BBS Species Updates Notebook

Check differences from years of BBS species

to develop taxonomic harmonization workflow

```
# optional
# rm(ls())
require(here)
```

```
Loading required package: here
```

```
here() starts at /Users/billspat/Code/SpaCELab/atx/Avian-Interaction-Database
```

```
require(readr)
```

```
Loading required package: readr
```

```
library(dplyr)
```

```
Attaching package: 'dplyr'
```

```
The following objects are masked from 'package:stats':
```

```
    filter, lag
```

```
The following objects are masked from 'package:base':
```

```
    intersect, setdiff, setequal, union
```

```
R_L0 <- here::here('R/v2')
source(file.path(R_L0, 'bbs_specieslist_L0_psb.R'))
```

```
Loading required package: curl
```

```
Using libcurl 8.7.1 with LibreSSL/3.3.6
```

```
Attaching package: 'curl'
```

```
The following object is masked from 'package:readr':

    parse_date
```

```
print(L0_dir)
```

```
[1] "/Users/billspat/Code/SpaCELab/atx/Avian-Interaction-Database/L0"
```

we've already downloaded the 2023 file and don't have the URL handy for re-download, so read it in directly using the guessed encoding

```
bbs.splist.2023.file <- file.path(L0_dir,"bbs_splist_2022_L0.csv")
encoding.2023 <-readr::guess_encoding(bbs.splist.2023.file)
encoding.2023$encoding[1]
```

```
[1] "ISO-8859-1"
```

not sure why this isn't UTF8 unless this file was downloaded on a windows computer and saved here.

read into a data frame and check it

```
bbs.splist.2023<-read.csv(bbs.splist.2023.file ,fileEncoding=encoding.2023$encoding[1])
print(nrow(bbs.splist.2023))
```

```
[1] 760
```

```
head(bbs.splist.2023)
```

```
  Seq  AOU          English_Common_Name           French_Common_Name
1   6 1770 Black-bellied Whistling-Duck    Dendrocygne à ventre noir
2   7 1780       Fulvous Whistling-Duck            Dendrocygne fauve
3   8 1760                Emperor Goose                 Oie empereur
4   9 1690                   Snow Goose               Oie des neiges
5  10 1691      (Blue Goose) Snow Goose Oie des neiges (forme bleue)
6  11 1700                 Ross's Goose                  Oie de Ross
            Spanish_Common_Name        ORDER   Family       Genus
1         Dendrocygna autumnalis Anseriformes Anatidae Dendrocygna
2            Dendrocygna bicolor Anseriformes Anatidae Dendrocygna
3                Anser canagicus Anseriformes Anatidae       Anser
4             Anser caerulescens Anseriformes Anatidae       Anser
5 Anser caerulescens (blue form) Anseriformes Anatidae       Anser
6                   Anser rossii Anseriformes Anatidae       Anser
                  Species                  genus_species
1               autumnalis         Dendrocygna autumnalis
2                  bicolor            Dendrocygna bicolor
3                canagicus                Anser canagicus
4              caerulescens             Anser caerulescens
5 caerulescens (blue form) Anser caerulescens (blue form)
6                   rossii                   Anser rossii
```

Read using re-useable function that also

```
bbs.splist.2023 <- read_bbs_2023(bbs.splist.2023.file)
head(bbs.splist.2023)
```

```
  Seq  AOU          English_Common_Name           French_Common_Name
1   6 1770 Black-bellied Whistling-Duck    Dendrocygne à ventre noir
2   7 1780       Fulvous Whistling-Duck            Dendrocygne fauve
3   8 1760                Emperor Goose                 Oie empereur
4   9 1690                   Snow Goose               Oie des neiges
5  10 1691      (Blue Goose) Snow Goose Oie des neiges (forme bleue)
6  11 1700                 Ross's Goose                  Oie de Ross
        Order   Family       Genus                 Species
1 Anseriformes Anatidae Dendrocygna               autumnalis
2 Anseriformes Anatidae Dendrocygna                  bicolor
3 Anseriformes Anatidae       Anser                canagicus
4 Anseriformes Anatidae       Anser             caerulescens
```

```
5 Anseriformes Anatidae       Anser caerulescens (blue form)
6 Anseriformes Anatidae       Anser                   rossii
                  genus_species
1         Dendrocygna autumnalis
2            Dendrocygna bicolor
3                Anser canagicus
4             Anser caerulescens
5 Anser caerulescens (blue form)
6                  Anser rossii
```

