plestiodon ski~ 49.5 -117. cdc,c~ 50c9509d-~  
## 5 3902675359 Plestiodon ski~ 49.5 -120. cdc,c~ 50c9509d-~  
## 6 3903369741 Plestiodon ski~ 49.4 -118. cdc,c~ 50c9509d-~  
## 7 3902518370 Plestiodon ski~ 49.1 -118. cdc,c~ 50c9509d-~  
## 8 3902382094 Plestiodon ski~ 49.1 -118. cdc,c~ 50c9509d-~  
## 9 3903318078 Plestiodon ski~ 49.0 -118. cdc,c~ 50c9509d-~  
## 10 3903399939 Plestiodon ski~ 49.1 -118. cdc,c~ 50c9509d-~  
## # ... with 51 more rows, and 101 more variables: publishingOrgKey <chr>,  
## # installationKey <chr>, publishingCountry <chr>, protocol <chr>,  
## # lastCrawled <chr>, lastParsed <chr>, crawlId <int>,  
## # hostingOrganizationKey <chr>, basisOfRecord <chr>, occurrenceStatus <chr>,  
## # taxonKey <int>, kingdomKey <int>, phylumKey <int>, classKey <int>,  
## # familyKey <int>, genusKey <int>, speciesKey <int>, acceptedTaxonKey <int>,  
## # acceptedScientificName <chr>, kingdom <chr>, phylum <chr>, ...

myspecies\_coords <- gbif\_data$data[ , c("decimalLongitude", "decimalLatitude", "individualCount", "occurrenceStatus", "coordinateUncertaintyInMeters", "institutionCode", "references")]  
  
myspecies\_coords <- st\_as\_sf(myspecies\_coords, coords = c("decimalLongitude", "decimalLatitude"), crs = st\_crs(4326))  
  
# CLEAN THE DATASET! ----  
#names(myspecies\_coords)  
#sort(unique(myspecies\_coords$individualCount)) # notice if some points correspond to zero abundance  
#sort(unique(myspecies\_coords$occurrenceStatus)) # check for different indications of "absent", which could be in different languages! and remember that R is case-sensitive

## Additional Data

fgdb <- "C:/Users/rborthwi/OneDrive - MADRONE ENVIRONMENTAL SERVICES LTD/Documents/Data Analysis/22.0253/bc-cdc-species-habitat-modelling/data/ModelData.gdb/ModelData.gdb"  
  
# List all feature classes in a file geodatabase  
fc\_list <- ogrListLayers(fgdb)  
print(fc\_list)

## [1] "R\_PLSK\_Range" "A\_ASTR\_Range" "R\_PLSK\_EO"   
## [4] "R\_PLSK\_EO\_Ext" "R\_PLSK\_WSI\_SO" "R\_PLSK\_iNat\_Obsc\_True"  
## [7] "A\_ASTR\_WSI\_SO" "A\_ASTR\_iNat\_Obsc\_True" "A\_ASTR\_EO"   
## attr(,"driver")  
## [1] "OpenFileGDB"  
## attr(,"nlayers")  
## [1] 9

#Second, load the species data of interest - write function that automates this:  
fc\_PLSK\_range <- sf::st\_read(fgdb, layer = fc\_list[[1]])

## Reading layer `R\_PLSK\_Range' from data source   
## `C:\Users\rborthwi\OneDrive - MADRONE ENVIRONMENTAL SERVICES LTD\Documents\Data Analysis\22.0253\bc-cdc-species-habitat-modelling\data\ModelData.gdb\ModelData.gdb'   
## using driver `OpenFileGDB'  
## Simple feature collection with 11 features and 24 fields  
## Geometry type: MULTIPOLYGON  
## Dimension: XY  
## Bounding box: xmin: 1372462 ymin: 458775.4 xmax: 1782422 ymax: 701431  
## Projected CRS: NAD83 / BC Albers

fc\_PLSK\_EO <- sf::st\_read(fgdb, layer = fc\_list[[3]])