download 2024 file (with 2023 data) if it's not downloaded already, read and alter columns for comparison

```
bbs.splist.2024.file <- file.path(L0_dir,"BBS2024_SpeciesListL0.csv")
# this only downloads and modifies if we don't have one already
bbs.splist.2024 <- download_current_bbs_csv(bbs_csv_file_path = bbs.splist.2024.file)
```

```
Warning in download_current_bbs_csv(bbs_csv_file_path = bbs.splist.2024.file):
BBS file exists
/Users/billspat/Code/SpaCELab/atx/Avian-Interaction-Database/L0/BBS2024_SpeciesListL0.csv
not overwriting. set overwrite = TRUE to write new file
```

```
head(bbs.splist.2024 )
```

```
  Seq  AOU          English_Common_Name           French_Common_Name
1   6 1770 Black-bellied Whistling-Duck    Dendrocygne à ventre noir
2   7 1780       Fulvous Whistling-Duck            Dendrocygne fauve
3   8 1760                Emperor Goose                 Oie empereur
4   9 1690                   Snow Goose               Oie des neiges
5  10 1691      (Blue Goose) Snow Goose Oie des neiges (forme bleue)
6  11 1700                 Ross's Goose                  Oie de Ross
        Order   Family       Genus                  Species
1 Anseriformes Anatidae Dendrocygna               autumnalis
2 Anseriformes Anatidae Dendrocygna                  bicolor
3 Anseriformes Anatidae       Anser                canagicus
4 Anseriformes Anatidae       Anser             caerulescens
5 Anseriformes Anatidae       Anser caerulescens (blue form)
6 Anseriformes Anatidae       Anser                   rossii
                  genus_species
1         Dendrocygna autumnalis
2            Dendrocygna bicolor
```

```
3                Anser canagicus
4             Anser caerulescens
5 Anser caerulescens (blue form)
6                   Anser rossii
```

Compare sp list to find changed species

check names

```
print('2023')
```

```
[1] "2023"
```

```
print(names(bbs.splist.2023))
```

```
[1] "Seq"                 "AOU"                 "English_Common_Name"
[4] "French_Common_Name"  "Order"               "Family"
[7] "Genus"               "Species"             "genus_species"
```

```
print('2024')
```

```
[1] "2024"
```

```
print(names(bbs.splist.2024))
```

```
[1] "Seq"                 "AOU"                 "English_Common_Name"
[4] "French_Common_Name"  "Order"               "Family"
[7] "Genus"               "Species"             "genus_species"
```

Compare

```
diffs <- difference_bbs_species_list_2023_24(bbs.splist.2023,bbs.splist.2024 )
diffs
```

```
# A tibble: 8 x 7
    AOU differing_values_diffEng~1 differing_values_dif~2 differing_values_dif~3
  <int> <chr>                      <chr>                  <chr>
1  3340 "Northern Goshawk -> Amer~ "Autour des palombes ~ ""
2  4123 "(unid. Red/Yellow Shafte~ ""                     ""
3  4641 "Pacific-slope Flycatcher~ "Moucherolle côtier -~ ""
4  4640 "Cordilleran Flycatcher -~ "Moucherolle des ravi~ ""
5  4642 "unid. Cordilleran / Paci~ "unid Moucherolle côt~ ""
6  7421 "Swinhoe\u0092s White-eye~ ""                     ""
7  5212 "Unid. Cassia Crossbill /~ ""                     ""
8  6556 "(unid. Myrtle/Audubon's)~ ""                     ""
# i abbreviated names: 1: differing_values_diffEnglish_Common_Name,
#   2: differing_values_diffFrench_Common_Name, 3: differing_values_diffOrder
# i 3 more variables: differing_values_diffFamily <chr>,
#   differing_values_diffGenus <chr>, differing_values_diffSpecies <chr>
```

Species differences & anomolies notes:

The current comparison lists these species as changing since last time: differing_values_diffEnglish_Common_N

- Northern Goshawk -> American Goshawk
- (unid. Red/Yellow Shafted) Northern Flicker -> (unid. Red / Yellow Shafted) Northern Flicker
- Pacific-slope Flycatcher -> (Pacific-slope Flycatcher) Western Flycatcher
- Cordilleran Flycatcher -> (Cordilleran Flycatcher) Western Flycatcher
- unid. Cordilleran / Pacific-slope Flycatcher -> (unid. Cordilleran / Pac-slope) Western Flycatcher
- Swinhoe¬ís White-eye -> Swinhoe,Äôs White-eye
- Unid. Cassia Crossbill / Red Crossbill -> unid. Cassia Crossbill / Red Crossbill
- (unid. Myrtle/Audubon's) Yellow-rumped Warbler -> (unid. Myrtle / Audubon's) Yellow-rumped Warbler

The species re-assignment checking will occur in the next script: `bbs_specieslist_L1.R`

Then, if combining with bbs_obs data: `AvianInteractionData_L1.R`