## Reading layer `R\_PLSK\_EO' from data source   
## `C:\Users\rborthwi\OneDrive - MADRONE ENVIRONMENTAL SERVICES LTD\Documents\Data Analysis\22.0253\bc-cdc-species-habitat-modelling\data\ModelData.gdb\ModelData.gdb'   
## using driver `OpenFileGDB'  
## Simple feature collection with 37 features and 55 fields  
## Geometry type: MULTIPOLYGON  
## Dimension: XY  
## Bounding box: xmin: 1466241 ymin: 469730.9 xmax: 1697319 ymax: 641128.5  
## Projected CRS: NAD83 / BC Albers

fc\_PLSK\_EO\_Ext <- sf::st\_read(fgdb, layer = fc\_list[[4]])

## Reading layer `R\_PLSK\_EO\_Ext' from data source   
## `C:\Users\rborthwi\OneDrive - MADRONE ENVIRONMENTAL SERVICES LTD\Documents\Data Analysis\22.0253\bc-cdc-species-habitat-modelling\data\ModelData.gdb\ModelData.gdb'   
## using driver `OpenFileGDB'  
## Simple feature collection with 1 feature and 63 fields  
## Geometry type: MULTIPOLYGON  
## Dimension: XY  
## Bounding box: xmin: 1490685 ymin: 672770.7 xmax: 1490735 ymax: 672820.7  
## Projected CRS: NAD83 / BC Albers

fc\_PLSK\_WSI\_SO <- sf::st\_read(fgdb, layer = fc\_list[[5]])

## Reading layer `R\_PLSK\_WSI\_SO' from data source   
## `C:\Users\rborthwi\OneDrive - MADRONE ENVIRONMENTAL SERVICES LTD\Documents\Data Analysis\22.0253\bc-cdc-species-habitat-modelling\data\ModelData.gdb\ModelData.gdb'   
## using driver `OpenFileGDB'  
## Simple feature collection with 1322 features and 132 fields  
## Geometry type: POINT  
## Dimension: XY  
## Bounding box: xmin: 1453130 ymin: 469601.5 xmax: 1697269 ymax: 570309.8  
## Projected CRS: NAD83 / BC Albers

fc\_PLSK\_iNat\_obsc <- sf::st\_read(fgdb, layer = fc\_list[[6]])

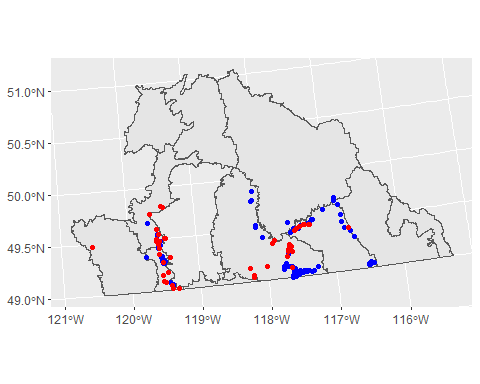
## Reading layer `R\_PLSK\_iNat\_Obsc\_True' from data source   
## `C:\Users\rborthwi\OneDrive - MADRONE ENVIRONMENTAL SERVICES LTD\Documents\Data Analysis\22.0253\bc-cdc-species-habitat-modelling\data\ModelData.gdb\ModelData.gdb'   
## using driver `OpenFileGDB'  
## Simple feature collection with 6 features and 50 fields  
## Geometry type: POINT  
## Dimension: XY  
## Bounding box: xmin: 1460940 ymin: 508797 xmax: 1607856 ymax: 550244.5  
## Projected CRS: NAD83 / BC Albers

## Plots

Testing the data and visualizing it:

## bc\_bound\_hres was updated on 2021-03-01

## xmin ymin xmax ymax   
## -123.73209 48.99881 -114.05415 52.49719



## Generate The Data Citations

## Warning: gbif\_citation() for occ\_search() and occ\_data() is deprecated.   
## Use rgbif::occ\_download() or rgbif::derived\_dataset() instead.